

Has globalization shrunk manufacturing labor share in transition economies?

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Abstract

The objective of this paper is to investigate the nexus between the labor share and globalization in transition economies, with a reference to the skill intensity. We put these developments in the context of the structural and reform developments in transition economies. We rely on the predictions of the efficient bargaining model, whereby globalization forces are set to affect workers' market bargaining power, which then produces certain developments in the labor share. We use industry-level data for 23 transition economies of Central and Southeast Europe and the Commonwealth of Independent States over the late transition period of 2000-2015. Results robustly suggest that globalization forces played important role for the stagnant labor shares in transition economies, mainly in low-skill industries. Workers' shares in high-skill industries largely remained intact. Results further suggest that the negative effect has been the strongest for the low-skilled workers in the earlier phases of country's development and then lessened or vanished as countries turned a higher development stage. The key finding advises that if governments of transition countries attempted to or undertook steps to seize globalization by offering 'cheap labor', then it has been the wrong strategy.

Keywords: labor share; globalization; skill intensity; transition economies

JEL classification: E25; F16; F66

1. Introduction

In a standard trade theory framework, global trade and finance flows increase the efficient allocation of resources, resulting in higher and diversified growth, more jobs, economies' restructuring and spillover of technical innovation (Krugman and Obstfeld, 1994; Estrin et al. 1997; Prasad et al. 2005). Globalization increases the demand for the abundant factor of production, hence increasing its price. If the abundant factor is labor, then wages should rise, implying that workers gain more from the national income 'pie'. However, greater factor mobility – both of capital due to race for attracting investment and of labor due to eased outward migration – under globalization may have impaired bargaining power of workers, corroding their share in total income.

Transition economies opened their markets to the forces of globalization in early 1990s. At that time, most of them faced fierce competition from the global market, against the losing of their traditional ones (which were usually secured because of the existence of one large central-planning state), which all resulted in a severe collapse of the output. Transition, convoyed with the privatization of the state-owned capital, was frequently accompanied by erosion of the physical and human capital and many transition economies saw years of disinvestment in machinery and massive lay-offs which made skills obsolete. The latter was predominantly a consequence of the inefficient use of labor resources under socialism (Lehmann and Muravyev, 2011). Hence, idle labor was surmounting, workers' power and wages falling, despite patterns may have been heterogeneous across countries (Svenjar, 1999). Except for few transitioners (mainly being the Visegrad countries), majority of them consolidated only late (late-1990s and early 2000s), yet recognizing that their key economic problem remained to be large and structural unemployment. However, integration into the global trade flows was inevitable as many transition economies opened to trade – despite exporting concentrated and low-value-added products. Later, many of them started programs based on state aid to attract FDIs under the implicit offering of 'cheap labor'.

Existing yet scarce data on transition economies suggest that labor share in total income has been stagnant at best. The simple average share of the compensation of employees in total expense has been ranging from 14.4% in the 1990s to 16.9% in the 2000s and moderating at 16.7% in the 2010s. Likewise, the labor share in manufacturing moderated from 15.6% in 2000 to 15% in 2015. Hence, the question is if globalization, perplexed with a combination of structural transition characteristics, prevented labor share to significantly increase in transition economies. This paper aims to investigate this issue.

The issue of the labor share developments gained attention in the global literature, despite predominantly for the industrialized countries. For example, Blanchard (1996) and Bentolila and Saint-Paul (2003) and Piketty and Zucman (2014) document changes in labor and capital shares in the OECD countries or their subgroups, while Poterba (1997) and Elsby et al. (2013) in the United States.

Karabarbounis and Neiman (2014) document labor share declines in an industrialized panel of 59 countries. Guerriero (2019) achieves the same conclusion with a panel of 151 country over a 45-year span and thorough consideration of labor share measurements. Crotty and Epstein (1996), Rodrick (1997), Harrison (2005) and Guscina (2006) focus on the role of globalization for the labor share in industrialized countries, inferring its predominantly eroding effect.

We undertake an approach rooted in the bargaining literature, to be able to both theoretically and empirically establish the potential negative effects of globalization on labor share in transition economies. To that end, we employ an estimable version of the bargaining model, whereby labor share is a function of labor productivity, endowments, fixed costs of capital and labor to relocate and their alternative returns abroad. We observe labor shares and productivity at the industry level, securing space to capture inter-industrial developments, particularly in the light of skill intensity. We empirically investigate this model in a dynamic framework with past values of the variables used as instruments. The period 2000-20015 is captured for a total of 23 transition economies of Central and Southeast Europe and the Commonwealth of Independent States.

