

What are the effects of job polarization on skills distribution of young workers in developing countries?



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Introduction

One of the most discussed topics in the domain of labour economics during the last couple of decades has been the polarization of employment in industrialized countries, namely the growth of high and low paying jobs and the decline of jobs paying wages around the middle of the wage distribution. Economists identify two main reasons for this phenomenon, the first one being technological progress and the second one the globalization of the world economy. Both factors have contributed to changes in the distribution of skills demanded by employers in the labour markets of industrialized countries. The technological changes experienced in the past decades have been proven to be biased towards high-skilled workers. In other words, the technological innovations have appeared to complement and increase the productivity of skilled labour (managers, professionals, etc.) and to substitute the routine tasks typical of jobs in the middle of the wage distribution (secretaries, technical assistants, etc.). Low-paying jobs, typically characterized by manual non-routine tasks (waiters, personal assistants, etc.), are less likely to be replaced by technology. Furthermore, the globalization of the world economy has facilitated the import of low-skill intensive goods produced in developing countries, where the cost of labour is substantially cheaper than in the industrialized world. The import of such goods has taken the form of both imports of final goods and of offshoring of the production of intermediate goods.

The bulk of the literature on employment polarization focuses on the industrialized world although the concepts of “skill-biased technological change” and globalization have obvious implications for the distribution of employment also in developing countries. The ILO school-to-work transition surveys (SWTS) offer an opportunity to study the phenomenon of polarization more closely from the perspective of 23 developing countries. The objective of the technical brief is to examine the skill distribution of young workers in different industries as a function of their trade openness. According to the globalization hypothesis, the jobs that are most prone to be offshored in the industrialized countries are those performed by middle-skilled workers who are, in the context of the present paper, workers with secondary education. However, once these jobs are offshored, they are often performed by workers in the developing countries with education levels at the secondary level or higher. Therefore, this paper will examine the relative occupational skills level of workers in the sectors most open to trade. Three case studies of Madagascar, Ukraine and Vietnam will be presented to better demonstrate the research topic.

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The ILO School-to-work transitions surveys (SWTS) are implemented as an outcome of the **Work4Youth (W4Y)** project, a partnership between the ILO and The MasterCard Foundation. The project has a budget of US\$14.6 million and will run for five years to mid-2016. Its aim is to “promote decent work opportunities for young men and women through knowledge and action”. The immediate objective of the partnership is to produce more and better labour market information specific to youth in developing countries, focusing in particular on transition paths to the labour market.

See the website www.ilo.org/w4y for more information.

1. A brief review of the literature¹

In recent years a main topics of interest for economists specializing in the domain of labour economics has been the so-called polarization of the labour market. Goos and Manning (2007) first defined job polarization as the growth of employment of low-skilled workers accompanied by growing employment of high-skilled workers and at the same time declining employment of middle-skilled workers. In the current literature we find multiple explanations of this phenomenon, but the two most important ones relate to technological change and international trade.² Goos, Manning and Salomons (2010) note that in the 1990s technology was seen as the main driver behind changes in the structure of employment whereas in the following two decades, the main focus was on international trade and the globalization of the world economy.

When speaking about technological change as a force driving polarization of the labour market, one assumption predominates in the literature; namely that technological changes are biased towards skilled jobs. The so-called “skill-biased technological change (SBTC)” hypothesis rests on the idea that the technological progress experienced in the industrialized world in recent decades has favored skilled workers relative to unskilled workers (Manning, 2004). Autor (2013) and Goos, Manning and Salomons (2014) also used the term “routine-biased technological change” to demonstrate the idea that the technological progress of the last decades actually substituted jobs characterized by routine tasks, namely tasks that are repetitive enough to be coded and replicated by a machine. Such jobs are not necessarily the ones that used to be carried out by the least skilled workers, but rather performed by those in the middle of the skill (and wage) distribution.

Autor (2013) finds a positive correlation between the demand for highly educated workers and the use of computers as proof of the SBTC hypothesis. Tasks that are unfamiliar are always at first assigned to human workers because of their capacity to adapt. Subsequently, as these tasks are formalized, they become candidates for automation by computers. Autor (2013) adds that the tasks most apt to computerization are those which are routine or codifiable. Autor, Katz and Kearney (2006) add that computers can serve as a substitute for tasks which are mainly repetitive and carrying out explicit sets of manual activities.

The idea of SBTC is expanded within one of the most influential papers in the literature of polarization, specifically Autor, Levy and Murnane (2003). These authors created a classification of tasks that differentiates routine and non-routine tasks. Routine tasks are defined as being easily done by a machine following accurate programming, which is in contrast to non-routine tasks that are not mastered at a level sufficient to allow programming of a machine. According to their hypothesis, machines can easily substitute the tasks that are routine and simply codified, meaning those performed primarily by middle-skilled workers. On the other hand, machines can complement the tasks that are more analytical in nature and typically performed by high-skilled workers as well as those that are non-routine manual tasks performed by low-skilled workers. However, Michaels, Natraj and Van Reenen (2014) add that computers are not able to substitute the tasks of

¹ The author is a student of Master of Science in Economics at the University of Geneva in Switzerland. He would like to thank Prof. Michele Pellizzari and Prof. Giovanni Ferro-Luzzi of the same university for their support in overseeing the collaboration with ILO and comments on the draft. Thanks are also due to Sara Elder and Yonca Gurbuzer of the ILO Work4Youth Programme for technical support on the data and editing of the draft.

