UPSTREAMNESS, WAGES, AND WORKERS' ORIGIN: A REVIEW OF THE LITERATURE

Valentine Fays, Benoît Mahy, François Rycx

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Upstreamness, wages, and workers' origin: A review of the literature

Valentine Fays [1], Benoît Mahy [2] & François Rycx [3]

Abstract – *In recent decades, production processes have become increasingly fragmented and divided into ever smaller parts. This fragmentation, which is particularly pronounced in small open economies such as Belgium, has resulted in the emergence of global value chains (GVCs). At the same time, net immigration in OECD countries has been consistently positive since the 1960s. Between 2000 and 2017, the number of foreign-born residents (i.e., first-generation immigrants) in OECD countries rose by more than 50 percent (OECD, 2018). Starting from these premises, this article aims to provide a succinct overview of the literature on the nexus between firms' position in global value chains (i.e. their level of upstreamness) and the native–immigrant wage gap. To do so, we first discuss the potential sources of wage inequalities based on workers' origin. Next, we present the main findings concerning the impact of upstreamness on workers' wages in general, and in particular the interplay between upstreamness and wage inequalities between natives and immigrants. Particular attention is devoted to empirical results for the Belgian economy.*

Keywords: *global value chains, wages, immigration*

JEL Classification: J15, J31, F16.

1. Valentine Fays est Assistante sous mandat à la Faculté Warocqué d'Economie et de Gestion de l'Université de Mons. Elle est affiliée à l'institut de recherche en développement humain et des organisations (humanOrg) de l'UMONS et au Département d'Économie Appliquée de l'ULB (DULBEA). Courriel : valentine.fays@umons.ac.be
2. Benoît Mahy est Professeur ordinaire à la Faculté Warocqué d'Economie et de Gestion de l'Université de Mons. Il est affilié à l'institut de recherche en développement humain et des organisations (humanOrg) de l'UMONS et au Département d'Économie Appliquée de l'ULB (DULBEA). Courriel : benoit.mahy@umons.ac.be
3. François Rycx est Professeur à la Faculté SBS-EM de l'Université libre de Bruxelles (ULB). Il est affilié au Centre Emile Bernheim (CEB), au Département d'Economie Appliquée (DULBEA), à humanOrg (UMONS), à l'IRES (UCL), au Global Labor Organization (GLO) et à l'IZA (Bonn). Courriel : frycx@ulb.ac.be

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Résumé – *Durant ces dernières décennies, les processus mondiaux de production de biens et de services sont devenus de plus en plus fragmentés. Cette fragmentation, particulièrement prononcée au sein des petites économies ouvertes telle que la Belgique, a entraîné l'émergence de chaînes de valeur mondiales (CVM). Parallèlement, l'immigration nette dans les pays de l'OCDE est demeurée positive, et ce depuis les années 1960. Par ailleurs, entre 2000 et 2017, le nombre de résidents nés à l'étranger (c'est-à-dire les migrants de première génération) a augmenté de plus de 50% au sein des pays de l'OCDE (OCDE, 2018). Sur base de ces constats, cet article vise à fournir un aperçu de la littérature concernant le lien entre la position (plus ou moins en amont) des firmes dans les chaînes de valeur et l'écart de salaires entre travailleurs natifs et migrants. A cette fin, nous abordons tout d'abord les sources potentielles d'inégalités de salaires basées sur l'origine des travailleurs. Ensuite, nous présentons les principaux résultats relatifs à l'impact de la position de la firme dans les CVM sur le salaire des travailleurs en général, puis plus particulièrement sur les inégalités de salaires entre travailleurs natifs et migrants. Ce faisant, nous consacrons une attention particulière aux résultats empiriques concernant l'économie belge.*

Mots-clés : *chaînes de valeur mondiales, salaires, immigration*

Classification JEL : J15, J31, F16

1 INTRODUCTION

Wage differences between native and migrant workers are well documented in the literature (Chiswick, 1978; Borjas, 1985). These wage differences can be attributed to different reasons: productivity differentials coming from human capital discrepancies (e.g. Heath & Cheung, 2007), but also occupational and sectoral segregation (Bayard *et al*., 1999) and wage discrimination (Bartolucci, 2014; Fays *et al*., 2019).

Another strand of the literature documents the impact of globalization on wage inequalities within countries and firms (Shepherd, 2013; Lopez *et al*., 2015; Chen, 2017). Over recent years, globalization has been characterized by lower transaction and coordination costs associated with the revolution of information and communication technologies. Together, with reduced product market regulations, they triggered a disintegration of production tasks across national borders (Baldwin & Okubo, 2019), translating into increasingly fragmented processes and the emergence of truly global value chains (GVCs) which involve the sourcing of inputs from multiple suppliers often located in foreign countries.

