# PH.D. THESIS CONCEPTUALISATION

# Up-skilling in rapidly developing countries: propensity of occupations or individuals?

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## Summary

The given paper is aimed to prove the thesis that occupational training is a consequence of high wage differences within- and between-occupations caused by changes in occupational structure. High wage diversity within- and between-occupations is grossly underresearched by scholars who study causality of upskilling and skills differentiation, occurred in 1980s. Some of them focus mainly on occupational changes as a predominant factor of qualification diversity. Those scholars who study wage differentiation usually omit changes in occupational structures. The given paper combines these two approaches. On the one hand, it is shown that occupational structure changes is a powerful explanatory factor for wage diversity in a countries that faced industrial phase of development rather than other concepts such as international trade or formal labour market institution. On the other hand, it is proven that this wage diversity is closely interrelated with skills diversity were upskilling emerges as a rational respond of employees to wage inequality.



**Kew words**
BRIC countries · qualification improvement · wage gaps · occupational shifts · industrialisation · socio-economic development

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# 1 Introduction

This paper is exploring the relationships among three main notions — 1) occupational shifts, 2) wage differentiation between and within occupations, and 3) qualification improvement within occupations. The first part denotes the occupations and occupational shifts. The concept of industrialization is used to explain the occupational shifts and the wage gaps between occupations and particular jobs. Additionally, it helps to understand the raise of demand for skills in economies that come through a set of certain conditions that are as follows — computerization of means of production, automation of labour, even in agriculture, and the change of the nature of quasi-rents allocated with the particular types of activity, jobs, and contracts. These processes appear the same in the different countries that came through the certain transformation of their industrial relations. The latter is one of the crucial analytical constructs attached to the industrialization concept that appear to be useful in the analysis. Mainly derived from the neo-Marxist approach there are also some of them that are used in the analysis — productive forces, production relations, on the one hand, and capital and quasi-rents – on the other.

Since the above-mentioned conditions appear the similar in different countries, it enables us to compare them among each other. Moreover, it gives the instruments to both identify and explain the difference between the countries of interest. In light of explanation the difference between the countries, also the concept of transition is used. It used in relation with Russian case as Russian reforms of 1990s were developed and forced by the government and some international institutions as the transition from the planned to the market economy. However, not only Russian case is covered by the transition theory. All the other countries among BIC — Brazil, India, and China — that pass through the series of so-called "modernization reforms" consider the reality of their development as transition to the knowledge-based economies and where upskilling is presumed as domain condition of advancement. Particularities of these transitions are shown in the last part of the current paper.

# 2 Qualification and occupations

Qualification improvement is a relatively late phenomenon that has appeared in Western world in the second half of the XX century[1]. It followed by the number of changes in economies of the industrially developed countries. The main transformation that was common for all these countries denoted the changes in significance of qualification in the determination of a society's social and economic development. (Bell, 1976; Castells, 2010; Powell & Snellman, 2004). Since the 1960-70s notions of 'qualification level' and 'skills' are widely used in the international comparisons and classifications to explain the diversity of payoffs (IMF, 2007b), occupational compositions (Goldthorpe, 2002), and distribution of rents (Liu & Grusky, 2013).

The nature of the trend has taken place from the 1960-70s in relation to a) labour force, and b) means of production (industrial, or production and economic relations) was indicated by the shrinks in proportion of high-skilled workers in industrially developed countries (Bureau of Labor Statistics, 2003–2004, pp. 9-10; Harnad, 1991; Hicks & Allen, 1999, p. 24; Perkin, 1990). The evolution of labour force and means of production resulted in the revolution in informational sector in 1980–1990s (Burton-Jones, 1999; Castells, 2004; Krug, 2005; Powell & Snellman, 2004), when intellectual services differentiated from social service industries (Singelmann, 1978). Creation of new types of employment positions has led to a disintegration of the once homogeneous group of non-manual workers into the high-skilled workers on the one hand and so-called 'generic' workforces (Castells, 2004) and 'procariat'(Standing, 2011), on the other. This differentiation of work force has occurred between- and within-occupations resulting in challenges for the labour force in terms knowledge and skills.

## 2.1 Qualification within industrialization framework

To describe the new phenomenon, Bell suggested the notion of a *post-industrial society* (Bell, 1976). He was not the only scholar who did attempts to understand the nature of this transformation. One can see in literature the notions such as 'programmed society'(Touraine, 1971), 'society of services' (Singelmann, 1978), 'network society' (Castells, 2011), 'society of informational capitalism'(Fuchs, 2013), and even metaphors such as 'weightless society'(Leadbeater, 2000) etc. For the exception of Bell's concept, most of these attempts have done under the critical approach of the new reality where information and skills became the most important issue of a development. Relative neutrality and simplicity of industrialization framework provides powerful analytical tools in comparative studies across the countries, which may have different historical and cultural background.

Industrialization concept postulates the existence of a number of subsequent stages that reflect a certain relation between labour force and means of production established in a society. More complex types of work task and duties, and higher skill levels describe each following phase of industrialization. By this, *qualification is considered the key issue of industrialization* (Kerr, Harbison, Dunlop, & Myers, 1960) — the role of skills increases from one stage to another.

In other words, the market bargaining force in a post-industrial society is based upon competitive knowledge and competences, as well as upon creative potential (Leitch Review of Skills, 2006; OECD, 2000; Perry, Denison, & Solow, 1971). Within this framework competitive knowledge, competences, and creative potential are considered the fundamentals of *knowledge-based economy* (Burton-Jones, 1999; Machlup, 1962). In light of this, knowledge-based economy is an inherent feature of post-industrial society.

[1] More by token, according to Bosch and Charest (2012) development of vocational education and training 'cannot be understood solely by examining the inner dynamics of education and training system'. Broader societal context should be a matter of study.

Nature of qualification in such economies is changed from fixed to *continuous education* and *training*. Based on International Adult Survey, O'Connell (1999) showed a wide spreading of continuing education and participation in job-related training among employees in industrially advanced countries such as Australia (38%), Belgium (20%), Canada (38%), Ireland (23%), the Netherlands (32%), New Zealand (45%), Poland (17%), Switzerland (32%), the United Kingdom (52%), and the United States (46%).

## 2.2 Qualification, new work, and new workers

When new types of production appear *the jobs* require a worker to *demonstrate* and *apply* knowledge, skills, and even features of character that were not in demand before. This demand enhances the transformation of *work*. According to Bell, transition to knowledge-based economy is followed by the activities that were predominantly associated with 'informational work' (Bell, 1976). Because of its nature, this type of work requires a person to keep the acquired competences updated what implies the socialization the corresponding attitudes and values. Thus, new type of worker appears following the occupational decomposition of the work force.

According to different authors and statistics, these were *professionals*, *administrative personnel*, and *technocrats* (Allegretto, Dube, & Reich, 2011; Kumar, 1978, pp. 185–240; Porat, 1977; Reich, 1992). New types of work and related jobs were getting to appear similar to how a) "traditional jobs" created to satisfy the needs of material production and b) common services were replaced by machinery production and skilled labour during early industrialization (see Table 1). In knowledge-based economy *information* became the working capital, more widely than *material objects*, as was formerly the case (Unwin, 1904). Ideas, knowledge, advance skills, talent and individual 'creativity' (Regini, 2010) — as compared to generic knowledge and skills — became crucial factors in the value-added chain, and determined personal success (Leggett, 2013) and even different growth patterns:

> Differences in economic growth across countries are closely related to cognitive skills as measured by achievement on international assessments of mathematics and science. In fact, once cognitive skills are incorporated into empirical growth models, school attainment has no independent impact on growth (Hanushek, 2013, p. 9).

There is a hypothesis that occupational shifts are documented alongside the *polarisation of skills* and diverse economic outputs from various competences. Diversity of competences is embedded in the variety of job tasks that are highly determined by occupational structure. Handel (2013) revealed the 'structuring power of occupations as determinants of job content' as 'a substantial proportion of *abstract task* content is "hard wired" into occupations' (p. 81). Both institutional and personal success in knowledge-based economy are noticeable when economy's advancement is assured by a group of *occupations* or *workers*, which are able to deal with high-technology processes, information, and ideas, and who actually know how to produce, manage and share these technologies and knowledge. Studying the socio-economic transformation of Western Europe, the USA, and Japan, many scholars emphasize their attention on the phenomenon of *new workers* by using a number of terms to describe it, namely 'informational workers' (Castells, 2004), 'experts managers', 'expert supervisors', 'experts'(Wright, 1997), 'credentialed specialists'(Wright, 1989b), 'symbolic analyst'(Holmes & Marcus, 2006; Reich, 1992), 'salariat', 'service class'(Goldthorpe & McKnight, 2006), or 'higher professionals' (Chan & Goldthorpe, 2007).

To distinguish this kind of workers from the generic workforce, organizations — partially inspired by the management studies and partially, by the accumulated industrial experience — elaborated a varied number of employment compensation schema that exist mainly in a form of *service relationships* (Rose, 2005). In contrast, the others remain to be under unified 'labour contracts', or so called 'spot contracts' (Goldthorpe, 2000, p. 1580; Morgan & McKerrow, 2004; Sørensen,

2000). Meanwhile, this phenomenon does not necessarily emerge in a way of enhancing frontiers between occupations; rather it occurs both between and within-occupations. For instance, some neo-Marxist and critical scholars documented the *proletarization of professionals* and *de-qualification* of other non-manual workers in modern bureaucratic organizations, especially in those of a high level of within-occupational monopoly and closure (Kitchener, 2000; Larson, 1979; Murphy, 1990). Erikson, Goldthorpe, and Portocarero (1979) distinguish a) *higher-* and *lower-grade* non-manual workers — managers, supervisors, professionals, technicians, employees in administration and commerce; as well as b) *skilled*, *semi-* and *unskilled* manual workers in Great Britain, France, and Sweden. Wright (1997) distinguishes *experts*, *skilled*, and *unskilled* workers in the US. Penn (1984) differentiates *labour aristocracy* and *routine non-manual workers*. Some authors speak about devaluation of 'intermediate qualifications — both academic and vocational — that most lose their capacity to 'make a difference''(Heath, Mills, & Roberts, 1992; Jackson, Goldthorpe, & Mills, 2005). It is of importance to notice that polarization of skills concerned with new type of work, jobs, contracts, and benefits occurs both between- and within- occupations what is shown below.

## 2.3 Qualification and occupational decomposition

Bell bases his analysis of post-industrial society on Machlup's study of changes in occupational structure of American society during the XIX to XX centuries (1848–1960), according to which the main occupational shifts in this country were caused by an enhancement of role of knowledge and information in social and economic development. In other words, these scholars highlight the importance of labour force characteristics reflected in the link between qualification and occupational status, as compared to industrial relations derived from relations involving the ownership of capital goods (see Marx, 1859).

In early industrial economy manual workers exist in a form of homogeneous army of low-skilled employees (Marx, 1859; Urquhart, 1984). Their occupational status is entirely homogenous as well as their qualification (A. H. Hansen, 1922; Jones, 1925). To some extent being a 'manual worker' in early industrial economy was the same as being a low- or even non-qualified employee (Ogburn & Tibbitts, 1929; Sorokin, 1927). Their *homogeneous occupation* coincides closely with their *homogeneous qualification*. The same we can say about professionals. At the same time-period, they existed as a very small group of high-skilled specialists who were employed with intellectual labour and demonstrated neglectable within-occupational differences. Their homogeneous occupation status was overly matched with their homogeneous qualification. By the stage of late industrialization, almost all occupational groups are turned to be numerous and diversified enough to say that occupational statuses are no longer fully matched with qualification. In light of this, industrialization is viewed as a *process of sequential mismatching of occupations and qualifications in terms of homogeneity*. In other words, in post-industrial society occupations are so splitted in terms of skills that we can speak about specific homogenous lacunas within occupations and no longer of homogeneous occupations determined through homogeneous qualification[2]. That is the essential of polarization hypothesis in terms of which late phases of industrialization can be considered a transition from differentiation to polarization.

[2] Here we speak about relatively large occupational groups like those are coded by 9-digit scheme of International Standard of Classification of Occupations that was developed in 1988 by ILO to gain explicit comparison of occupational structures of industrialised countries. Though, different countries use various approaches to measure occupational structure, ISCO-88 (and its later version ISCO-2008) or related classification schemas (e.g. ISCO88 (COM) used in the EU, the UK's SOC, Brazilian CBO-94 (Classificação Brasileira de Ocupações) – see the mapping of it to ISCO-88 in (Muendler, Poole, Ramey, & Wajnberg, 2004)) are usually included in labour force surveys. ISCO-88 is based on 4 distinct skill level (Bergman & Joye, 2001), namely 1) primary education, 2) secondary education, 3) tertiary education (without university degree), and 4) tertiary education (university degree or equivalent); as well as widely used by scholars as initial scheme for their more 'theoretical' classifications (Ganzeboom & Treiman, 1996).

Table 1

Modes of Socio-Economic Development, Occupational Structure and Qualification

| | PI | EI | I | LI | PTI |
|---|---|---|---|---|---|
| **Historical framework** | **In Western Europe**: from the 14th century (feudal system decay to the west of the Elbe) until the first quarter of the 18th century | **In Western Europe** (England): the second quarter of the 18th century until the first half of the 19th century; In the **USA** (northern states): from the end of the 18th century until the end of the 19th century | **In Western Europe**: from the middle of the 19th century until 1950s (in England); to1960s (in continental Europe, due to World War II); In the **USA**: from the end of the 19th century until the 1940s | **In Western Europe**: 1960-1990; In the **USA**: from 1940-1950 until the 1970s | **In Western Europe**: from 1980-1990 until the present; In the **USA**: from the end of the1970s until the present |
| **Proportions in the occupational structure** | Predominance in the economy of ground laborers (peasants); workers engaged in foraging, hunting and fishing; crafts associated with the lay of the land; handicraftsmen | Predominance in the economy of low-skilled workers engaged in homogeneous manual work on farms, in forestry, in fishing, at factories and plants, in transport, in trade, and in consumer services | Predominance in the economy of industrial workers primarily engaged in conveyor-type production; growth in the number of agents and administrative staff performing routine tasks in offices | Predominance in the economy of non-manual workers: officials, technical staff, engineers, doctors, school teachers, and insurance and real-estate brokers | Predominance of professional managers and technical experts, represented by such occupations as advisers, computer specialists, researchers, analysts, and qualified technical staff; a small share of workers and representatives involved in unskilled, routine work |
| **Nature of work, labour division, specialization and qualification** | Most simple, unskilled, homogeneous and universal labor of a physical character | Universal, homogeneous labor, low level of qualifications, low professional differentiation | Skilled and semiskilled labor, differentiation of workers according to qualifications and specialty, formation of a wide group of non-manual workers; formation of a narrow stratum of intellectual workers; | Highly-specialized labor, high-scaled differentiation according to qualifications, as well as the character and content of the performed work, both between professionals and within them | Highly skilled labor with broad specialization, high professional differentiation of intellectual labor, a new criterion of creativity is included within qualifications; with automation of production processes, unskilled, routine work is disappearing |
| **References** | Bücher (1912); Castel (1995); Lindert (1980); Tawney and Tawney (1934); Unwin (1904) | R. M. Brown (1924); Commerce Yearbook (1928); A. H. Hansen (1922); Jones (1925); Ogburn and Tibbitts (1929); Routh (1987); Sorokin (1927); Urquhart (1984); US Bureau of Labor Statistics (1927) | P. M. Blau and Duncan (1967); W. Hansen (1963); Machlup (1962); Mills (1951); Routh (1987); Woollard (1998) | Broom and Smith (1963); Card and Krueger (1994); Goldthorpe, Llewellyn, and Payne (1987); Goldthorpe, Lockwood, Bechhofer, and Platt (1969); Hicks and Allen (1999); Kumar (1978); Larson (1979); Penn (1984); Perkin (1990); Perry et al. (1971); Routh (1987); Singelmann (1978); Wyatt and Hecker (2006) | D. Brown (2007); Bureau of Labor Statistics (2003–2004, 2009–2010); Burton-Jones (1999); Castells (2011); Gilbert (2011); Harnad (1991); Morgan and McKerrow (2004); Oesch and Menés (2011); Porat (1977); Powell and Snellman (2004); Regini (2010); Urry (2000) |

*Source:* Adapted from Anikin (2013a)

Note: PI pre-industrial economy; EI early industrial economy; I transition phase of economic development from early to late industrial; LI late industrial phase of economic development; PTI post-industrial phase of development.