² Some authors like Goos, Manning and Salomons (2010) focus also on institutional change as another explanatory factor of labour market polarization, but do not find any statistically significant results when testing for effects.

workers engaged in manual non-routine tasks. Nevertheless, as technological progress continues in this future, this effect may arise as well.

Goos, Manning and Salomons (2014) demonstrate job polarization in all 16 European countries of their sample. They find that in the case of Europe, the primary source of polarization of the labour market aligns to the SBTC hypothesis with offshoring showing a much less significant impact. Furthermore, the authors find that the highest paid occupations have shown the most substantial growth together with some of the lowest paid occupations while the occupations with median wages declined. The same outcome was already found by Goos and Manning (2007) in case of the Great Britain. Likewise, also in Great Britain, the increase in high paid jobs, described by the authors as “lovely” jobs, together with low paid jobs, classified as “lousy” jobs, is accompanied by the decline in jobs paying around median wage.

Focusing now on the second widely-accepted explanation of job polarization, the one related to international trade and focusing on the concept of offshoring According to Blinder and Krueger (2009), offshoring is a phenomenon of globalization whereby jobs “migrate” from one country to another, regardless of the fact that these jobs are done by the same company or not. One might, therefore, need to differentiate between offshoring and outsourcing, the latter being migration of jobs out of the company independently of whether these jobs stay in the country or not. Likewise, Blinder and Krueger (2009) define a job as “offshorable” if it can be shifted overseas. One of the most important papers in this area is Blinder (2009) who outlines two criteria to test whether or not a certain job may be offshored: (i) does the job requires face to face personal communication or contact with end users of the service, or (ii) can the job be done at a remote location with little or no impact on the quality of the work product delivered.

Based on these two criteria, Blinder (2009) differentiates between two sorts of services: personally-delivered and impersonally-delivered. He concludes that only the impersonally-delivered services can be offshored because personal services are related to a specific geographic region and offshoring would reduce their quality. Blinder (2007) points out that the personally-delivered services can become impersonally-delivered in the near future thanks to the technological progress.

Jensen and Kletzer (2008) add the concept of comparative advantage into the reasoning of Blinder (2009). They believe that the number of jobs lost in the United States due to the offshoring will be much smaller than the one presented by Blinder (2009). Their findings are based on the fact that jobs deemed to be at risk of offshoring are mostly low paid jobs, thus impacting less on the job market of the as a result of the United States which maintains a comparative advantage in high wage and high-skilled jobs.

Autor, Dorn and Hanson (2013) analyze the polarization of the U.S. labour market by treating each geographic region as an independent local labour market and differentiating their levels of industrial specialization. Each local labour market is different in terms of exposure to trade according to the importance of different industries. They found a significant reduction of employment in the manufacturing industry in regions that were more exposed to trade. Additionally, Blinder and Krueger (2009) argue that jobs in the U.S. are offshored more easily than the jobs located, for example, in Germany or France, because there are fewer language barriers between the U.S. and developing countries such as India. Accordingly, they estimate that almost 25 per cent of all U.S. jobs can be offshored, of which about one quarter is in manufacturing and three quarters are in other services.

Without exception, the literature on the polarization of the labour market has paid little attention to examining the labour markets of developing countries. The papers reviewed so far either study job polarization from the theoretical viewpoint, or examine the labour market of different developed countries only to prove their corresponding

hypothesis. This paper takes a different approach and studies polarization from the point of view of developing countries.

In fact, the globalization hypothesis has obvious implications not only for the labour markets of developed countries but also for those countries, typically developing countries, where jobs are offshored. Goldberg and Pavcnik (2007) show that some goods defined as unskilled-labour intensive from the point of view of a developed country become skilled-labour intensive from the point of view of a developing country once they are offshored. Therefore, jobs, which are performed by low-skilled workers in a developed country can be operated by middle-skilled workers in developing countries. Accordingly, jobs, which are in some developed countries performed by middle-skilled workers can be performed by high-skilled workers in developing countries once they are relocated. Even though unskilled workers are abundant in many developing countries, the recent research on this topic argues that workers who are better off thanks to globalization in these countries are the skilled workers relative to unskilled ones.

2. Technical challenges

As the previous part has shown, papers looking at job polarization from the viewpoint of developing countries are absent in the current literature. The recent school-to-work transition surveys (SWTS) of the ILO provide a unique opportunity to fill the gap. The SWTS were run in 25 countries between 2014 and 2015³ using a questionnaire that captures both quantitative and qualitative data relating to the labour market situations of young people between the ages of 15 and 29. The vast majority of SWTSs were implemented by the National Statistics Office with nationally-representative samples averaging 3,500 households. The surveys include numerous questions that are useful for the purpose of this paper, namely questions related to the respondent's formal education and employment history.