Defined this way, the paper brings a couple of novelties to the current sparse of discussions in the literature and in transition policy circles. First, it is among the few papers dealing with the issue in transition economies, and probably the only one for these countries framing the relations in a robust theoretical framework. Second, the paper is the first to analyze labor shares at the industry level, which is an aspect discussed at theoretical levels, but rarely pursued empirically due to its data requirements. Third, through relying on fixed costs for relocation and alternative returns of capital and labor, the paper examines genuine structural characteristics of transition economies, like their reforms in the enterprise, trade and foreign exchange policies, accelerated outward migration rates and deteriorations in market bargaining power. More so, by dwelling on skill intensity at industry level, the paper delves into the attempt of major part of transition economies to utilize globalization fruits through offering 'cheap labor'.

Results robustly suggest that globalization forces played instrumental role for the stagnant labor shares in transition economies over the observed period, particularly for the low-skill industries. Results further suggest that the negative effect has been the strongest for the low-skilled workers in the earlier phases of country's development and then lessened or vanished as countries turned a higher stage of their development.

The paper is organized as follows. Section 2 lays the theoretical foundations. Section 2 elaborates some structural characteristics of transition economies in light of the paper's objective. Section 4 presents the methodology and the data. Section 5 presents the results and offers a discussion. Section 6 concludes.

2. Theoretical foundations

The underlying theoretical framework of this paper is the efficient bargaining model, pioneered by Brown and Ashenfelter (1986). Firms choose the combination of inputs – including workers – to produce output that maximizes their profits, though then bargain over the division of rents. The relative bargaining power between labor and capital determines the share of income acquired by each side. In the explication of the model, we are driven by Blanchard and Giavazzi (2003), with some modifications along Harrison (2005).

We assume there are two factors of production: labor and capital. The representative firm uses a vector of inputs $i = (i_K, i_L)$, whereby subscripts refer to capital and labor, respectively. Inputs determine a production function $Y(i_j)$. The competitive return to the factors is provided by $r_0 = (r_{0K}, r_{0L})$, while total return by $r = (r_K, r_L)$. The utility function of the inputs is as follows:

$$U_j = (r_j - r_{0j})i_j, \text{ where } j = K, L \quad (1)$$

Firm's revenue depends on the prices and inputs $R(P, i_j)$, whereby prices are a function of the production function $P(Y(i_j))$. Then, the difference between the revenues and the competitive-market return of inputs gives the excess profits:

$$R(Y(i_j), i_j) - r_{0j}i_j \quad (2)$$

Maximizing (2) with respect to i_j provides the following condition:

$$\left[\frac{\delta Y}{\delta i_j} \right] P = \mu r_{0j} \quad (3)$$

whereby $\mu = \left(\frac{1}{\varepsilon} + 1\right)^{-1}$, ε representing the demand elasticity.

We could implicitly define the optimal choice of i as:

$$i^* = F(P, \mu, r_{0j}) \quad (4)$$

The excess profits (rents) in (2) can be hence rewritten as:

$$Rents = R(F) - r_0 F \quad (5)$$

Total revenues, optimal inputs and total rents, equations (1)-(5) are independent of inputs' bargaining power.

However, labor and capital bargain to acquire their shares in total rents. The outcome of such bargaining is provided with the maximization of:

$$\prod_{j=K,L} (r_j i_j - U_{j0}) \quad (6)$$

Whereby U_{j0} is the minimum utility acceptable for the bargaining to succeed. Hence, to solve (6), we need to define the outcomes of bargaining failure. Both workers and capital may leave at some fixed (one-off) cost (e.g. the cost of labor migration abroad), which we denote C_j , and seek and receive alternative returns r_j^* (either on the competitive market or in a form of unemployment benefit). We assume that fixed costs are proportional to the quantity of the input, $C_j = f_j i_j$. So, the minimum utility is given by:

$$U_{j0} = r_j^* i_j - f_j i_j \quad (7)$$

Which when inserted in (6), provides the following maximization problem:

Maximize over r_j : $\prod_{j=K,L}(r_j i_j - r_j^* i_j - f_j i_j)$, subject to the revenue constraint $R(F)$.

Combining the first-order conditions gives the following specification for wage:

$$r_L = \frac{1}{2} \left[\frac{R(F)}{i_L} + r_L^* + (f_K - r_K^*) \frac{i_K}{i_L} - f_L \right] \quad (8)$$

If we multiply (8) with the labor input and divide by total revenues, we obtain the labor share on the left side:

$$\frac{r_L i_L}{R(F)} = \frac{1}{2} \left[1 + \frac{r_L^* i_L - f_L i_L - r_K^* i_K + f_K i_K}{R(F)} \right] \quad (9)$$

$\frac{r_L i_L}{R(F)}$ being the share of wages in total income, or the labor share, LS .

Equation (9) tells us that under efficient bargaining, labor share depends positively on labor productivity, alternative returns to labor and fixed cost to capital of relocating, while negatively on the alternative return to capital and the fixed cost to labor of relocating.

