Measuring the Costs of Coercion to Workers in Forced Labour

Alexandra Vinogradova, Michaëlle De Cock, Patrick Belser

Introduction

What are, in addition to the human suffering, the financial costs of coercion to people who work in forced labour? In other words, how much money is "stolen" from people in forced labour? Answering this question requires some estimate of the net *opportunity cost* of being in forced labour, i.e. the amount of income that is lost because a person is in forced labour instead of being free. In a general sense, the cost of coercion can be defined as the difference between a victim's actual income in forced labour and what he or she would have earned doing the same job in a free labour relationship.

Research over the last few years has shown that the loss of income associated with coercion can be traced to two main sources. The first source is the underpayment of wages. Indeed, it can be argued that economic exploitation is the main reason why some employers use coercion. In most cases, people in forced labour receive wages that are lower than the market wage and in some cases these wage payments fall short of the subsistence minimum. People in forced labour often receive wages net of some artificial deductions imposed in a discretionary way by their employer. For example, victims may be overcharged for the cost of their accommodation – a cost which is often directly deducted from the victims' nominal wage. Workers in bonded labour, who repay a loan through their work, may face deductions for food or housing, on which employers charge a hefty premium over the market price. These deductions all contribute to further reducing the net payments received by people in forced labour.

Underpayment of wages includes forced overtime and other forms of "excessive work" which are not adequately remunerated. Forced labourers typically work longer days and longer weeks than free workers, sometimes up to 16 hours a day for seven days a week. This overtime is not remunerated at a higher rate than regular working hours; at best forced labourers receive their usual hourly wage. In addition to the longer working hours, the "excessive work" sometimes includes the work of the family members, such as wives and children who contribute to the production of goods and services but receive no payment. All these forms of unpaid or underpaid "excessive work" should be taken into account when estimating the total cost of coercion. Our methodology is presented in chapter 1.

The second source of lost income that we consider arises mainly in cases of human trafficking: it is the financial costs associated with the recruitment process. Migrant workers who are trafficked into forced labour often incur a series of costs linked to their recruitment, including payments to a recruitment agency or a broker, funding a particular type of training necessary for being eligible for admission to the destination country, acquiring language skills, or payment for the visa and transportation. Almost no systematic economic research exists on this topic. We therefore compiled case studies that contained some information of the economic aspects of human trafficking, from which we derived a simple model which is presented in chapter 2.

Both components of the cost of coercion, namely the underpayment of wages and the cost of recruitment are examined only for victims of forced labour for the purpose of economic exploitation exacted by private actors. It excludes victims of forced prostitution as well as victims of forced labour imposed by the State.

1. Estimating the cost of coercion from the underpayment of wages

1.1. Methodology

In the context of this research, profits from economic exploitation of forced labour are defined as an "employer's" total value-added minus payment of wages. The cost of coercion (to workers) from the underpayment of wages, by contrast, is defined as the difference between usual wages paid to free workers and the lower wages paid to people in forced labour. This is illustrated in figure 1 below. In normal times, the wages of free workers are equal to the so-called labour income share (LIS). With workers in forced labour, however, a certain proportion of the labour income share goes instead into the pockets of their "employers". Hence, the cost of coercion can be understood as a form of "underpayment of wages" or, from the "employer's" side an "extra profit" from coercion.

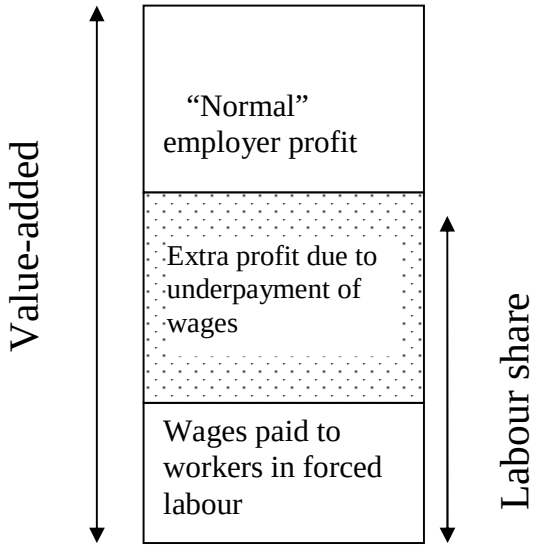


Figure 1 : Cost of coercion from underpayment of wages

To estimate these "extra profits", we first calculate the difference between the usual share of value-added that goes to low skilled labour (i.e. labour stripped of human capital) and an estimate of the actual wage payments made to forced labourers. We then multiply the average underpayment of wages by the number of forced labourers. The extra-profits are calculated for a selected number of activities in three different economic sectors, namely agriculture, industry (mining, construction, manufacturing-especially garment and apparel), and services (hotels and restaurants, and domestic helpers).