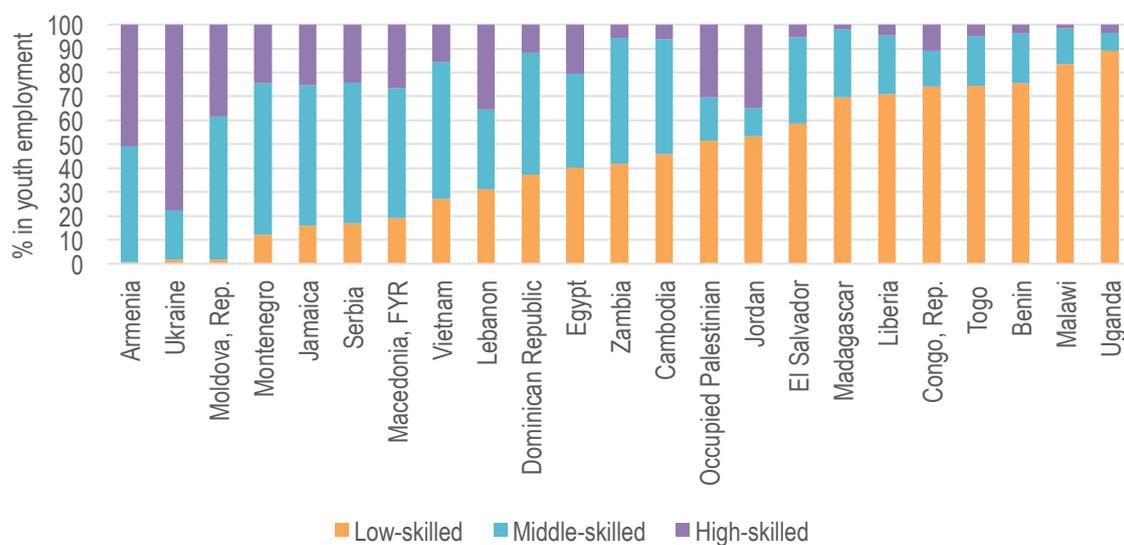
While national education categories are used in some countries, all SWTS results are mapped to the International Standard Classification of Education (ISCED) with all individuals in the samples classified according to his highest level of completed formal education. Following a common practice in the literature on employment polarization, education will be used as a proxy for the skill-level of the worker. For simplicity, three groups of workers are defined. The first group consists of *low-skilled workers*. Those are the workers who have either never attended school or only attained an elementary education or lower. The next category consists of *middle-skilled workers*, namely workers with completed secondary education. The last category is composed of *high-skilled workers*, individuals having completed post-secondary or university education. In the pooled sample of all 23 SWTS countries, 43 per cent of individuals are among the low-skilled category, 37 per cent are among the middle-skilled category and 20 per cent of individuals are in the high-skilled category.

Figure 1 shows the educational attainment of young workers in all countries of the sample. According to the data, the countries with the highest proportions of young workers with only elementary or lower education are the low-income countries, namely Benin, Liberia, Malawi, Togo and Uganda. In these countries more than one in four young worker has finished their education at the elementary level or lower. Furthermore, in El Salvador, Jordan, Madagascar, the Occupied Palestinian Territory and Republic of Congo, this is true of more than half of the employed youth. On the other hand, the proportion of youth with

³ An additional 28 surveys were run between 2012 and 2013 for a total of 53 survey covering 34 countries. The paper is based on the 23 countries of the second round that were available at the time of drafting.

elementary or lower education is very low (less than 2 per cent) in Armenia, Republic of Moldova and Ukraine. Concerning the high-skilled individuals, the differences across countries are similar as in the low-skilled workers category. In Benin, Cambodia, Dominican Republic, El Salvador, Liberia, Madagascar, Malawi, Togo, Uganda and Zambia, less than 10 per cent of the youth population has achieved university or post-secondary education, while this proportion exceeds 33 per cent in Armenia, Jordan, Lebanon, Republic of Moldova and Ukraine.

Figure 1. Youth employed population by skills level, 23 countries



Note: Current students are not included since their final levels of education area not yet known.

Source: Author's calculations using ILO 2014-2015 SWTS data (45 855 observations from 23 countries).

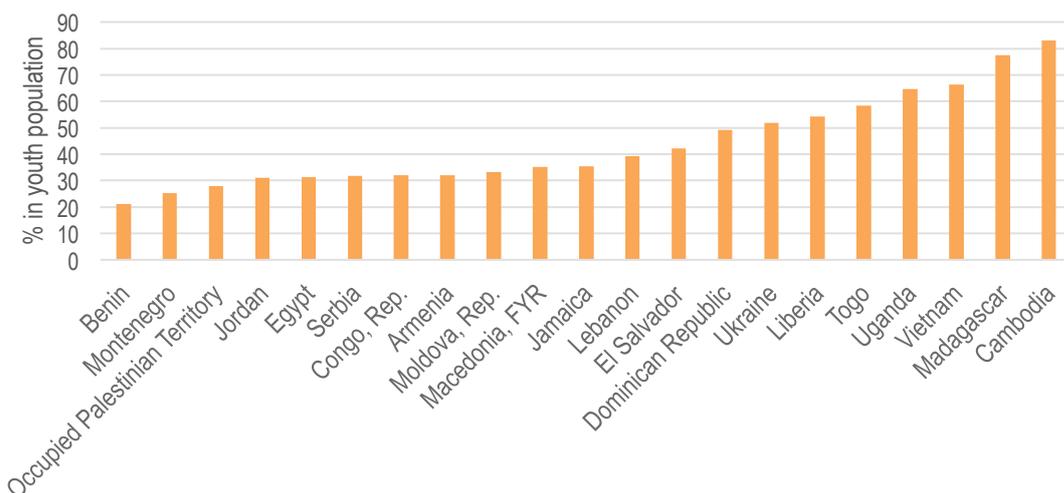
For the purpose of this study, we are interested to distinguish youth who are working at the time of the survey whose job can be categorized according to the 4th revision of the 2-digit International Standard Industrial Classification of all Economic Activities (ISIC). This distinction results in an exclusion of Malawi and Zambia, where the 2-digit ISIC codes were not available. Figure 2 presents the employed shares of youth in the remaining 21 countries. The average employment share in the pooled sample is 44 per cent. The share of working youth is highest in Cambodia and Madagascar, with more than three out of four youth employed. In Liberia, Togo, Uganda, Ukraine and Vietnam, the employed share of the youth population is more than half. On the other hand, the proportions of working youth are smallest in Benin and Montenegro, where less than one out of four youth is working.