Transformation of occupational structures with respect to this qualification diversification, appearing of new work and new workers and its further differentiation that have occurred in industrially developed countries during the second half of the XX century and was described by a number of scholars, is summarized in Table 1. Though they use various terms to describe the stages of development, the number of these stages remains more or less the same. For example, Lerner (1958) distinguishes industrial, urban, literate, and participant modes of society with focusing on secular evolution of values and beliefs of people. Though values are seen to be bound with various

behaviours (Bardi & Schwartz, 2003), Lynd and Lynd (1929), Duvall (1946) and later Kohn (1989) provided *empirical evidence* of values' dependency on 'social class reality' measured in occupational terms[3]. That is why ignorance of occupational shifts in modelling development could be irretrievable, especially, in the realm of our research.

In further support of our suggestion, Chen (1947); Dunkerley (1975) argued that particular occupational structure and a corresponding system of competences appeared as a society's respond to the changes in industrial relations and technology. In some countries developing a particular type of occupational structure and skills became a goal of their socio-economic policies (Häusermann, 2010; Hennock, 2007; Köhler & Zacher, 1982; Soskice, Estevez-Abe, & Iversen, 2001)[4]. It is the way of national adaptation, which became a predominant feature of industrially advanced countries, such as England (the reorganization of traditional industries forced by M. Thatcher), Germany (the social market economy (Soziale Marktwirtschaft) of R. Erhard), Japan (the Ministry of Commerce and Industry's policy), the USA (the reforms to the educational system in the 1930s, and others). In "developing countries", such as BRICs — Brazil, Russia, India, and China — it was gradual decomposition, partially accompanied by the transplantation of institutes and technologies. Socio-economic consequences of these reforms are scrutinized in the fifth paragraph.

The scheme presented on Table 1 sums up the trends analysed above in the columns LI—'late industrial phase of socio-economic development', and PTI—'post-industrial stage of development'. It is important to show that diversification of qualification changes alongside the occupational structure shifts; moreover changes in knowledge and skills are nested in jobs, what was also discussed earlier. Based on conceptual as well as empirical papers discussed above and summarised in the Table, 5-stage model of industrialization in a) occupational and b) qualification terms could be presented. Occupational changes are presented by proportions in the occupational structure; qualification terms — by nature of work, labour division according to specialization and skills. Within the certain historical framework, these indicators produce the criteria to distinct different types of socio-economic development and arrange them in consistent order.

This scheme is very important to this paper as it links the idea of modernization that BRIC countries declare and implement in different terms and reflections. In terms of industrialization, modernization could be treated as transition from one stage to another. Since these countries are keen on building knowledge-based economies (see Paragraph 5) they seemingly have the same goal willing to become a part of post-industrial world with its requirements to labour force for continuing education and training.

[3] For instance, Kohn (1989) uses Hollingshead's classification of occupational positions as the measure of class.

[4] For instance, the UK "Skills for Life" strategy of early-2000s should be mentioned as a remarkable example of cross-government initiative 'to ensure adults gained the skills required to find and keep work and participate fully in society' Department for Business (2013, p. 19). According to the official papers, Skills for Life introduced 'a learning infrastructure including national standards, a core curriculum, materials and tests, new qualifications and professional standards for tutors as well as national targets for the numbers of adults to improve their skills and gain new formal qualifications'(Ibid). Now the UK Government confirms the necessity to make training traditions more effective in terms of 'shaping them for the 21st century economy'(Department for Business, 2011, p. 30) on a par with qualifications more relevant and valued in terms of the global market requirements facilitated by the third-world economies that 'are investing heavily in their people at all levels' (Department for Education & Department for Business, 2013, p. 4).

# 3 Qualification as individual attribution

Alternative view to the qualification and qualification improvement derives from liberal theory. In this paragraph, we consider briefly logic concerned with the main achievements of it as well as some critique of liberal theory derived from empirical studies.

## 3.1 Qualification, human capital theory, and monopoly of skills

The diversification and further polarization of skills was expected to be linked with the *monetary benefits* that workers could reap from the additional years of education or unique work experience embodied in their capacity to labour in a certain company or industry. In order to describe the additional returns to the economic value, which was supposed to be produced by the stock of competences — i.e. education, skills, and even creativity (Rodriguez & Loomis, 2007; Sheffrin, 2003) — embodied in the ability to perform labour, the term '*human capital*' was widely brought to the public use primarily by the economists Shultz, Becker, and Mincer. It's worth noting that the main limitation of empirical verification of such models is in its using the years of education or even initial level of literacy (Romer, 1989), rather than advanced human capital indicators. Sociologists heavily criticize the human capital theory as it does not reflect the underlying processes that transform education and knowledge into a capital, well shown by Bourdieu (2008) and Liu and Grusky (2013). For example, Bourdieu brought to wide use the notion of '*cultural capital*' to distinguish benefits people gained on specific knowledge and pattern of socialization (habitus) from benefits that they can return on the other forms of capital, such as economical, administrative, or social one.

More powerful basis in support of the individual nature of upskilling arrives from analytical Marxism. By this, owners of "traditional" means of production — i.e. capitalists in Marxian approach — no longer appeared as exclusive rent-takers. Redistribution of companies' surplus has been changed drastically, so that the social nature of *authority* changed correspondingly, by scattering towards "nonproletarianized employees", such as high level managers, professionals, experts, and technicians of various sorts (Wright, 1997). Following the approach of analytical Marxism, the main reason for this can be enrooted in *differentiation of productive assets* and its unequal ownership or control (Wright, 1989b, p. 306). By this, *skills* or *credential assets* became the basis of a new form of exploitation — 'socialist exploitation' –'negotiated redistribution of surplus from workers to experts' (Wright, 1989a). In other words, qualification appeared in a form of personal asset distinguished from "traditional" ones such as labour power assets, capital assets, and organizational assets (Roemer, 1982; Wright, 1989b, p. 306). Acquired knowledge and expertise assets enhance professionals' capacity to appropriate the surplus from the 'monopoly of certain skills, particularly when legally certified through credentials' (Wright, 1989b, p. 307).

## 3.2 Qualification, occupational closure, and quasi-rents

According to neo-Marxian approach, knowledge and expertise turned to produce new types of rents to their holders, such as "loyalty rent" and "employment rent" (Wright, 1989b) situating these workers into *micro-classes*. Liu and Grusky (2013) develop the idea of micro-classes based on the *occupational closure* as one of the most important and established type of institutional closure. Authors try to prove that such kind of closure erects a foundation for the converting of quasi-rents into permanent rents. This 'artificially' maintained deficit of supply within the *local occupational monopolies* does decrease the payoffs of highly qualified workers to the equilibrium (competitive) price for such labour on a permanent base. In this case, one can speak about permanent rents. There are a number of empirical evidences for this view, such as *tenure tracks* in the USA and in some other industrially developed countries. In this perspective, qualification improvement can be considered as inherent instrument of maintaining local monopoly.

Actually, the majority of markets are scarcely coordinated by tenure contracts or other mechanisms that produce permanent rents. Quasi-rents are considered as *transitionary rents* of *temporary shortage of skilled labour force*. From the authors' viewpoint, owners of capital assets exist as a rare exception from this regularity. Because of convertibility of quasi- to permanent rents, it will avail much to figure out why even high skilled and top-paid employees that seem to accrue employment rents — and corresponding benefits — do often demonstrate consistent intentions of becoming a part of stakeholders or high level management. It seems to be a shared motivation pattern amidst most of efficient-like employees in skills intensive sectors, like finance, banking, marketing, and consulting. High-level management does not accrue permanent rents, but do appropriate a part of a surplus. This example is one of a number that bring to the reality the suggestion of rents convertibility — not only from quasi- to permanent form as authors insist, but also from one quasi-rent to another. We call it "*movement between quasi-rents*". This phenomena exists only in the industrially developed society with the high rate of *intra-occupational diversity* – – that was proven Liu and Grusky (2013). This diversity is maintained primarily by the firm- and industry-biased distribution of earnings. The key feature of this diversity is a high-wage differentiation. One may ascribe these 'switching between quasi-rents' with a closure mechanism; however, they do not exist in a form of permanent rents. For example, in Russia in the early 1990s due to the shortage of financial professionals, accountants, and related experts, these occupations were extremely high paid. Today just few jobs in financial sector are related with the similar benefits. The same trend takes place in contemporary China.

We may speak even about "*stable quasi-rents*" if this intra-occupational diversity is very intensive, so that the overall demand could not be matched, as people prefer different kind of jobs even within the scope of their credentialed competence. It is totally corresponds with the idea of Liu and Grusky (2013) about '*the taste*' of both graduates and employees to choose the jobs and courses. Due to this, students could have the willingness to study at say financial or economic faculties, what could support the illusion of popularity of the occupation taken in its "aggregated" form. When they enter labour market, they face diversity within the chosen specialty. Both within-working place and intra-occupational experience usually gives the relatively exact picture of scatteredness of the earnings of different people who was awarded supposedly the same specialty or degree — even among those graduated the same university or college.

In other words, we assume that people *do* gain knowledge of market situation (see Polavieja, 2012). The main information about market devotes the lacunas where quasi-rents exist. In "sufficient" world emploees try to "switch" between these lacunas. *Ceteris paribus*, they use new knowledge and more specialized skills as well as the social context data collected to compensate imperfect information about the probability of success — more often by women than men (Ibid) — as the instrument of this within-structural movement and "switching", i.e. of making decisions about jobs. Noticeably, recent literature reviews the evidence on this. Lerman (2013) documents that 'in the apprenticeship countries, the advantage in employment rates is sizable, providing men with vocational education a 9 percentage point higher employment rate at age 40 and a 4 point advantage at age 50'(p. 19). From this viewpoint, demand for additional training could be considered as a consequence for their willingness to accrue quasi-rents in a different occupational lacuna and therefore move up within the occupation[5]. To some extent it is the adapted description of '*competitive system*', offered by the classics of liberal theory K. Davis and Moore (1945) to

[5] From the point of external forces, that can restrict the labour forces in their demand for training, there are at least three groups of workers — 1) employees that do not gain quasi-rents: a) stay at the same level and b) go down; 2) those who gain quasi-rents and stay without training, therefore equalizing their long-run gains to market price; 3) gain quasi rents and use training a) to maintain monopoly and b) to switch to another position within occupation or even change occupation

describe contemporary western societies. In order to achieve the higher position in such a society one should increase his qualification.

The idea of corresponding returns on the qualification improvement is scarcely consistent with the results of Jackson et al. (2005), argued that the tendency for educational qualifications in mobility processes in industrialized countries, such as Great Britain, is of decreasing rather than increasing importance. The authors intend to explain declining link between education and class structure through the non-educational mechanisms that employers stick with in selecting employees:

> Employers will select employees by reference to whatever attributes they believe most relevant to the productive efficiency of their organisations, and there is no guarantee that these attributes will always be ones indicative of merit, whether as defined in terms of educational attainment or indeed in any other plausible way (Ibid p. 27)

Therefore, qualification improvement can be one of these mechanisms used embedded not only in workers' ability to perform labour, but mainly in occupation itself. It may not increase the merit of worker as liberal theory argues (T. N. Clark & Lipset, 1991), but strengthens workers' *negotiable power* (say, as a micro-class) as well as diminishes exploitation of them on particular labour market in knowledge-based economy especially if the latter is characterized by high level of skills diversity both within- and between occupations. There is an empirical evidence of this, for example, McIntosh (2002) showed that rate of low-skilled improvement could be a result of falling demand for low-skilled labour.

Another reason why we may consider qualification improvement as propensity of occupations is related to the processes inside the organizations that operate in skill intensive sectors. Given the previous findings that knowledge and expertise produces rents, organizations usually tend to control and manage job-related as well as personal additional education and training of their workers. For example, O'Connell (1999) has documented that in industrially developed countries continuous education and training are sponsored financially in most cases by employers. By this, firms do exercise the control over the process of movement between quasi-rent lacunas. Even if it gives to workers some benefits in the future, in terms of non-liberal theories it can be an example of domination that firms release over the allocated resources, in particular case — over individually acquired human capital. In such case, workers still have freedom to switch from non-rent to quasi-rent lacunas, but their freedom is highly limited by their knowledge and expertise assets bounded to firm- as well as industry-biased specificity.

We consider qualification improvement as activity urged by either employee or employer that is aimed to increase productivity of a worker — in organizational logic; or to reach at least quasi-rent zone — in employees' perspective. In both cases indicator of these lacunas relates to wages — when workers are paid more than occupational average (Wright, 1989b). In the next paragraph, we consider literature and studies on occupational framework of wage differentiation and its connection and influence on qualification in knowledge-based economy.

# 4 Qualification and wage differentiation

In previous paragraph qualification, changes are considered a key indicator of industrialization concept that was created to describe and explain the socio-economic changes in Western countries during the second half of the XX century. There are two main changes in qualification are considered above as a context of qualification improvement — 1) *differentiation* of skills and its further *polarization*; and 2) shifting from fixed to continuous nature of qualification. Though many scholars recognise the abovementioned changes in qualification, the actual reasons for these trends are arguable; and wages differentiation as well as its relationship to the qualification trends is the central part of the debates.

## 4.1 Skills differentials as matter of wages

Obstacle for this debate was pushed by the phenomenon of rigidity of wages against the background of occupational decomposition and qualification trends in Western countries described above. It was believed that wage differentials were not changing too much. Moreover, some scholars argued that despite the growing skills differences and occupational decomposition of labour force wage diversity declined. For example, Knowles and Robertson (1951) in their famous paper 'Differences between the wages of skilled and unskilled workers, 1880-1950' argued for declining wage differentials between skilled and unskilled workers in the UK industries such as construction, shipbuilding, railways, and mostly in the engineering. The same viewpoint of narrowing of the skill differentials in Great Britain during the early XX century was also supported by Turner (1952), who remained consistent with his own opinion even a decade later (Turner, 1964).

In spite of the fact that these scholars lean heavily on aggregated statistics in support of such statements, their findings were critically viewed by Penn (1984) who relied on much longer trends in average wages in the engineering industry in urban Britain, from 1859 to 1964. The evidence from Rochdale provided by author in his book 'Skilled Workers in the Class Structure' does 'not support the hypothesis of an overlap of skilled and semi-skilled earnings nor of a rapid decline in relativities'(Ibid, p. 107). It is worth noting here, that Penn distinguishes moderate-skills workers because of diversification of low-skills jobs. He didn't find the great change in skills differentials that appeared 'very stable between 1935 and 1964'(Ibid). Although Penn complains at the paucity of relevant data about semi-skilled labour, it would be difficult for him to chase up the trend of widening wage differentials between high- and semi-skilled labours. Moreover, intuitively as well as analytically he predicts narrowing of these differences by witnessing 'persistent technological rationalization in the engineering industry'(Ibid); and not only in this industry, we would say. It could be possible in terms of polarization of skills differentials reflected in splitting of moderate-jobs. As a result, some of them (minority) approach towards highly skilled positions; others go down and stick to the less skilled jobs.