According to the ILO Policy and Integration Department[1], the average share of labour in production is around 50% in the Industrialized countries and Asia, 40% in Latin America and Middle East and North Africa and as low as 30% in Sub-Saharan Africa. In our study we apply a more refined LIS, that is, we assume that labour income share varies not only among regions but also among economic sectors. Unfortunately, there are not too many studies which estimate LIS in the three main economic sectors, namely, agriculture, industry and services. The studies by Hayami and Ruttan (1985) and Mundlak (2001) estimate the LIS in agriculture to be around 0.7. The same figure was used by Restuccia, Yang and Zhu (2003) for calibrating their model of agricultural productivity. A more recent study by Young and Zuleta (2008) shows that the economy-wide share of raw labour, i.e. labour stripped from human capital, was on average 0.3 in the United States from 1949 to 1996. The conventional figure, used by economists for calibrating the economy-wide production function, is 0.66 or 2/3[2]. The calibration that we use in this study will be discussed in more detail in a later section.

[1] Lübker, Malte, "Labour Shares", ILO, Policy and Integration Department, Technical Brief No.01
[2] For model calibrations it is frequently assumed that labour income share is on average 2/3, while capital share is 1/3. These are, however, very rough estimates and they refer to en economy average, rather than to a particular sector. Obviously, various sectors have different distribution of income among the factors of production and, moreover, they do not employ identical inputs.

In sum, the extra-profits from exploitation of forced labour are estimated for a selected number of economic activities in the three economic sectors. This is done by taking the difference between the labour share and the actual payments to forced labourers, who are assumed to receive wages equal to 80 percent of the official minimum wage (still a rather conservative assumption).

Hence, the work-horse formula for calculating under-payment of wages is:

$$\Pi_i^c = \pi_i^c N_i^c = \sum_{i=1}^{7} (\alpha_i^c va_i^c - w_i^c) N_i^c, \qquad (1)$$

where αi is the labour share in production, vai is the value added per worker, ωi is the actual wage payments to people in forced labour, and Ni is the estimated number of forced labourers in sector i. The superscript c refers to a particular country. The term in the parentheses represents the average “underpayment of wages” per worker in sector i in country c.

The difficulty with this formula is that we do not know the number of victims of FL in each country but only by country groups (regions). Therefore, we cannot apply equation (1) directly. Only regional estimates of forced labour are available from Belser, de Cock, and Mehran (2005), "ILO Minimum Estimate of Forced Labour in the World". The country groups include "Industrialized Economies" (IE), "Transition Economies" (TE), "Asia\&Pacific" (AS), "Latin America\&Caribbean" (LA), "Sub-Saharan Africa" (SS), and "Middle East & North Africa" (MENA). Hence we can calculate regional averages and then sum the estimates across all country groups to obtain a global estimate.

Another problem is that many countries in our sample, especially developing countries, lack data or have data of poor quality. Therefore, we have to modify our procedure an approximate regional averages by taking two or three representative countries in each region. For the "Industrialized Countries" we chose USA and France, for "Transition Economies" - Belarus, Kazakhstan, and Russia, for "Asia\&Pacific" - China, India, and Philippines, for "Latin America\&Caribbean" -

Brazil, Paraguay, and Bolivia, for "Sub-Saharan Africa" - Mali and South Africa, and finally for "Middle East and North Africa" - Egypt, Israel, and United Arab Emirates. The choice of these countries was based on their relevance to the forced labour problem and also on their weight in the corresponding region.

1.2. The formal procedure

- Calculate value added per worker in each country in each sector as

$$VAW_i^c = \frac{VA_i^c}{L_i^c},$$

where VA_i^c and L_i^c are the value added and the number of workers, respectively, in sector i in country c.

- Compute labour value added

$$LVAW_i^c = LIS_i^c \times VAW_i^c,$$

where LIS_i^c stands for the labor income share in sector i in country c.