In order to link the structure of employment with trade patterns, data on trade openness are matched to each ISIC-level at the country level (see Annex table A.1). Trade data are taken from the Organization for Economic Cooperation and Development (OECD) and include information on exports at the industry level for all countries in our sample but Armenia, Liberia and the Occupied Palestinian Territory.⁴ With the exclusion of these three countries as well as Malawi and Zambia, dropped due to the lack of information of the industry levels, the final sample considered for analysis consists of 18 countries.⁵

⁴ Annex table A.1 shows country level data on exports by sector.

⁵ Explicitly : Benin, Cambodia, Dominican Republic, Egypt, El Salvador, Jamaica, FYR Macedonia, Jordan, Lebanon, Madagascar, Montenegro, Republic of Congo, Republic of Moldova, Serbia, Togo, Uganda, Ukraine and Vietnam.

Figure 2. Share of working youth, 21 country average



Source: Author's calculations using ILO 2014-2015 SWTS data (30 254 observations from 21 countries).

3. Globalization and the distribution of skills in developing countries

This section of the paper will link the structure of employment in the SWTS countries with their openness to global trade in an attempt to investigate whether the implications of the theories of job polarization are supported by the data from the perspective of the developing world. The section is divided into two parts. First, the analysis of the sample of all the SWTS countries will be provided (section 3.1), then the focus will concentrate on three case studies (section 3.2): Madagascar, Ukraine and Vietnam. These case studies will allow an examination of the phenomenon of globalization in a more detailed manner, concentrating on a finer classification of the industrial sectors. The three countries were chosen according to the size of their samples, allowing meaningful analyses at the 2-digit industry level and also for their geographic and income distribution (as low-income sub-Saharan African country, lower-middle income Eastern European country and lower-middle income South-East Asian country).

The brief review of the literature at the beginning of this paper suggests that the most important impact of globalization and technological change is on jobs exercised by middle-skilled workers. Therefore, the main hypothesis of this paper is to examine if the skill distribution of the workers is changing with increasing trade openness.

3.1 Analysis on the pooled SWTS sample

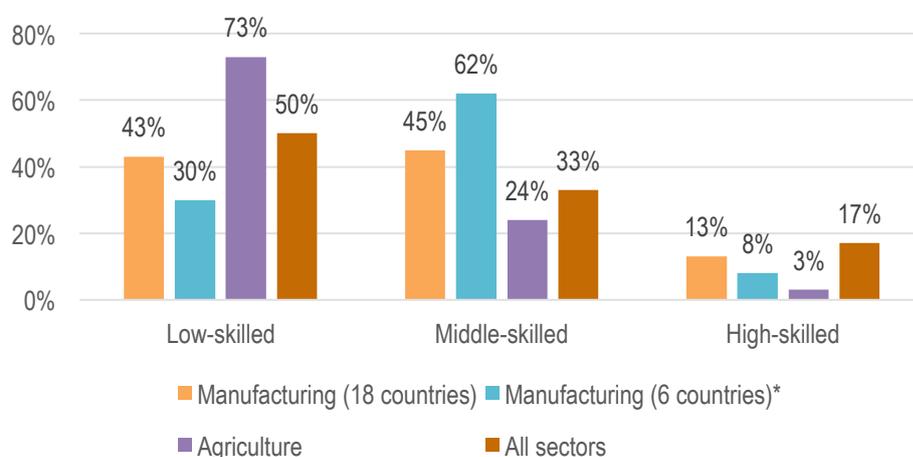
The globalization hypothesis postulates that middle-skilled jobs are moved away – or offshored – from developed to developing countries where the production costs (mostly labour costs) are lower. Consequently, the jobs that are created as a result of offshoring activities in developing countries should be mainly those for middle-skilled workers. In the review of the SWTS data one should expect to see a higher proportion of middle-skilled workers employed in sectors that export more, especially when exports are directed to industrialized countries. Nevertheless, the skills distribution of the labour market in the developed countries is likely to be very different from the skills distribution of the labour market in developing countries. Therefore, as Goldberg and Pavcnik (2007) point out, some jobs performed by lesser skilled workers in a developed country can be performed by skilled workers in a developing country. On the other hand, previous documents assessing

the SWTS have pointed to a high degree of under-education among young workers in developing countries, meaning many unskilled workers end up doing work that would normally be performed by skilled workers.⁶

On average, the manufacturing sector represents 78 per cent of all exports of the countries in the SWTS sample. Countries with the most important share of manufacturing on total exports are Cambodia and El Salvador with 97 and 94 per cent, respectively (see Annex table A.1). On the other hand, the countries where the manufacturing sector does not represent a substantial part of exports are Benin and Republic of Congo with 58 and 38 per cent, respectively. Figure 3 shows the skill distribution of workers in the manufacturing industry compared to the average of all sectors (youth employment in total). In the manufacturing sector, the proportion of middle-skilled workers is higher than the average one and at the same time, the proportion of low-skilled and high-skilled workers is smaller than the average. These findings support the hypothesis about the positive effect of trade openness on the proportion of middle-skilled workers.