The trend of skills polarization was not recognized at one blow and it is still arguable. Firstly, economists such as Mitchell (1985b) and McLaughlin (1994) stick with the notion "wage flexibility". Based on the USA labour market data, these scholars proved that the wages are not rigid. Moreover, they are flexible — i.e. 'sensitive to demand conditions' Mitchell (1985b, p. 2). Mitchell (1985a) showed that wages in the past (before 1950s) were *less flexible* than since World War II. Of a high significance are the predictors of this flexibility that scholars denote personal attributes — i.e. gender, age, education, and race; as well as institutional — i.e. unions and implicit contracts Mitchell (1985b); skills biased technological changes (see Reshef, 2013) and rational choices — wage-change decisions (Ibid) etc. Latter issue was concerned in the previous section when we discussed quasi-rents as mechanism that force people in industrialised economy to improve qualification and even change a job. Mitchel also pays attention at shifts within and between industries and occupations, but do not consider them of a great importance:

> Changes in the proportion of workers in high-paying and low-paying industries and occupations will also affect average hourly earnings. But they do not reflect changes in the actual wage schedule (Ibid, p. 4)

Nonetheless, Mitchel relies *only* on data about annual change in manufacturing production worker employment as well as annual average of monthly quit rate in manufacturing.

## 4.2 Wage gaps as within-occupational aspect, and polarization of skills

Gallie (1991) was one of the first sociologists who noticed the marked tendency towards the polarization of skills in the 1980s in industrially developed countries that accompanied the changes in occupational structure during post-war period[6]. Comprehensive skill increases within occupations, that followed this occupational dynamics were ascribed by Gallie as a *consequence* of shifts in ocuppational structure abovememntioned. We may agree with this partially. The ground for our doubts is provided by Russian case where remarkable changes in occupational structure has not been resuled in 'expansion of higher skilled jobs'. In markert economy, since high qualification is poorly paid by markert, neither workers nor emploers are interested in developing skills.

Given this, Gallie ignored the issue of *wage distributions within occupations* that can (de)stimulate workers to improve their qualification. There are both theoretical and empirical findings that growing segregation of workers by skill has been accompanied by increase in *wage inequality* (IMF, 2007b; Kremer & Maskin, 1996) nested in occupational structure (Handel, 2013, p. 88):

> …wages are significantly higher in occupations that are intensive in [abstract] tasks and significantly lower in occupations that are intensive in [routine] task.

Over and above, there are a number of papers argued that this within-occupation wage diversity could be a consequence of skills differentials. Statistics of income differentiation for the last 20-30 years demonstrates on-going gap of premiums paid for skilled and unskilled work in industrially developed countries (Berman, Bound, & Griliches, 1994; S. J. Davis & Haltiwanger, 1991; IMF, 2007b; Juhn, Murphy, & Pierce, 1993). Moreover, since 1980s in addition to the premium-gaps for the intellectual and manual labour in developed countries the gaps in wages between high- and moderate-skilled labour has been notably increased, primarily in the U.S. (Juhn et al., 1993), Japan (Katz & Revenga, 1990), and some other European countries, including the UK (Machin, 1997)[7].

This demand for the unique labour force has been provided mainly by the organizations with high value added in innovative production. They have embraced the uniform realms of skills concentration inside the national economies. Kremer and Maskin (1996) point out that firms with skills-intensive production functions use *homogeneous labour* in terms of qualification, and the number of such firms has increased in advanced economies, including that of the United States, where high qualification has become well paid since the 1970s. Thus, it should be underlined that this *segregation of skills* has been produced both on *inter-firm* and *intra-sectoral* levels (Berman et al., 1994). All these findings do not substitute but amend the hypothesis of occupational prediction of wage gaps – by explaining variation of occupational wage gaps. Moreover, Akerman, Helpman, Itskhoki, and Redding (2013) showed that in Brazil overall wage differentiation is mostly explained by *within sector-occupation wage gaps* (90%) that are produced by *between-firm* wage differentiation (86%) distinguished by size and export-oriented production.

[6] As we showed above these occupational shifts partially appeared as consequences followed from the institutional efforts of the countries to reach knowledge-based economy We also mentioned that under some tradition this efforts are called modernization (Eisenstadt, 1999). Since the BRICs are on the modernization track, it supports the analytical basis for comparing these countries in terms of "polarization hypothesis".

[7] It is noticed in the Report that these income-gaps are related to those who are employed in skills-intensive sectors of economy, rather than to the "qualified workers" within occupation.

Finally, based on the literature reviewed, we came to realization that wage differences for different tasks are determined by occupational shifts. To sum up in few words, we register the following sequential logical chain: *occupational shifts — wage differences/polarization — skills differences/polarization*. From this perspective qualification, improvement could be a consequence of wage differentiation produced by certain occupational shifts. *Concentration of earnings* and *qualification* in *homogenous parts within occupations* can lead to *polarization* of these occupations in future, especially in light of data about obstructed inter-occupational mobility (Jackson et al., 2005)[8]. In light of this, the *rate* of within- and between-occupation wage gaps should be of a great interest. Unfortunately, this issue is scarcely viewed by the scholars.

Given the thesis of skills polarization, routine work the content of which in knowledge based economy is limited to no particular occupation, keeps its within-group homogeneity in qualification — it is reflected on low premium-gaps for semi- and low-skilled workers that constitute the generic labour force at the given stage of socio-economic development (Castells, 2011). That's why it's commonplace when middle-qualified semi-professional gains similarly the same amount of money with, say, manual worker of high- and even middle qualification to attain which person is required to invest nearly the same value of time and financial resources that should be done in case of qualification of either semi-professional or clerk. Alike unification of premiums for jobs with relatively equal requirements to labour force grasping the gap between intellectual and manual labour can be observed also in relation to high-skilled workers from different occupational groups and different sectors that concerned with similar unspecific qualification.

Another analytical problem comes from the other socio-economic phenomena that can predict wage diversity and therefore have impact on occupational skills upgrading; especially, if we study developing countries. It is believed by economists (see for example Acemoglu, 2003; Akerman et al., 2013), that the most important predictors for wage inequality[9] — besides demand-and-supply aspects mainly drawn from occupational shifts — are as follows: a) globalization and openness (IMF, 2007a) — including that of trade liberalization and international economic integration; and b) labour market institutions, official legislation and labour unions (Harjes, 2007). These two exogenous factors are of a great importance because the countries like Brazil, India, Russia, and China on the one hand, are highly integrated in global economy and on the other — their governments intervene in the domestic economies decisively aiming to push the reforms in labour markets.

## 4.3 Irrelevance of openness in predicting wage gaps and skills increase

At least since Adam Smith free trade became a central tenet in liberal economics (see critiques from Stiglitz, 2000). It is traditionally considered that eliminating of the frontiers between the countries augments the flows of both capital and consumer goods and services[10] that in long run period decreases the final prices and enlarge the total productivity in corresponding industries. The most remarkable side-effect of such forms of globalization for domestic labour markets is supposed to be forecasted by the extended Hecksher–Ohlin–Samuelson hypothesis, according to which the relative demand for skilled labour should drop after the introduction trade liberalization legislation (see Kravis, 1956). This view derived from Stolper-Samuelson theorem (Stolper & Samuelson, 1941) became common in post-war years. Subsequent economic integration of Europe became a fertile ground for arguing for this neoliberal theory. Particularly, views associated with this position were very popular before the financial-economic crisis of the year 2008 (see Sachs, 2005).

[8] Thought before the 1980s the latter increased correspondingly to occupational shifts particularly those that are cohort biased (Hauser, Dickinson, Travis, & Koffel, 1975).

[9] Economists usually use the word inequality that in most cases simply means differentiation.

[10] One should strictly distinguish these two types of markets. It is proven by Stiglitz (2000), that 'financial and capital markets are essentially different from markets for ordinary goods and services' (p. 1079).

By the end of the XX century the wage differentiation sharply increased in some developing countries, such as Brazil (Pavcnik, Blom, Goldberg, & Schady, 2004), China (Knight & Song, 2003), Mexico (Cragg & Epelbaum, 1996; Hanson & Harrison, 1999). From the late 1980s, BRIC countries have been intensively included in the economic globalization processes by importing goods, technologies, and labour force. Since occupational shifts in these countries have been accompanied by the opening process of domestic markets Stolper-Samuelson theorem could provide an alternative explanation for some particularities of demand for skills. According to this theorem, we could expect a remarkable decline in demand for skills on domestic markets in the BRICs. In fact, majority of developing countries, and not only the BRICs violated these hypothesis by increased *within-industry* and therefore *occupationally biased* demand for skilled workers. Stem from this occupational shift the wage differentiation between skilled and unskilled labour produced higher income inequality during last 20-30 years (Pavcnik, 2003).

Moreover, it was documented that trade liberalization had no statistically significant effects on the industry wage structure and thus wage inequality between skilled and unskilled workers through their *industry affiliation* in many developing countries. For Brazil and Chile it was shown by Pavcnik et al. (2004) and Pavcnik (2003), correspondingly; evidence from Mexico came from Revenga (1997) and Feliciano (2001); Colombian case was witnessed by Attanasio, Goldberg, and Pavcnik (2004); Amiti and Cameron (2012) showed that reducing tariffs in Indonesia reduces the wage skill premium within firms that import their intermediate inputs; Robbins and Gindling (1999) showed that in Costa Rica trade liberalization did not lead to a decrease in relative demand for more-skilled workers, as predicted by extended Hecksher–Ohlin–Samuelson hypothesis.

These findings are of a great importance for us, because we can skip warring about exogenous factors such as globalization and openness, which considered as typical predictors for wages distributions and skills increase in developing countries and focus directly on occupational structure. Alternatively, we can use the proper proxies to control these effects. Taken this for granted, high differentiation of wages within occupations stem from demand shifts to more qualified labour force may spur people to improve acquired knowledge and skills even much more intensively if technological modernization is combined with trade liberalization and international integration.

The main reason for this arises from the *changes in industries* of trading, sales and services that usually follow by import of technologies and consumables. In case of developing countries, sharply reshaped industrial relations require new type of workforce. It is the case when industrial relations develop faster than productive forces what augments the premiums increase to qualified labour. The most picturesque example of a country characterised by such a tendency belongs to Brazil. As was shown by Pavcnik et al. (2004) trade liberalization in this country

> …resulted in an increase in the marginal returns to college education in Brazil. Within the traded sector, the impact of increasing openness on wages was insignificant for those in the top two education groups but negative for lower level education groups. These findings are consistent with the hypothesis that imported technology raised the relative demand for highly skilled labour (p. 73).

Thus, even if globalisation and openness play significant role in producing the diversity in domestic labour markets of developing countries it firstly affects their occupational structures and corresponding *within-sectoral shifts* 1) augmenting those activities that on the one hand deal with sales and services, and on the other — with export oriented production, like agriculture in Brazil, minerals in Russia, consumables in China and India; and 2) hindering both the government and enterprises to create the jobs that barely contribute to overall economic growth of the country, like routine manual labour jobs in contemporary Russia.

Routine labour is supposed to be the sole activity relevant to the qualification of low education groups, studied by Pavcnik et al. (2004) above. It could explain why increasing openness in Brazil is negative in terms of its impact on wage premiums for these categories of workers. Since routine labour is proliferated of machinery labour, computers, and IT in the most domestic workplaces affected by globalization and openness, low skilled labour run out of widespread use that resulted in wages decrease for lower education groups, abovementioned.

It is contrasted with polarization of skills have emerged in Europe and USA in 1990s, where computers and IT "replace the routine tasks that are performed by middle skilled workers" (Reshef, 2013). Polarization of skills and wages is considered to be a key feature of post-industrial stage of economic development. Appeared to constrict the employment shares of moderate qualified workers in the UK (Goos & Manning, 2007), Europe (Goos, Manning, & Salomons, 2009), and USA (Bluestone & Harrison, 1988), computerization of working places in BRICs conversely — favoured the middle skills workers as it was related to the creation of new jobs and relative occupational transformations. The latter we can witness Brazil (Scalon, 2013), India (Development Data, 2013), Russia (Anikin, 2013a) and China (Li, 2013).

## 4.4 Ambiguity of formal labour market institutions in predicting wage gaps and skills increase

Since our research is focused on occupation-biased wage gaps that might urge the within-occupational training, one should bear in mind that both wage gaps and training could be affected from the site of the labour market institutions (Garnero, Kampelmann, & Rycx, 2013; Harjes, 2007), such as official legislation and labour unions[11] in terms of minimum wages (Autor, Katz, & Kearney, 2008), conditions of work, and career perspectives[12]. It is of a great importance, as BRIC countries use protective measures to enhance human capital policy, though they use these institutional instruments in different ways in terms of both national and regional regulation as well as focusing on different categories of workers[13].

Both theoretically and practically, the given perspective originates from the U.S. — and much later, from the European countries' — experience in evaluating the socio-economic consequences produced by the formal labour market institutions (Neumark, Salas, & Wascher, 2013). Meanwhile, in different countries including that of the BRICs both legislation measures and labour unions are usually induced in two main directions — a) protection and b) incentives. Widely believed, that incentives policy measured as rules for guiding the socio-economic behaviour of economic agents and aimed to urging the market competition between them, encouraging firms to create the new jobs, raising productivity, breeding the labour force's human capital, and etc., — is supposed to be the most preferable course in contrast with protection policy.

[11] Unionization, such as that of the 1970s in the USA contributes to the decrease in wage differentiation (DiNardo, Fortin, & Lemieux, 1996).

[12] We also should take into account that wage cuts are frequent therefore can have a considerable impact on real wage gaps (McLaughlin, 1994). The effects of wage cuts are not considered here because they are not necessary derived from the formal market institutions.

[13] Brazil has the national minimum monthly wage at $326 (last increase was in January 2013). China has no national minimum. Each province sets up its own lower-bound limits for payoffs. The highest minimum wage is in Shenzhen province that is at $241 per month. Yunan province has the lowest minimum set to as low $100 (China's Ministry of Human Resources). India has the similar policy. Moreover, the minimum payoffs in India are set up in relation with skills. For example, in the capital if India unskilled workers should be paid at least $130, semi-skilled — $144, and skilled labour — $158, that is much higher as compared to other provinces. Since the mechanism of minimum wages is widely used by the BRIC countries we have to be aware about the proper proxies that could capture these effects and distinguish them from the occupationally biased wage-range effects.

### *4.4.1 Protective policy in terms of status inconsistency, and routinization hypothesis*

In contrast with incentive policy, protective measures are more direct as they usually reflect in lifting up the minimal wages and regulating the particular standard of living for the specific categories of workers and their families. By this, the national governments decrease the nominal payment gaps. If this dropping is crucial enough, there will be the cutting off the magnitude of training within the affected occupations — as low-paid workers can be demotivated to improve their qualification by their own. This is so if low-paid workers gain according to their value, i.e. if we reveal them being low qualified as well as low-paid. In terms of structural sociology, it is the case of *relatively low status inconsistency* (see Hope, 1975; Lenski, 1967) between two stratification hierarchies — economical and educational — when the higher and more unique qualification is paid better rather than the lower and more routine one; and vice versa in the case of *high status inconsistency*. In economies with low level of status inconsistency, the minimum wage policies are focused de facto on those who are barely qualified so that the national government compensates the market's valuation of the *'objectively low-value labour force'*. In economies with high status inconsistency, the minimum wage measures can relate to the wide range of occupations of varying qualification, so that the government's minimum-wage support may be focused on commensuration with the costs of the given asymmetricity of inconsistent wages for the attained high-grade qualification. In this case, we speak of institutional compensations for the *'subjectively low-value labour'*.