- Calculate the labour cost per worker as 80% of the minimum wage in the corresponding country (ω^c)[3]

- Calculate under-payment of wages per worker by sector by country as :

$$\pi_i^c = LVAW_i^c - 0.8w^c.$$

- Average across the two or three representative countries to get a regional figure for under-payment of wages per worker in forced labour by sector, π_i^R.

- Calculate the number of forced labourers by sector in each region.

3 Numerous case studies show that forced workers receive less then the official minimum wage, on average 80% of it.

- Calculate the distribution of forced labour ($FLdist^c$) among the sectors in each representative country, assuming that FL is distributed among the three sectors in the same proportion as the total employed labour is distributed in these sectors.

- Average across the two representative countries in each region to get average distribution of forced labour by sector

- Calculate the number of victims of forced labour by sector by sector by regions as :

$$N_i^R = FLdist^R \times N^R.$$

- Calculate FL under-payment of wages by sector by region:

$$\Pi_i^R = \pi_i^R \times N_i^R.$$

- Calculate FL under-payment of wages in each region by summation over all three sectors

$$\Pi^R = \sum_{i=1}^{3} \Pi_i^R.$$

- Calculate total world FL under-payment of wages:

$$\Pi = \sum_{R=1}^{6} \Pi^R.$$

1.3. The Data

Our calculations use the latest available data, which refers to the year 2007. In order to calculate extra-profits per worker, we need the following data for each country: the value added by sector, the share of labour contribution to production, employment by sector, and the minimum wage. The data on the value added is available from the online UN database[4]. The data on employment is taken from the ILO database

[4] See Appendix for data sources

(LABOURSTA) and from the online resources[5]. The data for the minimum wages is taken from the ILO wage database (TRAVAIL) as well as from national sources[6].

The value added per worker in each sector in each country is obtained by dividing the total value added in a given sector, in a given country, by the number of employed people in that particular sector in that country. The labour income share (LIS) is assumed to vary across sectors and regions. It is calibrated to 0.7 in agricultural sector in all regions except Latin America (LA) and Sub-Saharan Africa (SS). This figure is consistent with estimates reported in Hayami and Ruttan (1985) and Mundlak (2003). Agricultural LIS in LA and SS is calibrated to 0.9 under the assumption that labour is the major input in agricultural production in countries of this region. LIS in industrial sector is calibrated to 0.3 in Industrialized Economies, based on the study by Young and Zuleta (2008). In Transition Economies, Latin America and MENA it is set to 0.5, in Asia\&Pacific and Sub-Saharan Africa to 0.4[7]. We have not been able to find any studies that estimate labour income share in services sector. We assume that it is equal to the economy average for all regions. It is widely accepted in the economics literature that the average labour income share equals two thirds or 0.66, so we use this figure in our calculations for services sector. Table 1 summarizes the calibration for LIS.

Table 1: Labor Income Share

Sector	IE	TE	AS	LA	SS	MENA
agri	0.70	0.70	0.70	0.90	0.90	0.70
indu	0.30	0.50	0.40	0.50	0.40	0.50
serv	0.66	0.66	0.66	0.66	0.66	0.66

[5] http://www.nationmaster.com
[6] http://www.ilo.org/public/english/protection/condtrav/

