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GLOBAL VALUE CHAINS (GVCS) AND SOCIAL UPGRADING: THE ROLE OF COUNTRY'S ABSORPTIVE CAPACITY: THE EURO-MEDITERRANEAN CASE

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ABSTRACT

This study examines the multidimensional impacts of Global Value Chain (GVC) participation and its forward and backward linkages on the social upgrading process, using data from 63 countries over the period (2010–2020) with a special focus on Euro-mediterranean countries . Applying a two-stage least squares (2SLS) estimation method, the analysis highlights both the positive and negative effects of GVC integration on labour wellbeing while adding to the existing literature by measuring social upgrading in terms of four aspects; working poverty, working vulnerability, labour rights and unemployment. The paper further tries to enrich the literature by tackling the different countries absorptive capacities that might control the effectiveness of GVCs in the social upgrading process that includes innovative capacity, human capital capacity and governance capacity by introducing an interaction term between the GVC variable and the different capacities. The main findings show that forward GVC participation enhances labour wellbeing by increasing national compliance with labour rights and reducing unemployment. On the other side, it is found that GVC might lead to unequal impacts, where it works mainly in favour of high skilled labour, while the low skilled labour wages and opportunities fall, hence increasing income inequality and working poverty. In addition, the study highlights the role on innovation capacity and the governance quality in enhancing the implications of GVC for the social upgrading process. It is found that investments in R&D enhances labour rights and reduces working poverty, while the strong regulatory framework is found to be effective in terms of reducing working poverty, unemployment, and vulnerability. Furthermore, the study reveals that investments in human capital may propose challenges due to the mismatch between the educational outcomes and the GVC needs, which results in higher working poverty, unemployment mainly for the less skilled labour. Focusing on the Euro-Mediterranean (Euro-Med) region, the analysis reveals that while GVCs help reduce working poverty and improve labour rights, they also contribute to rising unemployment, particularly in low-skilled sectors like agriculture and textiles.

Key Words: GVCs, Social Upgrading, Labour Wellbeing, Absorptive Capacity, Innovation, Human Capital, Governance, Euro-med.

JEL Classification: F14; F16; J31; J21; F63; F66.

RÉSUMÉ

Cette étude examine les impacts multidimensionnels de la participation aux chaînes de valeur mondiales (CVM) ainsi que de ses liens en amont et en aval sur le processus d'amélioration sociale, en s'appuyant sur des données provenant de 63 pays sur la période 2010–2020, avec un accent particulier sur les pays euro-méditerranéens. En appliquant une méthode d'estimation en deux étapes des moindres carrés (2SLS), l'analyse met en lumière les effets à la fois positifs et négatifs de l'intégration aux CVM sur le bien-être des travailleurs, tout en enrichissant la littérature existante en mesurant l'amélioration sociale selon quatre dimensions : la pauvreté au travail, la vulnérabilité au travail, les droits du travail et le chômage.

L'article cherche également à approfondir la littérature en prenant en compte les différentes capacités d'absorption des pays qui peuvent conditionner l'efficacité des CVM dans le processus d'amélioration sociale. Ces capacités incluent la capacité d'innovation, le capital humain et la qualité de la gouvernance. Une variable d'interaction entre la participation aux CVM et ces différentes capacités est introduite à cet effet.

Les principaux résultats montrent que la participation en amont aux CVM améliore le bien-être des travailleurs en augmentant le respect des droits du travail à l'échelle nationale et en réduisant le chômage. En revanche, il est observé que l'intégration aux CVM peut générer des effets inégaux, bénéficiant principalement aux travailleurs hautement qualifiés, tandis que les salaires et les opportunités pour les moins qualifiés diminuent, ce qui accroît les inégalités de revenus et la pauvreté au travail.
Par ailleurs, l'étude souligne le rôle de la capacité d'innovation et de la qualité de la gouvernance dans l'amplification des effets positifs des CVM sur l'amélioration sociale. Il ressort que les investissements en R&D renforcent les droits du travail et réduisent la pauvreté au travail, tandis qu'un cadre réglementaire solide contribue efficacement à la réduction de la pauvreté au travail, du chômage et de la vulnérabilité. En revanche, les investissements dans le capital humain peuvent poser des défis, notamment en raison d'un décalage entre les résultats éducatifs et les besoins des CVM, ce qui entraîne une augmentation de la pauvreté au travail et du chômage, en particulier parmi les travailleurs peu qualifiés.

En se concentrant sur la région euro-méditerranéenne, l'analyse révèle que, bien que les CVM contribuent à réduire la pauvreté au travail et à améliorer les droits du travail, elles entraînent également une hausse du chômage, notamment dans les secteurs peu qualifiés comme l'agriculture et le textile.

الملخص

تتناول هذه الدراسة الآثار المتعددة الأبعاد للمشاركة في سلاسل القيمة العالمية وروابطها الأمامية والخلفية على عملية الترقية الاجتماعية، بالاعتماد على بيانات من 63 دولة خلال الفترة من 2010 إلى 2020، مع تركيز خاص على بلدان منطقة الأورو-متوسط. ومن خلال استخدام طريقة التقدير في مرحلتين، تسلط التحليلات الضوء على الآثار الإيجابية والسلبية لاندماج الدول في سلاسل القيمة العالمية على رفاه العمال، وتُثري الأدبيات القائمة من خلال قياس الترقية الاجتماعية عبر أربعة أبعاد: الفقر في العمل، هشاشة العمل، حقوق العمال، والبطالة.

كما تحاول الدراسة تعميق الفهم القائم من خلال تناول القدرات الاستيعابية المختلفة للدول التي قد تؤثر على فعالية سلاسل القيمة العالمية في دعم الترقية الاجتماعية، بما في ذلك القدرة على الابتكار، رأس المال البشري، وجودة الحوكمة. وتُدخل الدراسة متغيرًا تفاعليًا يجمع بين مؤشر المشاركة في سلاسل القيمة والقدرات المختلفة لقياس هذا التأثير.

تشير النتائج الرئيسية إلى أن المشاركة الأمامية في سلاسل القيمة العالمية تُحسّن من رفاه العمال من خلال تعزيز الامتثال الوطني لحقوق العمال وتقليل معدلات البطالة. في المقابل، أظهرت النتائج أن سلاسل القيمة قد تؤدي إلى آثار غير متكافئة، حيث تعود فائدتها بشكل أساسي على العمال ذوي المهارات العالية، بينما تنخفض أجور وفرص العمال الأقل مهارة، مما يؤدي إلى زيادة الفقر في العمل وتفاقم عدم المساواة في الدخل.

كما تُبرز الدراسة دور القدرة على الابتكار وجودة الحوكمة في تعزيز أثر سلاسل القيمة العالمية على الترقية الاجتماعية، إذ تبين أن الاستثمار في البحث والتطوير يُسهم في تحسين حقوق العمال وتقليل الفقر في العمل، بينما يُعد الإطار التنظيمي القوي فعالًا في تقليل الفقر والبطالة والهشاشة في سوق العمل.
ومع ذلك، تكشف الدراسة عن تحديات محتملة في الاستثمار في رأس المال البشري بسبب عدم التوافق بين مخرجات التعليم واحتياجات سلاسل القيمة، مما يؤدي إلى ارتفاع معدلات الفقر في العمل والبطالة، لا سيما بين العمال الأقل مهارة.

وفيما يتعلق بمنطقة الأورو-متوسط، تشير التحليلات إلى أن سلاسل القيمة تساهم في الحد من الفقر في العمل وتحسين حقوق العمال، لكنها في الوقت نفسه تُسهم في زيادة معدلات البطالة، خصوصًا في القطاعات الأقل مهارة مثل الزراعة والنسيج.

INTRODUCTION

Recently, GVCs have become a key pillar of international trade and economic development, mainly by reshaping the production, consumption and trading of goods across the world. Given today's interconnected world, it enables firms to benefit from diving the production across many countries while each country focusing on its comparative advantage, hence reducing costs, increasing efficiency, and enhancing innovation. For the emerging economies, GVCs offer opportunities to industrialization and economic growth by accessing global markets, technology, and knowledge transfer. On the other side, for the developed economies, GVCs enable countries to access low-cost labour and resources, and in return focussing on the higher value-added activities like design, branding, and marketing. However, despite the wide view regarding the effectiveness of GVCs for the economic upgrading process, the implication for the social upgrading in terms of changes in employment and real wages is still debatable. On one side, GVCs have profound implications for the labour market and labour wellbeing by creating new job opportunities, especially in industries where countries have a comparative advantage, hence, provide opportunities for skill development and knowledge transfer, yet they also bring challenges such as job insecurity and wage pressures. The outsourcing of certain tasks to regions with lower labour costs can result in job displacement and downward pressure on wages in higher-cost locations (Bernhardt & Milberg, 2011).

GVCs specifically play a significant role in shaping labour markets and worker well-being in the Euro-Med region. However, the benefits of GVC participation are uneven across the region. While some countries have seen increased labour opportunities, some Mediterranean nations face challenges in upgrading the quality of jobs, with many positions concentrated in low-wage, low-skill segments of the value chain. The share of "low-skilled" jobs in Mediterranean economies participating in GVCs remains high, often leading to precarious working conditions and limited upward mobility for workers. Therefore, while GVCs have the potential to improve labour outcomes in the Euro-Med region, their benefits are contingent upon policies that focus on skills development, labour rights, and sustainable industrial upgrading (Gereffi, G., & Sturgeon, T., 2013). In this regard, governments need to address these challenges by enhancing the country's competitiveness and implementing policies that promote labour rights, provide social protection, and invest in education and training to ensure that workers benefit from participation in GVCs while safeguarding their well-being and livelihoods. Hence, a country's absorptive capacities including its innovation, human capital, and regulatory environment conditions the realization of GVCs' benefits. Assessing these factors enables policymakers to identify strengths and weaknesses, formulate appropriate policies, and implement targeted interventions to enhance the country's competitiveness in GVCs.

Based on the previous discussion, the main aim of this paper is to analyse the role of GVC participation in the social upgrading process covering the most recent period (2010 - 2021) on a panel of 63

countries using 2SLS to deal with the problem of endogenous covariates and fixed effects with a specific focus on the Euro-Med case. However, the paper adds to the existing literature in two main elements. First, as mentioned, social upgrading has been tackled always in terms of employment and wages, yet following the Decent Work Agenda, social upgrading is defined as the process of improvements in the rights and entitlements of workers as social actors, which enhances the quality of their employment (Sengenberger, W., 2001). In that regard, this study focuses on labour well-being in its broad definition rather than just employment and wages, where it is tackled through four main aspects: employment, working poverty, working conditions and labour rights.

Moreover, we try to enrich the existing empirical framework by tackling which absorptive capacity matters more to reap the benefits of GVCs: innovation, governance and/or human capital capacity. Hence, the paper seeks to empirically demonstrate two hypotheses. The first is the impact of countries' participation in GVCs on workers' well-being, that is expected to have an adverse impact and the second is the role of countries' absorptive capacity in terms of innovation, governance and human capital on the benefits that countries can derive from joining GVCs, which is expected to enhance GVC effectiveness. The analysis is done in two steps: 1) Analysing the impact of GVCs with its different linkages on the four aspects of labour wellbeing, 2) Adding an interaction term between the GVCs variables and the different forms of country's absorptive capacity previously mentioned.

To this end, the rest of the paper is organized as follows: section 2 reviews the previous literature tackling the relation between variables of interest. Section 3 provides some stylized facts about GVCs, social upgrading and countries' absorptive capacity aspects in the sample countries over the past decade. Section 4 tackles the methodology, and data. Section 5 shows the empirical findings of the study. Section 6 concludes and offers some policy recommendations.