The most of the literature on the topic of the formal labour market institutions effects attaches the latter with the objectively low-value labour force primarily due to its focus on the experience of industrially matured economies characterised mainly by low level of the status inconsistency between economical and educational hierarchies. Since one cannot expect BRICs' economies of low level of status inconsistency, the minimum-wage measures in these countries can relate to the workers of both low and moderate skills level and even of high qualification. For instance, in contemporary Russia most of the teachers, medical doctors and even professors gain literally less than taxi drivers and some other representatives of casual labour (Federal State Statistics Service, 2013)[14]. As compared to the advanced economies, such as West Germany, better-educated workers are concentrated at high-wage firms, occupations, and industries, while less-educated workers are increasingly concentrated at low-wage establishments (Card, Heining, & Kline, 2012)[15].

Given the industrialization framework, the level of status inconsistency between economical and educational hierarchies grows up while economy approaches to post-industrial/informational stage of development Castells (2011). It is also supported by the results of empirical testing of the *routinization hypothesis* (see Levy & Murnane, 2003), that witnessed the shrinking number of middling jobs and sequential raising of a variety in the skills amongst the lower-paid workers in advanced economies. This is another side of job polarization. In order to distinguish this phenomenon from its counterpart there is a need to distinct the status inconsistencies of *transition economies* from the status inconsistencies of the late- or post-industrial economies. The main difference between them is as follows — in transition economy low-paid workers include both low- and *high*-skilled labour; in post-industrial economy, high and unique skilled labour is always worthily paid as compared to poorly rewarded low- and *moderate*-skills labour. That is why in the latter case we speak of *relatively low status inconsistency*.

[14] Actually, it returns us to the debate around liberal theory that argues for the strong causality between occupational recruitments and meritocratic achievements, based on certificates and credentials of different sort.

[15] Remarkably, Solga (2006) showed that in Eastern Germany — at least before 1989 — educational inequalities by social origin and political loyalty (party membership) had been violated meritocratic allocation in higher rank-occupational positions. The scholar also witnessed the stability of such order that is reflected in the class reproduction based on state-socialist legacies.

Given that the minimum wage policies are usually aimed to protect the workers at the bottom of qualification, high status inconsistency – i.e. lack of meritocracy – may help to explain the paucity of training among those who acquired high qualification in the BRICs, especially in Russia. Comparably with that, low status inconsistency, can produce the stimuli for the qualified workers to improve their qualification. The form of these stimuli depends on the effects produced by the protective measures — either direct or not.

### *4.4.2 Wage diversity as direct effects of protective policy, and labour market models*

Traditionally, liberal economists argue that minimum wage measures have impact on employment of low-waged and low-skilled workers, and therefore can predict wage gaps and training. To understand the origins of this opinion some words of the different labour market models are to be said. So called continental — or 'Rein' model of labour market originally typical for Germany, France, Italy, and to some extent to Japan, is highly elasticised on the price of labour, and barely flexible on employment. So called 'Anglo-Saxon' model of labour market vice versa — denotes the strong employment elasticity and low flexibility in wage rates[16].

In countries with continental model of labour market minimum wages have very small effects on employment, with the exception of young workers (Dolado et al., 1996)[17]. Conversely, both in the U.S. and the U.K. — as the main representatives of Anglo-Saxon model of labour market — minimum-wage increases have statistically significant negative impact on employment (Card & Krueger, 1995; Deere, Murphy, & Welch, 1995)[18], if they there are no such effects, it is compensated by the latency of monopsony power of a firm, like that of in the U.K. (Dickens, Machin, & Manning, 1999)[19], what is not taken into account by usual textbook on labour economics (see for example C. Brown, 1999).

By the same token, almost a hundred-year-history of studies of minimum-wage impacts context generalises either slight negative or zero direct effects of minimum-wages to employment, hours, and wages (Schmitt, 2013). Still there are a number of exceptions. For example, DiNardo et al. (1996) showed that minimum-wage policy has a larger impact on changes of earnings diversity in low-wage regions. Therefore, the influence of minimum-wage policies could have variable effects on labour markets but overly they have very slight impact on it. It could happen even irrelatively to *structural composition* of labour market model. For example, given high segmentation of labour market in Brazil (see Paragraph 5), one can expect considerable economic effects of minimum wages. In fact, employment is not affected adversely by minimum wage increases in either sector, both *formal* and *informal* (Lemos, 2009). But still it remains ambiguous, as decrease in earnings inequality that drops down the wage differentiation in the private and public sectors in Brazil (Lemos, 2007).

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[16] These two models do not exclude the variety neither within nor between them. For example, Dolado et al. (1996, pp. 4-5) counts at least four different ways of inducing the minimum-wage policy: a) statutory minimum wage set by government (France, the Netherlands, Luxemburg, Spain, and Portugal); b) minimum wage as part of national collective agreements (Belgium, Greece, and Denmark); c) minimum wages as sectoral collective agreements (Germany, Italy, Austria, and Switzerland); d) minimum wages negotiated with either employers or unions – as part of collective agreements (Sweden, Norway, and Finland). Moreover, there is a considerable diversity between these modes of minimum-wage policies by variety of socio-demographic and economic dimensions, such as region, age, industry, occupation, qualification, firm's size, job tenure, etc.

[17] Minimum-wage policy can affect the employment for low-wage workers that nominally can decrease the pay-gaps both within and across the occupations. But it should be noted that in some recent papers the negative effects of minimum wages to teen employment are hesitate (see Allegretto et al., 2011).

[18] Meanwhile, even in the USA it has been a debatable issue. For example, Card and Krueger (1994) using the 'natural experience' data showed that employment (in fast-food-sector in Jersey state) was not affected by minimum-wage increase, what forced them to verify this hypothesis on the much wider empirical field (Card & Krueger, 1995).

[19] Conservative Government in its 1993 Trade Union Reform and Employment Rights Bill abolished the minimum-wage system in the UK.

### *4.4.3 Training as indirect effect of protective measures*

Switching research interests to indirect effects of minimum wages has occurred only during recent years, and was caused primarily by the overall awareness of organizational, sectoral and institutional diversity of the national economies, both between- and within- them. Minimum wages can 'increase workers' productivity (from organizing production to increasing training)' (Schmitt, 2013, p. 23), as 'cost increases flow through more adjustment channels' (Hirsch, Kaufman, & Zelenska, 2011) than simply changes in wages, employment, or hours. In other words, training of personal could be an effect of minimum-wage policy, so that it should be taken into account when we specify the model and particularly heterogeneity of the training in methodological chapter.

## 4.5 Diversity of qualification improvement

To distinguish the wage-gap effects in explaining qualification improvement one need take into account a number of factors that can determine diversity of the phenomenon of interest. According to literature, these are as follows: gender, age, occupation, level of education, firm size, sector, and hours of work.

There are two reasons for controlling of gender. Firstly, there is still gender asymmetricity of labour markets in BRICs. For example, according to Arabsheibani, Carneiro, and Henley (2003) in Brazil on average men are paid 33% more per hour than women though in some countries it profoundly decreased since the 1980s. Second reason comes from the advanced economies (F. D. Blau & Kahn, 1996) in which the wage gaps were accompanied by the "a gender twist" in the demand for skill (F. D. Blau & Kahn, 1994) resulted in benefiting women relative to men at a lower levels of labour-market skills (Katz & Murphy, 1992). In 1980s women were more active in improving their qualification that reflected in a faster closing of the gender gap at the bottom of the skill distribution than at the top (F. D. Blau & Kahn, 1997). F. D. Blau and Kahn (1994) Showed that women were able to 'swim against the current' by improving their qualifications, particularly their relative experience and occupational status (1994, p. 27).

O'Connell (1999) also showed that gender was one of the important factors that constitute the diversity of qualification improvement. It is a more male activity rather than female. Besides this, there is a remarkable male-female disparity in terms of source of funding for personal training. O'Connell (1999) summarizes that '70% of men participating in training received financial support from employers, compared to less than 60% of women. On the other hand, on average, over 44% of women, but only 31% of men, provided funding for their own education or training' (p. 28). Given Polavieja (2012) findings, this women 'swim against the current' by improving their personal qualification that is needed to materialize contextual information.

O'Connell (1999) used occupation status as a direct predictor of qualification improvement in European countries:

> Managerial occupations stand out as the occupation with the highest incidence of education and training, followed closely by technical occupations, and the extent of participation in job-related training was, on average, very similar for these two occupational groups. Intermediate non-manual occupations in clerical and sales areas occupied an intermediate position in both overall and job-related training. The lowest incidence of both overall and job-related training occurred in skilled manual occupations and machine operatives. Surprisingly, perhaps, the incidence of training among skilled workers was not in general markedly greater than among the less skilled machine operatives (p. 17)

His findings could be helpful to hypothesize both the magnitude and direction of the influence of occupational structure on the phenomenon of interest. Paucity of training among manual workers can support an argument for polarization – i.e. routinization hypothesis. Given the results of McIntosh (2002), we can expect high demand for low-skilled labour in European countries.

Approximately the same pattern we witness in contemporary Russia where low-skilled manual labour demonstrates the lowest incidence of both overall and job-related training (Anikin, 2012). On opposite side we find professionals as well as those who already possess higher-level educational qualifications; especially, if they are young non-manual workers occupied within financial sector (O'Connell, 1999) where participation of employees in some form of continuing education is a part of business routine. Additionally, most of people in Europe and USA involved in the training more often work for big companies (500 or more employees). Moreover, big companies usually cover the financial expenses related to training courses needed for their workers. Workers of smaller firms (less than 20 employees) who receive training are more likely to provide funding themselves.

## 4.6 Measurement of wage gaps

Penn and even most recent scholars use the definition of skills differentials in terms of wages as difference between *average earnings* of skilled and unskilled labour, taken both *within* and *between industries*. If we look at the range of wages of different groups of workers, the trend of wage diversity will be clearer. Taking into account the importance of extreme and Median values when analysing wage dispersion between and within groups (Skans, Edin, & Holmlund, 2009) it's better to use not only the average wage. Methodologically, *range* could be measured in terms of difference between *maximum* and *minimum* wages as well as between *higher (75%)* and *lower (25%) quintiles* or *percentiles* (90% and 10%, correspondingly), or even *between medians* (see for example, Mitchell, 1985b). Intuitively, it seems to be logically more correct as workers usually tend to possess and — to share information about existing maximum payoff rates within and across occupations as well as within- and between industries. It is of a high significance when polarization is observed.

Having been mostly an issue of measurement, differentiation of wages within and between occupations is measured by decomposing overall wage into within and between-group components. According to Akerman et al. (2013), these are as follows (in general terms):

$$T = W + B$$

The left-side part of equation denotes total wage differentiation. The first component of right-side of equation is within-occupation differentiation of wages; the second one — between-group component. It is written in terms of individual changes.

Akerman et al. (2013) insist on using log wage for the decomposition as this kind of positive monotonic transformation (a) protects the results from the influence of units for wages, and (b) enables the inclusion of controls for worker observables into regression (Ibid, p. 2).

More precise description of wage-gaps within- and between occupations is included in second chapter denoted methodological issues of the present study.

# 5 Socioeconomic context of qualification improvement in BRICs

The BRICs are now on their way to build a knowledge-based economy. These countries are investing heavily in their people at all levels. Literally, it means that these countries switch to the form of development characterised by the intensive type of production that requires qualitative changes in productive forces of the working population. On the one hand, these tendencies may be either driven or restricted by the labour market shifts caused by globalization or technological development (IMF, 2007a); on the other, they are institutionally moderated by the governments. Finally, socio-economic reality of these countries is firmly embedded in 'natural environment' that can either facilitate or frustrate the development (see Table 2).

Table 2

Land area and population of the BRIC countries, 2012

| | Land Area (1 000 km²) | Population (thousands) | Density (thousands per km²) |
|---|---|---|---|
| Brazil | 8 514 | 198.66 | 23.3 |
| Russia | 17 098 | 143.53 | 8.4 |
| India | 3 287 | 1236.69 | 376.2 |
| China | 9 600 | 1350.69 | 140.7 |

*Source:* Eurostat (2012); World Development Indicators (2013c)

Since the mid-1980s and during the 1990s Brazil, Russia, India, and China had implemented so called liberal reforms aimed to facilitate socio-economic modernization. The socio-economic as well as socio-demographic results of these efforts are briefly summarised in Table 3 and Table 4.

Table 3

Socio-economic statistics for the BRIC countries

| | *GDP p.c. PPP (current international $)* | | | | | *Unemployment* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1980 | 1990 | 2000 | 2005 | 2011 | 1980 | 1990 | 2001 | 2005 | 2013 |
| Brazil | 3613 | 5183 | 7017 | 8509 | 11640 | 4.3 | 3.7 | 12.3 | 9.8 | 6.5 |
| Russia | - | 8014 | 6833 | 11853 | 21921 | - | - | 10.6 | 7.6 | 6 |
| India | 419.9 | 873.8 | 1528 | 2209 | 3650 | - | - | 4.3 | 4.4 | 3.5 |
| China | 250.2 | 794.9 | 2366 | 4115 | 8400 | 4.9 | 2.5 | 3.6 | 4.2 | 4.1 |
| | *Employment in agricultural sector, %* | | | | | *Informal employment* [a)] | | | | |
| | 1980 | 1990 | 2000 | 2005 | 2010 | 1985-89 | 1990-94 | 1995-99 | 2000-07 | 2009-10 |
| Brazil | 29.3 | 22.8 | 20.6 | 20.5 | 17 | - | 60 | 60 | 51.1 | 42.2 |
| Russia | - | 13.9 | 14.5 | 10.2 | 9.7 | - | - | - | 8.6 | 8.9 |
| India | - | 60.5 | 59.9 | 55.8 | 51.1 | 76.2 | 73.7 | 83.4 | 83.5 | 83.6 |
| China | 68.7 | 60.1 | 50 | 44.8 | 36.7 | - | - | 18 | 32 | 32.6 |

*Source:* CIA (2013); IMF (2013); World Development Indicators (2013b)

*Notes:* [a)] The level of informal employment in non-agricultural sectors is presented in the table. The pattern of informal employment has its own specifics in each country from (Charmes, 2012); data. For instance, informal employment in China means the absence of labour contracts and social security, covering mostly urban population. Data about China presented in the Table before the year 2005 cover urban resident employees (among the urban immigrants the share of informally employed was about 84% in 2005). Since the majority of them are occupied with the non-agricultural sectors, the gap in estimates seems to be not very noticeable. Statistical data about informality in China is taken from Cai, Du, and Wang (2009). In India informal activity is concentrated in rural area mainly in a form of casual labour (Arnal & Förster, 2010). Data for India (2009/2010), Brazil (2009), Russia (2010), and China (2010) compiled from the ILO statistics questionnaires (ILO, 2012). Data for the other time points are covered by (Jutting & Laiglesia, 2009). Official Russian Statistics does not collect data about informal employment. Rather, the data of employment in informal sectors are showed. This rate was 12.1% in 2010. See Kapelyushnikov (2012) for estimations of analytical power of different concepts of informal activity in contemporary Russia.