[7] See discussion in subsection 2.1

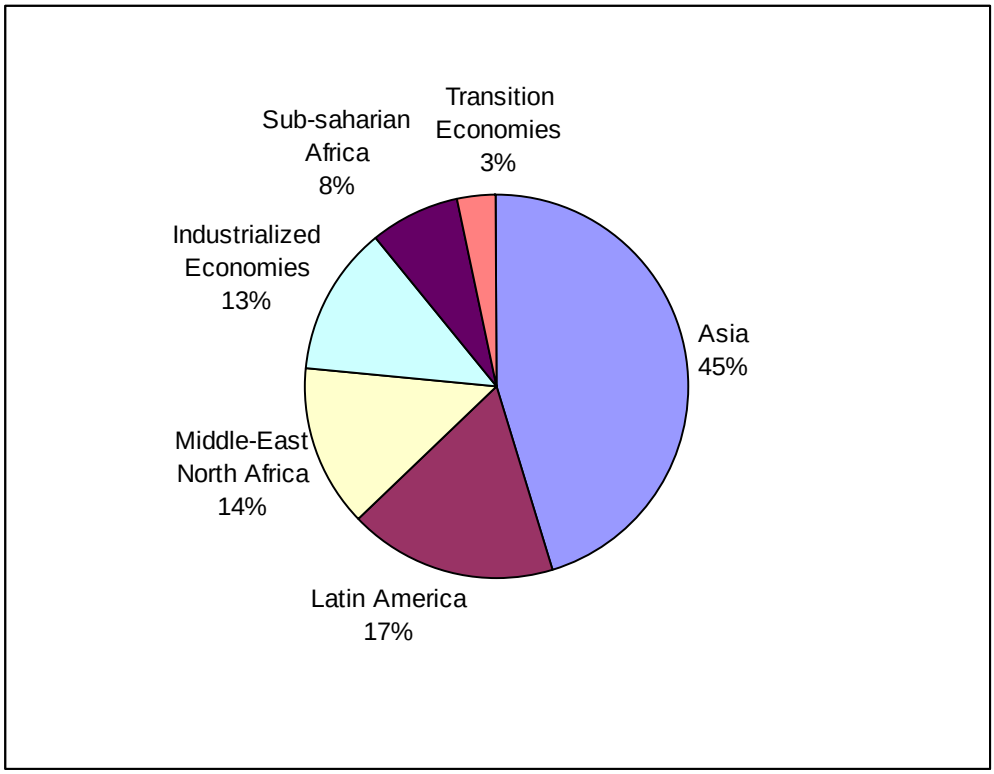
1.4. Results: The underpayment of wages

With this approach we estimate the total costs of coercion from the underpayment of wages to be equal to $19.56 billion (see Table2). The largest profits from economic exploitation of FL are realized in Asia and Pacific (47.3\%), followed by Latin America and the Caribbean (16.8\%) and Middle East\&North Africa (12.2\%). Transition economies have the smallest share of profits amounting to only 2.3% (see Figure 2)

Table 2: Cost of coercion from the underpayment of wages by region, 2007 (USD)

Region	Cost of coercion
Industrialized Economies	2,508,368,218
Transition Economies	648,682,323
Asia	8,897,581,909
Latin America	3,390,199,770
Sub-Saharan Africa	1,494,276,640
Middle-East North Africa	2,658,911,483
Total	**19,598,020,343**