In figure 3, we also look at the smaller share of countries in which the share of manufacturing on total exports is more than 85 per cent.⁷ The result is an even more pronounced difference between the skills distribution of the manufacturing sector compared to the average of total youth employment. The share of middle-skilled workers in manufacturing is as high as 62 per cent among these countries, nearly double that of the all sector average share of middle-skilled workers of 33 per cent.

Figure 3. Skills distribution of young workers in manufacturing, agriculture and all sectors of youth employment, 18 country average



Note: Data are based on the 18 country average except for the reference to Manufacturing (6 countries)* which covers those countries of the sample where the share of manufacturing on total exports is more than 85 per cent.

Source: Author's calculations using ILO 2014-2015 SWTS data (30 771 observations from 18 countries).

Agriculture also represents an important share of exports (12 per cent in the pooled sample of 18 countries), however, the structure of employment in this sector does not seem to be polarized around middle-skilled workers. Rather, figure 3 shows the skills distribution of young workers in agriculture is much more low-skilled in nature. Nearly three out of four workers (73 per cent) in agriculture has elementary education or lower. Furthermore, the share of high-skilled workers in this sector is only 3 per cent compared to

⁶ See, for example, Elder et al. (2015), p. 21.

⁷ These countries are Cambodia, Dominican Republic, El Salvador, FYR Macedonia, Serbia and Vietnam.

17 per cent in total youth employment. Hence, even though the agriculture sector represents a substantial part of exports in some countries, employment does not seem to be polarized. This probably has to do with the scale of agricultural enterprises in many of the SWTS countries, which are likely to be more geared toward agriculture for own production or for small-scale market operations rather than large scale operations aiming toward the export market. As the major share of workers employed in the agriculture sector is represented by low-skilled workers, both in developed and developing countries, the incentive to offshore these activities to cut costs is smaller compared to the manufacturing or services industry.

In the following section, the sector-specific analysis for three different countries will be presented. Nevertheless, the aim of this paper is to study the phenomenon of polarization mainly in the general context. To this purpose, three different regressions were run. Table 1 gives the findings from a linear regression model aimed to identify the relationship between export (as measure of trade openness) and skills levels of young workers. To improve the quality of the regression, the data were aggregated by country and by ISIC codes such that the percentage of low-skilled, middle-skilled and high-skilled workers per sector per country was obtained. Furthermore, the country-level fixed effects were taken into account and the regression was weighted by respective number of observations.

Table 1. Coefficients from a linear regression model explaining the relationship between skills level of young workers and trade openness

	edulL (1)	edulM (2)	edulH (3)
Export	-0.436*** (0.077)	0.407*** (0.073)	0.029 (0.052)
Constant	0.667*** (0.007)	0.281*** (0.006)	0.050*** (0.004)
R ²	0.84	0.79	0.72

Notes: N=293. Standard errors are in parentheses. All models include country-level fixed effects and are weighted by the number of observations in the respective sector of a country in the sample. *** Significant at the 1 percent level. The independent variable export represents the trade openness of the specific sector, therefore the share of the respective sector on the total exports of the country.

Source: Author's calculations using ILO 2014-2015 SWTS data (18 countries).

The first regression specification (1) examines the relationship between skills level of young workers and trade openness using a sample composed of low-skilled workers. The significantly negative relationship between trade openness and skills level is supporting the hypothesis of the paper. The second regression (2) studies the same relationship for the middle-skilled workers. There is a strong, positive relationship between trade openness and skills level in this case, statistically significant at a 99 per cent level. Finally, the third regression (3) was run with the same specification but taking into account the sample composed only of high-skilled workers. The relationship is slightly positive, however in this regression, the output is not statistically significant. This output thus provides further evidence to support the hypothesis that globalization is reflected in a positive relationship between trade openness and employment of middle-skilled workers.

3.2 The case studies of Madagascar, Ukraine and Vietnam

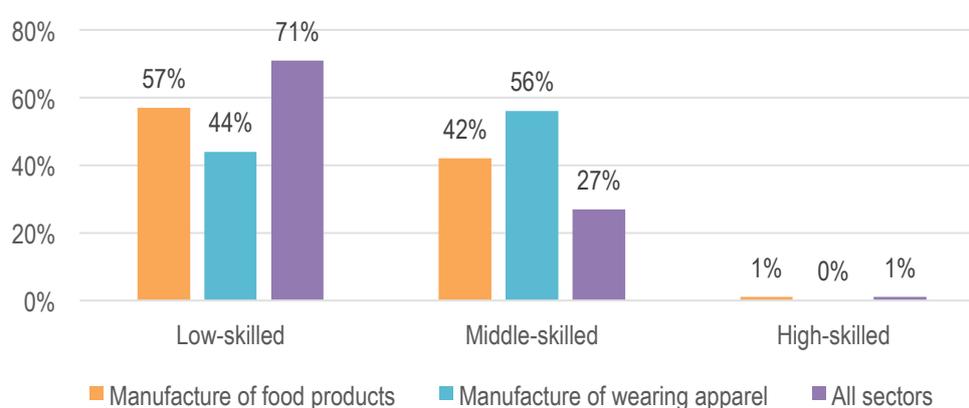
This section of the paper examines the skills distribution of young workers in Madagascar, Ukraine and Vietnam, where sample sizes were sufficiently large at the detailed sectoral level. The countries are also selected because of their geographic distribution – Madagascar (Sub-Saharan Africa), Ukraine (Eastern Europe) and Vietnam

(South-East Asia) and diversity of income levels – low income (Madagascar) and middle income (Ukraine and Vietnam).⁸ For each country, detailed sectors that represent the most important share of exports are identified.