Equation (9) establishes the labor share as a function of global factors. Globalization shifted the relative importance of domestic and international markets, which in turn considered labor compensation as a cost rather than demand factor (Onaran and Stockhammer, 2006). This conceptual framework has been developed in several theoretical and empirical studies, discussing the effects of globalization on labor and the threat effects associated with international capital mobility and outsourcing (Rodrik, 1998; Burke and Epstein, 2001; Harrison, 2005; Lee and Jayadev, 2005; Pollin, 2006). This theory also has implications for the skill intensity across industries. Industries with higher share of high-skill labor are likely to pay higher compensations and, hence, labor share may remain more isolated from globalization forces. On the other hand, low-skill labor is easily replaceable and prone to low or breakable bargaining power, hence also adversely exposed to globalization dynamics (Bohle and Greskovits, 2005).

3. Transition specifics under globalization

With the breakup of the former socialist states, the countries of Central, Southeast Europe and the Commonwealth of Independent States commenced their path towards market-oriented economies. This, in parallel, meant that they opened to trade, investment and technology flows, which were previously captured with intra-Yugoslav and intra-Soviet bloc transactions. The ratio of trade to GDP has been increasing swiftly after declaring independence, partly because of the trade's strong growth, and partly because of the early declines in GDP. All transition economies – despite with different pace – reoriented their trade toward the Western market economies, particularly the EU. On average, they doubled the share of their exports in GDP in a decade and then roughly maintained the level. The penetration in the foreign markets was even more successful – particularly for the lead transitioners – in the area of manufactured goods (Mrak, 2000). In particular, the global automotive industry's wave of constructing factories across the world went through transition economies also, first settling in countries as Czech Republic, Hungary, Poland, Slovakia, Slovenia, but more recently in Serbia, North Macedonia, Uzbekistan and others. On the way of increasing trade integration, transition countries benefited from their institutional arrangements: most of them received MFN status under GATT which then translated into WTO membership; a sub-group formed the Central-European Free Trade Agreement (CEFTA), in existence nowadays in new composition of transition countries; many of them signed the EU Stabilization and Association Agreements, providing framework for gradual liberalization of trade; and finally, lead transitioners already became EU Member States in 2004 and 2007.

Transition economies were feebly financially integrated in the global world at the outset of transition. At that time, private capital was cautious as commercial risks were perceived unacceptably high. The progress in transition then resulted in increasing of capital flows. From 0.4% of GDP in early 1990s, the share increased to above 5% in the years preceding the Global Financial Crisis, with steady recovery few years later. The surge in FDI reflected the strong interest of companies to spread their operation into new markets, though (later) supported by outlandish government programs to attract MNCs. FDIs strengthened transition countries position in global trade, as they were increasing and diversifying export yet often without significant rooting in the domestic economy, hence also dragging up import. However, countries were quite heterogeneous in the attraction of FDIs; particularly for the late transitioners, FDIs were perceived a vehicle for reducing unemployment at the prevailing wages usually positioned at the lower ends of wage distributions. Especially in 2000s and 2010s, MNCs found fertile soil to relocate their labor-intensive operations in countries close to the big markets, yet providing room for significant labor savings, despite skills utilized have not always been on the downside at least not in terms of formal qualifications. In any case, FDIs brought in new technologies, far above the current technological level of the host countries, which potentially further supported labor savings.

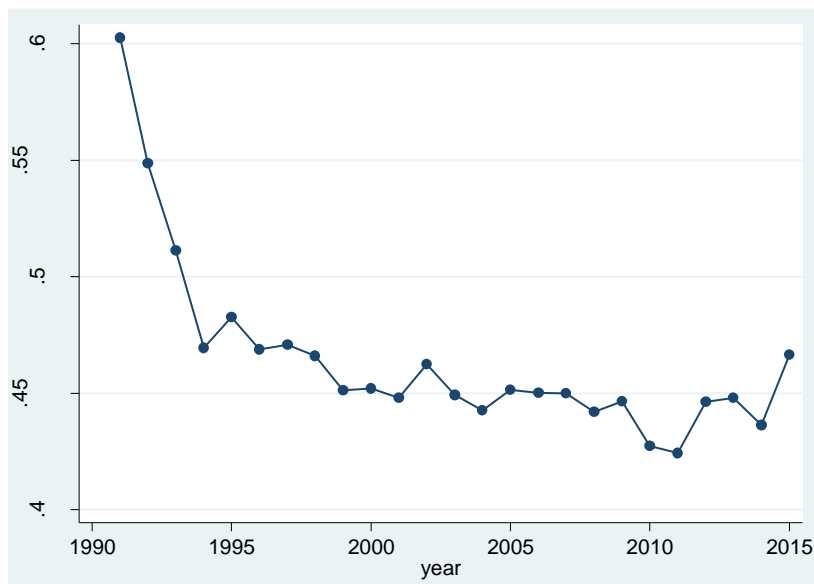
Within these waves, investment in manufacturing became increasingly important, roughly accounting for more than 60% of total accumulated FDI in the transition region, whereby early investments were primarily made in food, beverage and tobacco processing industries (World Economic and Social Survey), while later investment in automotive, chemical and electronic-support industries. Hence, over time, manufacturing FDI in transition economies became more outward oriented. However, they frequently demanded lower-skilled or routine workers, hence being a hiring competitor of the technologically-lagging and yet labor-intensive domestic firms. In the jargon of Hunya and Geishecker (2005), FDI in manufacturing remained to be low-wage seeking, vertical, export-oriented investment. As a result, the FDI-induced increases in labor productivity might have outweighed the increasing output and wages, potentially resulting in shrinking labor shares, particularly for unskilled workers (Egger and Strehler, 2001).

