GLOBAL KNOWLEDGE-INTENSIVE BUSINESS SERVICES TRADE FLOWS. THE REVEALED COMPETITIVE POSITION OF EUROPE AND CENTRAL AND EASTERN EUROPE

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ABSTRACT: The paper analyses global trade flows in knowledge-intensive business services (KIBS) over the period 2005 to 2021, focusing on the competitive position of Europe in general with additional emphasis on Central and Eastern Europe (CEE). Using data from the OECD-WTO Balanced Trade in Services (BaTIS) database, the study examines major global exporters and their revealed comparative advantages (RCA), as well as the structure and shifts in the structure of intra- and extra-continental trade flows. We establish some stylised facts. The results indicate that Europe in 2021 was still the largest KIBS exporter globally, however, with declining shares due to Asia and the Americas' growth over the analysed period. The article further explores the competitive position of the CEE region which became an integral part of the sector in Europe and a favourite destination for nearshoring as well as backshoring projects. We conclude with a set of general policy recommendations. The EU, specifically, should focus on fostering innovation, digital transformation, and skills development by enhancing R&D support, investing in digital infrastructure, and promoting science, technology, engineering and mathematics (STEM) talent pool development to strengthen, in particular creation of high-value-added services in KIBS sectors.

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Introduction

Knowledge-intensive business services (KIBS) are defined as services that heavily rely on professional knowledge (Miles 2005), either specialised (e.g. engineering, legal) or general (e.g. IT, finance, R&D). They encompass a broad range of activities like finance, supply chain and logistics management, consultancy, R&D, IT services, legal advice, or marketing. In the present article, we utilise a definition of KIBS by Schnabl and Zenker (2013), which is in line with Miles (2005) but restricts it in NACE Rev. 2 (the Statistical Classification of Economic Activities in the European Community**)** sense to selected ICT and professional services (within the category of

other business services). In line with the definition, KIBS are responsible for approximately 11 million FTE (full-time equivalent jobs) within EU-27. They are, therefore, responsible for approximately 1/3 of overall business services employment in the EU-27 and around 5.5 per cent of the total labour force in the European common market.

KIBS play a critical role in modern economies. By easing and partially driving innovation and transformative digitalisation, providing expert knowledge, and enabling the smooth operation of other industries, they directly and indirectly impact overall competitiveness (Muller, Zenker 2001). KIBS refer to services that rely heavily on professional knowledge, expertise, and skills and are thus centred on white-collar professionals. The services are typically provided by specialised firms or dedicated centres within corporations and play a critical role in supporting a knowledge economy. They are distinguished by their reliance on intellectual capabilities rather than physical inputs or pure labour-intensive (blue-collar) processes. The nexus between knowledge, innovation, and spatial proximity is the key to a theoretical and empirical understanding of KIBS (Muller, Doloreux 2009). Spatial proximity, allowing them to reap traditional Marshallian benefits (e.g. labour market pooling, specialised subcontractors, knowledge spillovers), makes them prone to be located in or close to major metropolitan areas both in advanced and emerging states (e.g. Brodzicki, Golejewska 2019, ABSL 2023a).

At the current stage of global economy development, KIBS play an essential role in supporting and enhancing global value chains (GVCs) by providing specialised knowledge and expertise that enable firms to remain competitive and innovate (Lema, Nelson 2012, Montresor, Vezzani 2015). At the same time, KIBS contribute significantly to the servitisation of manufacturing, where services become integral components of production processes and overall product offerings (Lanz, Maurer 2015). Moreover, the governance structures within GVCs increasingly rely on KIBS for coordinating activities across borders and facilitating the transfer of knowledge within networks (Gereffi et al. 2005). Integration of KIBS into GVCs has transformed service companies from simple service providers to strategic actors, playing a substantial

role in global as well as regional production systems (Bryson, Daniels 2010).

In the present article, we focus on the competitiveness of Europe and Central and Eastern Europe (CEE), and in particular on KIBS. KIBS already play an important role in the European economy and are considered key to Europe's competitiveness because of their role in innovation, digital transformation, and the development and stability of European value-added chains, which are becoming increasingly substantial in the period of geostrategic fragmentation. CEE is one of the key global locations for KIBS investments and a major hub for back-office and mid-office functions with growing value added related to upgrading and upskilling its workforce. CEE, in the context of geostrategic fragmentation, will play a key role in allyshoring projects, that is, nearshoring and backshoring projects to safe and strategically allied countries. We contribute to the literature by assessing the changes in global knowledge-intensive business services trade flows over the period 2005–2021. We show major exporters at country level and shifts in their revealed comparative advantages. We furthermore analyse shifts in global KIBS flows at an aggregated level, showcasing changes in the role of intra-continental and inter-continental levels, with particular attention given to changes in Europe's competitive position. Finally, we establish some seminal stylised facts for the CEE region specifically.