Labour market implications of the emergence of GVCs' have received considerable attention in the literature (Feenstra, 2010; Hummels *et al*., 2018). An array of studies analyses the relationship between different aspects of globalization (e.g. firm-level offshoring, firm or country participation in GVCs) and wages. A few papers also investigate the consequences of firms' position in GVCs, as measured by their upstreamness (i.e. the number of steps before their products meet final demand) on wages and wage inequalities according to education, gender and origin (Shen & Silva, 2018; Gagliardi *et al*., 2019; Szymczak *et al*., 2019; Fays *et al*., 2020).

This article aims to provide a succinct overview of the literature regarding the nexus between firms' position in GVCs (i.e. their level of upstreamness) and native-immigrants wage gaps. To do so, we first discuss the potential sources of wage inequalities based on workers' origin (Section 2). Next, we present the main findings concerning the impact of upstreamness on workers' wages (Section 3) and in particular the interplay between upstreamness and the wage gap between natives and immigrants (Section 4). Particular attention is devoted to empirical results for the Belgian economy. The last section concludes.

2 WAGE DISCREPANCIES BETWEEN NATIVE AND MIGRANT WORKERS

Wage inequalities between native and migrant workers can come from different sources. First, they may partly be due to productivity differentials coming from human capital discrepancies attributed to migrants' language abilities (e.g. Chiswick, 1991; Chiswick & Miller, 1995; Borjas, 1999), literacy skills (e.g. Himmler & Jäckle, 2018), schooling quality (Sweetman, 2003), job tenure attainment (McDonald & Worswick, 1998), and different school-to-work transitions (Friedberg, 2000; Baert & Cockx, 2013). Another reason may be occupational and sectoral segregation. Indeed, migrant workers may be unequally distributed across occupations and industries, confining them to specific jobs or sectors that remunerate less (e.g. Aydemir & Skuterud, 2008). Third, a significative part of wage differences according to origin may also come from a discriminatory behaviour (e.g. Aeberhardt & Pouget, 2010; Barrett *et al*., 2012). According to the taste-based discrimination theory of Becker (1957), some employers, co-workers or customers are prejudiced against an intrinsic characteristic of a certain type of workers, such as origin. To avoid this prejudice, employers tend to look further and pay higher wages to the kind of worker they prefer. Consequently, equally productive workers can be paid differently because of an employer's dislike towards a worker's intrinsic characteristic, such as its origin. Another source of discriminatory behaviour by employers could also come from monopsonistic discrimination, considering direct labour supply elasticities from migrants to be lower as compared to their native colleagues. Findings of Hirsch and Jahn (2015) based on German data indeed suggest search frictions on the labour market to be a likely reason for employers to possess a more pronounced monopsony power in the case of migrant workers, and thus to pay them lower wages.

Besides these explanatory factors, native-immigrant wage gaps are also likely to be shaped by international trade characteristics and in particular by firms' position in global value chains (i.e. their level of upstreamness). Indeed, as highlighted in the next sections of this paper, a growing (but still quite small) literature shows that added value and wages depend significantly on firms' upstreamness and that these outcomes might contribute to explaining wage gaps between natives and immigrants.

3 UPSTREAMNESS, ADDED VALUE AND WAGES

A small number of articles have been able to investigate whether the position of a firm in a GVC matters for the creation of value. Rungi and Del Prete (2018) address this question with data on firms located in the European Union, and a downstreamness measure sourced from Antràs and Chor (2013). Interestingly, the authors uphold the intuition behind the U-shaped value generation curve and reveal a pattern of domestic value retention in the origin (developed) country of the firm. A related study is that of Ju and Yu (2015). Applying the methodology developed by Antràs *et al*. (2012) to Chinese data, the authors suggest that the higher position of a firm in a GVC (measured through an industrial upstreamness index), the larger its productivity and profitability. Moreover, they show that companies belonging to upstream industries are more capital intensive. Mahy *et al*. (2018) report a similar finding for the Belgian private sector. The authors find upstreamness to be positively associated with higher productivity and profitability.