LITERATURE REVIEW

GVCs are essential in today's interconnected economy, enabling countries to leverage comparative advantages through segmented production processes across various locations. Lately, GVCs have become a dominant feature of international trade, while influencing patterns of specialization and competitiveness among countries. That is why the theoretical concerns have been shifted towards the implications of GVCs for the labour markets. Over time, these models evolved to incorporate various concepts such as Fragmentation (Jones and Kierzkowski, 1990), Outsourcing (Arndt, 1996; Feenstra and Hanson, 1996; Kohler, 2001), Offshoring (Kohler, 2009; Feenstra, 2010; Baldwin and Robert-Nicoud, 2014), Trade in Tasks (Grossman and Rossi-Hansberg, 2008) and most recently, Global Value Chains (Koopmanet al., 2014). Through it all, it has been suggested that GVCs in its different terms facilitates the integration of economies into the global marketplace, fosters technological innovation and knowledge transfer, and enhances productivity. However, it also poses challenges, including job displacement, skill mismatches, and income inequality, as labour markets adapt to the changing demands of fragmented production processes.

Aligning with the general theoretical framework of GVCs, many empirical studies synthesize key findings and debates surrounding the implications of GVCs from a social upgrading perspective in terms of living standards and job. According to the aim of this paper, the empirical literature review focusses on how participation in global value chains shapes employment patterns, wages, working conditions. In addition, it highlights the main specific conditionalities that limit the countries' ability to benefit from GVCs. Numerous studies have highlighted the complex interplay between GVC participation and employment dynamics. While some argue that integration into GVCs leads to job creation through increased demand for labour-intensive production processes (Lu, et al., 2024), others suggest that it may exacerbate employment instability due to outsourcing and offshoring practices that may contribute to downward pressure on wages, particularly for low-skilled workers in developing countries (Gimet, et al., 2015; Banga, 2016; Pahl & Timmer, 2020). Other range of studies viewed that the implications of GVCs depend on the relative position along the chain (Jessen, 2021; Szymczak & Wolszczak-Derlacz, 2022). From a social sustainability perspective, it is also argued that GVCs' fragmented production processes and decentralized governance structures have significant implications for working conditions. Research indicates that subcontracting arrangements within GVCs can lead to precarious employment, informalization, and violations of labour standards, particularly in sectors characterized by intense competition and cost-cutting pressures (Pegler, 2015; Pasquali, 2021; Nikulin et al., 2022; Nikulin & Wolszczak-Derlacz, 2023).

Other strand of the literature argued that the implications of GVCs are intricately tied to the capacity of the country involved. GVCs offer numerous opportunities for economic growth, technology transfer, and skill development. However, a country's capacity to effectively engage with GVCs significantly influences

its ability to harness these benefits. Nations with skilled labour forces, innovative environment, supportive policies, and efficient institutions are better positioned to attract foreign investment, integrate into GVCs, and maximize the spillover effects. Some studies tied the effectiveness of GVCs to the governance and institutional framework of the country as well as the national context and policy framework (Puppim de Oliveira & de Oliveira Cerqueira, 2014; Kummritz et al., 2017; Khattak et al., 2017; Korwatanasakul et al., 2020; Teipen, & Mehl, 2021; Ndubuisi & Owusu, 2022; Biurrun et al., 2022; De Marchi & Alford, 2022). The results show that upgrading as a result of GVCs is conditional on the policy framework in the country including infrastructure, connectivity, investment and trade policy, business climate and institutions, financial development, labour market policy, education and skills, product standards and innovation, as well as labour, social, and environmental standards. On the other side, GVCs effectiveness has been tied to the innovation context, Gehl & Vallejo (2018) revealed the role of successful innovation systems in claiming the gains from GVCs. The results showed that the ability to diversify towards technological intensive goods is conditional on stronger innovation systems such as public R&D investments that help to build export capacity and diversify horizontally into new GVCs.

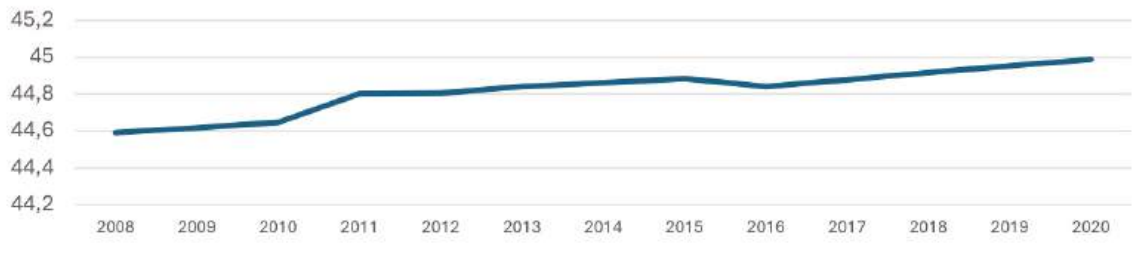
As shown, the relevance of GVCs for social upgrading in terms of wages and employment has been widely investigated, however, the literature lacks empirical studies tackling its relevance to the wellbeing in broader strands. In addition, despite the rich literature covering the conditionality of such link on the country's governance capacity, limited studies have tackled this direction in the social upgrading strand of the literature, while ignoring other aspects of absorptive capacity. The current paper adds to the existing literature by focussing on the labour wellbeing in its broader definition in terms of employment, working poverty, labour rights and working conditions rather than just employment following the International Labour Organization's Decent Work Agenda (Sengenberger, 2001) that comprises different aspects. In addition, arising from the fact that understanding and enhancing a country's capacity is essential for leveraging the full potential of GVCs and reaping their benefits, the current study tries to enrich the existing empirical framework by tackling the nonlinear relationship between GVC and Social upgrading by studying which absorptive capacity matters more to reap the benefits of GVCs: innovation, governance and/or human capital capacity.

STYLIZED FACTS

GVC

Figure 1 shows that over the past decade, GVCs have shown an increasing trend all-over the world, where they were a little bit fluctuating over the years, yet they have been increasing steadily starting from 2016. Despite that the long-term trend remained increasing, as technological innovations and regional trade agreements continued to push for greater participation in GVCs, the period between 2011 and 2016 showed a period of adjustment due to the global economic shifts and the gradual recovery after the 2008 financial crisis. Starting with the economies in developed countries, they struggled with weak demand, and slow growth, where many firms were still cautious about expanding their global supply chains, and some opted for shorter, more localized supply chains due to uncertainty in the global economy and concerns about demand. Besides, from 2011 onward, the growth rates of many emerging economies began to slow down, with China transitioning from an investment-driven growth model to one focused on consumption and services. This had a noticeable effect on the dynamics of GVCs since as the demand from emerging economies slowed, the production of intermediate goods in these countries was less robust, leading to some slowdown in the overall growth of GVCs (Keane, J., 2012). However, Post-2016, GVC showed a stable increase that was driven by the confluence of several factors. The technological advancements (e.g., automation, AI, digital platforms) that enabled more flexible and efficient supply chains. The regional trade agreements and the regionalization of trade helped firms mitigate risks from global trade tensions and strengthened regional supply chains. The geopolitical shifts (e.g., U.S.-China trade war, Brexit) pushed firms to diversify their supply chains. The rising consumer demand for sustainable and ethical production led to changes in sourcing practices and the geographic distribution of GVCs (Lee, K., et al., 2018).

Figure 1: Average world GVC participation as % of gross exports between 2008 and 2020

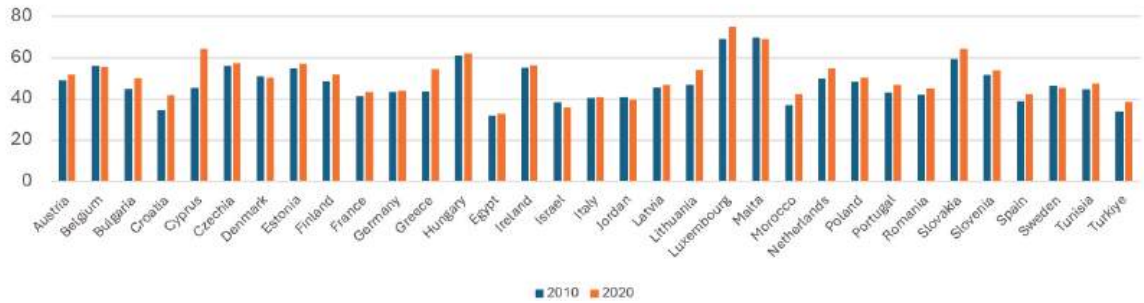


Source: By the author based on TIVA data base.

When examining the GVC participation of Euro-med countries from 2010 to 2020, for most countries in the region, the share of GVCs in gross exports exceeds 40%, which highlights the importance of GVC in the region. For some countries, like Malta and Luxembourg the share of GVC exceeds 60%. It

is quite clear that almost all countries in the region have experienced an increase in GVC between 2010 and 2020, except for some countries like Jordan, Sweden and Belgium (see figure 2). Regional integration and trade liberalization within the European Union (EU) and with neighbouring Mediterranean countries have facilitated more efficient cross-border trade and investment, boosting the flow of intermediate goods and services. Improvements in infrastructure and technological advancements have also played a significant role in reducing costs and enhancing the ability of Euro-Med countries to participate in higher-value stages of production. Furthermore, countries like Turkey, Morocco, and Tunisia have seen increased foreign direct investment (FDI), which has contributed to their growing involvement in GVCs. Finally, the EU's trade agreements with Mediterranean partners have helped integrate the region more deeply into European and global value chains, driving up the region's share in global production networks (Gereffi, G., & Sturgeon, T., 2013).

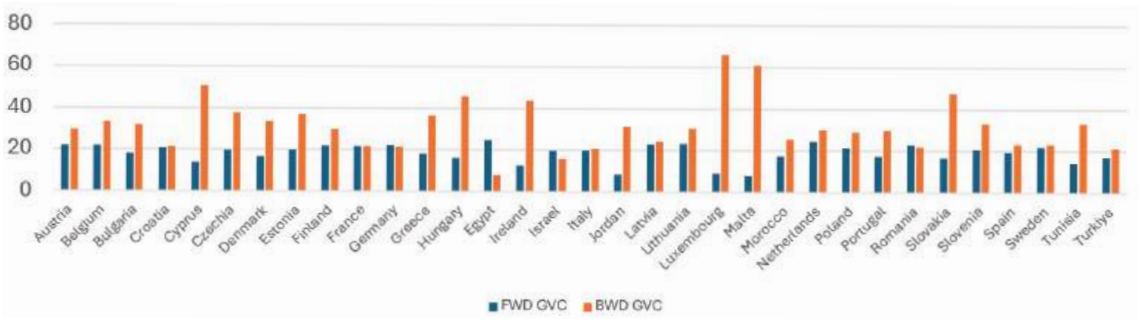
Figure 2: GVC participation as % of gross exports for Euro-Med Countries in 2010 and 2020



Source: By the author based on TIVA data base.

Despite the wide participation of the Euro Mediterranean Countries in the GVCs, the local backward and forward linkages within these value chains seem to be strictly heterogenous. Northern Mediterranean countries seem to be heavily engaged in backward linkages with a percentage that exceed the 40% of gross exports like Cyprus, Luxemburg, Malta, Slovakia, Hungary and Czechia. On the other side, southern countries seem to rely mainly on forward linkages that represents the value created in earlier stages, which rely mainly on low skilled labour like Egypt (see figure 3). Hence this might condition the equal distribution of GVCs opportunities across the region.

Figure 3: Forward and backward GVC participation as % of gross exports for Euro-Med Countries in 2020

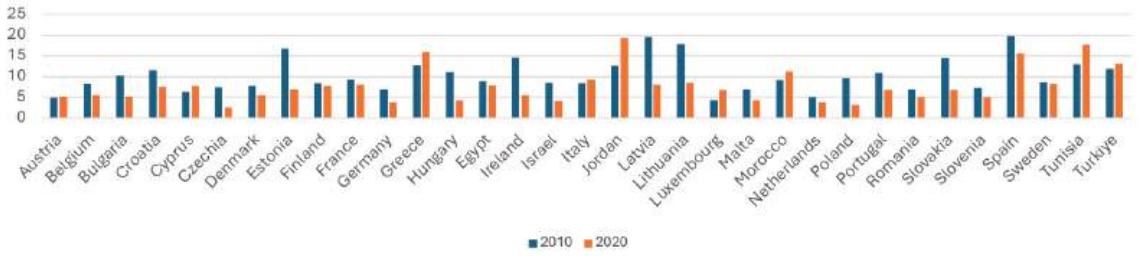


Source: By the author based on TIVA data base.