Table 4

Socio-demographic statistics for BRIC countries

| | *Natural change* | | | | | *Net migration* [a] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1980 | 1990 | 2000 | 2005 | 2010 | 1980 | 1990 | 2000 | 2005 | 2010 |
| Brazil | | | 13.4 | 10.0 | 8.6 | | | – 0.6 | – 0.5 | – 0.2 |
| Russia | | | – 6.5 | – 5.9 | – 1.7 | | | 2.5 | 0.9 | 8.7 |
| India | | | 16.1 | 14.8 | 13.4 | | | – 0.4 | – 0.5 | – 0.2 |
| China | | | 6.4 | 5.4 | 4.4 | | | – 0.4 | – 0.3 | – 0.3 |
| | *Urban population* | | | | | *Age dependency ratio* | | | | |
| | 1980 | 1990 | 2000 | 2005 | 2012 | 1980 | 1990 | 2000 | 2005 | 2011 |
| Brazil | 65.5 | 73.9 | 81.2 | 82.8 | 84.9 | 72.4 | 65.6 | 54 | 51 | 47.4 |
| Russia | 69.8 | 73.4 | 73.4 | 72.9 | 74 | 46.8 | 49.6 | 44.1 | 40.5 | 38.9 |
| India | 23.1 | 25.5 | 27.7 | 29.2 | 31.6 | 75.9 | 71.7 | 63.8 | 59.1 | 54.3 |
| China | 20.6[b] | 26.2 | 36.1 | 42.9 | 52.6 | 68.5 | 51.4 | 48.1 | 41.7 | 37.8 |

*Source:* Data about Russia are taken from Eurostat (2012); statistics for Brazil, India, and China were compiled from United Nations (2013). For the detailed sources, see United Nations (2012) and World Development Indicators (2013a).
*Notes:* [a] Net migration is the difference between natural change and population growth in a country.
[b] National census data for 1982.

Table 5 summarizes some statistics about changes in spread of informational technologies and education in the BRICs. Number of internet users is a good indicator as gives us some information about the possible opportunities that are opening in front of people aiming to improve their qualification. We see that the smallest rate of people engaged in informational technologies is in India (12.6 per 100), the highest – in Russia (53.3), though more than 10 years ago Russia had almost the similar spread of internet users among its population (4.1) as compared to China (4.6), and twice smaller, as compared to Brazil (9.1).

Table 5

Education statistics for BRIC countries

| | *Internet users (per 100)* | | | | | *Educational expenditure in tertiary as % of total educational expenditure* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1996 | 2002 | 2007 | 2010 | 2012 | 1995 | 1998 | 2002 | 2005 | 2010 [a] |
| Brazil | 0.5 | 9.1 | 30.9 | 40.7 | 49.8 | - | 21.4 | 23.6 | 19 | 16.4 |
| Russia | 0.3 | 4.1 | 24.7 | 43 | 53.3 | - | - | 17 | 21.1 | 23.1 |
| India | 0 | 1.5 | 4 | 7.5 | 12.6 | - | 17.5 [c] | 20.1 [c] | 16.6 | 35.9 [c] |
| China | 0 | 4.6 | 16 | 34 | 42.3 | | 15.6 | 24 [d] | - | - |
| | *Personal computers (per 100)* | | | | | *Current expenditure on education as % of GNI* | | | | |
| | 1990 | 2000 | 2002 | 2004 | 2006 [b] | 1995 | 1998 [c] | 2002 | 2005 | 2010 |
| Brazil | 0.2 | 4.9 | 7.2 | 13 | 16.1 | 4.3 | 4.7 | 3.7 | 4.4 | 5.6 |
| Russia | 0.3 | 6.4 | 8.9 | 10.4 | 13.3 | 3.9 | - | - | - | - |
| India | 0 | 0.4 | 0.9 | 1.5 | 3.2 | 3.1 | 4.3 [c] | - | 3.1 | - |
| China | 0 | 1.6 | 2.8 | 4.1 | 5.7 | 1.7 | 1.8 [c] | - | - | - |

*Source:* Development Data (2013)
*Notes:* [c] If there is a case; data for India and China are compiled for 1999, 2003, and 2011, respectively. [d] 1999.

Brazil embarked on technological and economic modernization of the agricultural sector and decentralization. Russia passed through the "Perestroika" during the same time periods that was focused on creation of free market economy and international integration. India turned to technological modernization of industrial sectors. China implemented liberalization of state owned enterprises and decentralization of agricultural sector. Notwithstanding the optimistic expectations about such reforms the latter hade various and uneven effects on labour potential (Fairbairn, 1967) depending on institutional and cultural context.

## 5.1 Brazil

The result of above-mentioned reforms for Brazil is mainly reflected in creation of a large and highly developed Agribusiness that brought the country to a third place in the world after the USA and EU in exporting of agricultural products. Highly organized and technologically developed industry with dominantly machinery production requires few qualified workers that can be hired from the different parts of the country. As shown in Table 3 the number of people employed for agricultural sector fell down up to at 42% from 1980 to 2010. It caused disparities on local labour markets of Brazil reflected in chaotic flows of rural population to cities (Table 4) anchoring in "favelas" (Klein & Luna, 2006). Ignorance of the primary education "which constituted the majority of schooling in rural areas" (Tarlau, 2013, p. 397) contributed to the urban immigration as well. Moreover, if take into account the magnitude of informal employment in non-agricultural sectors in Brazil (Table 3), we document the armies of economically active urban population are turned to be useless for the formal economy due to their poor education and skills. If put it in few words, that's a scarcely surprising result of asymmetrical modernization.

Intensifying the complexity and computerization of the means of production in agricultural sector as well as international integration of manufacturing plants reflected in a growing demand for highly skilled labour acquired unique qualification either produced by the institutions inside the country or taken from abroad. Fajnzylber and Fernandes (2009) showed that use of imported inputs, exports and foreign direct investments are associated with higher demand for skilled workers in Brazil.

The majority of population in Brazil is excluded from the opportunity to obtain a good education that would enable them to pretend to the main part of jobs in new industries. On the one hand, social exclusion cuts the unfavoured population off from highly ranked public schools and universities pushing Brazilian children in the streets, poverty and crime (Moulin & Pereira, 2000); on the other, there are both the shortage of schools in urban areas to accommodate all the pupils and the lack of skilled teaching personnel working in the overcrowded classrooms of economically disadvantaged students (Leonardos, 2012), so that even if these youths go to schools they obtain knowledge and skills that appear to be hardly sufficient either in terms of chances of being enrolled in a good university or the future requirements of the jobs in knowledge-based enterprises. As a result Brazil imports expensive qualified labour from the US and European countries, especially from Portugal[20]. In order to gain the employment of domestic workers the Brazilian Government introduces different programs of supporting of the talented citizens for studying abroad. It is remarkable that most of them choose non-humanitarian realms of education, including engineering, computer and natural science, and etc. (see Giordano & Pagano, 2013b).

Enhancing of innovative skill-consuming production in Brazil should speed up both inter-occupational and intra-sectorial differentiation primarily related to wages. Although this issue is still poorly investigated in Brazil, the recent studies of job-incomes indicate slight polarization of wages amongst Brazilians workers (Clementi & Schettino, 2013). Firstly, it means that the main part of national incomes is distributed among those employees and employers who make the most remarkable contribution to GDP growth. Since in industrial society capital and labour are tightly bound to each other (Marx, 1859), not only employees become aware of their qualification. Employers became motivated to have the knowledge and skills of their workers being up-to-date to

[20] It should be mentioned that Brazil is a country highly segregated by race, where white Europeans represent at least half of population, that have been enhanced to move into Brazil since the 1880s in order to cover the needs of emerging urban industry in Southern Cone (Huberman, 2013). Empirically, both local (rural) and low-qualified migrant workers (Africans) were discovered to be less efficient than labour from Anglo-Saxon countries (G. Clark, 1987). Existence of this practice and relative loyalty to it among population potentially can support remarkable labour force inflows into the country.

the innovation production. It is expected to result in upskilling shown by workers within variety of occupations. Sectorial employment in Brazil — and as shown below, not only in this country — plays a role of endogenous factor that may predict the distribution of wages within occupations. Secondly, referring to a bottom of income polarization in Brazil due to redistribution policy, it could demotivate people occupied with lower paid jobs to acquire human capital.

At the same time, the interests of growing capital become a reason of political instability in Brazil during the 1990s that could exogenously influenced labour market institutions. This point is important for our research as any political crises or stagnation reflects in speeding up emigration intentions, embraced most of all internationally competitive part of domestic labour force. Taking into account the initiatives of the contemporary government of Brazil to reshape the educational system, the most talented participants of the programs in light of poor social and political background may be willing to come out of the country. Statistically, they can be involved in training but in fact, all the benefits of their additional learning will be squeezed by another country. It should be taken into account during the analysis. Another issue here is "cultural rigidity". For Example, Leonardos (2012) showed that 'Children [in Brazil]… fail to acquire middle-class values and knowledge' (p. 71) that are crucial to acquire, maintain, and update competences and, moreover, to consider them as assets that could generate returns, stability and independence in the future. It means that we need to find good proxies for this in our analysis.

Training programs are considered as a remarkable part of the whole educational system of Brazil, that basically rooted in the reforms of 1930s implemented by "Escolanovistas" as an institutional critique to the religiously biased Catholic education system (Tarlau, 2013). Now almost all the programs are concentrated more on improving the general components of people's human capital, rather than on its specific part. In other words, people who would like to attain degree or go to the university *ceteris paribus* are more encouraged by the national government than those who are aimed on training. It is noteworthy as investing in fundamental skills is well correlated with the willingness to change the job and therefore inter-occupational mobility — for the exception of the cases when people get the education linked to their speciality. That is why they have more incentives to seek for a new job when they attain international-level degree. To prevent such brain-drain Brazilian government stopped the financing of full programs and switched to the short programs that failed to be very popular and therefore effective among population (Giordano & Pagano, 2013a). Another sufficient initiative of the Brazilian government resulted in the Apprentice Act. Based on administrative data collected by the Labour Ministry Corseuil, Foguel, Gonzaga, and Ribeiro (2012) indicated that workers participated in the program had a higher probability of getting a job in the years after the program and a higher probability of getting a non-temporary contract.

Thus, on the one hand *partially modernized* Brazilian economy requires skilled labour what facilitates upskilling within various occupations — and the government tries to cover the deficit of skilled labour by a) reshaping the domestic educational system, b) encouraging education abroad, c) widening the quotas on imports of qualified workers. On the other hand, the *asymmetrically modernized* economy overlapped with the historically rooted problem of restricted access of poor population to good education demotivates low-skilled labour to raise the qualification. The governmental limitations in facilitating upskilling for those aimed to foreign education demotivate skilled labour to improve qualification inside the country.

## 5.2 Russia

Liberal Reforms in Russia resulted in shutting up of most of enterprises in skill-intensive sectors. Overnight plenty of well-educated people lost their working places. Partially, they rolled down to impoverishment and became so called 'new poor'(Silverman & Yanowitch, 1997); on the other hand, they emigrated from Russia primarily to Western countries where they could find jobs

corresponding their human capital. Totally, in Russia considerable part of professionals and semi-professionals was marginalized (Balzer, 1998). Against a backdrop of this shortage of skilled labour Russia initiated active transition to a market economy what reflected in growing employment in *sales and services*, rather than in *productive industries*. In other words, Russia built a merchant capitalism instead of industrial one (Clarke, 2007).

Incapacity of the disrupted Russian economy to produce fast-moving and durable consumer goods facilitated Dutch disease (Algieri, 2011). All the attempts to throw off it by importing Western institutions of market economy failed (Polterovich, 2001). As a result, after the crisis of 1998 the goal of the 'new' Russia was broadened to gaining international competitiveness. In the mid-2000s, the idea of modernization of Russia's economy and society turned out to be a key issue in public discourse. The modernization is about to change the position place of a country within the global system of labour division and reshape its role in international markets. In other words 'successful' modernization implies the embracing of a socioeconomic order that is characterized by innovative production and a well-developed service sector that is occupied by qualified workers who have 'competitive' attitudes toward their work and human capital (Anikin, 2013b).

In fact, occupational statistics about Russia shows on the one hand continuous growth in the number of moderate skilled non-manual workers (up to 140%), and on the other hand, a very tenuous change in the labour force share of professionals — all this in light of on-going deindustrialization reflecting in reduction in the number of qualified manual workers who are basically employed as plant and machine operators, assemblers, and drivers (see Anikin, 2012, 2013b). It is shown that visible expanding of the service industry is provided mostly by moderate skilled jobs that require relatively low qualification (that is not higher than complete secondary specialized education). People who attain these positions usually heave extremely low interest in maintaining their knowledge and skills that is commonly shared in Russia, where totally only 5% receive training in professional courses (Anikin, 2012).

Beyond this, the author witnesses high occupational asymmetricity in qualification improvement in contemporary Russia. For example, in the year 2008 the rate of accumulation of knowledge and skills was the highest amongst professionals (17%) and semi-professionals (11%)[21]; whereas only 5% of service and sales workers and 3,4% of manual labourers received training among which assemblers and machine operators were mostly trained (5,5% of them). Among all other reasons, low magnitude of training in Russia among manual workers, may be a matter of 'patriarch' working-class subculture (Miller & Riessman, 1961), non-instrumental orientation to work (Goldthorpe et al., 1969) or 'mercantile' motivational pattern of manual labour in Russia (Anikin, 2013b). Still no particular studies explored this area thoroughly.

## 5.3 India

Modernization of India is one of the most controversial among the BRICs. Despite intensive technological reformation of non-agricultural sectors, Indian society remains predominantly rural (Table 3) and illiterate; and Indian economy is overly composed of unorganized sectors with weak enforcement. Though the Government has made hard effort to modernize national economy, India has failed to build industrially developed society. That is, reforms of 1990s were concentrating scarcely on non-agricultural sector — and mainly on trade and manufacture policy. Resulted in relative reduction of government investments to the infrastructure of the primary sector, this disparity also postponed the land issue. According to Montalvo and Ravallion (2010) and Ravallion (2011) the latter point seems to be a stumbling block of development of India due to overcrowding of rural area, where the majority of peasants do not possess any land. Moreover, agriculture and therefore population welfare still crucially depends on climate shocks and natural disasters.

[21] Author uses ISCO-88, adapted version, as a measure of occupational structure.

Deficiency of the technological modernization of Indian industry becomes more obvious if take into account extremely disproportionate number of workers employed in non-agricultural sectors informally that grew up considerably in 1990s (Table 3). According to National Sample Survey (2013), more than 69% of employees in India work at regular part-time jobs; whereas only 8% work as regular salaried/wage employee. In addition to it, 12.8% work in household enterprise and 5.8% work as helper in household enterprise, i.e. unpaid family worker, 8.6% attend domestic duties and are engaged in free collection of goods (vegetables, roots, firewood, cattle feed, etc.), sewing, tailoring, weaving, etc. for household use, and about 7% work as casual wage labour in different types of work. Thus, totally, at least 34% of Indian labour force is engaged in inconsistent low-qualified daily activity (National Sample Survey, 2013). Most of these people possess poor skills or even do not have them at all. On the one hand, employers invest inadequately in the human capital; on the other, employees have little opportunity to increase their qualification by formal upskilling (Jamal & Mandal, 2013).