Such globalization developments in transition economies have been inevitably accompanied by an array of structural reforms aiming at increasing economy's competitiveness. Apparently, the key move in the enterprise restructuring area has been the large-scale privatization (Pohl et al. 1996), though accompanied with and succeeded by a multitude of reforms at both policy and enterprise level. Enterprise restructuring in transition economies has been documented to have been correlated with privatization, ownership, product market competition and the hardening of budget constraints (see Djankov and Murrell, 2002), all with implications for workers. Likewise, the reforms and liberalization moves in the trade and foreign exchange sectors resulted in more favorable climate for the private sector production and investment. Finally, structural reforms did not avoid the labor market. Reflecting the socialist legacies, employment protection was rigid in early transition; hence, labor-market liberalization followed, despite a more comprehensive labor-market flexibilization followed only in the 2000s (Muravyev, 2010). Yet, the efficiency of collective bargaining did not improve with transition to a market economy, amid weakening unionization power. Between 2000 and 2015, unionization rates, already reflecting low levels, declined from 28.5% to 21%.

Overall, globalization forces in transition economies generated employment but frequently in the low-skill sectors. Accompanied with waves of outward migration of higher-skilled labor over the entire transition period, the high-to-low-skill jobs ratio has been downward sloping (Figure 1), despite dramatically falling in the first years following transition and more moderating afterwards.

Commander and Kollo (2004) argue that the reason for this trend may have been also the inadequate skill acquisition through education inherited from the socialist times, either in terms of its quality (diplomas rather than applicable skills) or in terms of its adaptation to specific processes or firms, rendering re-qualification hard or impossible. But, later in transition, labor mobility indisputably played a role, affecting labor shares and strengths in transition economies. Moreover, compressed wages potentially influenced low labor productivity and motivated departures for higher life quality elsewhere, especially of lower-skilled workers.

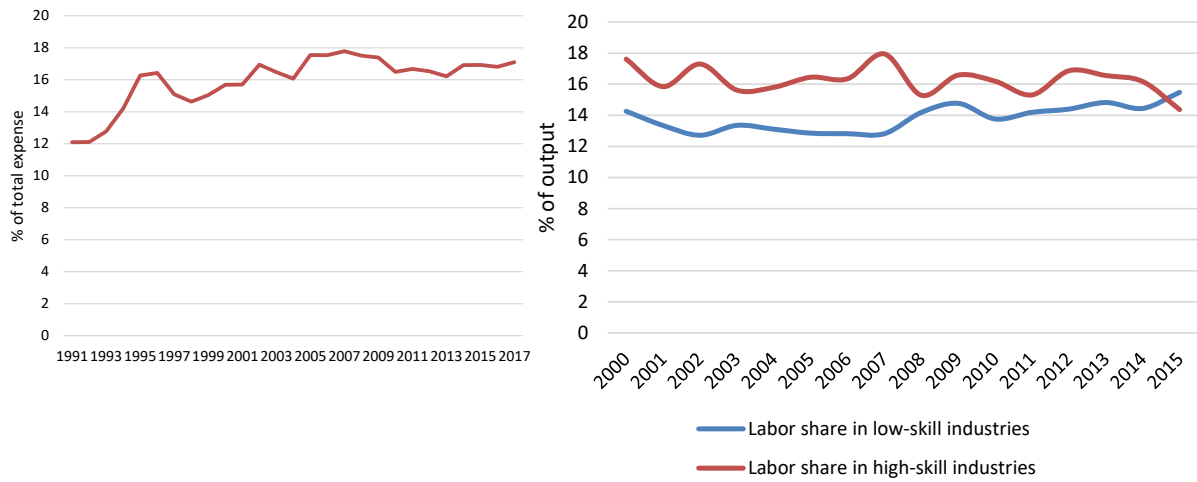
Figure 1 – High-to-low-skilled jobs in transition economies (averages)



Source: UNIDO Industrial Statistics.

Why is all this discussion relevant for understanding of the labor-share developments in transition economies in an era of globalization? Globalization exposed these countries to a flux of trade, investment and labor. A multitude of reforms have been pursued to ease these developments and make its expected effects more positive for the economies. Particularly low-skill workers have been in governments' focus to increase their living standards, despite low and weakening market bargaining power and intensified outward migration and brain drain may have actually resulted in no better position for workers in transition economies. Indeed, Figures 2 and 3 point out to a stagnant labor share in transition economies over the preceding almost three decades. The right panel makes a distinction between labor shares in high- versus low-skill industries and observes a slightly declining trend in the former and opposite one in the latter. Though, differences are hard to justify, at least visually.