LABOUR WELLBEING

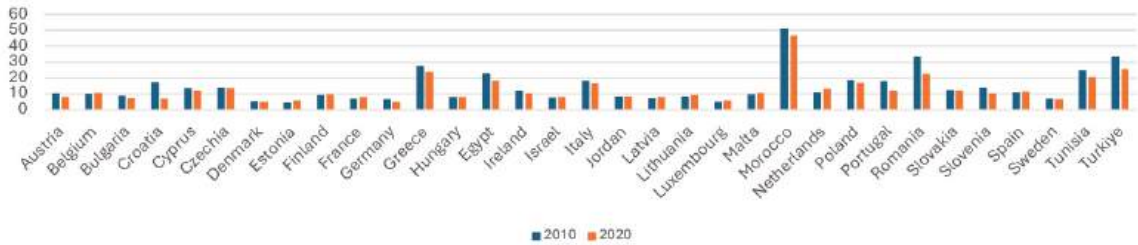
Figures (4, 5 ,6 and 7) tackles the different aspects of labour wellbeing for the Euro-Med countries. Regarding unemployment, most of the countries lies below 15%, yet some countries suffer from very high unemployment rates like Greece, Estonia, Jordan, Lativia, Lithuania, Spain and Tunisia. Figure 3 shows that for most of the sample, countries have succeeded in reducing unemployment between 2010 and 2020. Regarding working vulnerability, it accounts for less than 30% of total employment in almost all countries, except for Morocco, where it accounts for almost 50% of the total employment, followed by Romania and Turkey. When considering the national compliance with labour rights, Figure 5 shows that, labour rights are widely respected in the region mainly for the European countries, where almost all the countries score less than 2, yet it is less prevalent for the middle eastern countries like Jordan, Morocco, and Turkey that scores more than 3. It is showed that Egypt is the least performing country in terms of labour rights with a score that exceeds 6. However, it is clear in the figure that almost all the countries have improved their compliance with labour rights by reducing their score between 2015 and 2020. Hence, while labour rights vary across countries, many Euro-Mediterranean nations have made strides in improving legal frameworks, yet there are still widespread concerns over enforcement of these rights, particularly in sectors like agriculture, construction, and domestic labour, where workers often face exploitation. Finally, considering working poverty, for almost all the countries, workers below the poverty line accounts for only 15% of the total employment, yet for Egypt, Tunisia, and Turkey it exceeds 20%. Nevertheless, Figure 6 shows that working poverty has increased for many countries in the region between 2015 and 2020 like Egypt, Tunisia, Greece, Jordan, and Austria. While on the other side, many countries have succeeded in reducing it sharply like Turkey, Morocco, Bulgaria, Cyprus, and Estonia.

Figure 4: Unemployment as % of the total labour force for Euro- Med Countries in 2010 and 2020



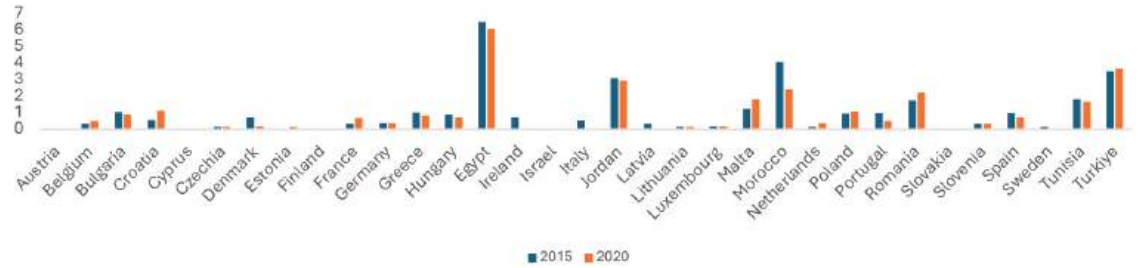
Source: By the author based on ILOSTAT, ILO modelled estimates

Figure 5: Working Vulnerability as % of total employment for Euro-Med Countries in 2010 and 2020



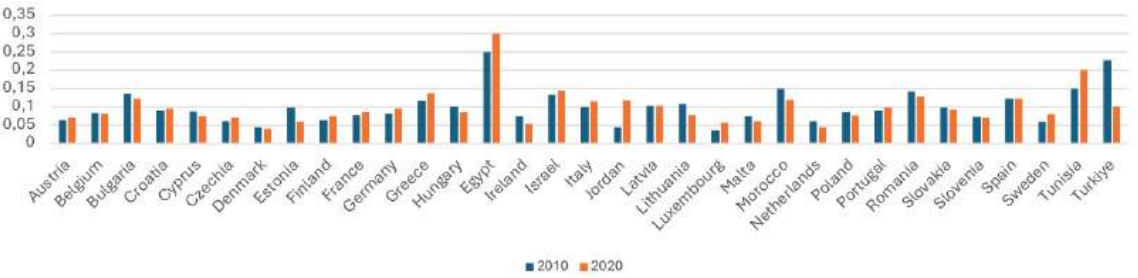
Source: By the author based on ILOSTAT, ILO modelled estimates

Figure 6: Score of national compliance with labour rights Index for Euro- Med Countries in 2010 and 2020



Source: By the author based on ILOSTAT, ILO modelled estimates

Figure 7: Working Poverty as % of employed people for Euro-Med Countries in 2010 and 2020



Source: By the author based on ILOSTAT, ILO modelled estimates

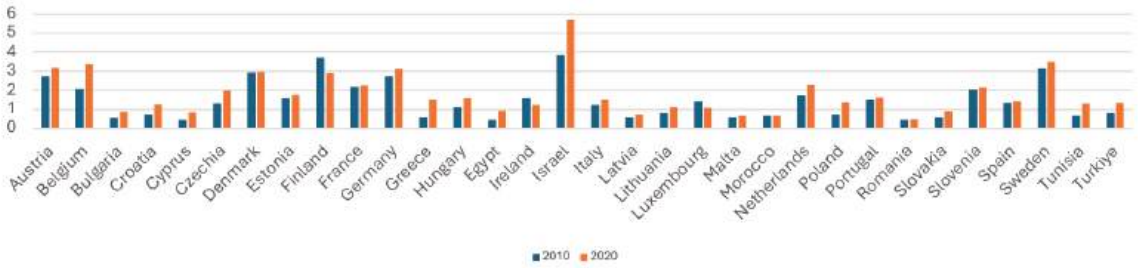
COUNTRY CAPACITIES

When considering the different countries' capacities, it is worth mentioning that research and development (R&D) investment, government spending on education, and regulatory quality play crucial roles in shaping economic and social development in any country, yet it is very limited in the region. Figure 8 shows that R&D investment varies across Euro-Med countries, with wealthier northern Mediterranean nations such as Finland, Sweden, and Austria typically investing more than 3% of the GDP in R&D, fostering technological advancements and high-value industries. In contrast, several Southern Mediterranean countries, including Morocco, Tunisia, and Egypt, face challenges in scaling up such investments that doesn't exceed 1% of the GDP, often due to limited public funding and lower private sector engagement.

Regarding investments in human capital, figure 9 shows that government spending on education accounts for more than 3% of total government spending for all the countries in the region, with most of the countries spending more than 5% on education. Some countries dedicate a higher share of their budgets to education, like Denmark, and Sweden with more than 7% of government spending goes to education. It is quite clear that almost all countries have increased spending on education between 2010 and 2020, yet it is still very low, where it doesn't exceed 10% of the governments total spending.

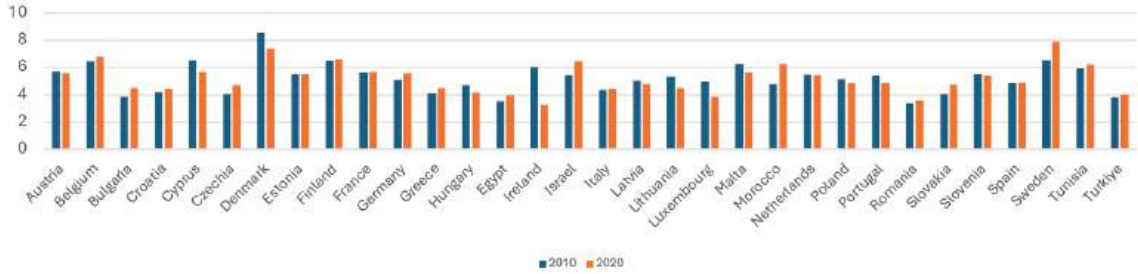
Figure 10 shows that Northern Euro-Med countries tend to have stronger regulatory frameworks, ensuring a transparent and efficient business environment that promotes private sector growth and attracts foreign investment. Denmark, Finland, Swede, Luxemburg and Netherlands are among the best performing countries regarding the regulatory quality with a score higher than 1.5 that is near the maximum score (2.5)[1], however, regulatory quality is more variable in Southern Mediterranean countries, where weaker governance structures, inconsistent enforcement of labour and environmental laws, and bureaucratic inefficiencies can hinder development potential. Egypt, Morocco and Tunisia are among the least performing countries where they score around -0.5.

Figure 8: R&D expenditures as % of GDP for Euro- Med Countries in 2010 and 2020



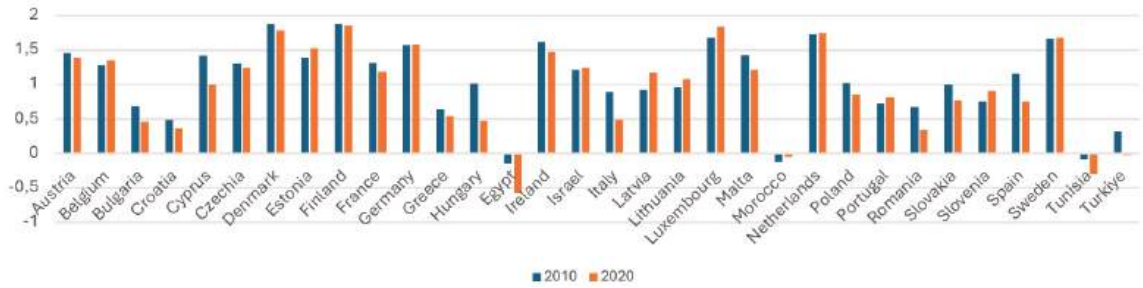
Source: By the author based on WDI, WB

Figure 9: Education Expenditure as % of total government expenditures for Euro-Med Countries in 2010 and 2020



Source: By the author based on WDI, WB

Figure 10: Regulatory Quality Index score for Euro-Med Countries in 2010 and 2020



Source: By the author based on WGI, WB

[1] It ranges between -2.5 and 2.5, where higher scores indicate better regulatory quality.

The figures in this section show that over the past decade, GVC participation has increased in the region for almost all the countries. However, on the other side, a large proportion of the countries have experienced a remarkable improvement in labour wellbeing, while it still remains a significant challenge for the region, especially in Southern Mediterranean countries, which have a large portion of the workforce employed in low-wage, informal, and precarious jobs that is often exacerbated by high levels of youth unemployment and gender disparities, hence, the question remains to discuss the causal relationship between GVCs and labour wellbeing, and whether addressing the disparities in R&D investment, education spending, and regulatory quality will be key to fostering GVCs effectiveness and ensuring sustainable growth, This will be tested in the following section through the empirical model considering the impact of GVCs on the social upgrading, while accounting for the conditionality of the different countries' absorptive capacities.