India has set a target of raising the skills of 500 million people by 2022, and is investing heavily in vocational training (Department for Education & Department for Business, 2013).When studying India, it is of a significance to keep in mind the role of the Government. Indian economy is centralised and integrated according to a national plan that is set up, executed and monitored by the Planning Commission each five years. Eleventh Five-Year Plan launched National Skill Development Mission, resulted in creation a three-tire institutional structure. Some of these programs are considering skills development through programs that focus on both formal and informal sectors as well as encourage vertical mobility — e.g. Vertically Integrated Engineering Programme launched by The Indira Gandhi National Open University. The Twelfth Five-Year Plan (2012-2017) announces the necessity to train and equip workers — especially teachers — on a continuous basis with latest skills.

Government of India produces a wide range of training programs that are compounded in relation with a) different categories of skills (e.g. Advance Vocational Training Scheme for specialists); b) nature of work (e.g. Craftsman Training Scheme), c) sector (e.g. Advance Vocational Training Scheme); d) accruing a particular speciality (Apprenticeship Training Scheme); and e) gender (Women Training Scheme, Research and Staff Training). These are the programs directly aimed to equip people with specific on-the-job marketable skills. In fact, the effects of these broad initiatives are scarcely recognisable (Jamal & Mandal, 2013). According to National Sample Survey (2013), one can witness very narrow spread of formal vocational training in contemporary India embracing around 3.6% of population (between 15 and 59 years); whereas 8.2% pass through non-formal training of various sorts, such as hereditary (2.5%), self-learning (1.8%), and learning on the job (3.4%) etc.

It is clearly seen from the statistics that the majority of employees receiving training in India channel their own effort into qualification improvement rather than receive something from the employers' investments. Given so deep governmental initiatives abovementioned to promote skill development programs, the expected number of actuate recipients should be much higher. Why it is so? Possible answer to this question is rooted not only in socio-economic ground. Low spread of training is embedded in socio-cultural context; that is rigid in terms of vertical movements. Indian society historically is stratified on the basis of non-merit attributes distributed by castes or *jati* (particularly in the Hindus society), and also maintained by reproductive and non-achievement orientations — 'traditional and survival' values (Inglehart, 1997) or 'tradition, conformity and security' value dimension (Schwartz, 1994) — commonly shared by peasant societies that are named in modernist theories as society based on 'tradition'(Maine, 1834), Gemeinschaft (Tönnies, 1887), Asiatic form (Marx, 2005), and traditional societies (Inglehart & Welzel, 2009; Lerner, 1958). Similarly to Russia, this area analytically is still undercovered in India.

## 5.4 China

China's case is very close to what happened in Europe in the second half of the XIX century — formation of capitalism with all its attributes, initial capital accumulation that goes hand-in-hand with labour exploitation. Table 3 provides a clear understanding of the pace of capital accumulation in China during the last 20-30 years that is conventionally called by liberal economists 'economic growth'. Now GDP of China is twice bigger than GDP of India, though in 1990s GDP of these countries were the same and in 1950s India even outperformed China twice. Before 1990s China made full use of key advantages which Russia and Eastern European[22] countries didn't have at that moment (Nee, Stark, & Selden, 1989): 1) incomplete early industrialization, which urged the GDP growth of China up to 20% just by migration of labour force from agriculture to non-agricultural sectors as well as by urbanization[23]; 2) large-scale foreign investment facilitated rapid modernization of technologies and production growth.

In 1990s, China embarked on liberalization that increased competition among provinces for the investments attraction and therefore economic growth. However, this has exacerbated strong regions disparities (Fan, 2013), both between- and within them (Lyons, 1998). According to Table 3 and Table 4, China is going now through a phase of urbanization. Mostly, it relates to small towns that accumulate flows of migrants from villages on the side of migration to large cities restricted by the existing registration system — *hukou* (Bai, 2008). Total number of migrant workers in urban areas in 2012 was 261.61 million people. According to official statistics, China's urban population is growing by about 21 million people a year, though employed population of cities is increasing only by 12.66 million a year (National Bureau of Statistics of China, 2013). Therefore, around 40% of urban newcomers are those who are not involved in any production activity. In many respects, this is families of migrant workers, who are their dependents.

Hourly rates paid to rural emigrants are much lower than of their urban counterparts, and they have to work on average more hours (Park & Wang, 2010). Most of people have scare chances to improve living conditions, get free education for children and social security for themselves due to the difficulties they face in obtaining local *hukou* (Goh, Luo, & Zhu, 2009). As in the case with their European predecessors, limited access to education of urban migrants in China reduces their chances in the labour market in relation to working places providing job stability and security, career prospects, and reasonable wages (Wan, 2004). In light of this, we expect scare skill development activities in Chinese enterprises, at least in relation with low-qualified and low-paid labour force. The same we can expect from considerable part of employed urban residents that according to Li (2013) remain peasants (19.73%).

At the same time, there are the groups that are favoured, both from state-socialist legacies, and from structural changes driven by the reforms. Besides local *hukou* abovementioned other statist privileges are attached to a) membership in state-origin unions which situate workers in relatively more prosperous status, b) being part of "State Personnel" — *guojia ganbu* — analogue of the Russian bureaucracy (Lin & Wu, 2009). According to Li (2013) structural changes of Chinese society were driven by changes a) in the ownership structure (elimination of old idea of the importance of state property) and b) in the industry-occupation structure. Because of the reforms, new occupations emerged, such as workers of private-owned business enterprises, individual entrepreneurs (8.66% of urban residents), and managers of non-state-owned enterprises (0.7%) and of private organizations (less than 0.84%).

[22] It should be noted that there is still no conventional view about the pattern of Chinese development – either it is the model of South-Eastern counties which are approaching to market economy, or it is closer to the states of the former Soviet bloc, including Russia and Eastern Europe, with transition economies.

[23] The mere fact of cityward migration can have no impacts on industrialization; rather, China's rapid economic growth is likely to be a cause for nationwide migration boom (see Zhang & Song, 2003).

These new occupations became a satellite of other sectoral changes, primarily — expanding employment in services. As in Russia, the growth of employment in this area is provided by semi-skilled workers the basis of which in China are clerks (10.92%), sales and service personal (13.3%). In general, the proportion of non-manual workers in China still is not very high — about 20% of the employed urban population, which includes professionals (7.8%) and administrative staff. Another occupational lacuna for training are urban residents occupied as manual workers in industrial enterprises — they embrace 19.8% of employed urban population (Li, 2013). It is noteworthy that only half of them are qualified as skilled labour. Meanwhile it is a fruitful ground for any training as working specialties are very popular among young people traveling from villages to work. More than half (55.15 %) of youth workers (17 to 31 years) are manual workers on factories and plants. The share of industrial workers among elders are much smaller — 25.07% (52-70 years) and 33.67% (43-51 years).

Thus, we can see, that BRIC countries seem to build on the one hand — the mixture of known phenomena modelled on the basis of developed countries; on the other — the BRICs have a bunch of specific features that intricate the study on qualification improvement and therefore distinguish it from what one can carry out on the ground of industrially matured economies. These are as follows: a) significant informal and even unregulated sector, b) wide range of absolute poverty related to severe conditions of life of remarkable part of working population, and c) culturally and institutionally specific barriers obstructing vertical mobility. Diversified parts of *economies in these countries* exist in a form of *overlapping* worlds. These worlds can coexist even within the same firm, occupation, or industry. Given the findings of above analysis, it contradicts to the development countries' experience where both low and high qualifications are embedded in *separate* occupational, industrial, and organizational *lacunas*.

# 6 Conclusion

To sum up, it's worth noting that qualification improvement remains underresearched phenomena, both theoretically, and empirically. There is no conventional theory of qualification improvement known at the present moment. Moreover, the phenomenon of qualification improvement is somewhat suppressed from the scope of analytical exploration. It was shown, that neither liberal, no Marxist theories cover this phenomenon overwhelmingly. Education and qualification *per se* are usual subjects of scholars' interests. However, it was proven that education and qualification are contextual explanatories, transformation of which lead to the qualification improvement as socio-economic phenomenon. Based on vast literature describing these transformations in developed countries, it was shown that qualification improvement is the inherent feature of specific phases of development, related to polarization of jobs and wages. There is no thorough conceptualization of qualification improvement as a matter of occupational shifts and related to them diversity of wages.

Occupational shifts and wages are usually used as predictors in some rare empirical studies on qualification improvement, broadly known as studies on continuous education and training. We documented a scanty number of empirical papers that study occupational shifts as a contextual explanatory for the job-and-skills biased wage diversity that is considered to predict qualification improvement in BRIC countries. We indicated that occupational shifts explain the reality of wage diversity in developing countries much better than neoclassical theory of globalization quite common in comparative studies on the BRICs. Since the latter are concerned, both relevance and significance of wide socio-economic as well as socio-demographic contexts are shown as inherent part of any comparative study on the BRICs. Empirical part clearly revealed in BRIC countries relatively low levels of upskilling, both personal and job-related. All these should be taken into account while we model qualification improvement in the BRICs.

# 7 References


Acemoglu, Daron. (2003). Cross-country Inequality Trends*. *The Economic Journal, 113*(485), F121-F149.

Akerman, Anders, Helpman, Elhanan, Itskhoki, Oleg, & Redding, Stephen. (2013). Sources of Wage Inequality. *American Economic Review Papers & Proceedings, forthcoming*.

Algieri, Bernardina. (2011). The Dutch Disease: evidences from Russia. *Economic Change and Restructuring, 44*(3), 243-277.

Allegretto, Sylvia A, Dube, Arindrajit, & Reich, Michael. (2011). Do minimum wages really reduce teen employment? Accounting for heterogeneity and selectivity in state panel data. *Industrial Relations: A Journal of Economy and Society, 50*(2), 205-240.

Amiti, Mary, & Cameron, Lisa. (2012). Trade liberalization and the wage skill premium: Evidence from Indonesia. *Journal of International Economics, 87*(2), 277-287.

Anikin, Vasiliy A. (2012). The modernization potential of the professional structure of the employed population of Russia. *Sociological research, 51*(6), 44-80. doi: 10.2753/SOR1061-0154510605

Anikin, Vasiliy A. (2013a). Mode of Socio-Economic Development and Occupational Structure: The Case of Contemporary Russia. *Transition Studies Review, 19*(4), 397-415. doi: 10.1007/s11300-013-0256-8

Anikin, Vasiliy A. (2013b). Motivation to Work in Russia: The Case of Protracted Transition from Noncompetitive to Competitive System. *The Journal of Comparative Economic Studies (JSCES), 8*, 35-60.

Arabsheibani, G Reza, Carneiro, Francisco Galrão, & Henley, Andrew. (2003). Gender wage differentials in Brazil: Trends over a turbulent era *World Bank Policy Research Working Paper* (Vol. 3148): World Bank.

Arnal, E., & Förster, M. . (2010). Growth, employment and inequality in Brazil, China, India and South Africa: An overview *Tackling Inequalities in Brazil, China, India and South Africa: The Role of Labour Market and Social Policies* (pp. 13–55): OECD Publishing.

Attanasio, Orazio, Goldberg, Pinelopi K, & Pavcnik, Nina. (2004). Trade reforms and wage inequality in Colombia. *Journal of development Economics, 74*(2), 331-366.

Autor, David H, Katz, Lawrence F, & Kearney, Melissa S. (2008). Trends in US wage inequality: Revising the revisionists. *The Review of Economics and Statistics, 90*(2), 300-323.

Bai, XM. (2008). Urban transition in China: Trends, consequences and policy implications. In G. Martin, G. McGranahan, M. Montgomery & R. Fernández-Castilla (Eds.), *The New Global Frontier: Urbanization, Poverty and Environment in the 21st Century* (pp. 339-356). London: Earthscan.

Balzer, Harley. (1998). Russia's Middle Classes. *Post-Soviet Affairs, 14*(2), 165-186.

Bardi, Anat, & Schwartz, Shalom H. (2003). Values and behavior: Strength and structure of relations. *Personality and social psychology bulletin, 29*(10), 1207-1220.

Bell, Daniel. (1976). *The coming of the post-industrial society.* Paper presented at the The Educational Forum.

Bergman, Manfred Max, & Joye, Dominique. (2001). Comparing social stratification schemas: CAMSIS, CSP-CH, Goldthorpe, ISCO-88, Treiman, and Wright. *Cambridge Studies in Social Research, 9*, 1-37.

Berman, Eli, Bound, John, & Griliches, Zvi. (1994). Changes in the demand for skilled labor within US manufacturing: evidence from the annual survey of manufactures. *The Quarterly Journal of Economics, 109*(2), 367-397.

Blau, Francine D, & Kahn, Lawrence M. (1994). Rising wage inequality and the US gender gap. *The American Economic Review, 84*(2), 23-28.

Blau, Francine D, & Kahn, Lawrence M. (1996). Wage structure and gender earnings differentials: An international comparison. *Economica*, S29-S62.

Blau, Francine D, & Kahn, Lawrence M. (1997). The Impact of Wage Structure on Trends in US Gender Wage Differentials1975-1987: National Bureau of Economic Research.
Blau, P.M., & Duncan, O.D. (1967). *The American occupational structure*. New York: Wiley.
Bluestone, Barry, & Harrison, Bennett. (1988). The growth of low-wage employment: 1963-86. *American Economic Review, 78*(2), 124-128.
Bosch, G., & Charest, J. (2012). *Vocational Training: International Perspectives*. New York: Taylor & Francis.
Bourdieu, Pierre. (2008). The Forms of Capital *Readings in economic sociology* (Vol. 4, pp. 280).
Broom, Leonard, & Smith, JH. (1963). Bridging occupations. *The British journal of sociology, 14*(4), 321-334.
Brown, Charles. (1999). Minimum wages, employment, and the distribution of income. *Handbook of labor economics, 3*, 2101-2163.
Brown, Drusilla. (2007). Globalization and employment conditions study *World Bank Social Protection Discussion Paper* (Vol. 0708). Washington: World Bank.
Brown, Robert M. (1924). Occupations in the United States. *The Scientific Monthly, 18*(2), 196-204.
Bücher, K. (1912). Industrial Evolution. from H. Holt and Company
Bureau of Labor Statistics. (2003–2004). Occupational Employment. *Occupational Outlook Quarterly, 47* (4).
Bureau of Labor Statistics. (2009–2010). Occupational Employment. *Occupational Outlook Quarterly, 53*(4), 8–9.
Burton-Jones, Alan. (1999). Knowledge Capitalism: Business, Work, and Learning in the New Economy. Oxford: Oxford University Press.
Cai, Fang, Du, Yang, & Wang, Meiyan. (2009). Employment and Inequality Outcomes in China, Paper presented at the OECD Seminar on "Employment and Inequality Outcomes: New Evidence, Links and Policy Responses in Brazil, China and India", April 2009, OECD, Paris.
Card, David, Heining, Joerg, & Kline, Patrick. (2012). Workplace heterogeneity and the rise of german wage inequality. *Mimeograph UC Berkeley*.
Card, David, & Krueger, Alan. (1994). Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania. *American Economic Review, 48*(4), 772-793.
Card, David, & Krueger, Alan B. (1995). Time-series minimum-wage studies: a meta-analysis. *The American Economic Review, 85*(2), 238-243.
Castel, Robert. (1995). *Les métamorphoses de la question sociale: une chronique du salariat*. Paris: Fayard.
Castells, Manuel. (2004). Informationalism, networks, and the network society: a theoretical blueprint. . In M. Castells (Ed.), *The network society. A cross-cultural perspective*. Northampton: Edward Elgar.
Castells, Manuel. (2010). *End of Millennium: The Information Age: Economy, Society, and Culture* (Vol. 3): Wiley. com.
Castells, Manuel. (2011). *The rise of the network society: The information age: Economy, society, and culture* (Vol. 1): Wiley-Blackwell.
Chan, Tak Wing, & Goldthorpe, John H. (2007). Class and status: The conceptual distinction and its empirical relevance. *American sociological review, 72*(4), 512-532.
Charmes, Jacques. (2012). The informal economy worldwide: trends and characteristics. *Margin: The Journal of Applied Economic Research, 6*(2), 103-132.
Chen, Ta. (1947). Occupations. *American Journal of Sociology, 52*, 43-56. doi: 10.2307/2771183
CIA. (2013). Unemployment rate. Retrieved 27.11.2013, from Central Intelligence Agency https://www.cia.gov/library/publications/the-world-factbook/geos/in.html