Evidence regarding the impact of firms/industries' upstreamness on workers' wages is still thin. Indeed, very little is known on whether and to what extent productivity gains associated to firms/industries' position in GVCs are shared with workers. According to the standard Walrasian (competitive) model of the labour market, wages reflect differences in labour productivity. Shifts towards higher value-added stages of the GVC, accompanied by positive technological spillovers and increased productivity, should thus enhance workers' wages. This prediction is also supported by human capital theory (Becker, 1964). The latter posits that: i) education (as well as formal training and informal work experience) develops skills that make workers more productive, and ii) workers are paid according to their marginal revenue product. Given that higher value-added activities along GVCs are often found to be more knowledge-intensive, and require more non-replaceable skilled workers (Mudambi, 2008), human capital theory suggests that such better skills should be rewarded with higher pay.

The study of Szymczak *et al*. (2019) is one of the first to investigate this issue. Using data for Central and Eastern European countries over the period 2005-2014, the authors examine the effect of industries' upstreamness on workers' wages. Their results show that workers earn higher wages when employed in industries located either at the beginning or at the end of the value chain. Mahy *et al*. (2018) examine a similar question at the firm level. Their findings for the Belgian economy suggest that productivity gains obtained by firms operating more upstream on the GVC are shared equally between profits and total labour costs. Chen (2017) investigates within-firm wage inequality across heterogeneous industries that hold different positions in the domestic value chain of the Chinese manufacturing industry. Estimates show that wage inequality is more pronounced in upstream industries than in downstream ones, and among firms with greater exposure to international trade. Another study is that of Shen and Silva (2018). The authors show that rising value-added exports from China to the U.S. have affected average wages in the latter country and that the impact depends on the position of the Chinese exporting industry in the global value chain.

Evidence regarding the role of moderating variables in the relationship between upstream and wages is still scarce. However, Shen and Silva (2018) show that the positive impact of upstreamness on wages is larger for highly educated workers than for their less educated counterparts. This conclusion is also supported by Chen (2017) who finds wage inequality between high- and low-skilled workers to be more pronounced in sectors operating further away from the final consumer (i.e. more upstream along GVCs). Gagliardi *et al*. (2019) investigate the moderating role of gender. Findings for the Belgian manufacturing industry show that differences in mean values of upstreamness for women and men only modestly contribute to the overall gender wage gap. On the contrary, gender differences in wage premia associated with upstreamness are found to explain a substantial part of the wage gap, especially at the top of the earnings distribution.

4 THE IMPACT OF UPSTREAMNESS ON WAGES ACCORDING TO WORKERS' ORIGIN

Fays *et al*. (2020) provide first evidence concerning the contribution of firms' upstreamness to the explanation of native-immigrant wage gaps. Their analysis focuses on the Belgian manufacturing industry over the period 2002-2010.

Belgium represents a particularly interesting case study to examine the interaction between firms' relative position along the GVCs and wage disparities based on workers origin. On the one hand, it is a very open and integrated economy, with increasingly diversified trading partners. This is notably illustrated by the GVC participation index, showing that Belgium sources more inputs from abroad and produces more inputs used in GVCs than most other OECD countries (De Backer & Miroudot, 2013). Estimates of Dhyne *et al*. (2015) further indicate that 82% (99%) of commercial firms in Belgium, between 2002 and 2012, have been producing (consuming) goods and services that were either directly or indirectly exported (imported). The manufacturing industry is one of the most fragmented sectors, with a particularly high GVC participation rate: 91.6% (99.5%) of firms operating in this industry are found to be directly or indirectly involved in exports (imports). This industry is thus an ideal candidate to investigate the consequences of upstreamness on workers' wages.

On the other hand, first-generation immigrants accounted in 2017 for almost 17% of the total population in Belgium (OECD, 2018), which makes this country one of the most multicultural in the OECD area (Martiniello, 2003). Unfortunately, it is also one of the worst OECD country in terms of the employment performance of immigrants. In 2017, the employment rate among foreign-born individuals in Belgium was approximately 57% (OECD, 2018). Only Greece, Mexico and Turkey had lower figures in the OECD area. Moreover, the study by the Federal Public Service Employment, Labour and Social Dialogue and Unia (2017) supports (on the basis of detailed descriptive statistics) that, while there is little evidence of wage heterogeneity between Belgian and EU15 workers, a huge heterogeneity appears between Belgian and non-EU15 groups of workers. Vertommen and Martens (2006) conduct a study on wage discrimination between native Belgian workers, new Belgian workers and foreigners, these last two groups being subdivided into 9 subgroups according to workers' regions of birth. To do so, they estimate Mincerian wage equations and Oaxaca-Blinder decompositions. Their results suggest that having Northern and Sub-Saharan African origins, despite possessing the Belgian nationality, decreases wages, while having Western and Eastern European origins has the opposite effect. More recently, controlling for a wide range of worker and firm characteristics, as well as firms' unobserved time-invariant heterogeneity and potential endogeneity in the composition of the workforce, the studies of Kampelmann and Rycx (2016), Fays *et al*. (2019) and Grinza *et al*. (2020) support the presence of wage discrimination in the order of 6% against non-EU15 workers considered as a whole in the Belgian private sector. When distinguishing these workers by their regions of birth, they further find that wage discrimination is the most significant against Asians (17.5%) and Eastern Europeans (12%), somewhat lower against Africans (7%) and people born in the South Pacific region (5.9%), and non-significant for North-Western Asians.