The remainder of the article is structured as follows. In the second chapter, we demonstrate the main economic features of KIBS. In chapter three, we discuss the international KIBS flows from the perspective of trade and foreign direct investment (FDI) theories. The next chapter presents the database and indicators utilised in the subsequent empirical analysis. The following chapter analyses the flows and discusses the results vis-à-vis the literature as mentioned above. The last chapter summarises the major results and provides some general policy recommendations.

KIBS: The economic feature of a product and the sector

As has been previously mentioned, KIBS include a diverse array of sub-sectors such as IT,

R&D, legal, finance, and accounting services (Miles 2005). They are often classified as professional and technical services. The demand for KIBS is fuelled by companies in other sectors like industrial manufacturing or other service industries seeking to utilise specialised knowledge or greater efficiency to stay competitive (den Hertog 2000). The demand is, therefore, to a large extent, derived. Cost-optimisation, greater productivity thanks to the utilisation of scale and scope economies, and provision of greater value for internal or external clients are at the core of the competitive offering of KIBS (ABSL 2024). In the present article, we use the definition of KIBS by Schnabl and Zenker (2013).

When perceived as a certain product range, KIBS embody a unique set of economic features that distinguish them from traditional goods and other types of services. These features relate to KIBS' intangibility, which is driven by expertise and significant client orientation.

From a microeconomic perspective, KIBS are primarily intangible products that rely heavily on specialised knowledge and expertise. This makes them very much distinct from physical goods. The services are often delivered in the form of advice, data analysis, software solutions, or consulting sessions (Miles 2005). The high knowledge content means that KIBS products are deeply embedded within professional expertise, which clients utilise to improve processes, gain insights, or make more informed decisions. Unlike standardised goods, KIBS are typically highly customised to meet specific client needs – a trend towards the provision of tailored services or data- and advanced-analytics-driven hyper-personalisation is clear (ABSL 2024). KIBS products are often co-produced in collaboration with the client. KIBS firms and clients work closely to tailor solutions that address unique business challenges and fit specific needs (den Hertog 2000). This customisation requires active participation from the client who provides context and requirements and from the KIBS provider itself, which adapts knowledge to fit the specific needs.

As KIBS products rely heavily on the intellectual and professional capabilities of white-collar professionals, human capital (the talent pool) is one of the most crucial assets in KIBS firms (Gallouj 2002). The expertise required for KIBS is often highly specialised and frequently gained as a result of learning by doing over the course of years. High knowledge intensity means that KIBS firms invest in skilled labour and training, and continue learning to maintain competitiveness. The need to tap into resources of the talent pool means that KIBS, as we have already stressed, are frequently spatially concentrated in major metropolitan areas, particularly in capital regions (ABSL 2023a). This feature makes them very close to the concept of the Porterian clusters (e.g. Porter 1998, Brodzicki, Kuczewska 2012). The role of business service centres varies between countries and regions within countries, but some trends are rather clear. Western Europe accounts for more mid-office and front-office processes, which are characteristic of HQs, while CEE countries account for more transactional and back-office functions. That, however, gradually changes. We clearly observe that CEE, converging in wage levels, upgrades and upskills its business-processes profile. Over time, the most labour-intensive and less complex processes will either shift to lower-cost locations (in closer proximity to Europe or globally, i.e., to India) or be increasingly (fully) automated unless tectonic changes to the present global world order occur. The future business models are yet unknown but could be vastly different from the present, making the current, legacy business models. The potential range of possibilities driven mostly by technological and social changes is shown, for instance, in the ABSL business transformation cube (ABSL 2023b).