Figure 2 – Compensation of employees in transition economies: (left) overall; and (right) in manufacturing observed by skill level, (averages)



Source: World Development Indicators; UNIDO Industrial Statistics.

We proceed to a more rigorous analysis of the labor shares in transition economies.

4. Methodology and data

We derive our estimable model based on the bargaining model exposed in Section 2. To avoid the complications of modelling of relative factor prices, we use an ex-post version of the model, directly looking at the outcome of the bargaining, i.e. the labor share (LS_{ijt}), as function of labor productivity (pr_{ijt}), endowments (ew_{jt}), alternative returns to labor (rl_{jt}) and capital (rc_{jt}), and the fixed costs to labor (ϕl_{jt}) and capital (ϕc_{jt}) of relocating:

$$LS_{ijt} = \alpha_0 + \beta_1 pr_{ijt} + \beta_2 ew_{jt} + \gamma_1 rl_{jt} + \gamma_2 rc_{jt} + \delta_1 \phi l_{jt} + \delta_2 \phi c_{jt} + \alpha_i + \alpha_j + \alpha_t + \varepsilon_{ijt} \quad (10)$$

Before we explain the variables in more detail, one should note that our analysis is done at the sectoral level, i.e. at the two-digit ISIC classification – hence the index i for the labor share and productivity. The remainder of the variables are available at the aggregate country level and hence the country and time subscripts, j and t , respectively. α_i stands for the industry fixed effects, α_j for the country fixed effects, α_t for the time fixed effects, while ε_{ijt} is the standard idiosyncratic shock.

Labor share is taken as the wage share in total output per industry. While we are confined by the availability of data, relevant discussions with regard to how compensation of employees is calculated are ongoing. Krueger (1999) is a prominent read on this topic; especially the discussion and evidence (see e.g. Bernanke and Gürkaynak, 2001) on the treatment of self-employment income is essential. It is however beyond our work, as we take the series from UNIDO as they are supplied.

Labor productivity is measured as the output per worker in each industry and is predicted to positively affect labor share. Endowments are captured by the surplus labor force (unemployed plus inactive individuals except students) and the gross fixed capital formation. The pool of capital is expected to negatively affect labor share, inter alia reflecting technological advancements and labor savings. Labor share is expected to be negatively affected by idle labor either, as larger pool of individuals without job implies lower bargaining power of those who work, and hence a downward pressure on wages. If the coefficient of non-employment is negative, the labor market is considered flexible. We complement the labor endowment measure with a metric on bargaining power. We decide to do so in order to more succinctly capture (and disentangle) the collective bargaining strength in transition economies. We define a ratio of the high-skill to low-skill sector employment divided by the surplus labor. The index has been initially proposed by Rudra (2005) and is motivated by an earlier observation that bargaining power correlates education: it is expected to increase as the ratio of skilled to unskilled workers increases, given workers' capacity and awareness for collective action, and as the pool of idle labor decreases (i.e. as more people enter the labor force). In this notion, bargaining power is influenced by the proportion of skilled to unskilled workers, which is along our discussion about the distinction between high- and low-skilled labor shares. See a broader discussion in Petreski (2019). So, stronger bargaining power is expected to increase labor share.

We assume that the fixed cost of relocating of the labor is large (possibly infinite in the short run) and could be captured by the country and year fixed effects. The fixed cost of relocating of the capital is captured through an index of trade and foreign exchange system health: the more favorable the trade and forex conditions to global movements of trade and capital, the lower the cost of capital to relocate, implying shrinking labor share.

The alternative returns to capital and labor are hard to measure succinctly and directly. However, we use some proxies. As a proxy for the return to labor if it migrates to a foreign country, we use the pace of outward migration. The entire transition process has been characterized by massive migration outflows from transition economies, in a search for higher living standard and this should, hence, serve suitable approximation for the alternative return to labor relocation. Higher outward migration makes domestic market labor scarcer and hence is expected to positively affect labor share. Finally, we use two proxies for the relative return of capital to relocate: foreign direct investment and the manufacturing export, both as shares in GDP. Understood in terms of our bargaining model (9), the rise of the alternative returns to capital should lead to reducing labor share, as wings of globalization reduce bargaining power of workers, particularly in labor-intensive low-skill industries.