METHODOLOGY AND DATA

METHODOLOGY

To test the previous hypotheses the paper uses secondary data from the Trade in Value Added (TiVA), and Inter-Country Input-Output (ICIO) database that provides indicators on the domestic and foreign origins of value added embodied in exports and in final demand for 63 countries from 2010 to 2021. The rest of the data is retrieved from the International Labour Organization (ILO), and World Bank (WB). The study focuses on this time frame since, the pattern of GVCs has undergone significant changes over the past decade driven by various economic, technological, and geopolitical factors. It includes for instance, technological advancements, rising trade tensions, in addition to new trade agreements and regional trade blocs. Moreover, the COVID-19 pandemic highlighted vulnerabilities in global supply chains, leading to disruptions in production and distribution, where such experience has led many companies to reconsider their supply chain strategies.

The estimated model is as follows:

$$\text{Ln LWell}_{it} = \beta_0 + \beta_1 \text{lnGVC}_{it} + \beta_2 Z_{it} + \aleph_i + \varepsilon_{it} \quad (1)$$

$$\text{Ln LWell}_{it} = \beta_0 + \beta_1 \text{lnGVC}_{it} + \beta_2 Z_{it} + \beta_3 \text{GVC}_{it} \times \text{EUR}_i + \aleph_i + \varepsilon_{it} \quad (2)$$

For the panel data, i refers to the country and t represents the time period. The main dependent variable is labour wellbeing. Following the International Labor Organization's Decent Work Agenda (Sengenberger, 2001), the paper measures wellbeing by tackling four main aspects: working poverty, labour rights, working conditions and employment. The main independent variable is GVC participation measured through the overall participation, forward participation, and backward participation. Z_{it} represents the set of control variables. The paper controls for the capital stock in the country, either through a substitution effect that more capital is used instead of workers or in a complementary relationship such that more capital is needed in association with additional workers (Bloch & Smith, 1977). GDP per capita as the widest measure of overall economic activity. Fertility rate through its effect on the early skill-acquisition, and unemployment risk in addition to its effect on the overall population (Polachek & Tatsiramos, 2014). School enrolment, where investments in education contribute to the empowerment of individuals to meet the evolving demands of the labour market, adapt to technological advancements, and remain competitive in their respective fields (Mincer, 1989). ICT where its adoption in businesses has led to a transformation in job roles and work processes, requiring workers to adapt to technological changes, while also facilitating remote work opportunities and the globalization of labour markets (Atalay, et al., 2018). EUR is a dummy variable that takes 1 if the country belongs to the Euro – Mediterranean region and zero otherwise. The paper uses an interaction term between GVC and EUR variable to separate the impact of GVC on Social upgrading in the region. $\aleph_i$ represents the unobservable

country fixed effects to account for unobservable heterogeneity across countries, and εit is the error term. It is worth mentioning that for smoothing the data, the natural logarithm is taken for some of the variables of the model, which allows for direct approximate proportional differences interpretation. All regressors are expressed as lags, given that the wage, employment and labour wellbeing adjustments to GVC participation are not instantaneous.

To estimate the previous equation, we started with a static model, mainly the random effects model, based on the Hausman test (see table 1 in appendix). Then following Banga (2016), the paper adopts a two-step system generalized method of moments (GMM) model to capture the dynamic nature of trade flows and to deal with the problem of endogenous covariates. As concerning Arellano and Bond (1991) and Arellano and Bover (1995), using the GMM method accounts for the problems of country-specific effects, serial correlation, and endogeneity unlike the traditional static techniques. Finally, to treat potential endogeneity for GVC due to issues of reverse causality and omitted variable bias, the paper adopts 2SLS following Mayer, Melitz, et al. (2016) and Aghion et al. (2018). The paper uses as instruments for GVCs the average trade volume with other countries in the same region, excluding the country of interest following Baldwin, R. (2016). This approach captures regional trade dynamics that may influence GVC participation without being directly affected by the specific economic conditions or policies of the country in question as it is argued that using average regional trade volume helps isolate the influence of broader regional economic activity while controlling for country-specific effects. Furthermore, the paper employed tests for overidentification and under identification to assess the validity of the instruments, where it shows that the model is identified and that the instruments do not suffer from correlation with the error term and are appropriately excluded from the equation (see table 2 in the appendix). It's worth mentioning that for abbreviation, the paper shows only the results of the 2SLS model, where the results of the three techniques were robust.

Afterwards, arising from the fact that understanding and enhancing a country's capacity is essential for leveraging the full potential of GVCs and reaping their benefits, the current study tries to enrich the existing empirical framework by tackling which absorptive capacity matters more to reap the benefits of GVCs: innovation, governance and/or human capital (HK) capacity. The following equation is estimated, where we introduced a variable representing the capacity of the country in the previously mentioned three aspects as well as an interaction term between the GVC and the country's capacity. Such that the equation is estimated once for the HK capacity, then another time for the innovative capacity and finally with the governance capacity. Then we tackled the case of the Euro-Med era by including an interaction term with the dummy variable EUR.

$$\text{Ln LWell}_{it} = \beta_0 + \beta_1 \text{ lnGVC}_{it} + \beta_2 \text{ lnGVC x CAP} + \beta_3 Z_{it} + \aleph_i + \varepsilon_{it} \quad (3)$$

$$\text{Ln LWell}_{it} = \beta_0 + \beta_1 \text{ lnGVC}_{it} + \beta_2 \text{ lnGVC x CAP} + \beta_3 \text{ lnGVC x CAP x EUR}_i + \beta_4 Z_{it} + \aleph_i + \varepsilon_{it} \quad (4)$$

Data and Variables

For equation 1, the dependent variable is labour wellbeing measured through four main aspects: working poverty, labour rights, working conditions and employment. For working poverty, the paper uses the

working poverty rate from the ILO that measures the share of employment with lowest economic class based on the WB's international poverty line of $2.15 a day. Regarding labour rights, the paper uses the Level of national compliance with labour rights variable from ILO, the indicator measures the level of national compliance with fundamental rights at work (freedom of association and collective bargaining) for all ILO member states based on six international ILO supervisory body textual sources and also on national legislation, where the indicator has a range from 0 to 10, with 0 being the best possible score (indicating higher levels of compliance with fundamental rights at work) and 10 the worst (indicating lower levels of compliance with fundamental rights at work). With regard to employment, the paper uses the annual unemployment rate from the ILO. For working conditions, the paper uses vulnerable employment as percentage of total employment. The main independent variable is the GVC participation measured through various linkages like forward participation in GVCs measured as domestic value added in foreign exports as a share of gross exports, by foreign exporting country, backward participation in GVCs measured as foreign value-added share of gross exports, overall GVC participation measured as the summation of both linkages. The data are retrieved from the TiVA database that provides indicators on the domestic and foreign origins of value added embodied in exports and in final demand. They are derived from OECD's Inter-Country Input-Output (ICIO) database which provides estimates of the flows of goods and services between 63 countries. For the set of control variables, data is retrieved from the world development indicators (WDI) databank by the WB. The paper uses fertility rate as total births per woman, GDP per capita measured by GDP per capita annual growth rate, capital stock measured as gross capital formation as a percentage of total GDP, school enrolment measured by net secondary school enrolment. and finally, ICT in terms of Internet usage measured as number of internet users per 100 population, education.

In equations 3 & 4, for the country's capacity, the paper uses three main constraints: HK constraint, innovation constraint, and governance constraint. For the HK, it is measured as government expenditure on education as percentage of government total expenditure through which investments in education contribute to the empowerment of individuals to meet the evolving demands of the labour market, adapt to technological advancements, and remain competitive in their respective fields (Mincer, 1989). Regarding the innovation constraint, the paper uses R&D expenditure as a percentage of GDP. Such data are retrieved from the world development indicators (WDI) databank by the WB. With respect to the governance constraint, the paper uses regulatory quality, where it captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Higher scores indicate better regulatory quality, where regulations are transparent, predictable, and supportive of economic growth, while lower scores suggest issues such as excessive bureaucracy, lack of enforcement, or corruption that hinder private sector development, such data is retrieved from the Worldwide Governance Indicators by the WB.

EMPIRICAL FINDINGS

WHOLE SAMPLE

This section tackles the main empirical findings using the 2SLS estimation showing the overall effects for the whole sample, then section 5.2 tackles the case of the Euro-Med countries. Each table consists of 9 columns; the first 3 columns show the effect on working poverty, the second three columns show the effect on labour rights, the next three columns show the effect on unemployment and finally the last three columns show the effect on working conditions. Within each category the first column represents the effect of the overall GVC participation, the second column shows the effect of forward GVC and finally the third column shows the effect of backward GVC.

Impact of GVC on Labour Wellbeing

Table 1 shows the impact of GVC on labour wellbeing for the whole sample. The main findings show that, the overall global value chain participation along with the forward linkage is more important relevant to the backward linkage in our case. First, it is found that GVC participation is beneficial for labour wellbeing in terms of unemployment and labour rights. It is found that participation in GVC or the forward linkage increases the national compliance with labour rights. In addition, it is found that GVC participation reduces unemployment in the participating country. However, on the other side it is found that GVC and the forward linkage renders labour wellbeing by increasing the working poverty. Such results follow the literature where it is argued that GVCs from one side can reduce unemployment through multiple channels, either by increased investment mainly by attracting foreign direct investment that leads to job creation in both manufacturing and service sectors. Another possible channel is the market expansion, where it enables firms to access larger markets, increasing demand for their products and services, which can lead to higher production levels and the need for additional labour. On the other side, it is found that backward participation might lead to higher unemployment, since firms that establish backward linkages may choose to outsource or offshore production to suppliers in countries with lower labour costs. Also, if workers are unable to acquire the necessary skills, they may face unemployment due to skill mismatch, specifically if the industries participating in backward linkages invest in automation and technology (Baldwin, R., & Lopez-Gonzalez, J., 2015). Likewise, countries participating in GVCs might be enforced to comply with labour rights due to multiple considerations. First, firms participating in GVCs often adhere to international labour standards and corporate social responsibility practices to maintain their reputations and competitiveness in global markets. In addition, firms might face a market pressure from the multinational corporations that operate within GVCs to comply with labour rights standards along with demand for transparency and accountability that requires better tracking and reporting of labour practices. This is common for countries in forward linkages as they are particularly selling to developed markets with high consumer awareness of labour rights, hence, they may face greater

reputational risks if their suppliers violate labour standards, which might lead to consumer boycotts, negative media coverage, and pressure from NGOs. (Gereffi, G., & Fernandez-Stark, K., 2016).

It's found that both GVC and forward GVC increase working poverty, which could be again returned to skill mismatches, as the demand for specific skills in GVCs can leave unskilled workers behind by remaining trapped in low-paying jobs. Moreover, suppliers in developing countries may cut costs by exploiting labour to stay competitive in the international market, this includes low wages, long hours, and poor working conditions, perpetuating cycles of poverty. This is more likely for forward linkages, where it might lead to job polarization, where high-skill, high-paying jobs are created, but low-skill, low-paying jobs dominate. This can exacerbate income inequality and working poverty among those without the necessary skills (Selwyn, B., 2016).

The signs of control variables are in compliance with the literature, where it is found that GDP per capita growth is essential in improving labour wellbeing by reducing working poverty, vulnerability and unemployment, while increasing labour rights. After that, ICT measured through internet usage is found to be beneficial in reducing working poverty and vulnerability and unemployment. Gross capital formulation as a measure for investments is found to render workers wellbeing, which supports the literature argument about the substitution effect between capital and labour.