How does firms' upstreamness contributes to the explanation of wage gaps according to workers' origin? The study of Fays *et al*. (2020), based on detailed Belgian matched employed-employee data, suggests that workers—whatever their origin – earn significantly higher wages when being employed in relatively more upstream firms (i.e. in firms that are further away from the final consumer), even after controlling for group effects in the residuals, a large set of individual, job and firm characteristics, time fixed effects as well as the endogeneity of upstreamness. Their most robust estimates suggest that if firm-level upstreamness increases by one step (i.e. approximately one standard deviation), workers' gross hourly wages rise on average by 2% regardless of their origin, i.e. independently of whether the latter were born in developed or developing countries.

However, unconditional quantile regressions also show that returns to upstreamness are very unequally distributed along the wage distribution. More precisely, estimates indicate that high-wage workers born in developed countries benefit substantially more from upstreamness that their low-wage counterparts. For workers born in developing countries, the benefits of working in upstream firms appear instead to be very similar for low- and high-wage workers.

Quantile decompositions further show that differences in mean values of upstreamness for workers born respectively in developed and developing countries only modestly contribute to the overall wage gap by origin. On the contrary, differences in wage premia associated with upstreamness (for workers born respectively in developed and developing countries) are found to explain a substantial part of the wage gap, especially at the top of the earnings' distribution.

5 CONCLUSION

Very little is known on whether and to what extent productivity gains associated to firms' position in GVCs are shared with workers. While recent works (Mahy *et al.*, 2018; Szymczak *et al.*, 2019) agree on the beneficial impacts of upstreamness on firm's productivity, clear evidence of its overall and distributional impact on individual wages at the firm level is still lacking. At the same time, no study has been examining the native-immigrant wage gap (and its related determinants) through the lens of GVCs (and of firms' position in the latter). The only exception to our knowledge is the study of Fays *et al*. (2020) relative to the Belgian manufacturing industry. Their results show that upstreamness fosters workers' wages, but not uniformly along the earnings distribution and among workers of varying origins. More precisely, they indicate that rents generated by more upstream firms are mainly shared with high-wage workers born in developed countries. Workers born in developing countries (whatever their earnings) and low-wage workers from developed countries benefit much less from working in more upstream firms.

Furthermore, Fays *et al*. (2020) suggest that the unexplained part of the wage gap by origin, associated to upstreamness, is at least partly reflective of non-productive factors. This unexplained gap might be related to power and authority associated to certain higher-level occupations, more likely to be held by workers born in developed countries. Segregation and/or discrimination in performance-related pay based on origin might also be part of the explanation. Interestingly, these arguments echo the estimates of Kampelmann and Rycx (2016), Fays *et al*. (2019) and Grinza *et al*. (2020) showing that workers from developing countries generate employer rents in the Belgian private sector and that these rents derive from the fact that those workers earn less than their opposite numbers born in developed countries at any given level of productivity.

Overall, these findings call for concrete and targeted policy measures to improve the integration of people with a foreign background into the Belgian labour market. Results for the Belgian economy show that substantial differences in earnings are still observed among people with varying migration backgrounds after controlling for a large range of moderators. These unexplained differences might result from various factors including among others social capital, preferences and discrimination. Various initiatives have been recently taken by the Belgian authorities to strengthen the fight against discrimination based on the place of birth. For instance, the law of January 2018, added in the Belgian Criminal Code, enables social inspectors to rely on anonymous test methods, including "mystery calls" and fake CVs, to establish whether employers are in breach of anti-discriminatory policy. At the same time, some initiatives have been taken to help employers address the challenges of workforce diversity. Brussels' Public Employment Service (Actiris), for instance, offers free assistance, for recruitment and human resource management, to companies willing to increase the diversity of their workforce in the capital region. While all these initiatives certainly denote that the fight against discrimination towards ethnic minorities is a priority in Belgium and that concrete steps are being taken, their effectiveness (and the potential need to develop new ones) remains to be investigated in future research.

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