To estimate our model (10), we rely on a dynamic technique. Namely, as labor share is rather a stock variable, persistence would be expected. Hence, a lagged labor share is used as a regressor. Both the lagged dependent variable and other regressors are susceptible to the endogeneity issue. Conceptually speaking, globalization may be observed as an exogenous phenomenon at first sight, moreover for

transition economies whose participation in global output is small. However, third factors may have affected the way globalization worked for workers: governments are those who intervened (e.g. through subsidies, reforms etc.) to ameliorate the way globalization may work for achieving domestic development objectives, among which reducing unemployment and increasing workers' wages were frequently topping the agenda. Hence, all our variables in (10) are considered an endogenous system. We approach to this issue by using an instrumental variables approach whereby former values of the regressors are used as instruments.

We conduct the analysis over the period 2000-2015. This period is chosen for two primary reasons. First, the quality of the industry-level data over 1990s for transition economies is lower and series are with multiple interruptions. Second, an analysis of the 1990s would anyway require a more comprehensive consideration of the jobs destruction (and the output falls) immediately after abandoning the central-planning system, which is somehow beyond our objective here. Instead, we are more interested in the more contemporary globalization contemplations with regard to the labor share in transition economies. Considering the two aspects, the usage of the referent time period seems justified. We have a pool of 23 transition economies of Central and Southeast Europe and the Commonwealth of Independent States. The group is composed of a total of 29 countries, but industry-level data were missing for Belarus, Kosovo, Serbia, Tajikistan, Turkmenistan and Uzbekistan. The source of the industry-level data is the UNIDO Industrial Statistics. Migration is obtained from the UN Population Division. Trade and foreign exchange liberalization is obtained from the EBRD Transition Indicators. All the remaining variables are obtained from the World Development Indicators. Definition, sources and descriptive statistics of the variables, as well the skills classification of industries, are further provided in the annex.

5. Results and discussion

We turn to discussing results now. Table 1 presents the results for the entire sample (column 1), which then splits by skill intensity (columns 2 and 3). Towards the bottom of the table, we present some standard tests for instruments' validity: all of them suggest that our instruments are valid and we have a correctly-identified model.

We first note that the lagged labor share is highly statistically significant and larger among low-skill industries implying its higher persistence there, which may well be related with the weaker bargaining power. A stark contrast in the labor share explained by the other variables is immediately apparent. None of the remaining variables is statistically significant in the high-skill industries, suggesting that global factors do not play a role neither in diminishing nor in increasing labor share. We should note that high-skill industries, among which chemicals, computers, machinery, cars, optics, may well be capital-intensive industries with significant gap with regard to technology used. In the jargon of Bohle

and Greskovits (2005), these use highly skilled labor with comparatively higher bargaining power, which fortifies that labor share under globalization remains intact.

The story completely changes when low-skill industries are observed. Productivity gains there are expectedly positively reflected into higher wage shares, along the predictions of our bargaining model. The pool of idle labor works negatively for the labor share, as more potential workers reduce bargaining power overall and hence exert downward pressure on wages. Likewise, higher capital endowment reduces labor share. This is not surprising for (transition) economies who opted for attraction of industries which are capital-intensive by definition, but who located an objectively labor-intensive part of the supply chain in these countries. Hence, the rising technological gap with regard to domestic companies yet likely exerted some negative developments for the labor share. The more countries opened their trade and forex regimes to resemble globalization reality, the lower the resulting bargaining power, hence lower labor share. Market bargaining power itself is insignificant.

Labor migration exerts a negative effect on labor share, being against our theoretical predictions. It is surely that outward migration makes the origin market less abundant with idle labor, however such condition is expected to be severely determined by a drain brain, i.e. departure of higher-skilled individuals. This leaves the domestic market with skills predominantly at the left part of the skill distribution, which is then key for the fading of the bargaining power and lower labor shares.

Finally, FDI variable is significant, while manufacturing export is not. The FDIs are negatively affecting labor share, as expected, because they are understood as the easiness with which foreign capital could cross borders. Their intensification signifies eased movements in the search of the highest returns, leaving workers and their bargaining power at the edges of the global game.

Table 1 – Baseline results

<i>Dependent variable: Labor share per industrial output</i>	Entire sample	High-skill industries	Low-skill industries
	(1)	(2)	(3)
Lagged labor share	0.589*** (0.076)	0.434*** (0.112)	0.745*** (0.078)
Productivity	1.998** (0.991)	0.717 (1.658)	2.988*** (0.909)
Labor force	-0.0192 (0.037)	0.0862 (0.075)	-0.0738* (0.041)
Capital	-0.0565** (0.028)	-0.00877 (0.052)	-0.0703*** (0.026)
Trade and foreign exchange index	-2.941** (1.255)	-3.069 (2.145)	-2.217* (1.178)
Market bargaining power	-0.39 (0.755)	-0.261 (1.471)	-0.500 (0.656)
Migration	-0.0926** (0.041)	0.0223 (0.083)	-0.143*** (0.045)
Manufacturing export	-0.00947 (0.031)	-0.0414 (0.054)	0.0404 (0.030)
FDI	-0.0414** (0.019)	-0.0333 (0.033)	-0.0391** (0.019)
Observations	4,108	1,626	2,482
R-squared	0.069	0.083	0.146
Weak identification test (Kleibergen-Paap rk Wald F statistic)	15.47	5.957	13.14
Weak identification test (Cragg-Donald Wald F statistic)	35.22	11.33	24.12
Underidentification test Chi-sq(10) P-val	0.000	0.000	0.000
Hansen J statistic Chi-sq(9) P-val	0.359	0.862	0.239

Source: Author's calculations.
*, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively. Standard errors provided in parentheses. Standard errors robust to arbitrary heteroskedasticity and autocorrelation of order one. Industry, country and time fixed effects not show due to space.