Table 1: Impact of GVC on Labour Wellbeing

	WPOV	WPOV	WPOV	LABRIGHTS	LABRIGHTSLABRIGHTS		UNEMP	UNEMP	UNEMP	VULNER	VULNER	VULNER
l.GVC	0.096			-0.094			-0.037			0.002		
	(1.76)*			(2.17)**			(1.74)*			(0.06)		
l.FWDGVC		0.248			-0.070			-0.045			-0.059	
		(3.14)***			(2.22)**			(1.36)			(0.94)	
l.BWDGVC			-0.018			0.030			0.498			0.440
			(0.33)			(1.20)			(3.52)***			(1.90)
l.SEC	0.039	0.040	0.054	0.022	0.023	0.020	-0.000	0.002	0.017	-0.070	-0.077	-0.107
	(1.11)	(1.18)	(1.56)	(1.70)*	(1.81)*	(1.60)	(0.01)	(0.24)	(1.31)	(2.90)***	(3.17)***	(3.17)***
l.FERT	1.024	0.911	0.619	-0.015	-0.048	0.064	-2.214	-2.292	-1.805	0.052	0.247	1.049

	(0.75)	(0.68)	(0.45)	(0.04)	(0.12)	(0.16)	(5.09)***	(5.13)***	(3.40)***	(0.08)	(0.37)	(1.13)
l.GDPpcG	-0.517	-0.526	-0.527	0.029	0.030	0.029	-0.135	-0.132	-0.130	-0.046	-0.041	-0.031
	(5.80)***	(6.01)***	(5.88)***	(2.06)**	(2.16)**	(2.08)**	(4.61)***	(4.50)***	(3.73)***	(2.25)**	(1.94)*	(1.26)*
l.INVG	0.054	0.055	0.059	0.034	0.026	0.035	-0.011	-0.009	-0.002	0.020	0.022	0.045
	(2.48)**	(2.58)***	(2.68)***	(2.02)**	(1.61)	(1.95)*	(1.43)	(1.19)	(0.22)	(0.95)	(1.00)	(1.78)*
l.INT	-0.040	-0.043	-0.045	0.007	0.006	0.006	-0.052	-0.049	-0.031	-0.039	-0.037	-0.027
	(2.13)**	(2.31)**	(2.38)**	(1.30)	(1.14)	(1.22)	(7.34)***	(6.84)***	(2.89)***	(4.53)***	(4.24)***	(2.31)**
_cons	16.244	16.789	16.316	7.835	6.503	7.548	12.186	8.690	11.404	60.130	41.244	55.905
	(5.71)***	(6.82)***	(5.84)**	(0.97)***	(0.91)***	(0.89)**	(1.74)***	(1.55)***	(1.58)**	(5.21)***	(5.05)***	(4.75)**
N	**257**	**257**	**257**	**335**	**335**	**335**	**715**	**715**	**715**	**656**	**656**	**656**

Based on the author's own calculation. * p<0.1, ** p<0.05, ***p<0.01

Innovation Capacity

Table 2 shows the impact of GVC participation on labour wellbeing after introducing the innovative capacity measured by expenditures on research and development. Apparently, the results show that when introducing the interaction term, the GVC linkages alone is insignificant, while what matters is the interaction term between the GVC and innovation. The results show that innovation increases the effectiveness of GVC in reducing working poverty, increasing labour rights and reducing unemployment, while it is not significant for working vulnerability. It suggests that when GVC is accompanied with investments in R&D, it works more efficiently for social upgrading through several mechanisms. Innovations can improve product quality, which can enhance competitiveness in global markets, leading to increased demand and job creation. The creation of higher value-added products enables firms to move up the value chain, which can lead to better wages and job security for workers involved in their production, which in turn helps to lift them out of working poverty. In addition, shared research initiatives can help developing countries participating in GVC to build their capabilities, leading to better labour standards and rights. Moreover, it can foster the creation of platforms that facilitate communication between workers and management, empowering workers to voice concerns about their rights ensuring that concerns are heard regardless of geographical barriers and enabling workers to report violations or unsafe conditions directly to management or third-party organizations. R&D investments often involve training initiatives that empower workers with new skills, enhancing their employability and bargaining power (Ambos, B., et al., 2021). It could be concluded that by investing in R&D, companies can not only improve their competitiveness but also create an environment that supports and enhances labour rights, invest in high value products, ultimately leading to better outcomes for workers across global supply chains.

Table 2: Impact of GVC on Labour Wellbeing with the Innovation Capacity

	WPOV	WPOV	WPOV	LABRIGHTS	LABRIGHTS	LABRIGHTS	UNEMP	UNEMP	UNEMP	VULNER	VULNER	VULNER
l.GVC	0.125			-0.012			-0.017			-0.089		
	(0.93)			(1.09)			(0.43)			(2.02)**		
l.GVNINOV	-0.075			-0.011			-0.011			-0.0001		
	(1.67)*			(4.76)***			(2.40)**			(0.14)	0.013	
l.FWDGVC		0.059			0.112			-0.063			(0.45)	
		(0.53)			(2.41)**			(0.96)			0.001	
l.FWDGVCINOV		-0.149			-0.024			-0.033			(0.19)	
		(1.92)*			(4.12)***			(3.35)***				
l.BWDGVC			-0.096			0.006			0.048			-0.007
			(2.11)**			(0.66)			(0.99)			(0.50)
l.BWDGVCINOV			-0.168			-0.021			-0.007			0.002
			(2.19)**			(4.94)***			(0.47)			(0.44)
l.SEC	-0.019	0.038	0.064	-0.016	-0.019	-0.013	0.007	0.010	-0.017	0.068	0.034	0.035
	(0.56)	(1.62)	(3.61)***	(2.68)***	(2.92)***	(2.14)**	(0.53)	(0.77)	(1.89)*	(2.31)**	(1.17)	(1.22)
l.FERT	5.883	-0.872	6.547	0.650	0.445	0.703	-0.511	-0.441	-4.394	-1.639	-1.470	-1.471
	(3.73)***	(0.95)	(5.01)***	(3.15)***	(1.85)*	(3.28)***	(1.37)	(1.19)	(5.29)***	(2.52)**	(2.15)**	(2.15)**
l.GDPpcG	-0.130	-0.148	-0.107	0.019	0.014	0.016	-0.271	-0.274	-0.310	-0.010	-0.007	-0.004
	(1.56)	(1.80)*	(1.47)	(0.51)	(0.35)	(0.43)	(6.85)***	(7.11)***	(8.10)***	(0.52)	(0.33)	(0.17)
l.INVG	0.028	0.027	0.027	-0.010	-0.008	-0.009	-0.001	-0.000	0.001	-0.047	-0.050	-0.050
	(1.87)*	(1.68)*	(1.84)*	(1.15)	(0.89)	(1.13)	(0.12)	(0.05)	(0.17)	(1.81)*	(2.23)**	(2.24)**
l.INT	-0.009	-0.043	-0.028	-0.018	-0.025	-0.020	-0.035	-0.037	-0.044	-0.059	-0.057	-0.057
	(0.68)	(3.40)***	(2.29)**	(2.46)**	(3.37)***	(3.01)***	(3.96)***	(4.09)***	(5.11)***	(7.04)***	(6.85)***	(6.99)***
_cons	19.413	13.819	17.645	3.094	3.925	3.798	12.961	6.252	12.324	52.479	25.076	48.213
	(7.02)**	(6.09)*	(6.60)**	(1.09)***	(3.34)***	(0.99)***	(2.10)**	(2.10)*	(1.97)*	(5.842)**	(5.94)**	(5.44)**
N	**257**	**257**	**257**	**335**	**335**	**335**	**715**	**715**	**715**	**656**	**656**	**656**

Based on the author's own calculation. * p<0.1, ** p<0.05, ***p<0.01

Governance Capacity

Table 3 shows the impact of GVC participation on labour wellbeing while controlling for the governance capacity measured by the regulatory quality. After introducing the interaction term with the GVC and its different linkages, the results show that GVC interacted with the governance variable is much more important than the GVC separately for all aspects of labour wellbeing, where the interaction term is significant in almost all specifications rather than the GVC term itself. It is found that GVC, forward and backward linkage interacted with regulatory quality are now effective in reducing the working poverty, unemployment and working vulnerability, while increasing compliance with labour rights. First, because higher regulatory quality enhances the ease of doing business with a special support to small and medium-sized enterprises (SMEs), where it creates a more predictable and transparent business environment. This encourages foreign investment and the establishment of GVCs, leading to job creation and economic opportunities. Moreover, it can facilitate the growth of SMEs that are often key players in GVCs by providing access to resources, funding, and technical support, where they are often significant contributors to job creation in many economies specially the emerging ones. Furthermore, higher regulatory quality could be reflected into efficient trade facilitation where it can streamline customs processes and reduce trade barriers, making it easier for businesses to engage in international markets with increased market access for local producers and higher incomes for workers. Finally, Effective regulations can lead to better social protection policies, helping workers cope with economic shocks that can reduce vulnerability and provide a buffer against working poverty, while it can also help formalize informal sectors by providing incentives for businesses to comply with regulations. This can lead to more formal job opportunities and reducing overall unemployment. (Kaplinsky, R., & Morris, M. H, 2017). It can also be argued that regulatory quality can significantly enhance the effectiveness of GVCs in promoting labour rights through the enforcement of labour standards, higher transparency and accountability, Integration of labour rights in trade agreements where, higher regulatory quality often correlates with governments that prioritize labour rights in trade agreements (Mosley, L., 2017). Generally, the results show that social upgrading as a result of GVCs is conditional on the regulatory framework in the country where higher regulatory quality enhances GVC effectiveness in reducing working poverty and vulnerability, reducing unemployment and finally increasing national compliance with labour rights.

Table 3: Impact of GVC on Labour Wellbeing with the Governance Capacity

	WPOV	WPOV	WPOV	LABRIGHTS	LABRIGHTS	LABRIGHTS	UNEMP	UNEMP	UNEMP	VULNER	VULNER	VULNER
l.GVC	0.125			0.016			0.006			-0.051		
	(1.46)			(1.46)			(0.19)			(0.92)		
l.GVCREG	-0.083			-0.031			-0.039			-0.015		
	(2.73)***			(9.48)***			(3.24)***			(2.89)***		
l.FWDGVC		-0.081			0.168			0.037			-0.041	
		(0.64)			(2.76)***			(0.67)			(0.86)	
l.FWDGVCREG		-0.126			-0.072			-0.108			-0.039	

		(2.21)**			(4.92)***			(4.27)***			(4.38)***	
l.BWDGVC			0.258			0.047			0.023			0.005
			(2.34)**			(4.71)***			(0.56)			(0.14)
l.BWDGVCREG			-0.119			-0.052			-0.038			-0.015
			(1.99)**			(10.34)***			(1.94)*			(2.26)**
l.SEC	-0.100	-0.098	-0.098	-0.015	-0.019	-0.012	0.010	0.014	0.010	-0.009	-0.007	-0.004
	(2.75)***	(2.67)***	(2.70)***	(2.59)***	(2.90)***	(2.18)**	(0.86)	(1.20)	(0.83)	(0.79)	(0.63)	(0.38)
l.FERT	-1.335	-0.673	-1.280	0.208	-0.322	0.437	-0.283	-0.291	-0.252	-0.280	0.614	0.641
	(2.18)**	(0.93)	(2.10)**	(1.18)	(1.18)	(2.38)**	(1.05)	(1.08)	(0.93)	(0.98)	(0.87)	(0.91)
l.GDPpcG	-0.189	-0.074	-0.175	0.102	0.141	0.083	-0.269	-0.271	-0.274	-0.062	-0.087	-0.086
	(1.94)*	(0.92)	(1.83)*	(2.84)***	(2.84)***	(2.33)**	(7.52)***	(7.78)***	(7.76)***	(1.76)	(2.83)***	(2.74)***
l.INVG	0.026	-0.018	0.024	-0.007	-0.007	-0.006	0.000	0.001	-0.000	0.003	-0.000	0.000
	(1.41)	(1.25)	(1.29)	(0.89)	(0.71)	(0.72)	(0.05)	(0.10)	(0.03)	(0.47)*	(0.04)	(0.07)
l.INT	-0.054	-0.066	-0.055	-0.005	-0.016	-0.008	-0.030	-0.032	-0.029	-0.058	-0.050	-0.049
	(3.36)***	(3.99)***	(3.43)***	(0.68)	(2.06)**	(1.23)	(3.92)***	(4.18)***	(3.75)***	(8.15)***	(6.64)***	(6.44)***
_cons	17.505	15.681	17.918	3.403	3.040	2.500(	11.827	6.003	12.799	58.795	32.236	56.748
	(5.72)***	(7.52)***	(5.83)**	(0.98)***	(1.28)***	(0.92)**	(1.94)***	(1.84)***	(1.80)**	(5.79)***	(6.08)***	5.41)**
N	**257**	**257**	**257**	**335**	**335**	**335**	**715**	**715**	**715**	**656**	**656**	**656**