The KIBS sector is present all over Europe, with major concentrations present in each analysed sub-region, like CEE (ABSL 2023a). The analysis of ABSL was performed on Eurostat's employment data for NUTS-2 level regions of Europe and candidate states using the definition of Schnabl and Zenker (2013) consistent with the present study. The identification of major concentration was performed using a number of factors, including absolute employment in NUTS-2 regions, location quotients (LQ) index relative to EU-27 average (treated as a benchmark), as well as the per cent changes in the two above indices over the horizon. The sector is concentrated in Europe's major metropolitan areas, with capital regions and strong academic centres playing clearly a dominant role. The top five concentrations of the talent pool in 2021 in absolute

numbers include Île de France (Paris metropolitan region), Madrid, Lombardia (Milan), Berlin, and Oberbayern (Munich). The top five regional concentrations, considering employment size, relative specialisation (relative to the EU27 average), and change in employment in absolute terms since 2016, were Île de France (Paris), Stockholm, Berlin, Noord-Holland (Amsterdam), and Bucuresti – Ilfov (Bucharest). High concentrations outside of EU27 include the UK (the Greater London metropolitan area, as well as the Manchester region) and Turkey (Istanbul).

While KIBS often require significant upfront investment in knowledge creation, software development, data infrastructure and data integration as well as expertise building, they can achieve economies of scale, particularly in IT and digital solutions. For example, once a software system is developed, it can be delivered to multiple clients at low marginal costs (Miozzo, Soete 2001). Additionally, economies of scope are realised when KIBS firms offer complementary services, such as combining consulting with data analytics, allowing them to address a broader set of client needs with shared resources (Antonelli 1998), thus providing a higher value added to a client.

As a result, KIBS are inherently innovative, with firms constantly seeking new ways to improve service delivery, adopt emerging technologies, and develop novel solutions (Miles et al. 1995). The innovation, as could have been expected, is not always in the form of radical breakthroughs but often involves incremental improvements and adaptations based on client feedback. KIBS products thus frequently evolve as firms adapt and refine their offerings to meet changing demands and address specific issues through interactions with clients in an iterative fashion.

Many KIBS products are complex, and clients may find it challenging to assess the quality and value of the service even after purchase (Kox 2002). This complexity stems from the fact that KIBS involve specialised knowledge that clients may not fully understand. As a result, KIBS providers often rely on reputation, trust, and previous client relationships to establish credibility and reduce uncertainty for new or potential customers. It leads to the establishment of long-term relationships between providers and clients. Owing to the nature of the services provided, clients often rely on the same KIBS providers for ongoing support, strategic advice, or regular updates. This results in a high degree of client retention and loyalty. This is crucial for the business model, as acquiring new clients is usually resource-intensive (Aslesen, Isaksen 2007).

KIBS products are generally high-value-added. They contribute directly or indirectly to the productivity and efficiency of their clients. By providing access to the expertise that clients may not possess internally, KIBS firms enable other businesses to optimise their operations, innovate, and ultimately to stay competitive (Crespi 2014). The impact on client productivity positions KIBS as a strategic resource. In order to provide high value at reasonable costs, KIBS functions are frequently outsourced to dedicated, specialised centres, either internally or externally. The specialised shared service centres (SSC), business process outsourcing (BPO), IT, and R&D centres are nowadays frequently replaced by more integrated global business services (GBS) centres (ABSL 2024). The employment in dedicated centres alone within the EU-27 can be estimated to be approximately 5.0 million FTEs.

KIBS have seen substantial growth in the last two decades due to digitalisation, globalisation, and the clear trend towards increased outsourcing of specialised services. Digitalisation, in particular, has enabled the transformation of traditional services into digital, facilitating remote consulting, cloud-based IT solutions, and data-driven analytics (Bryson 2007). The new wave of digital transformation is a side-effect of the recent COVID-19 pandemic, which in addition, led to a transformation in ways of working from firm-based to work-from-home and now increasingly hybrid workplace (ABSL 2024).

Furthermore, KIBS has expanded significantly owing to outsourcing, as companies increasingly rely on external expertise for complex functions rather than developing in-house capabilities. This trend aligns with the broader shift toward knowledge-based economies where intangible assets and intellectual property play a critical role in value creation (Miles et al. 1995).

Productivity in KIBS can be challenging to measure, as outputs are most often intangible, and quality can vary significantly across services (Kox 2002). Unlike manufacturing, where

productivity is often measured by units produced per labour hour or by total-factor productivity (TFP), KIBS productivity depends on factors like the quality of problem-solving, innovation, and client satisfaction. However, digital tools and automation (including intelligent process automation (IPA)/robotic process automation (RPA)/artificial intelligence (AI) tools) are improving productivity within KIBS by enabling tasks such as data processing, client communications, and project management to be overseen more efficiently (Crespi 2014). The rise of generative AI (genAI), in particular, can significantly transform the sector in the years to come with deep structural adjustments and substantial productivity boosts. The full impact on the size of employment at this stage is rather vague, with several possible scenarios (ABSL 2023b).