3.2.1 Madagascar

Of the 18 countries in the sample, Madagascar is the least export-oriented.⁹ The compositions of exports across sectors are 17 per cent agriculture and 76 per cent manufacturing (see Annex table A.1). Figure 4 shows the skills distribution of young workers in the specific sector of manufacture of food products (ISIC 10) compared to the average skills distribution for the totality of sectors in the country (total youth employment). The manufacture of food products sector was chosen because it represents one of the sectors most inclined towards the export market and also employed a large enough share of young workers in the sample. Furthermore, the manufacture of food products represents more than 10 per cent of all Madagascar’s exports. Even though the majority of workers in this sector is still low-skilled, the relative number of middle-skilled workers is significantly greater compared to the overall sector average with 42 per cent compared to 27 per cent respectively.

Figure 4. Skills distribution of young workers in the manufacture of food products, manufacture of wearing apparel and all sectors of youth employment, Madagascar



Source: Author’s calculations using ILO SWTS 2015 in Madagascar (3 489 observations).

Figure 4 also displays the skills distribution of workers employed in the manufacture of wearing apparel versus the overall skills distribution of employed youth. The manufacture of wearing apparel (ISIC 14) represents more than one-fifth of total exports in Madagascar. The reason to represent graphically this specific sector is the fact that the manufacture of wearing apparel is the second most exporting sector of Madagascar and the number of surveyed individuals employed in this sector is sufficient for a further examination. The skills distribution in this specific sector is substantially different from the all employed average given the fact that majority of workers are middle-skilled compared to only 27 per cent in all sectors.

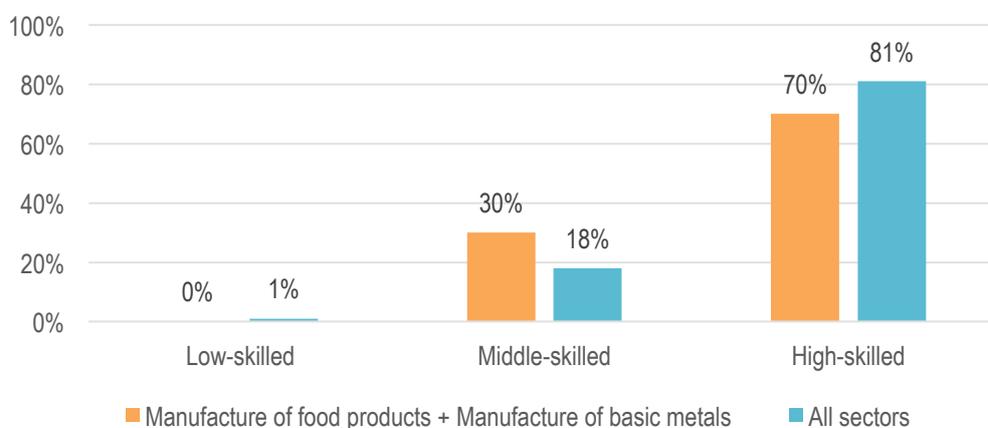
⁸ Income levels are according to World Bank income classification, July 2016.

⁹ Based on data from the OECD, STAN Bilateral Trade Database 2015.

3.2.2 Ukraine

Ukraine is the second most export-oriented country of the 18 countries analyzed. Unlike Madagascar, it is considered to be a middle-income country with agriculture and manufacturing representing 18 and 72 per cent, respectively, of total exports (Annex table A.1). Figure 5 shows the skill distribution of young workers in the manufacture of food products and manufacture of basic metals combined (ISICs 10+24). These sectors are selected because they jointly represent a significant portion (40 per cent) of the total exports of the country. The data show a substantially larger share of middle-skilled workers in these two sectors compared to total youth employment (30 per cent compared to 18 per cent). Even though the skill-distribution does not support the positive relationship between the trade openness and employment of middle-skilled workers in absolute terms, this can be explained by different skills distribution of the Ukrainian labour market. As discussed in the second part of this paper, the proportion of middle-skilled workers compared to high-skilled workers is very low in Ukraine. Therefore, some middle-skilled jobs that are eventually offshored from developed countries to Ukraine have to be performed by high-skilled workers because of the specific skills distribution of the local labour market. In fact, as many as 32 per cent of young workers are classified as overeducated for their jobs in Ukraine, according to the recent analytical report of the SWTS (Libanova et al., 2016).