Based on the author's own calculation. * p<0.1, ** p<0.05, ***p<0.01

Human Capital Capacity

The scenario is totally different when introducing the investments in human capital capacity measured by government expenditure on education. When introducing the interaction term between human capital and GVC with its different linkages, it is found that HK might worsen labour wellbeing, where it is found that GVC alone would improve the wellbeing, yet GVC interacted with human capital is found to increase working poverty, unemployment, while it is insignificant for labour rights and working vulnerability. It is argued that within the GVC framework, government spending on education can have mixed effects on labour wellbeing due to multiple explanations. First, mismatch of skills if the education system does not align with the needs of industries involved in GVCs, hence graduates may lack the specific skills required for available jobs, leading to underemployment or unemployment. When education does not align with the skills demanded by GVCs, those with inadequate or irrelevant education may face higher unemployment or underemployment, contributing to income inequality, while the skilled workers in high-demand sectors may command much higher wages, widening the gap. Moreover, education improvements take time to translate into a skilled workforce,

hence, in the meantime, economic conditions may change, and the immediate needs of the labour market could remain unmet. Another possible explanation is linked to the fact that simply increasing spending doesn't guarantee quality. If the education provided is inadequate or poorly managed, it may not prepare students effectively for the workforce. Other systemic issues, such as discrimination, geographic disparities, or lack of access to employment opportunities, can hinder the effectiveness of education spending in reducing working poverty. Since our variable is government spending on secondary school it highlights that the focus on higher education might neglect vocational training, which is often more relevant for lower-skilled jobs in GVCs, leaving some individuals without pathways to stable employment. Inequality in access to quality education can perpetuate social divides, and if marginalized communities receive lower-quality education, their members may struggle to enter the workforce, exacerbating economic disparities, where individuals from lower socioeconomic backgrounds may remain trapped in low-wage jobs, perpetuating inequality (Fernandez-Stark, K., et al., 2012). To sum up, without targeted interventions, inequality can be self-perpetuating within GVCs. As GVCs evolve, those with the right skills and education may benefit disproportionately, while those without may be left behind.

Table 4: Impact of GVC on Labour Wellbeing with the HK Capacity

	WPOV	WPOV	WPOV	LABRIGHTS	LABRIGHTS	LABRIGHTS	UNEMP	UNEMP	UNEMP	VULNER	VULNER	VULNER
l.GVC	-0.048			-0.017			-0.315			-0.227		
	(0.71)			(2.48)**			(6.15)***			(0.09)*		
l.GVCHK	0.020			-0.0001			0.014			-0.0001		
	(1.98)**			(0.24)			(4.15)***			(0.19)		
l.FWDGVC		-0.295		0.070			-0.104			3.346		
		(2.71)***		(2.25)**			(1.75)*			(0.98)***		
l.FWDGVCHK		0.068		-0.003			0.024			-0.431		
		(4.15)***		(1.03)			(3.18)***			(0.12)***		
l.BWDGVC			-0.242		-0.022			-0.124			-0.040	
			(2.92)***		(1.44)			(3.10)***			(1.14)	
l.BWDGVCHK			0.057		-0.0001			0.010			-0.002	
			(4.23)***		(0.10)			(2.26)*			(0.70)	
l.SEC	-0.048	-0.122	-0.094	-0.002	-0.007	-0.005	-0.008	-0.011	-0.009	0.030	0.020	0.031
	(1.22)	(3.44)***	(2.84)***	(0.36)	(1.12)	(0.85)	(1.19)	(1.63)	(1.37)	(4.02)***	(3.14)***	(4.38)***
l.FERT	2.751	2.671	1.975	-0.412	-0.652	-0.641	-4.841	-5.690	-5.812	0.769	0.295	0.696
	(1.82)*	(2.38)**	(1.87)*	(1.66)*	(2.72)***	(2.64)***	(6.62)***	(8.20)***	(8.53)***	(1.19)	(0.44)	(1.09)
l.GDPpcG	3.179	-0.130	-0.228	0.025	0.024	0.025	-14.962	-15.204	-15.363	-7.626	-7.037	-7.746
	(3.81)***	(1.53)	(2.79)***	(2.25)**	(2.18)**	(2.22)**	(14.22)***	(15.18)***	(15.04)***	(7.95)***	(7.29)***	(8.08)***

l.INVG	-0.014	-0.013	0.021	0.000	-0.002	-0.000	-0.015	-0.030	-0.027	-0.003	-0.006	-0.004
	(0.79)	(0.84)	(1.17)	(0.06)	(0.77)	(0.20)	(2.45)**	(5.46)***	(4.93)***	(0.56)	(1.16)	(0.77)
l.INT	-0.024	0.018	0.001	0.001	-0.002	-0.001	0.031	0.026	0.030	-0.023	-0.029	-0.022
	(1.16)	(1.09)	(0.04)	(0.24)	(0.58)	(0.38)	(3.37)***	(3.04)***	(3.39)***	(2.78)***	(3.41)***	(2.66)***
_cons	16.555	16.664	20.466	6.997	2.318	7.128	13.032	2.731	13.280	56.946	4.852	44.728
	(5.90)**	(8.92)**	(6.97)**	(1.07)***	(2.62)	(1.02)**	(2.03)**	(3.64)**	(1.92)**	(5.99)**	(13.53)	(8.29)**
N	**257**	**257**	**257**	**335**	**335**	**335**	**715**	**715**	**715**	**656**	**656**	**656**

Based on the author's own calculation. * p<0.1, ** p<0.05, ***p<0.01

EURO-MEDITERRANEAN CASE

This section shows the main empirical findings using the 2SLS estimation while focussing on the Euro-Med region. Again, each table consists of 9 columns; the first 3 columns show the effect on working poverty, the second three columns show the effect on labour rights, the next three columns show the effect on unemployment and finally the last three columns show the effect on working conditions. The first column represents the effect of the overall GVC participation, the second column shows the effect of forward GVC and finally the third column shows the effect of backward GVC. Within each category, an interaction term is introduced between GVC and all its linkages with the dummy variable EUR to differentiate the effect for countries in the region.

Impact of GVC on Labour Wellbeing for EURO-MED

In table 5, when tackling the case of the Euro-Med, it's found that GVC and its linkages are effective in reducing working poverty and vulnerability and increasing labour rights in the region. Yet, it is found that for countries in the region, GVC renders labour wellbeing by increasing unemployment, which is mainly relevant to the fact that many countries in this region are heavily reliant on agriculture and textiles where, such low-killed-labour intensive activities employ a significant portion of the workforce who struggle to adapt to shifts in global demand, resulting in job losses when these sectors decline or move production elsewhere. And since many firms in these industries may outsource production to countries outside the region with lower labour costs (e.g., Southeast Asia), it can lead to job losses in countries like Tunisia and Morocco, where such jobs have historically been concentrated mainly because GVCs often prioritize high-tech and knowledge-intensive industries, which can marginalize traditional sectors. Moreover, many workers in the region lack the skills required for jobs created by GVCs, particularly in high-tech and specialized sectors. This mismatch contributes to higher unemployment rates, especially among young people and women in the less developed economies, where the educational system itself may not adequately prepare workers for the skills demanded by GVCs. Countries with high unemployment rates among youth, like Algeria and Egypt, often face challenges in aligning educational outcomes with labour market needs, leading to higher unemployment rates. Yet, it helps in mitigating working poverty and

vulnerability and advocating labour rights, where the dynamics of GVCs can seem contradictory in the region. That could be linked to the fact that while GVCs improve wages in certain sectors, they can also lead to job losses in others, particularly in industries that cannot compete with cheaper imports or more efficient production methods. This dual effect can leave some workers unemployed since even some workers benefit from higher pay in their already guaranteed opportunities, others, particularly those in traditional sectors, may find themselves unemployed if they cannot adapt or retrain for the new roles (Timmer, M., et al., 2013). To reconcile these opposing effects, it's essential for policymakers to implement strategies that ensure inclusive growth. This includes investing in education and training, supporting innovation, and promoting policies to enhance regional development and economic diversification during transitions. This underscores the importance of complementing GVC in the region with additional capacities to effectively contribute to the social upgrading process, which will be tackled in the following sections.

Table 5: Impact of GVC on Labour Wellbeing for EURO-MED

	WPOV	WPOV	WPOV	LABRIGHTS	LABRIGHTS	LABRIGHTS	UNEMP	UNEMP	UNEMP	VULNER	VULNER	VULNER
l.nGVC	-0.021			0.056			-0.168			-0.069		
	(0.31)			(4.10)***			(6.51)***			(0.88)		
l.GVCEUR	-0.195			-0.046			0.075			-0.134		
	(4.98)***			(10.34)***			(9.23)***			(5.41)***		
l.FWDGVC		0.238			0.017			0.256			0.723	
		(0.51)			(0.44)			(3.31)***			(3.12)***	
l.FWDGVCEUR		-0.415			-0.075			0.121			-0.371	
		(5.07)***			(8.53)***			(6.89)***			(7.02)***	
l.BWDGVC			-0.010			0.083			-0.188			-0.021
			(0.16)			(6.85)***			(7.63)***			(0.28)
l.BWDGVCEUR			-0.295			-0.087			0.140			-0.183
			(4.18)***			(11.75)***			(9.38)***			(4.01)***
l.SEC	-0.132	-0.170	-0.134	-0.016	-0.018	-0.016	0.059	0.046	0.052	-0.138	-0.164	-0.147
	(3.56)***	(1.75)*	(3.40)***	(2.86)***	(3.11)***	(3.02)***	(5.48)***	(3.66)***	(4.74)***	(4.20)***	(4.30)***	(4.36)***
l.FERT	1.758	1.028	1.464	-0.100	-0.048	0.004	-1.556	-2.071	-1.759	3.658	2.652	3.662
	(1.92)*	(0.44)	(1.47)	(0.59)	(0.23)	(0.02)	(4.94)***	(5.30)***	(5.46)***	(3.82)***	(2.26)**	(3.71)***
l.GDPpcG	-0.516	-0.554	-0.522	0.123	0.121	0.101	-0.275	-0.294	-0.280	0.259	0.240	0.237

	(3.05)***	(2.69)***	(3.04)***	(3.53)***	(3.09)***	(3.03)***	(5.29)***	(5.19)***	(5.39)***	(1.64)	(1.42)	(1.49)
l.INVG	0.069	0.062	0.068	-0.010	-0.013	-0.009	0.004	-0.002	0.000	-0.026	-0.046	-0.020
	(1.50)	(1.34)	(1.46)	(1.28)	(1.52)	(1.18)	(0.31)	(0.12)	(0.01)	(0.58)	(0.97)	(0.44)
l.INT	-0.051	-0.060	-0.056	-0.039	-0.036	-0.033	-0.081	-0.104	-0.091	-0.298	-0.339	-0.306
	(1.80)	(1.92)*	(1.98)**	(6.84)***	(5.64)***	(6.29)***	(8.94)***	(10.41)***	(10.23)***	(10.79)***	(11.31)***	(11.28)***
_cons	18.074	18.146	18.296	4.805	6.475	4.810	15.982	7.945	14.628	53.372	43.520	51.691
	(3.29)***	(2.74)***	(3.23)***	(5.22)***	(8.09)***	(6.07)***	(9.09)***	(5.09)***	(9.25)***	(10.00)***	(9.29)***	(10.68)***
N	**257**	**257**	**257**	**335**	**335**	**335**	**715**	**715**	**715**	**656**	**656**	**656**