KIBS products have a strong potential for internationalisation. This applies, in particular, to services provided through digital delivery channels. These allow KIBS companies to reach clients across borders without having to be physically present. For example, IT services or financial consulting can often be provided completely remotely. This allows KIBS providers to serve global markets (Roberts 1999). With respect to the above, WTO (2010) classifies international trade in services into four modes:

– Mode 1 (cross-border supply), where services are supplied from one country to another (e.g. online consulting),
– Mode 2 (consumption abroad), in which consumers travel to another country to receive services,
– Mode 3 (commercial presence), which involves establishing a business presence abroad (e.g. a foreign branch of a KIBS firm),
– Mode 4 (movement of natural persons), where individuals travel abroad to supply services temporarily.

KIBS typically engage in these modes to facilitate global knowledge exchange and innovation. Mode 1 has become increasingly important for KIBS due to digitalisation, while Mode 3 enables firms to establish local operations and foster proximity to clients in foreign markets. Mode 4 is also significant, as KIBS firms often rely on the mobility of skilled professionals to deliver specialised, high-value services worldwide. As a result, KIBS have become increasingly internationalised, utilising the available digital technologies to serve global clients across all time zones, often with minimal need for physical presence (more Mode 1 than Mode 2 or 4 above).

Additionally, KIBS firms from developed economies, using the other modes of internationalisation, often expand into emerging markets to take advantage of the demand for advanced services, lower labour costs (key for transactional processes), and avoid saturation in their home markets (Roberts 1999). This expansion into global markets not only helps KIBS firms diversify their revenue streams but also exposes them to a broader range of stimuli. There is, thus, a direct link between trade and FDI. FDI flows are integral to KIBS and are often realised through complex arrangements involving outsourcing and insourcing. Outsourcing, understood as the delegation of specific service functions to external providers, allows firms to access cost-effective expertise. On the other hand, insourcing emphasises retaining capabilities internally within an organisation, often to protect intellectual property and ensure a sufficient degree of control (Contractor et al. 2010). The FDI strategies of KIBS firms often depend on balancing the different available options, where companies assess costs across locations, quality, and strategic control factors to determine the most effective service delivery model (UNCTAD 2021).

Offshoring and nearshoring reflect additional strategic considerations for KIBS firms within the global economy. Offshoring involves the relocation of service operations to distant, low-cost locations to obtain or retain a cost advantage. Nearshoring, which has gained significance recently, is the transfer of services to geographically close or proximate locations. It minimises time-zone differences and enhances coordination with clients (Gonzalez et al. 2010). This trend is notably prominent in Europe, where CEE has become a prime nearshoring destination because of skilled labour, cultural compatibility, and advantageous geographical location (UNCTAD 2022).

Emerging models like backshoring and friend-shoring highlight changing dynamics in FDI flows within KIBS in recent years, which has become prominent in the post-COVID era with rising geostrategic tensions and clear geostrategic fragmentation. Backshoring, or bringing previously offshored services back to the home

country, often occurs in response to quality concerns or shifts in economic/regulatory conditions. Friend-shoring or ally-shoring, a more recent phenomenon, involves sourcing services from politically as well as militarily allied and/or economically stable nations to mitigate various geopolitical risks (Baldwin, Freeman 2022). These approaches align with a trend toward seeking more resilience and proactive risk management in supply chains, particularly in the light of more frequent global disruptions (poly-crisis, characteristic of the VUCA-BANI world). Geostrategic fragmentation leads to the re-emergence of regionalisation and selective partnerships, as well as an evident rise in protectionist policies. These impact GVCs indirectly or directly by increasing costs, reducing efficiency, and reshaping traditional trade routes (e.g. the present rerouting of trade around Cape of Good Hope due to attacks of Houthis on ships in the Red Sea). According to UNCTAD (2023), fragmentation threatens the core benefits of globalisation as trade networks become less interconnected and countries prioritise resilience over efficiency. UNCTAD highlights that while GVCs traditionally were striving for cost optimisation, companies are now increasingly factoring in risks associated with geopolitical instability. This leads to shifts in production locations and reshapes supplier networks. Regionalised VCs (RVCs) are on the rise and could become a prominent feature of the global economy within the coming decade.