Overall, our results presented in Table 1, well fit the theoretical predictions of the bargaining model for transition economies. They suggest that globalization forces worked negatively for labor shares in transition economies, though only for the low-skilled industries. High-skilled industries remained integral in this regard. Hence, if governments attempted to or undertook steps to seize globalization by offering ‘cheap labor’, results suggest it has been the wrong strategy.

We further delve into our findings, by splitting the sample on countries whose GDP per capita has been on average above or below the transition-group median. By so doing, in the ‘above’ group we have: Croatia, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia and Czech Republic, which are roughly the Central European (CEE) countries who joined the EU in 2004. We make this distinction because of the usual subgrouping of the transition region on CEE, Southeast Europe (SEE) and the Commonwealth of Independent States (CIS). However, we decide here for two instead of

three groups because of the missing countries who belong to SEE and CIS, hence significantly reducing these two samples and hence estimates' efficiency. However, a dichotomy instead of trichotomy is indicative, as shown in Table 2.

Results are largely corroborating our findings in Table 1, despite some significances are reduced. Labor share persistence is the strongest in the low-skill industries of the less developed transitioners (column 2). However, productivity is only positively affecting labor share in this group either. Interestingly, capital endowment is negatively affecting labor share in this same group, but the coefficient turns positive in the more developed transitioners, irrespective of skill intensity. This may suggest that labor-intensive but technologically advanced foreign capital in transition economies may well work positively for labor share once these countries attain certain level of development.

Trade and foreign exchange liberalization, signifying the fixed cost of the capital to relocate, shows an endured negative influence on labor share, except in high-skill industries in more developed transition economies. Outward migration works negatively for labor share, though surprisingly in the two ends of skill and development distribution – for the low-skilled industries in less developed economies and for the high-skilled industries in more developed ones. The former effect is in line with our overall results, while the latter effect only corroborates the argument that brain drain may be detrimental for the later stages of development, not for shaping bargaining power, but for reducing the provision of intellectual input into the development process.

Table 2 – Results by country level of development

<i>Dependent variable: Labor share per industrial output</i>	Countries with GDP per capita below median		Countries with GDP per capita above median	
	High-skill industries	Low-skill industries	High-skill industries	Low-skill industries
	(1)	(2)	(3)	(4)
Lagged labor share	0.246* (0.142)	0.756*** (0.129)	0.519*** (0.090)	0.510*** (0.077)
Productivity	-3.369 (2.970)	3.355* (1.757)	0.974 (1.103)	-0.539 (0.714)
Labor force	0.544** (0.275)	-0.0281 (0.165)	0.086 (0.068)	0.0123 (0.036)
Capital	-0.129 (0.092)	-0.145*** (0.051)	0.136*** (0.047)	0.110*** (0.028)
Trade and foreign exchange index	-9.173** (4.061)	-6.541** (3.080)	-0.976 (1.627)	-1.585* (0.898)
Market bargaining power	-0.71 (1.265)	-0.855 (0.636)	-1.742* (0.923)	-0.623 (0.477)
Migration	-0.241 (0.266)	-0.346** (0.136)	-0.214** (0.107)	-0.068 (0.064)
Manufacturing export	-0.222 (0.177)	-0.0708 (0.136)	0.0107 (0.039)	-0.03 (0.019)
FDI	0.0413 (0.081)	-0.0143 (0.039)	-0.0118 (0.022)	-0.0163 (0.016)
Observations	664	1,084	962	1,398
R-squared	0.249	0.184	0.23	0.392
Weak identification test (Kleibergen-Paap rk Wald F statistic)	2.553	6.258	10.66	17.65
Weak identification test (Cragg-Donald Wald F statistic)	1.565	3.247	5.921	11.75
Underidentification test Chi-sq(10) P-val	0.000	0.000	0.000	0.000
Hansen J statistic Chi-sq(9) P-val	0.739	0.0738	0.264	0.0612

Source: Author's calculations.
, ** and * denote statistical significance at the 10, 5 and 1% level, respectively. Standard errors provided in parentheses. Standard errors robust to arbitrary heteroskedasticity and autocorrelation of order one. Industry, country and time fixed effects not show due to space.*

Overall, global factors affect labor share negatively and this effect is the strongest for the low-skill workers in the earlier phases of country's development. The effect lessens or even vanishes once a country turns a higher stage of its development, despite then high-skill industries may well face input constraints determined by the earlier globalization-induced developments like outward migration.