Based on the author's own calculation. * p<0.1, ** p<0.05, ***p<0.01

Innovation Capacity for EURO-MED

When considering the role of innovation in enhancing the GVC effectiveness in the Euro-Med era, table 6 shows that innovation works in favour of labour wellbeing in terms of reducing working poverty, and vulnerability and in increasing labour rights, where the interaction term is significant in almost all specifications. Yet, the scenario is a bit different regarding unemployment. It is found that when innovation works with GVC, it increases unemployment for the region rather than reducing it. From one side, it improves labour wellbeing regarding working poverty, labour rights and vulnerability due to several considerations. First innovation allows firms in the Euro-Med region to improve their production processes and develop higher-value products, so by upgrading technologies and adopting new methods, businesses can increase productivity within the GVC, leading to higher wages and better job security for workers, which can alleviate working poverty, yet it has adverse effects on employment with regard to skill mismatch. As well, innovative products and services can help Euro-Med countries to diversify their export markets beyond traditional sectors, and by tapping into emerging markets and niches, firms can create more stable job opportunities, reducing vulnerability associated with reliance on a limited number of industries. Likewise, if R&D are concerned with green innovations along the chain, addressing environmental challenges can secure long-term viability and stable jobs. While if R& D is directed towards innovative financial instruments, such as microfinance, it can support SMEs and enable them to grow, innovate, and offer higher paying jobs, contributing to poverty reduction. Moreover, it is found that innovation has the potential to significantly enhance labour rights within GVCs in the region by improving transparency, empowering workers, and fostering collaboration. Yet, addressing specific regional challenges, such as the need for greater compliance and the empowerment of marginalized groups, is essential for realizing these benefits. In the Euro-Med, key sectors such as agriculture and textiles often face labour rights challenges, therefore, innovations like precise agriculture technologies can improve working conditions by ensuring better resource management. Similarly, digital tools in the textile sector participating in the chain can monitor working conditions and compliance with labour rights standards. Innovative platforms that facilitate dialogue between governments, businesses, and civil society can foster collaborative efforts to improve labour standards. For instance, initiatives that bring together Mediterranean countries to share best practices can leverage innovation for systemic change. On the other side, it is found that it might threaten employment in the region as it doesn't always align with immediate job creation goals, due to specific characteristics of the countries in the region. As mentioned, R&D often focuses on advanced technologies and requires a highly skilled workforce, while many countries in the Euro-Med region have a significant portion of their labour force in lower-skilled jobs, accordingly, if R&D investments do not lead to relevant skill development or training programs, a mismatch can occur, leaving many workers unable to access new job opportunities (Fischer, B., et al., 2024).

Table 6: Impact of GVC on Labour Wellbeing with the Innovation Constraint for EURO-MED

	WPOV	WPOV	WPOV	LABRIGHTS	LABRIGHTS	LABRIGHTS	UNEMP	UNEMP	UNEMP	VULNER	VULNER	VULNER
l.GVC	-0.227			0.009			-0.093			-0.171		
	(2.99)***			(0.70)			(3.87)**			(2.55)*		
l.GVNINOV	0.134			0.000			-0.042			0.033		
	(6.09)***			(0.02)			(6.52)**			(1.80)		
l.GVCEURINO	-0.191			-0.012			0.033			-0.065		
	(4.36)***			(4.24)***			(6.27)**			(4.39)**		
l.FWDGVC		0.417			0.046			0.471			0.969	
		(1.09)			(0.92)			(4.24)**			(3.37)**	
l.FWDGVCINOV		0.202			-0.006			-0.117			-0.076	
		(3.60)***			(0.74)			(6.03)**			(1.51)	
l.FWDGVCEURINO		-0.332			-0.021			0.074			-0.078	
		(4.21)***			(3.73)**			(5.25)**			(2.11)*	
l.BWDGVC			-0.301			0.018			-0.049			-0.132
			(4.04)***			(1.88)*			(2.43)*			(2.39)*
l.BWDGVCINOV			0.263			0.005			-0.073			0.110
			(5.85)***			(0.67)			(5.66)**			(3.08)**
l.BWDGVCEURINO			-0.343			-0.026			0.062			-0.141
			(3.41)***			(4.56)***			(6.04)**			(4.96)**
l.INVG	-0.123	-0.158	-0.145	-0.008	-0.011	-0.007	0.057	0.048	0.058	0.018	0.021	0.016
	(2.81)***	(2.56)**	(3.20)***	(1.35)	(1.82)*	(1.11)	(4.46)**	(3.22)**	(4.45)**	(0.41)	(0.43)	(0.36)
l.INT	1.650	0.168	0.643	0.753	0.658	0.780	-2.023	-2.497	-2.054	-0.310	-0.312	-0.336
	(1.51)	(0.08)	(0.55)	(3.72)***	(2.81)***	(3.76)***	(5.15)**	(5.10)**	(5.01)**	(9.51)**	(9.19)**	(10.92)**
l.GDPpcG	-0.251	-0.410	-0.293	0.029	0.027	0.029	-0.274	-0.338	-0.293	0.041	-0.120	0.039
	(1.51)	(1.98)**	(1.74)*	(0.80)	(0.74)	(0.81)	(4.82)**	(5.08)**	(5.12)**	(0.26)	(0.70)	(0.24)
l.FERT	0.042	0.030	0.035	-0.010	-0.010	-0.010	0.005	0.004	0.004	4.681	3.953	4.242
	(0.95)	(0.65)	(0.78)	(1.26)	(1.17)	(1.26)	(0.31)	(0.24)	(0.27)	(4.27)**	(3.11)**	(3.75)**

l.SEC	-0.060	-0.096	-0.075	-0.028	-0.028	-0.030	-0.065	-0.076	-0.081	-0.068	-0.083	-0.078
	(2.03)**	(2.66)***	(2.55)**	(3.84)***	(4.09)***	(4.31)***	(5.56)**	(5.83)**	(7.27)**	(1.91)	(2.15)*	(2.15)*
_cons	21.781	13.523	23.506	3.300	3.279	3.090	16.018	5.826	13.858	46.500	25.521	44.728
	(3.20)**	(2.25)*	(3.61)**	(3.08)***	(3.23)***	(3.18)***	(2.12)**	(2.23)**	(1.95)**	(7.83)**	(4.40)**	(8.29)**
N	**257**	**257**	**257**	**335**	**335**	**335**	**715**	**715**	**715**	**656**	**656**	**656**

Based on the author's own calculation. * p<0.1, ** p<0.05, ***p<0.01

Governance Capacity for EURO-MED

Table 7 shows the importance of governance capacity in the Euro-Med in enhancing the GVC effectiveness. It is clear that the governance capacity is the most important constraint for the countries in the region compared to the other constraints. The results show that, GVC interacted with the regulatory quality for the Euro-Mediterranean countries is effective in reducing working poverty, vulnerability, unemployment and increasing labour rights. Despite that the region includes diverse economies with varying labour standards, the high regulatory quality ensures that countries align their labour laws with international standards, facilitating smoother integration into GVCs, where harmonized regulations can help mitigate competitive disadvantages and improve overall labour conditions. This not only benefits workers but might also strengthen the overall competitiveness and sustainability of GVCs in the region. Additionally, companies that prioritize regulations are more likely to attract consumers who are increasingly aware of and concerned about labour rights, thus enhancing labour well-being through market pressures. It is also suggested that regulatory quality is very important for the region since they are essential for sectors prone to labour exploitation, such as agriculture and textiles since it can enhance the transparency and traceability of labour practices within GVCs in such sectors, while it encompasses not just the existence of laws but also their enforcement. Robust enforcement mechanisms can address labour violations effectively, leading to better working conditions and protections for workers across the region, offering stable working conditions and more secured job opportunities. Moreover, Countries with strong regulatory frameworks are more attractive to foreign investors, where high-quality regulations provide assurances that labour rights are protected, which can lead to increased investment in labour-intensive sectors like textiles and agriculture, ultimately improving job quality and wages. From another side, high regulatory quality promotes dialogue among stakeholders, including governments, employers, and labour unions, where such dialogue can lead to more effective labour policies that address the specific needs of the workforce, and fostering a collaborative environment that enhances labour well-being (Maskus, K. E., 2002). Hence, the results suggest that by establishing harmonized standards, enhancing enforcement, and promoting social dialogue, countries can create an environment where labour wellbeing is prioritized within the GVC in the region.

Table 7: Impact of GVC on Labour Wellbeing with the Governance Constraint for EURO-MED

	WPOV	WPOV	WPOV	LABRIGHTS	LABRIGHTS	LABRIGHTS	UNEMP	UNEMP	UNEMP	VULNER	VULNER	VULNER
l.GVC	-0.001			0.045			-0.272			-0.154		
	(0.25)			(3.15)***			(4.20)***			(1.86)*		
l.GVCREG	0.000			-0.021			-0.032			0.031		
	(0.26)			(5.12)***			(1.82)			(1.38)		
l.GVCREGEUE	-0.027			-0.016			-0.005			-0.074		
	(7.09)***			(3.73)***			(0.91)*			(3.25)***		
l.FWDGVC		-0.006			0.068			0.034			1.414	
		(0.37)			(1.07)			(0.64)			(3.54)***	
l.FWDGVCREG		0.001			-0.036			-0.053			-0.368	
		(0.33)			(2.12)**			(1.66)*			(3.33)***	
l.FWDGVCREGEUE		-0.038			-0.042			-0.140			0.079	
		(4.11)***			(4.48)***			(2.85)***			(1.11)	
l.BWDGVC			-0.001			0.058			-0.271			-0.140
			(0.66)			(4.57)***			(4.30)***			(1.85)*
l.BWDGVCREG			0.000			-0.041			-0.018			0.114
			(0.22)			(5.45)***			(0.82)			(2.86)***
l.BWDGVCREGEUE			-0.048			-0.015			0.010			-0.148
			(6.23)***			(1.74)*			(0.99)			(3.44)***
l.SEC	-0.004	-0.003	-0.005	-0.008	-0.012	-0.010	0.001	0.017	-0.020	-0.134	-0.140	-0.150
	(3.84)***	(1.80)*	(3.78)***	(1.42)	(1.95)*	(1.77)*	(0.05)	(1.41)	(1.52)	(3.89)***	(3.12)***	(4.24)***
l.FERT	-0.053	0.038	-0.036	0.318	-0.057	0.468	-0.435	-0.249	-4.007	4.315	1.650	3.938
	(1.97)**	(0.78)	(1.27)	(1.84)*	(0.23)	(2.51)**	(1.33)	(0.93)	(5.14)***	(4.41)***	(1.13)	(3.84)***
l.GDPpcG	-0.002	0.002	-0.006	0.109	0.131	0.082	-0.201	-0.270	-0.244	0.262	0.804	0.270
	(0.34)	(0.24)	(1.17)	(3.06)***	(3.02)***	(2.28)**	(5.06)***	(7.79)***	(6.67)***	(1.62)	(3.76)***	(1.67)*
l.INVG	0.001	0.001	0.000	-0.008	-0.011	-0.006	0.003	-0.000	0.003	-0.019	-0.076	-0.021
	(0.81)	(0.42)	(0.32)	(0.98)	(1.25)	(0.72)	(0.36)	(0.04)	(0.39)	(0.42)	(1.45)	(0.47)

l.INT	0.002	0.002	0.002	-0.013	-0.020	-0.011	-0.029	-0.034	-0.035	-0.314	-0.329	-0.344
	(1.88)*	(2.18)**	(2.20)**	(1.80)*	(2.95)***	(1.69)*	(3.57)***	(4.45)***	(4.30)***	(9.66)***	(8.41)***	(11.05)***
_cons	0.487	0.310	0.479	1.925	3.925	2.228	13.653	5.190	13.615	53.983	28.557	54.251
	(2.96)**	(1.37)*	(2.94)**	(1.82)*	(3.34)**	(2.32)*	(2.04)**	(1.99)*	(1.85)*	(8.92)**	(4.69)**	(9.90)**
N	**257**	**257**	**257**	**335**	**335**	**335**	**715**	**715**	**715**	**656**	**656**	**656**