Global KIBS trade and FDI flows from a theoretical perspective

The development of trade theory from its origins to contemporary frameworks reflects a trajectory from classical perspectives on goods-based trade of states to more nuanced microeconomic analyses focusing on the role of firm heterogeneity (e.g. Rynarzewski, Zielińska-Głębocka 2006, Brodzicki, Ciołek 2016). The concept of absolute advantage (Smith 1776) marked the beginning of trade theory, highlighting how countries benefit by specialising in the production of goods in which they hold absolute efficiency advantages, e.g. absolute cost advantage. Smith argued that specialisation increases productivity, thereby making it profitable for nations to trade.

Building on this, Ricardo introduced the theory of comparative advantage, which suggested that even if a country holds no absolute advantage, it can still benefit from trade. It can do it by focusing on the production and export of goods with the lowest opportunity cost relative to others (Ricardo 1817). Ricardo's work established the foundation for understanding how asymmetries between nations drive trade. It is worth stressing here that the relevance of neo-Ricardian approaches is still significant in general but for KIBS trade specifically (e.g. Pitelis, Antonakis 2003, Guerrieri, Meliciani 2005).

The Heckscher-Ohlin (HO) model extended the classical view by introducing the role of factor endowments in trade. According to the HO model, countries export goods that intensively utilise their abundant factors and import goods that require less abundant factors (Ohlin 1933). The HO dominated the trade discourse after WW2 till the 1980s. The model has been instrumental in explaining trade flows in goods. It had a more limited impact on addressing trade in services and knowledge-intensive sectors. Subsequently, the Heckscher-Ohlin-Vanek (HOV) theorem expanded the HO model by considering variations in factor intensities between countries (Vanek 1968). While the HOV theorem provided further insight into the trade patterns of factor-intensive goods, both the HO and HOV models encountered limitations when applied to services trade, where, obviously, factors like human capital and/or expertise play a greater role. At the same time, the prior theories were unable to explain the forces behind the phenomenon of intra-industry trade.

The intra-industry trade theory (frequently referred to as the new trade theory, NTT) was able to explain trade between similar economies in similar products (similarity-driven), such as the exchange of differentiated goods within the same industry. The intra-industry models (e.g. Krugman 1979, 1980) can be particularly relevant to understanding trade in knowledge-intensive services, where product differentiation and economies of scale are of fundamental significance. The intra-industry trade framework, utilising the concepts of horizontal or vertical product differentiation in the presence of economies of scale, better explains how nations with similar endowments engage in trade. This lays a better

foundation for understanding the true trade dynamics in KIBS.

Nonetheless, a major disadvantage of NTT was the assumption of symmetry between firms. The symmetry is obviously far away from the real world, where most trade is conducted by firms with the highest competitive potential, mostly based on productivity advantage measured at the firm level. It is important to stress that a substantial portion of trade globally is of intra-firm type (e.g. Helpman 2006, Bernard et al. 2018, Antràs, Yeaple 2014). Luckily, theoretical advancements led to the heterogeneous firms model, or the Melitz model, which introduced a microeconomic perspective on trade by analysing firm-level heterogeneity and productivity differences in international markets (Melitz 2003). The Melitz model and its subsequent extension suggest that only the most productive firms within an industry engage in export because of high entry costs in foreign markets (the so-called selection effect), with most firms (with productivity below the threshold) only able to compete in the domestic markets or even forced to exit (market crowding-out effect). Since KIBS firms rely heavily on specialised expertise, high human capital intensity, and innovation closely linked to productivity, the Melitz model offers an effective framework through which we are able to understand why only specific, high-performing firms can successfully enter and thrive in foreign service markets. KIBS flows are, at the same time, responsive to factors like technological advancement and firm-level innovation (Francois, Hoekman 2010).

Firm heterogeneity within KIBS is a key factor in understanding the sector's contributions to economic growth and competitiveness. Research shows that variations in innovation capabilities, skilled labour, and regional factors related to firm embeddedness in regions significantly impact firms' performance and export behaviour. Castellacci (2008) shows that differing innovation strategies within KIBS have an impact on the scope of competitive advantage. Freel (2006) finds that small KIBS firms with high innovation and skilled talent pool achieve superior performance, particularly in international markets. Regional attributes, such as the human capital base, as well as the availability and quality of the R&D infrastructure, play a key role (Lafuente et al.