Figure 5. Skills distribution of young workers in the manufacture of food products and basic metals and all sectors of youth employment, Ukraine



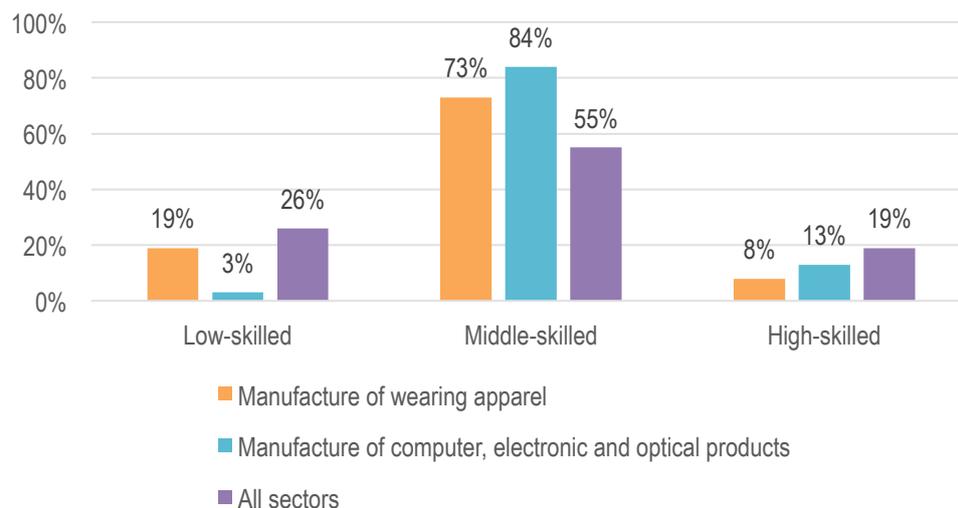
Source: Author's calculations using ILO SWTS 2015 in Ukraine (1 274 observations).

3.2.3 Vietnam

Vietnam is the most export-oriented country of the countries sampled.¹⁰ The volume of exports of Vietnam is almost identical to the aggregated volume of exports of all other 17 countries combined. The manufacturing sector makes up 83 per cent of Vietnam's exports. Figure 6 shows the skills distribution of young workers in the manufacture of wearing apparel (ISIC 14), which represents 13 per cent of total exports. The share of middle-skilled workers in this export-oriented sector is significantly higher compared to that of all sectors at 73 and 55 per cent, respectively. At the same time, the shares of low-skilled and high-skilled young workers are lower in comparison to all young workers in the country.

¹⁰ Based on data from the OECD, STAN Bilateral Trade Database 2015.

Figure 6. Skills distribution of young workers in the manufacture of wearing apparel, manufacture of computer, electronic and optical products and all sectors of youth employment, Vietnam



Source: Author's calculations using ILO SWTS 2015 in Vietnam (1 246 observations).

Lastly, figure 6 also shows the skills distribution of young workers engaged in the manufacture of computer, electronic and optical products (ISIC 26). This sector represents more than one fourth of all the exports of Vietnam. The share of middle-skilled workers is significantly higher in this sector compared to other sectors (84 per cent compared to 73 per cent in the manufacture of wearing apparel and 55 per cent for all sectors combined).

4. Concluding remarks

The principal aim of this technical brief is to examine the labour markets of various developing countries in order to study the phenomenon of the job polarization. The current literature, summarized in section 1, is dedicated almost entirely to the examination of job polarization by studying the labour markets of developed countries. Therefore, the attempt here is to fill a knowledge gap by looking at job polarization from a developing country perspective.

In the first part of the empirical section, the SWTS datasets were explored to demonstrate the impact of globalization, viewed in terms of trade openness, on the skills distribution of labour markets in developing countries, and more specifically, on particular sectors of youth employment. In the second part, three case studies were presented. The general conclusion of our investigation is that there is a positive relationship between employment of middle-skilled workers and the relative trade openness of the sector. Given that levels of educational attainment in many developing countries are still heavily tilted towards lower levels but with an increasing trend toward secondary-level attainment, a push toward trade openness and offshoring could thus offer an expanding opportunity for absorption of emerging young labour market entrants in developing countries. Nevertheless, when it comes to certain middle-income countries with a high education base, as in the case of Ukraine, the increase in middle-skilled employment opportunities due to offshoring can result in a situation in which jobs performed by relatively unskilled workers in developed country are taken up by skilled workers in the developing country once they are offshored.

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Annex tables

Table A.1 Exports by sector and SWTS country (%)