Clark, Gregory. (1987). Why isn't the whole world developed? Lessons from the cotton mills. *Journal of economic history, 47*(1), 141-173.
Clark, Terry Nichols, & Lipset, Seymour Martin. (1991). Are social classes dying? *International sociology, 6*(4), 397-410.
Clarke, Simon. (2007). *The development of capitalism in Russia*: Routledge.
Clementi, F, & Schettino, F. (2013). *Income polarization in Brazil, 2001-2011: A distributional analysis using PNAD data.* Paper presented at the 2013 Second Congress, June 6-7, 2013, Parma, Italy.
Commerce Yearbook. (1928). Washington: United States Department of Commerce.
Corseuil, Carlos Henrique L, Foguel, Miguel Nathan, Gonzaga, Gustavo, & Ribeiro, Eduardo Pontual. (2012). The Effects of a Youth Training Program on Youth Turnover in Brazil *REAP Working Paper* (Vol. 042 ). Rio de Janeiro: REAP.
Cragg, Michael Ian, & Epelbaum, Mario. (1996). Why has wage dispersion grown in Mexico? Is it the incidence of reforms or the growing demand for skills? *Journal of Development Economics, 51*(1), 99-116.
Davis, Kingsley, & Moore, Wilbert E. (1945). Some principles of stratification. *American sociological review, 10*(2), 242-249.
Davis, Steve J, & Haltiwanger, John. (1991). Wage dispersion between and within US manufacturing plants, 1963-1986: National Bureau of Economic Research.
Deere, Donald, Murphy, Kevin M, & Welch, Finis. (1995). Employment and the 1990-1991 minimum-wage hike. *The American Economic Review, 85*(2), 232-237.
Department for Business, Innovation and Skills. (2011). New Challenges, New Chances - Further Education and Skills System Reform Plan: Building a World Class Skills System (Vol. BIS/11/1380). London: BIS.
Department for Business, Innovation and Skills. (2013). The International Survey of Adult Skills 2012: Adult literacy, numeracy and problem solving skills in England (Vol. BIS/13/1221). London: BIS.
Department for Education, & Department for Business, Innovation and Skills (2013). Rigour and Responsiveness in Skills (Vol. BIS/13/960). London: BIS.
Development Data, The World Bank. (2013). Education Statistics. from World Bank http://databank.worldbank.org/data/home.aspx
Dickens, Richard, Machin, Stephen, & Manning, Alan. (1999). The effects of minimum wages on employment: Theory and evidence from Britain. *Journal of Labor Economics, 17*(1), 1-22.
DiNardo, John, Fortin, Nicole M., & Lemieux, Tomas. (1996). Labor market institutions and the distrbution of wages, 1973-1992: A semiparametric approach. *Econometrica, 64*(5), 1001-1044.
Dolado, Juan, Kramarz, Francis, Machin, Stephen, Manning, Alan, Margolis, David, Teulings, Coen, . . . Keen, Michael. (1996). The economic impact of minimum wages in Europe. *Economic policy*, 319-372.
Dunkerley, D. (1975). *Occupations and society*. London: Routledge & K. Paul.
Duvall, Evelyn Millis. (1946). Conceptions of Parenthood. *American Journal of Sociology, 52*(3), 193-203. doi: 10.2307/2771063
Eisenstadt, Shmuel Noah. (1999). Multiple Modernities in an Age of Globalization. In C. Honegger, S. Hradil & F. Traxler (Eds.), *Grenzenlose Gesellschaft?* (pp. 37-50): VS Verlag für Sozialwissenschaften.
Erikson, Robert, Goldthorpe, John H, & Portocarero, Lucienne. (1979). Intergenerational class mobility in three Western European societies: England, France and Sweden. *The British Journal of Sociology, 30*(4), 415-441.
Eurostat, European Commission, Statistical Office of the European Communities. (2012). The European Union and the BRIC countries. Luxembourg: Statistical Office of the European Communities.

Fairbairn, Ian J. (1967). More on the Labor Potential. Some Evidence from Western Samoa. *Economic Development and Cultural Change, 16*(1), 97-105.
Fajnzylber, Pablo, & Fernandes, Ana M. (2009). International economic activities and skilled labour demand: evidence from Brazil and China. *Applied Economics, 41*(5), 563-577.
Fan, Ping. (2013). Rural Society and Peasants in China. In P. Li, M. K. Gorshkov, C. Scalon & K. L. Sharma (Eds.), *Handbook on Social Stratification in the BRIC Countries: Change and Perspective*. London: World Scientific Publishing Company.
Federal State Statistics Service, Russian Federation. (2013). *Accrued Average Monthly Nominal Wages by Economic Activity*. Retrieved from: http://www.gks.ru/bgd/regl/b13_06/IssWWW.exe/Stg/d06/03-10.doc
Feliciano, Zadia M. (2001). Workers and trade liberalization: the impact of trade reforms in Mexico on wages and employment. *Indus. & Lab. Rel. Rev., 55*, 95.
Fuchs, C. (2013). *Internet and Society: Social Theory in the Information Age*. New York: Taylor & Francis.
Gallie, Duncan. (1991). Patterns of skill change: upskilling, deskilling or the polarization of skills? *Work, Employment & Society, 5*(3), 319-351.
Ganzeboom, Harry B. G., & Treiman, Donald J. (1996). Internationally Comparable Measures of Occupational Status for the 1988 International Standard Classification of Occupations. *Social Science Research, 25*(3), 201-239. doi: http://dx.doi.org/10.1006/ssre.1996.0010
Garnero, Andrea, Kampelmann, Stephan, & Rycx, François. (2013). Minimum Wage Systems and Earnings Inequalities: Does Institutional Diversity Matter? *Working Papers CEB, 13*.
Gilbert, D. (2011). *The American Class Structure in an Age of Growing Inequality* (8th ed.). London: SAGE Publications.
Giordano, Alfonso, & Pagano, Antonietta. (2013a). Brazil in the Transition Towards Knowledge Economy: Between Qualification and Internationalization of Human Capital. *Transition Studies Review, 20*(1), 19-31. doi: 10.1007/s11300-013-0267-5
Giordano, Alfonso, & Pagano, Antonietta. (2013b). Brazil in the Transition Towards Knowledge Economy: Between Qualification and Internationalization of Human Capital. *Transition Studies Review*, 1-13.
Goh, Chor-ching, Luo, Xubei, & Zhu, Nong. (2009). Income growth, inequality and poverty reduction: a case study of eight provinces in China. *China Economic Review, 20*(3), 485-496.
Goldthorpe, John H. (2000). Rent, Class Conflict, and Class Structure: A Commentary on Sorenson. *The American Journal of Sociology, 105*(6), 1572-1582.
Goldthorpe, John H. (2002). Occupational Sociology, Yes: Class Analysis, No: Comment on Grusky and Weeden's" Research Agenda". *Acta Sociologica, 45*(3), 211-217.
Goldthorpe, John H, Llewellyn, Catriona, & Payne, Clive. (1987). *Social mobility and class structure in modern Britain* (2nd ed.). Oxford: Clarendon Press
Goldthorpe, John H, Lockwood, David, Bechhofer, Frank, & Platt, Jennifer. (1969). *The affluent worker in the class structure*. New York: Cambridge university press.
Goldthorpe, John H, & McKnight, Abigail. (2006). The economic basis of social class. In S. L. Morgan, D. B. Grusky & G. S. Fields (Eds.), *Mobility and Inequality: Frontiers of Research in Sociology and Economics* (pp. 109-137). California: Stanford University Press.
Goos, Maarten, & Manning, Alan. (2007). Lousy and lovely jobs: The rising polarization of work in Britain. *The Review of Economics and Statistics, 89*(1), 118-133.
Goos, Maarten, Manning, Alan, & Salomons, Anna. (2009). Job polarization in Europe. *The American Economic Review, 99*(2), 58-63.
Handel, Michael J. (2013). Putting tasks to the test: Human capital, job tasks, and wages. *Journal of Labor Economics, 31*(2 Part 2), S59-S96.
Hansen, Alvin H. (1922). Industrial classes in the United States in 1920. *Journal of the American Statistical Association, 18*(140), 503-506.

Hansen, W. (1963). Professional engineers: Salary structure problems. *Industrial Relations: A Journal of Economy and Society, 2*(3), 33-44.
Hanson, Gordon H, & Harrison, Ann. (1999). Trade liberalization and wage inequality in Mexico. *Industrial and Labor Relations Review*, 271-288.
Hanushek, Eric. (2013). Economic Growth in Developing Countries: The Role of Human Capital. *Economics of Education Review*.
Harjes, Thomas. (2007). *Globalization and income inequality: A European perspective*: International Monetary Fund.
Harnad, Stevan. (1991). Post-Gutenberg galaxy: The fourth revolution in the means of production of knowledge. *Public-access computer systems review, 2*(1), 39-53.
Hauser, Robert M, Dickinson, Peter J, Travis, Harry P, & Koffel, John N. (1975). Structural changes in occupational mobility among men in the United States. *American Sociological Review*, 585-598.
Häusermann, Silja. (2010). *The politics of welfare state reform in continental Europe: modernization in hard times*. New York: Cambridge University Press.
Heath, Anthony, Mills, Colin, & Roberts, Jane. (1992). Towards meritocracy? recent evidence on an old problem. In A. F. Heath & C. Crouch (Eds.), *Social research and social reform*. Oxford: Clarendon Press.
Hennock, Ernest Peter. (2007). *The origin of the welfare state in England and Germany, 1850-1914: social policies compared*. Cambridge: Cambridge University Press.
Hicks, Joe, & Allen, Grahame. (1999). A Century of Change: Trends in UK statistics since 1990 *Research Paper* (Vol. 99/111). London: Social and General Statistics Section.
Hirsch, Barry, Kaufman, Bruce, & Zelenska, Tetyana. (2011). Minimum wage channels of adjustment. *Andrew Young School of Policy Studies Research Paper Series*(11-34).
Holmes, Douglas R, & Marcus, George E. (2006). para-ethnography and the rise of the symbolic analyst. *Frontiers of capital: Ethnographic reflections on the new economy*, 33.
Hope, Keith. (1975). Models of status inconsistency and social mobility effects. *American Sociological Review*, 322-343.
Huberman, Michael. (2013). One world of labour regulation, two worlds of trade: examples of Belgium and Brazil. *European Review of Economic History*.
ILO. (2012). Statistical update on employment in the informal economy. Geneva: ILO Department of Statistics.
IMF. (2007a). *World Economic Outlook: Globalization and Inequality*: International Monetary Fund.
IMF. (2007b). World Economic Outlook: Spillovers and Cycles in the Global Economy: International Monetary Fund.
IMF. (2013). Unemployment rate. Retrieved 27.11.2013, from International Monetary Fund http://www.imf.org/external/pubs/ft/weo/2012/02/weodata/weoselgr.aspx
Inglehart, Ronald. (1997). *Modernization and postmodernization: Cultural, economic, and political change in 43 societies* (Vol. 19): Cambridge Univ Press.
Inglehart, Ronald, & Welzel, Christian. (2009). How Development Leads to Democracy: What We Know About Modernization. *Foreign Affairs, 88*(2), 33-48. doi: 10.2307/20699492
Jackson, Michelle, Goldthorpe, John H, & Mills, Colin. (2005). Education, Employers and Class Mobility. *Research in Social Stratification and Mobility, 23*, 3-33. doi: http://dx.doi.org/10.1016/S0276-5624(05)23001-9
Jamal, Tabassum, & Mandal, Kasturi. (2013). Skill development mission in vocational areas–mapping government initiatives. *CURRENT SCIENCE, 104*(5), 590-595.
Jones, MZ. (1925). Trend of Occupations in the Population. *Monthly Lab. Rev., 20*, 14.
Juhn, Chinhui, Murphy, Kevin M, & Pierce, Brooks. (1993). Wage inequality and the rise in returns to skill. *Journal of political Economy*, 410-442.

Jutting, Johannes, & Laiglesia, Juan R de. (2009). Is informal normal?: towards more and better jobs in developing countries (pp. 162). Paris.
Kapelyushnikov, R. (2012). Neformalnaya zanyatost v Rossii: chto govoryat alternativnie opredeleniya? (Informal employment in Russia: What are the alternative approaches about?) *Working papers by NRU Higher School of Economics. Series WP3 "Problemi rinka truda" (Labour market issues)* (Vol. 4). Moscow: NRU Higher School of Economics.
Katz, Lawrence F, & Murphy, Kevin M. (1992). Changes in relative wages, 1963–1987: supply and demand factors. *The quarterly journal of economics, 107*(1), 35-78.
Katz, Lawrence F, & Revenga, Ana L. (1990). Changes in the Structure of Wages: The US versus Japan: National Bureau of Economic Research.
Kerr, Clark, Harbison, Frederick H, Dunlop, John T, & Myers, Charles A. (1960). Industrialism and industrial man. *Int'l Lab. Rev., 82*, 236.
Kitchener, Martin. (2000). The Bureaucratization'of Professional Roles: The Case of Clinical Directors in UK Hospitals. *Organization, 7*(1), 129-154.
Klein, Herbert S, & Luna, Francisco Vidal. (2006). Brazil since 1980: New York: Cambridge University Press.
Knight, John, & Song, Lina. (2003). Increasing urban wage inequality in China. *Economics of Transition, 11*(4), 597-619.
Knowles, KGJC, & Robertson, DJ. (1951). Differences between the wages of skilled and unskilled workers, 1880-1950. *Bulletin of the Oxford University Institute of Statistics, 13*(4), 109-127.
Köhler, P., & Zacher, H. (1982). *The evolution of social insurance, 1881–1981: studies of Germany, France, Great Britain, Austria, and Switzerland* (K. P & Z. H Eds.). London/New York: St. Martin's Press.
Kohn, Melvin. (1989). *Class and conformity: A study in values*: University of Chicago Press.
Kravis, Irving B. (1956). Wages and foreign trade. *The Review of Economics and Statistics, 38*(1), 14-30.
Kremer, Michael, & Maskin, Eric. (1996). Wage inequality and segregation by skill: National Bureau of Economic Research.
Krug, G. (2005). *Communication, Technology and Cultural Change. Communication, Technology and Cultural Change.* . London: SAGE Publications Ltd.
Kumar, Krishan. (1978). *Prophecy and progress: The sociology of industrial and post-industrial society*. New York: Penguin books.
Larson, Magali Sarfatti. (1979). *The rise of professionalism: A sociological analysis* (Vol. 233). Berkeley: University of California Pr.
Leadbeater, C. (2000). *The weightless society: living in the new economy bubble*. New York: Texere.
Leggett, Chris. (2013). Developing and augmenting talent. In J. Benson, H. Gospel & Z. Ying (Eds.), *Workforce Development and Skill Formation in Asia*. New York: Routledge.
Leitch Review of Skills. (2006). Prosperity for all in the global economy–world class skills. Final report. London: The Stationery Office.
Lemos, Sara. (2007). Minimum wage effects across the private and public sectors in Brazil. *Journal of Development Studies, 43*(4), 700-720.
Lemos, Sara. (2009). Minimum wage effects in a developing country. *Labour Economics, 16*(2), 224-237.
Lenski, Gerhard E. (1967). Status inconsistency and the vote: a four nation test. *American Sociological Review*, 298-301.
Leonardos, Ana Cristina. (2012). CIEP: A Democratic School Model for Educating Economically Disadvantaged Students in Brazil? *Effective Schools in Developing Countries (RLE Edu A), 8*, 69.
Lerman, Robert I. (2013). Skill development in middle level occupations: the role of apprenticeship training (Vol. Policy Paper No. 61). Bonn: Institute for the Study of Labor (IZA).