2010). Müller and Zenker (2001) emphasise that KIBS firms differ in their ability to transform and apply knowledge, affecting their overall innovation. KIBS firms' varied structures and capacities (Brosnan, Doyle 2019, Doloreux, Shearmur 2012, Miozzo, Grimshaw 2005) drive the scope of their roles as innovation facilitators in both regional and international contexts. This further underscores the importance of formulation of more tailored policies to address the varied needs of heterogeneous firms (Schricke et al. 2012).

The concept of the 'happy few' (Ottaviano, Mayer 2007) refers to a small group of highly productive firms that are disproportionately successful in international markets due to their exceptional capabilities and resources. In the context of KIBS, this concept is highly relevant as only a small number of KIBS firms possess the necessary scale to reap the benefits of economies of scale to a large extent but, at the same time, have innovation potential, expertise, and digital infrastructure to engage and expand effectively in global markets. As an illustration, Brosnan and Doyle (2019) examine the internationalisation of KIBS in Ireland, revealing that only a small portion of firms with advanced digital infrastructure and high innovation levels can consistently operate across borders. This aligns with the 'happy few' idea, as it demonstrates that only highly capable KIBS firms are able to sustain global operations and is fully in line with the postulates of Marc Melitz (2003).

At the same time, the FDI theory provides a framework to understand the motivations and patterns of KIBS firms as they expand internationally (e.g. Cieślik 2017, Umiński 2000). Traditional FDI theories, such as Dunning's (1988) eclectic paradigm, offer valuable insights into FDI in KIBS. The eclectic OLI paradigm suggests that firms engage in FDI when they possess Ownership, Location, and Internalisation advantages. KIBS firms typically have significant ownership advantages in the form of proprietary knowledge, specialised skills, and brand reputation. At the same time, they try to utilise location advantages, such as access to skilled labour, proximity to clients, and favourable regulatory environments. Internalisation advantages, whereby firms retain control over their specialised knowledge by investing abroad rather than licensing, are particularly relevant for KIBS,

where intellectual property and service quality control are critical.

The internationalisation process model, or the so-called Uppsala model, describes FDI as a gradual process, often beginning with lower-risk entry modes and advancing toward greater resource commitment as firms accumulate knowledge and experience (Johanson, Vahlne 1977). This model fits KIBS firms, which frequently begin by exporting services or forming strategic alliances before establishing foreign subsidiaries or branches (refer to WTO trade in services modes above). As KIBS firms gain expertise in foreign markets and assess demand for their knowledge-intensive services, they tend to escalate their investment levels. This process often aligns with the need for local/regional adaptation and close client engagement. KIBS firms in Europe, for instance, may initially engage in nearshoring relationships within the EU (CEE in particular) before fully investing in new markets (a waterfall approach rather than the so-called sprinkler strategy).

More recent FDI theories, including the knowledge-based view, emphasise the role of intangible assets in FDI decision-making. This applies in particular to sectors like KIBS, where competitive advantage is grounded in knowledge and human capital (Kogut, Zander 1993). Knowledge-based theories suggest that KIBS firms leverage their unique intellectual assets to enter foreign markets, seeking to optimise knowledge transfer and foster innovation. Digitalisation has further supported FDI in KIBS by facilitating remote service delivery and expanding firms' geographical reach, allowing KIBS providers to establish a presence in diverse locations to serve global clients better. This expansion is particularly evident in the CEE region, where skilled labour, digital infrastructure, as well as geographical and time-zone (temporal) proximity to Western Europe make it an attractive destination for KIBS multinationals seeking locations to enhance their competitive positioning.

Taking the above observations into account, trade and FDI theories seem to complement each other in explaining global trade flows (e.g. Cieślik 2017), and KIBS flows in particular. As trade and FDI are extremely intertwined in KIBS, one could argue that for KIBS, trade and FDI theories are more than just complementary. They are interdependent in explaining the global dynamics.

Source of data and the assumptions

Our analysis is based on the OECD-WTO Balanced Trade in Services (BaTIS). The OECD-WTO BaTIS (2024) dataset is a comprehensive resource for international trade data on services. It is a collaboration between the OECD and the WTO. The BaTIS dataset provides data on bilateral trade in services flows between countries at an aggregated level. The OECD-WTO BaTIS dataset is a complete, consistent, and balanced matrix of international trade in services statistics. It contains annual bilateral data covering more than two hundred reporters and partners. From a sectoral point of view, it is broken down into the twelve main EBOPS 2010 statistical categories. One of the BaTIS dataset's major strengths is its balancing methodology. It is used to reconcile discrepancies that might arise in individual countries' reporting, leading to more consistent and trustworthy global trade figures.