ISIC	Benin	Cambodia	Congo, Rep.	Dominican Republic	Egypt	El Salvador	Jamaica	FYR Macedonia	Jordan
ISIC 1	39.9	1.7	0.0	8.2	9.2	3.1	4.1	5.2	12.2
ISIC 2	0.2	0.0	0.6	0.0	0.0	0.2	0.0	0.0	0.0
ISIC 3	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0
ISIC 5	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
ISIC 6	0.0	0.0	61.2	0.0	11.9	0.0	0.0	0.1	0.0
ISIC 7	0.0	0.0	0.0	0.9	0.0	0.0	9.0	3.2	0.0
ISIC 8	0.5	0.0	0.0	0.1	1.1	0.0	0.3	0.6	5.9
ISIC 10	5.3	2.8	0.1	7.4	9.0	14.5	12.3	5.5	6.0
ISIC 11	0.0	0.1	0.1	1.3	0.1	1.9	5.5	1.6	0.5
ISIC 12	0.0	0.2	0.0	5.7	0.1	0.0	0.0	0.4	0.9
ISIC 13	1.5	0.6	0.0	4.8	5.8	5.4	0.0	1.9	1.1
ISIC 14	0.0	50.0	0.0	8.3	4.8	39.4	0.1	13.5	15.4
ISIC 15	0.0	4.3	0.0	4.6	0.8	1.3	0.0	1.6	0.1
ISIC 16	1.1	1.1	0.5	0.1	0.2	0.1	0.1	0.1	0.3
ISIC 17	0.0	0.0	0.0	0.9	1.8	5.0	0.1	0.2	2.5
ISIC 18	0.0	36.8	0.0	0.0	0.0	0.1	0.1	0.0	0.0
ISIC 19	10.8	0.0	0.6	5.7	11.0	1.9	20.6	1.4	0.1
ISIC 20	0.6	0.0	0.1	2.9	14.3	4.0	38.1	18.6	22.8
ISIC 21	0.2	0.0	0.0	0.5	1.3	2.1	0.2	1.7	7.9
ISIC 22	0.3	0.2	0.0	4.5	3.0	5.9	1.0	1.7	3.3
ISIC 23	4.2	0.0	0.0	1.4	4.3	1.0	2.5	1.1	1.3
ISIC 24	6.6	0.5	0.3	18.2	7.7	3.1	0.0	15.3	1.9
ISIC 25	2.3	0.1	0.3	0.7	1.6	1.1	0.2	1.0	2.4
ISIC 26	1.6	0.3	0.5	1.6	2.9	3.7	0.5	0.7	2.2
ISIC 27	0.7	0.3	0.1	5.9	5.3	0.6	0.2	4.4	3.0
ISIC 28	11.2	0.2	1.0	0.8	0.4	0.6	0.3	9.3	2.6
ISIC 29	1.0	0.0	1.6	0.3	0.7	0.9	0.4	6.6	1.2
ISIC 30	9.9	0.0	32.9	0.1	0.0	0.0	0.3	0.4	1.5
ISIC 31+32	0.0	0.0	0.0	13.3	1.4	1.6	0.0	2.1	3.1
Agriculture (ISIC 1-3)	40.2	1.7	0.6	8.2	9.5	3.3	4.2	5.3	12.2
Manufacturing (ISIC 10-32)	57.5	97.4	38.0	88.8	76.5	94.0	82.5	89.1	80.1

Table A.1 (cont).

ISIC	Lebanon	Madagas car	Moldova, Rep.	Montene gro	Serbia	Togo	Uganda	Ukraine	Vietnam
ISIC 1	5.9	15.9	21.2	1.0	7.0	14.0	30.6	16.1	5.4
ISIC 2	0.0	0.0	0.0	2.4	0.1	0.1	0.1	0.6	0.1
ISIC 3	0.0	0.9	0.0	0.0	0.0	0.0	0.1	0.0	0.1
ISIC 5	0.0	0.0	0.0	0.7	0.0	0.1	0.0	1.0	0.7
ISIC 6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	5.6
ISIC 7	0.0	4.3	0.0	5.3	0.3	0.3	0.1	6.4	0.2
ISIC 8	0.5	1.4	0.1	0.6	0.1	16.5	0.1	1.1	0.1
ISIC 10	14.7	9.6	16.9	8.6	11.3	8.9	21.3	13.8	11.1
ISIC 11	3.0	0.4	7.9	6.7	1.4	2.4	2.4	0.5	0.2
ISIC 12	0.0	0.1	0.4	1.8	1.9	0.0	3.7	0.6	0.2
ISIC 13	1.3	2.7	2.9	0.1	1.2	3.5	1.7	0.5	3.2
ISIC 14	2.6	20.6	11.7	0.3	3.9	0.1	0.2	1.1	12.9
ISIC 15	1.2	0.6	2.1	0.2	2.3	0.1	2.9	0.6	8.1
ISIC 16	0.4	0.7	0.4	7.1	1.6	2.4	0.5	1.7	1.6
ISIC 17	3.2	0.5	0.5	0.9	2.5	0.2	0.8	1.8	0.5
ISIC 18	0.2	0.7	0.0	0.1	0.1	0.0	0.0	0.0	0.0
ISIC 19	1.1	3.8	0.5	4.8	2.1	1.0	5.7	1.4	0.9
ISIC 20	10.9	2.9	2.8	1.8	5.2	6.5	3.3	5.7	2.4
ISIC 21	1.2	0.0	3.9	2.1	1.6	0.3	0.4	0.5	0.1
ISIC 22	3.6	0.2	1.7	0.5	7.3	10.7	1.3	1.0	2.1
ISIC 23	1.3	0.0	2.0	0.3	1.1	12.2	4.9	1.0	1.6
ISIC 24	13.4	31.0	0.3	28.8	8.1	8.8	5.5	26.7	2.3
ISIC 25	3.1	0.2	1.2	2.1	4.4	1.0	1.1	1.5	1.5
ISIC 26	1.5	0.4	1.5	0.7	1.6	0.6	2.8	1.4	25.1
ISIC 27	7.7	0.1	9.5	0.8	7.3	0.1	0.4	2.2	3.1
ISIC 28	4.3	0.7	2.2	4.8	4.5	3.3	2.5	3.8	2.5
ISIC 29	1.0	0.3	3.4	1.2	15.2	1.2	2.6	2.5	2.3
ISIC 30	0.7	0.3	0.4	1.8	1.0	0.8	2.0	3.4	1.2
ISIC 31+32	7.0	0.8	5.2	0.7	3.4	3.9	0.5	1.1	4.4
Agriculture (ISIC 1-3)	5.9	16.8	21.3	4.0	7.1	14.2	30.8	17.7	6.2
Manufacturing (ISIC 10-30)	83.2	76.5	77.4	76.1	89.0	67.9	66.4	72.7	87.1

Note: Exports presented by sector and country for the year 2014 except for the sectors from 31 to 99 which are non-exporting sectors (with corresponding volumes of export not significantly different from 0).

Source: Author's calculations using STAN Bilateral Trade Database, OECD 2015.