Based on the author's own calculation. * p<0.1, ** p<0.05, ***p<0.01

Human Capital Capacity for EURO-MED

For the case of the Euro-Med countries, it's found that HK works in favor of labour wellbeing when interacting with GVC for all aspects, except for unemployment. This could be linked mainly to inequalities in access to education in the region, even if governments are spending more on education, it doesn't guarantee more job opportunities due to specific considerations in the countries. The Euro-Med region encompasses countries with varying levels of economic development, educational infrastructure, and access to quality education. In many cases, rural areas and less developed regions experience significant barriers to education, resulting in a workforce that is less skilled and less prepared for participation in GVCs. This inequality can lead to higher unemployment rates in these areas as local economies struggle to integrate into more advanced GVCs. Socioeconomic factors often determine access to education as in countries where families face financial constraints, children from lower-income households may be unable to afford schooling or may drop out to support their families that results in limited job opportunities for these marginalized groups, particularly as GVCs increasingly demand skilled labour. Moreover, cultural factors contribute to gender inequalities in education in the region, where girls may face additional barriers, such as early marriage, which can limit their educational attainment. This disparity in education can hinder their ability to access employment opportunities in GVCs, contributing to higher unemployment rates among women. Even in countries that invest significantly in education, if the education system does not align with the skills demanded by GVCs, graduates may find themselves unemployed. Nevertheless, inequitable access to quality vocational training can exacerbate this issue, as marginalized communities may not have access to the types of education that prepare them for available jobs. Generally, the quality of education varies significantly among countries in the region. Regions with lower quality education systems may produce graduates who lack the skills needed for the labour market, contributing to unemployment. While many Euro-med countries invest heavily in higher education, this focus can sometimes overlook primary and secondary education needs, especially in underserved areas. This imbalance can lead to a surplus of graduates in certain fields while leaving significant gaps in vocational training that are essential for entry-level jobs in industries linked to GVCs (Downes, P., 2014). Finally, it worth mentioning that while governments may allocate funds for education, the effectiveness of those expenditures could result in inadequate educational opportunities for marginalized groups due to corruption, mismanagement, and lack of effective policy implementation, which in turn, can lead to higher unemployment rates among those who are unable to access quality education.

Table 8: Impact of GVC on Labour Wellbeing with the HK Constraint for EURO-MED

	WPOV	WPOV	WPOV	LABRIGHTS	LABRIGHTS	LABRIGHTS	UNEMP	UNEMP	UNEMP	VULNER	VULNER	VULNER
l.GVC	-0.302			0.047			-0.301			-0.085		
	(3.22)***			(2.99)***			(5.93)***			(0.85)		
l.GVCHK	0.046			-0.003			-0.001			-0.004		
	(3.72)**			(1.34)			(0.40)			(0.37)		
l.GVCHKEUR	-0.037			-0.007			0.017			-0.023		
	(4.69)****			(9.03)***			(4.19)***			(5.07)***		
l.FWDGVC		0.007			0.122			-0.094			1.936	
		(1.23)			(1.05)			(1.58)			(3.62)***	
l.FWDGVCHK		-0.003			-0.019			0.004			-0.215	
		(3.06)***			(1.37)			(0.43)			(3.70)***	
l.FWDGVCHKEUR		-0.010			-0.014			0.041			-0.036	
		(2.29)**			(7.96)**			(3.11)***			(3.21)***	
l.BWDGVC			-0.008			0.049			-0.115			-0.115
			(1.44)			(2.76)**			(2.97)***			(1.24)
l.BWDGVCHK			0.001			0.001			0.005			-0.006
			(1.07)			(0.46)			(1.68)*			(0.44)
l.BWDGVCHKEUR			-0.019			-0.014			0.009			-0.012
			(5.97)***			(10.11)**			(1.77)*			(1.71)*
l.SEC	-0.070	0.001	-0.005	-0.005	0.001	-0.008	-0.006	-0.011	-0.012	-0.105	-0.068	-0.103
	(2.35)**	(0.80)	(3.10)***	(0.79)	(0.09)	(1.31)	(0.69)	(1.70)*	(1.60)	(2.83)***	(1.70)*	(3.28)***
l.FERT	3.487	-0.183	-0.203	-0.033	0.018	-0.042	-4.839	-5.780	-5.950	4.451	5.163	5.119
	(4.95)***	(3.22)***	(2.62)***	(0.18)	(0.09)	(0.23)	(6.36)***	(8.39)***	(8.44)***	(4.43)***	(4.58)**	(5.83)***
l.GDPpcG	0.524	-0.0001	-0.003	0.106	0.088	0.111	-15.470	-15.249	-15.757	0.122	0.333	0.866
	(3.75)***	(0.11)	(1.34)	(2.88)***	(2.09)*	(3.15)**	(14.29)***	(15.35)***	(15.00)***	(0.75)	(1.37)	(5.53)***
l.INVG	0.029	0.0001	-0.0001	-0.016	-0.016	-0.016	-0.014	-0.029	-0.027	0.005	-0.068	-0.071
	(1.06)	(0.54)	(0.04)	(1.95)*	(1.66)	(2.00)*	(2.11)**	(5.29)***	(4.79)***	(0.11)	(1.33)	(1.83)

l.INT	-0.105	-0.002	-0.001	-0.038	-0.035	-0.037	0.028	0.027	0.027	-0.294	-0.303	-0.347
	(4.68)***	(2.39)**	(1.93)*	(6.46)***	(5.68)**	(6.81)**	(2.91)***	(3.14)***	(2.90)***	(10.46)***	(9.02)***	(14.91)***
_cons	10.664	18.417	24.694	4.197	4.119	4.780	16.422	0. 535	15.456	49.694	21.416	46.734
	(2.48)**	(8.69)**	(7.07)***	(4.07)**	(2.51)*	(5.20)**	(2.06)***	(4.17)	(1.92)***	(8.10)***	(3.17)**	(10.18)***
N	**257**	**257**	**257**	**335**	**335**	**335**	**715**	**715**	**715**	**656**	**656**	**656**

Based on the author's own calculation. * p<0.1, ** p<0.05, ***p<0.01

CONCLUSION AND POLICY RECOMMENDATIONS

The current study analysed the impacts of GVC participation on labour wellbeing using a panel of 63 countries between 2010 and 2021 using 2SLS estimation. The main results highlight that GVCs help in improving labour wellbeing by enhancing labour rights compliance and reducing unemployment. However, it increases working poverty. The study highlights the of innovation capacity and governance quality in enhancing the social upgrading effects of GVCs. Investments in R&D are found to enhance GVC effectiveness in improving labour rights and reducing working poverty and unemployment, while a strong regulatory environment ensures GVCs benefit workers by promoting labour rights and reducing vulnerability, poverty and unemployment. However, the interaction between GVCs and human capital, measured by government spending on education, presents challenges. While education is critical for long-term labour market success, a mismatch between educational outcomes and GVC needs may lead to higher unemployment and working poverty, especially for those lacking the necessary skills for the global economy.

Focusing on the Euro-Mediterranean region, the analysis reveals that GVC participation helps reduce working poverty, improve labour rights, and decrease vulnerability. However, rising unemployment remains a challenge, that could be linked to low-skilled sectors like agriculture and textiles. The mismatch between the workforce's skills and the evolving needs of modern GVCs has exacerbated regional disparities. Innovation in the region aligned with GVCs has a positive impact by reducing poverty and enhancing labour rights but increases unemployment due to skill mismatches. To maximize benefits, innovation must be paired with targeted investments in educational quality and workforce training. Governance quality is found to be the key aspect that plays a crucial role, with strong regulatory frameworks enhancing GVC effectiveness, improving working conditions, and attracting investment. Finally, human capital investments are undermined by educational inequalities, particularly in rural and marginalized areas, contributing to high unemployment. Addressing these educational disparities, with a focus on vocational training, is essential for improving labour market outcomes in the region.

In conclusion, the study's findings suggest that GVC participation has the potential to improve labour wellbeing, but this requires careful policy design to ensure that the benefits are equitably distributed. The study highlights that the governance structure is the most important factor for enhancing GVC effectiveness, however for innovation and human capital capacities, they should be accompanied by a concentration on marginalized groups and low skilled workers to ensure an inclusive social upgrading process from GVCs. Governments should adopt a comprehensive, inclusive approach that integrates GVC participation with investments in human capital, innovation, and governance, while addressing skill mismatches, improving regulatory frameworks, fostering inclusive growth, and addressing educational disparities, such that countries could maximize the positive impacts of GVCs while mitigating their negative effects, ensuring that the benefits of global economic integration reach all segments of society. Such policies may include:

- To address skill mismatches, particularly in low-skilled sectors, governments should increase investment in vocational training programs that match the needs of modern GVCs. These programs should focus on equipping workers with practical skills required in higher-value, technology-intensive industries. Moreover, more investments should be directed towards education systems that prioritize Science and Technology, as well as digital skills, to meet the demand for skilled labour in GVCs, especially in advanced sectors like manufacturing, IT, and services. On the other side, governments can collaborate with the private sector to ensure that educational curricula are aligned with the evolving demands of the global economy and that workers are equipped with the skills necessary for participation in GVCs. Furthermore, localized education policies should focus on the specific labour needs of each region, ensuring that curricula are designed to support the development of skills that are relevant to the local economy, especially in sectors involved in GVCs. More efforts should be directed towards improving access to quality education, particularly in rural and marginalized areas, to address educational disparities. This could involve expanding access to primary and secondary education and improving infrastructure in underserved regions.

- Policies should be designed to support workers who may be displaced by job polarization, through active labour market policies, including unemployment benefits, job placement services, and career counselling. Targeted measures should be introduced to support workers in industries vulnerable to job losses or wage suppression (e.g., agriculture, textiles). This may include social safety nets, income support, and assistance for small-scale businesses to modernize or diversify their activities. Besides, policies should ensure that the benefits of GVC participation are more equally distributed across all sectors and regions, especially addressing disparities between rural and urban areas. Special focus should be given to marginalized groups, including women and youth, to ensure their participation in the global economy.

- Governments should prioritize investments in research and development, particularly in key sectors where the region has a comparative advantage. Supporting innovation can help firms in the Euro-Med region move up the value chain, reduce dependency on low-skilled labour, and improve working conditions. In addition, governments should focus on innovation that promotes sustainability, such as green technologies that can create long-term, stable jobs and address environmental challenges while improving labour wellbeing. Providing incentives and support for SMEs to invest in innovation, helps them to improve productivity and wages while increasing their competitiveness in global markets.

- Countries should strengthen labour rights enforcement, ensuring that GVCs do not increase inequality. This involves ensuring that labour laws are aligned with international standards and are effectively enforced through mechanisms such as inspections, transparency, and worker empowerment. In regions like Euro-Med, where countries have varying labour standards, it is essential to harmonize regulations to create a level playing field for businesses and protect workers that can help reduce competitive disadvantages, especially in sectors like textiles and agriculture, which are prone to labour exploitation. Nevertheless, countries should encourage

dialogue between governments, employers, labour unions, and civil society to develop labour policies that ensure the protection of workers' rights.

- Countries should pursue policies that promote economic diversification away from traditional, low-skilled sectors toward higher-value and more sustainable industries. This can reduce the vulnerability of countries to sector-specific shocks and improve overall labour market outcomes. In the Euro-Med region, cross-border collaboration and regional development programs can enhance the benefits of GVC participation. Cooperation between countries can help develop shared infrastructure, improve workforce mobility, and promote regional industrial policies that benefit all countries involved.

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APPENDIX

Table 1: Hausman Specification Test for Fixed and Random effects model

	Coef.
Chi-square test value	6.003
P-value	.306

Table 2: Overidentification and Under-identification tests of the instruments

Test	P-value	Test Statistic
Sargan statistic (overidentification test of all instruments)	0.5767	0.312
Under-identification test	0.0000	64.267

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