We perform the analysis at two levels: states and aggregate the data to intra- and inter-continental flows for Europe, Asia, the Americas, and Oceania. In addition, we devote a section of analysis to CEE states only.

We approximate the KIBS flows by aggregating data for EBOPS 2010 category sections SI (Telecommunications, computer, and information services) and SJ (Other business services), taking into account the definition of Schnabl and Zenker (2013). Schnabl and Zenker revised the prior KIBS classification in NACE Rev. 1 to NACE Rev. 2 standards limiting the definition of KIBS to NACE Rev. 2 sections J – ICT (divisions 62 and 63) and section M – Professional, scientific, and technical activities (divisions 69–73). A detailed analysis of the correspondences between EBOPS 2010 and NACE Rev. 2 showed that KIBS could be well approximated by aggregated sections SI and SJ in the BaTIS database.

Furthermore, owing to data limitations in the BaTIS dataset, the analysis is conducted over the period 2005–2021.

The analyses below use the revealed comparative advantage (RCA) index. This index is used in international economics to determine a country's relative advantage or disadvantage in certain product groups. It has traditionally been used to assess a country's trade specialisation based on its export performance in specific sectors.

The RCA index, attributed to Balassa (1965), compares the share of a given group of products/services in the total exports of a given country to the respective share of the same in the case of a reference group, usually globally. In accordance with the logic of the index, the RCA interpretation is as follows:

– RCA > 1: The country has a comparative advantage in the product/service, indicating it exports more of this product than the world average.

– RCA < 1: The country has a comparative disadvantage in the product, or lack of competitive advantage, or in other words, exports less than the world average.

The RCA index is commonly used to assess a country's strengths and weaknesses in international trade. This helps in developing trade policies, focusing on competitive sectors, and understanding shifts in comparative advantage over time.

In the present article, RCA has been calculated as the share of KIBS in a given country's total services exports relative to the share of KIBS in total global services exports.

The use of the RCA index aligns well with contemporary trade theories. Unlike traditional comparative advantage theories, which focused on static factors like productivity advantage (Ricardo 1817) or resource endowments (Ohlin 1933), modern trade theories integrate elements of technology, economies of scale, and human capital to explain competitive trade patterns (e.g. Krugman 1979, 1980).

Despite its Ricardian connotations, RCA can also be derived from Porterian or Meliz's (2003) heterogenous trade theories.

Porter's (1990) framework suggests that national competitive advantage is rooted in factors such as firm strategy, structure, and domestic rivalry. Porter focuses on the strategic factors that shape national competitiveness. In that sense, RCA is in line with Porter's approach, as it allows us to empirically identify sectors with noticeable international specialisation in which a given country outperforms other countries or the global mean. Melitz (2003) emphasises the critical role of firm-level differences within industries or firm-level heterogeneity. Nations succeed by fostering competitive industries (Porter) while allowing the most productive firms within

those industries to thrive and expand internationally (Melitz). Both theories provide valuable insights for trade and industrial policy, guiding countries on macro-level strategies and firm-level dynamics essential for sustaining competitive advantage. This applies both to manufacturing industry sectors as well as knowledge-intensive services and KIBS in particular. In the end, both Melitz (2003) and Porter (1990) postulate that productivity is the ultimate source of competitive advantage.

Empirical analysis of global KIBS flows

Top global KIBS exporters and their revealed comparative advantages

KIBS is a globalised sector with increasing competition among the key incumbents and new emerging locations both in Asia and in Europe – including CEE and Southern Europe/Western Balkans with potentially disruptive consequences. As we can see in Table 6, Ireland, Switzerland, and India consistently rank highest in RCA values among the top 10 global KIBS exporters. The Netherlands and the UK maintain a stable comparative advantage. The RCA values for Germany and France are above one but below 1.1. The US and China do not show an RCA.

Interestingly, if we calculate the RCA for continents, Europe is the only continent in 2021 to have a value above one, indicative of a holistic comparative advantage. The values for the remaining continents are 0.95 for Asia, 0.94 for the Americas, 0.74 for Oceania, and 0.54 for Africa.