Figure 2: Cost of coercion from the underpayment of wages by region, 2007

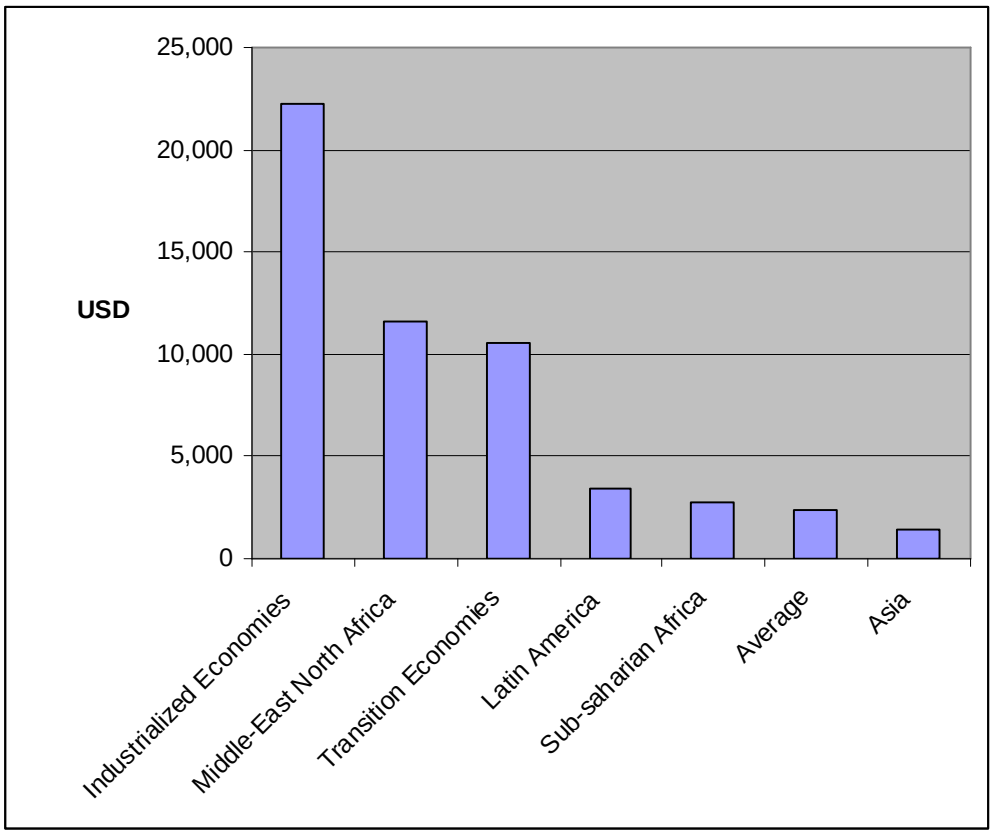


When we calculate underpayment of wages per victim of forced labour, we find that the figure is highest in the Industrialized countries, with $22'198 per victim per year, followed by the Middle East and North Africa with $11’611, and Transition Economies with $10’548 per victim per year (See Table 3). The Asian region has the smallest figure, amounting to about $1'440 per victim per year. The average cost per victim is calculated by dividing the total cost by the total number of victims in economic exploitation in the world. Our results show that on average the cost of coercion due to underpayment of wages amounts to $2'414 per victim in 2007 (see figure 3).

Table 3: Underpayment of wages per forced labourer by region, 2007 (USD)

Region	Underpayment of wages	Number of victims	Cost per victim
Industrialized Economies	2,508,368,218	113,000	22,198
Middle-East North Africa	2,658,911,483	229,000	11,611
Transition Economies	648,682,323	61,500	10,548
Latin America	3,390,199,770	995,000	3,407
Sub-saharian Africa	1,494,276,640	537,500	2,780
Asia	8,897,581,909	6,181,000	1,440
Total	19,598,020,343	8,117,000	2,414

Figure 3: Cost of coercion from underpayment of wages per worker per region



2. Estimating the cost of recruitment

As already mentioned in the introduction, the cost of coercion is not limited to the underpayment of wages. The journey into forced labour often starts with a payment made to recruitment agents, which also needs to be added into the equation. Based on known cases, trafficked victims have been observed to pay recruitment costs which vary from US$ 150 in poor regions to an average of more than US$ 5'000 for securing a job in industrial countries. On average, it appears that victims of trafficking pay approximately three months of the wages they will get once at destination to secure their recruitment. In absence of more precise data, we therefore use this guess-estimate to calculate the cost of recruitment by region and by sector of activity. The total amounts to almost USD 1,4 billion.(see Table 4).

Table 4 : Cost of recruitment per victim of trafficking by region

Region	Trafficked victims	Cost of recruitment per victim	Total cost of recruitment
Industrialized Economies	74,133	5,399	400,270,777
Middle-East North Africa	203,029	2,717	551,719,286
Latin America	217,470	977	212,396,124
Transition Economies	59,096	722	42,675,823
Asia	408,969	349	142,855,489
Sub-saharian Africa	112,444	151	16,994,438
Total	**1,075,141**	**1,271**	**1,366,911,936**

3. Conclusions and recommendations for future research

Although there are many assumptions involved, our paper has shown that the cost of coercion to workers in forced labour is substantial in both absolute and per worker terms. Using an original methodology, our paper estimates that for the 8.1 million victims who are coerced into labour exploitation these costs include the under-payment of $19.56 billion in wages. In addition, those among them who were trafficked are estimated to pay another $1.4 billion for abusive recruitment fees. Hence, the total cost of coercion to workers in forced labour amounts to approximately US$ 21 billion. Given the large amount of unknown facts and figures still characterise (ing?) the contemporary reality of forced labour, these figures must not be taken as final, but should rather be used as a starting point for future reflexion and research.

A number of assumptions made in the present study are open to further research. One particular question relates to the sectoral distribution of forced labourers. In the present study, we have assumed – for lack of better data - that forced labourers are distributed among the three relevant sectors of economic activity in the same proportion as total employed people. This, however, is questionable and would benefit from further research. Another key assumption is that the number of people in forced labour has remained unchanged since the ILO's first estimate in 2005. Here again, much remains to be done to fully understand the true magnitude of forced labour and to assess recent trends, including the impact of the recent global economic crisis of forced labour.