Lerner, Daniel. (1958). *The passing of traditional society: Modernizing the Middle East*. New York: Free Press
Levy, Frank, & Murnane, Richard J. (2003). The skill content of recent technological change: An empirical exploration. *The Quarterly Journal of Economics, 118*(4), 1279-1333.
Li, Peilin. (2013). Changes in Chinas Social Stratification Since 1978. In P. Li, M. K. Gorshkov, C. Scalon & K. L. Sharma (Eds.), *Handbook on Social Stratification in the BRIC Countries: Change and Perspective*. London: World Scientific Publishing Company.
Lin, Thung-hong, & Wu, Xiaogang. (2009). The Transformation of the Chinese Class Structure, 1978-2005. In K.-b. Chan (Ed.), *Social Transformations in Chinese Societies* (pp. 81-116): Brill.
Lindert, Peter H. (1980). English Occupations, 1670-1811. *The Journal of Economic History, 40*(04), 685-712.
Liu, Yujia, & Grusky, David B. (2013). The Payoff to Skill in the Third Industrial Revolution. *American Journal of Sociology, 118*(5), 1330-1374.
Lynd, Robert Staughton, & Lynd, Helen Merrell. (1929). *Middletown; a study in contemporary American culture*. Oxford: Harcourt, Brace.
Lyons, Thomas P. (1998). Intraprovincial Disparities in China: Fujian Province, 1978–1995. *Economic Geography, 74*(4), 405-432.
Machin, Stephen. (1997). The decline of labour market institutions and the rise in wage inequality in Britain. *European Economic Review, 41*(3), 647-657.
Machlup, Fritz. (1962). *The production and distribution of knowledge in the United States* (Vol. 278). Princeton: Princeton university press.
Maine, H.S. (1834). *Ancient law: its connection with the early history of society, and its relation to modern ideas*. New York: H. Holt and company.
Marx, Karl. (1859). *Zur Kritik der Politischen Ökonomie* (Erstes Heft ed.). Berlin: Duncker.
Marx, Karl. (2005). *Grundrisse: Foundations of the Critique of Political Economy* (M. Nicolaus, Trans.). London: Penguin Books Limited.
McIntosh, Steven. (2002). The Changing Demand for Skills. *European Journal of Education, 37*(3), 229-242. doi: 10.2307/1503373
McLaughlin, Kenneth J. (1994). Rigid wages? *Journal of Monetary Economics, 34*(3), 383-414.
Miller, S Michael, & Riessman, Frank. (1961). The working class subculture: A new view. *Social Problems, 9*(1), 86-97.
Mills, C Wright. (1951). *White Collar: The American Middle Classes*. New York: Oxford university press.
Mitchell, Daniel JB. (1985a). Wage flexibility in the United States: Lessons from the past. *The American Economic Review*, 36-40.
Mitchell, Daniel JB. (1985b). Wage flexibility: Then and now. *Industrial Relations: A Journal of Economy and Society, 24*(2), 266-279.
Montalvo, Jose G, & Ravallion, Martin. (2010). The pattern of growth and poverty reduction in China. *Journal of Comparative Economics, 38*(1), 2-16.
Morgan, Stephen L, & McKerrow, Mark W. (2004). Social class, rent destruction, and the earnings of black and white men, 1982–2000. *Research in Social Stratification and Mobility, 21*, 215-251.
Moulin, Nelly, & Pereira, Vilma. (2000). Families, schools, and the socialization of Brazilian children: contemporary dilemmas that create street children. *Children of the Streets of the Americas: Globalization, homelessness and education in the United States, Brazil and Cuba. RA Mickelson (Ed.) New York: Routledge*.
Muendler, Marc-Andreas, Poole, Jennifer, Ramey, Garey, & Wajnberg, Tamara. (2004). *Job Concordances for Brazil: Mapping the Classificaçao Brasileira de Ocupaçoes (CBO) to the International Standard Classification of Occupations (ISCO-88)*. Unpublished manuscript.

University of California. San Diego. Retrieved from http://dss.ucsd.edu/~muendler/docs/brazil/cbo2isco.pdf
Murphy, R. (1990). Proletarianization or Bureaucratization: The Fall of the Professional? In R. T. a. M. Burrage (Ed.), *The Formation of Professions: Knowledge, State and Strategy* (pp. 70-95). London: Sage.
National Bureau of Statistics of China, Statistical Communiqué of the People's Republic of China. (2013). Statistical Communiqué of the People's Republic of China on the 2012 National Economic and Social Development. Retrieved 30/11/2013 http://www.stats.gov.cn/english/newsandcomingevents/t20130222_402874607.htm
National Sample Survey, National Sample Survey Office. (2013). Employment and Unemployment: NSS 68th round: July 2011- June 2012. from Ministry of Statistics & Programme Implementation http://164.100.34.62/index.php/catalog/143
Nee, Victor G, Stark, David, & Selden, Mark. (1989). *Remaking the economic institutions of socialism: China and Eastern Europe*. Stanford, California: Stanford University Press.
Neumark, David, Salas, JM, & Wascher, William. (2013). Revisiting the minimum wage-employment debate: Throwing out the baby with the bathwater? : National Bureau of Economic Research.
O'Connell, Philip J. (1999). Adults in Training: An International Comparison of Continuing Education and Training (Vol. CERI/WD(99)1). Paris: Organisation for Economic Cooperation and Development, Centre for Educational Research and Innovation.
OECD. (2000). Literacy in the Information Age Final Report of the International Adult Literacy Survey: Final Report of the International Adult Literacy Survey. Paris.
Oesch, Daniel, & Menés, Jorge Rodríguez. (2011). Upgrading or polarization? Occupational change in Britain, Germany, Spain and Switzerland, 1990–2008. *Socio-Economic Review, 9*(3), 503-531.
Ogburn, W. F., & Tibbitts, Clark. (1929). Occupations. *American Journal of Sociology, 34*(6), 1169-1180. doi: 10.2307/2765903
Park, Albert, & Wang, Dewen. (2010). Migration and urban poverty and inequality in China. *China Economic Journal, 3*(1), 49-67.
Pavcnik, Nina. (2003). What explains skill upgrading in less developed countries? *Journal of Development Economics, 71*(2), 311-328.
Pavcnik, Nina, Blom, Andreas, Goldberg, Pinelopi, & Schady, Norbert. (2004). Trade liberalization and industry wage structure: Evidence from Brazil. *The World Bank Economic Review, 18*(3), 319-344.
Penn, R. (1984). *Skilled Workers in the Class Structure*. New York: Cambridge University Press.
Perkin, Harold. (1990). *The rise of professional society: England since 1880*. London: Routledge.
Perry, George L, Denison, Edward F, & Solow, Robert M. (1971). Labor force structure, potential output, and productivity. *Brookings Papers on Economic Activity, 1971*(3), 533-578.
Polavieja, Javier G. (2012). Socially Embedded Investments: Explaining Gender Differences in Job-Specific Skills. *American Journal of Sociology, 118*(3), 592-634.
Polterovich, Victor. (2001). Трансплантация экономических институтов.
Porat, Marc Uri. (1977). The Information Economy: Definition and Measurement. Washington DC: Office of Telecommunications, U.S. Department of Commerce.
Powell, Walter W, & Snellman, Kaisa. (2004). The knowledge economy. *Annual review of sociology, 30*, 199-220.
Ravallion, Martin. (2011). A comparative perspective on poverty reduction in Brazil, China, and India. *The World Bank Research Observer, 26*(1), 71-104.
Regini, Mario. (2010). The increasing individualization of work and labour. *Socio-Economic Review, 8*(2), 357-360.
Reich, R.B. (1992). *The work of nations: preparing ourselves for 21st-century capitalism*. New York: Vintage Books.

Reshef, Ariell. (2013). Is technological change biased towards the unskilled in services? An empirical investigation. *Review of Economic Dynamics, 16*(2), 312–331. doi: 10.1016/j.red.2013.01.005
Revenga, Ana. (1997). Employment and wage effects of trade liberalization: the case of Mexican manufacturing. *Journal of labor Economics, 15*(S3), S20-S43.
Robbins, Donald, & Gindling, Tim H. (1999). Trade Liberalization and the Relative Wages for More-Skilled Workers in Costa Rica. *Review of Development Economics, 3*(2), 140-154.
Rodriguez, Jacob P, & Loomis, Steven R. (2007). A new view of institutions, human capital, and market standardisation. *Education, Knowledge & Economy, 1*(1), 93-105.
Roemer, J.E. (1982). *A general theory of exploitation and class*. Cambridge: Harvard University Press.
Romer, Paul M. (1989). Human capital and growth: theory and evidence: National Bureau of Economic Research.
Rose, David. (2005). The ESeC Class Schema Summarized (ISER, Trans.). Colchester: ESeC Project Working paper.
Routh, G. (1987). *Occupations of the People of Great Britain, 1801-1981*. London: Macmillan Press.
Sachs, Jeffrey. (2005). *The end of poverty: How we can make it happen in our lifetime*: Penguin UK.
Scalon, Celi. (2013). Social stratification and its transformation in Brazil. In P. Li, M. K. Gorshkov, C. Scalon & K. L. Sharma (Eds.), *Handbook on Social Stratification in the BRIC Countries: Change and Perspective*. London: World Scientific Publishing Company.
Schmitt, John. (2013). Why does the minimum wage have no discernible effect on employment? *Center for Economic and Policy Research*.
Schwartz, Shalom H. (1994). Beyond individualism/collectivism: New cultural dimensions of values. In U. Kim, H. C. Triandis, Ç. Kâğitçibaşi, S.-C. Choi & G. Yoon (Eds.), *Individualism and collectivism: Theory, method, and applications. Cross-cultural research and methodology series* (pp. 85-119). Thousand Oaks: Sage Publications, Inc.
Sheffrin, Steven M. (2003). Economics: Principles in action. *Upper Saddle River, New Jersey, 7458*, 271.
Silverman, Bertram, & Yanowitch, Murray. (1997). New Rich, New Poor, New Russia: Winners and Losers on the Russian Road to Capitalism, ME Sharpe. N.Y.: Armonk, NY.
Singelmann, J. (1978). *From agriculture to services: the transformation of industrial employment*. California: Sage Publications.
Skans, Oskar Nordström, Edin, Per-Anders, & Holmlund, Bertil. (2009). Wage dispersion between and within plants: Sweden 1985-2000 *The Structure of Wages: An International Comparison* (pp. 217-260): University of Chicago Press.
Solga, Heike. (2006). The rise of meritocracy? Class mobility in East Germany before and after 1989. In M. Diewald, A. Goedicke & K. U. Mayer (Eds.), *After the Fall of the Wall. Life Courses in the Transformation of East Germany* (pp. 140-169).
Sørensen, Aage B. (2000). Toward a Sounder Basis for Class Analysis 1. *American Journal of Sociology, 105*(6), 1523-1558.
Sorokin, Pitirim Aleksandrovich. (1927). *Social mobility*. New York: Harper and Brothers.
Soskice, David W, Estevez-Abe, M, & Iversen, T. (2001). Social protection and the formation of skills: a reinterpretation of the welfare state. In P. A. Hall & D. W. Soskice (Eds.), *Varieties of capitalism: The institutional foundations of comparative advantage* (Vol. 8). Oxford: Wiley Online Library.
Standing, Guy. (2011). *The precariat: The new dangerous class*. London: A&C Black.
Stiglitz, Joseph E. (2000). Capital market liberalization, economic growth, and instability. *World development, 28*(6), 1075-1086.

Stolper, Wolfgang F, & Samuelson, Paul A. (1941). Protection and real wages. *The Review of Economic Studies, 9*(1), 58-73.
Tarlau, Rebecca. (2013). Coproducing Rural Public Schools in Brazil Contestation, Clientelism, and the Landless Workers' Movement. *Politics & Society, 41*(3), 395-424.
Tawney, AJ, & Tawney, RH. (1934). An occupational census of the seventeenth century. *The Economic History Review, 5*(1), 25-58.
Tönnies, Ferdinand. (1887). *Gemeinschaft und Gesellschaft*. Leipzig: Fues's Verlag.
Touraine, A. (1971). *The post-industrial society: tomorrow's social history: classes, conflicts and culture in the programmed society*. New York: Random House.
Turner, HA. (1952). Trade unions, differentials and the levelling of wages. *The Manchester School, 20*(3), 227-282.
Turner, HA. (1964). The Disappearing Drift (Or, in Defence of Turner). *The Manchester School, 32*(2), 155-196.
United Nations, Department of Economic and Social Affairs, Population Division (2012). World Urbanization Prospects: The 2011 Revision. *ST/ESA/SER.A/322*. New York: Department of Economic and Social Affairs, Population Division
United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, Highlights and Advance Tables. *ESA/P/WP.228*. New York: Department of Economic and Social Affairs, Population Division
Unwin, G. (1904). *Industrial Organization in the Sixteenth and Seventeenth Centuries*. Oxford: Clarendon Press.
Urquhart, Michael. (1984). Employment shift to services: where did it come from? *Monthly Lab. Rev., 107*, 15.
Urry, John. (2000). *Sociology beyond society: mobilities for the twenty-first century*. London: Routledge.
US Bureau of Labor Statistics. (1927). Handbook of Labor Statistics 1924-1926. Washington: United States Department of Labor, Bureau of Labour Statistics.
Wan, Guanghua. (2004). Accounting for income inequality in rural China: a regression-based approach. *Journal of Comparative Economics, 32*(2), 348-363.
Woollard, Matthew. (1998). The classification of occupations in the 1881 census of England and Wales. *History and Computing, 10*(1-3), 17-36.
World Development Indicators, The World Bank. (2013a). Age dependency ratio (% of working-age population). from World Bank http://data.worldbank.org/indicator/SP.POP.DPND
World Development Indicators, The World Bank. (2013b). GDP per capita, PPP (current international $). Retrieved 27.11.2013, from http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD
World Development Indicators, The World Bank. (2013c). Population growth. from World Bank http://databank.worldbank.org/ddp/home.do
Wright, E. (1989a). A general framework for the analysis of class structure. In E. O. Wright & others (Eds.), *The debate on classes*. New York: Verso.
Wright, E. (1989b). Rethinking once again the concept of class structure. In E. O. Wright & others (Eds.), *The Debate on Classes*. New York: Verso.
Wright, E. (1997). *Class Counts: Comparative Studies in Class Analysis*. Cambridge Cambridge University Press.
Wyatt, Ian D, & Hecker, Daniel E. (2006). Occupational changes during the 20th century. *Monthly Lab. Rev., 129*, 35-57.
Zhang, Kevin Honglin, & Song, Shunfeng. (2003). Rural–urban migration and urbanization in China: Evidence from time-series and cross-section analyses. *China Economic Review, 14*(4), 386-400.