6. Concluding remarks

The objective of this paper is to understand the labor share developments in transition economies under globalization forces. Given the opening up of transition economies to foreign markets and foreign capital, frequently supported by state aid and, in majority of cases with implicit offering of

‘cheap labor’, the paper makes a special reference to the skill intensity interference in understanding the globalization-labor share nexus. In the same line, we put these developments in the context of the structural and reform developments in transition economies. To achieve our objective, we rely on the predictions of the efficient bargaining model, whereby globalization forces are set to affect workers’ market bargaining power, which then produces certain developments in the labor share. Particularly, the model sets labor share to be determined by productivity, endowments, fixed cost of labor and capital to relocate and the alternative returns of both factors elsewhere. We use industry-level data for 23 transition economies of Central and Southeast Europe and the Commonwealth of Independent States over the late transition period of 2000-2015.

Results robustly suggest that globalization forces played instrumental role for the stagnant labor shares in transition economies over the observed period. The finding is particularly relevant for the low-skill industries, whereby market bargaining power has been likely weaker and/or easily breakable, leading to negative consequences for labor shares. On the other hand, workers’ shares in high-skill industries largely remained intact. Moreover, results suggest that the negative effect of global factors for the labor share has been the strongest for the low-skill workers in the earlier phases of country’s development. The effect lessens or even vanishes once a country turns a higher stage of its development, despite then high-skill industries may well face input constraints determined by the earlier globalization-induced developments. The key finding of this paper has a very important policy implication which asserts that if governments of transition countries attempted to or undertook steps to seize globalization by offering ‘cheap labor’, then it has been the wrong strategy.

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Table A 1 – Variables descriptions and sources

Variable	Description	Source
Labor share per industrial output	Wage mass per industry <i>i</i> divided by the output of the same industry.	UNIDO Industrial Statistics Database
Productivity	The logarithm of output per industry <i>i</i> divided by the number of workers in the same industry.	UNIDO Industrial Statistics Database
Labor force	The share of the unemployed and inactive (except pupils and students) persons in total labor force	World Development Indicators
Capital	Gross fixed capital formation as a share of GDP	World Development Indicators
Manufacturing export to GDP	Manufacturing export divided by GDP	World Development Indicators
Trade and foreign exchange index	An index measuring the liberalization level in the area of trade and foreign exchange on a scale 1= little or no change from a rigid centrally planned economy to 4.33 = the standards of an industrialized market economy	EBRD
Bargaining power	The ratio of skill ratio and the surplus labor, whereby surplus labor equals working age population (15-64) minus the total labor force minus students enrolled in secondary and tertiary education, divided by the working age population.	UNIDO Industrial Statistics Database World Development Indicators
Migration	The annual change of the migration stock of each country abroad (number of emigrants). As the source does not provide values for each year but rather for each fifth year, interpolation has been used.	UN Population Division
Manufacturing export	Manufacturing export divided by GDP	World Development Indicators
Foreign direct investment	Foreign direct investment, net, divided by GDP	World Development Indicators

Table A 2 – Skill reclassification of ISIC-based industries

Manufacturing industry	Skill level
15 Food and beverages	Low
16 Tobacco products	Low
17 Textiles	Low
18 Wearing apparel, fur	Low
19 Leather, leather products and footwear	Low
20 Wood products (excl. furniture)	Low
21 Paper and paper products	Low
22 Printing and publishing	High
23 Coke, refined petroleum products, nuclear fuel	High
24 Chemicals and chemical products	High
25 Rubber and plastics products	Low
26 Non-metallic mineral products	Low
27 Basic metals	Low
28 Fabricated metal products	Low
29 Machinery and equipment n.e.c.	High
30 Office, accounting and computing machinery	High
31 Electrical machinery and apparatus	High
32 Radio, television and communication equipment	High
33 Medical, precision and optical instruments	High
34 Motor vehicles, trailers, semi-trailers	High
35 Other transport equipment	High
36 Furniture; manufacturing n.e.c.	Low
37 Recycling	Low

Table A 3 – Descriptive statistics for the included variables

Variable	Obs	Mean	Std.Dev.	Min	Max
Labor share per industrial output	6,256	13.946	8.854	0.292	98.550
Productivity	6,213	3.204	2.215	(3.123)	10.560
Labor force	6,213	70.499	5.239	56.105	80.527
Capital	6,256	25.406	5.929	11.830	57.990
Trade and foreign exchange index	5,843	4.156	0.350	2.330	4.330
Market bargaining power	6,216	0.241	3.145	(4.547)	51.450
Migration	6,256	0.277	3.728	(16.667)	15.079
Manufacturing export	6,109	24.843	18.178	0.077	76.736
FDI	6,256	6.268	7.306	-	55.076