Revealed comparative advantages in KIBS can be attributed to the size and depth of the talent pool. The availability of skilled labour, especially in technology and science (STEM), greatly impacts a country's RCA in KIBS (Francois, Hoekman 2010). This is, in turn, a function of the size of the population as well as the overall quality of the educational system. Furthermore, the overall intensity of investments in R&D and innovation plays a role. Last but not least, we should stress the role of a supportive policy environment and overall culture of entrepreneurship.

When we combine the analysis with an analysis of trends in export values over the period
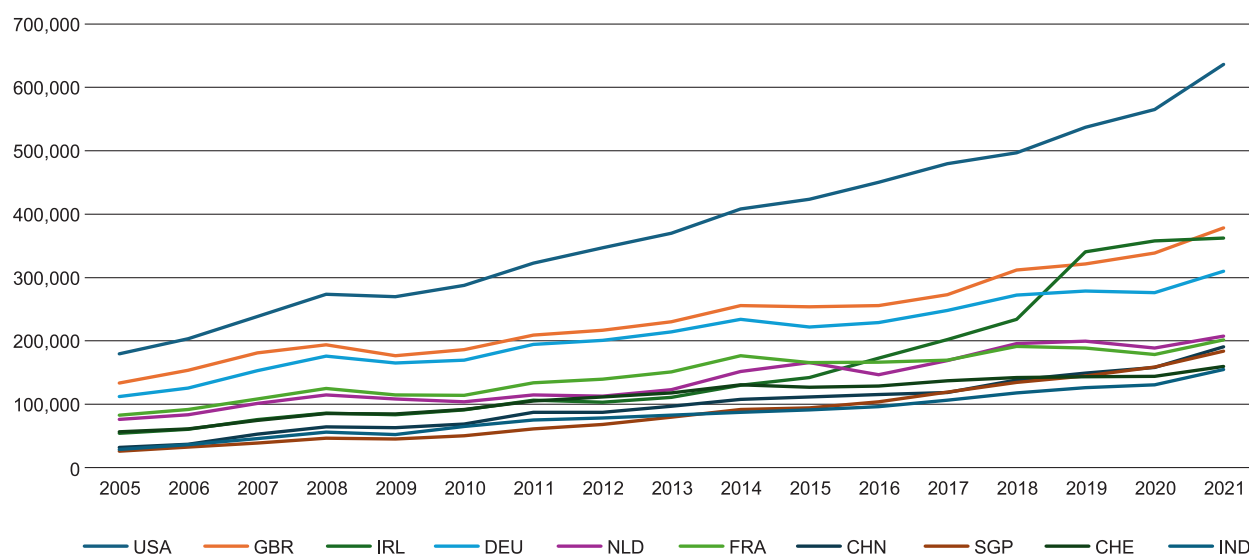
Fig. 1. Evolution of exports of top 10 KIBS exporters globally in 2021 (USD million) based on the BaTIS database of WTO-OECD.
*ISO-3 country codes.

2005–2021 (Fig. 1), we then can identify Ireland, Switzerland, India, and the Netherlands as leaders of specialisation as they consistently show high RCA values, indicating strong specialisation in KIBS. Their export values align, confirming their competitive positions in this sector. The US and the UK have substantial KIBS export volumes, followed by Ireland and Germany. As to the overall export dynamics over the period, we see that the growth among the top 10 was the largest within the period 2005–2021 for Singapore, followed by Ireland, China, and India. China, although growing in export volume, which is indicative of its pure economic size, lacks at this stage a comparative advantage in KIBS, which is very different from India (the last in the top 10 in terms of value, but with high RCA and high average growth – indicative of a large potential).

Intracontinental and extra-continental trade flows

The aggregation of trade flows to continents leads to a number of interesting conclusions (Tables 1–5). Europe in 2021 was responsible for 53.3% of global KIBS exports, ahead of Asia (24.7%) and the Americas (19.8%). At the same time, 65.5% of exports of KIBS from Europe are directed to another European country (mostly intra-EU trade). Globally, intra-European trade is responsible for 35.2% of global KIBS flows. It

is ahead of the intra-Asian flows (10.7%) and intra-Americas flows (4.7%). Europe is responsible at the same time for 50.3% of KIBS imports into Africa, 43.6% into the Americas, 35.6% into Asia, and 36.2% into Australia and Oceania.

10.7% of global trade flows are intra-Asia, and Asia is responsible for 24.7% of the total global KIBS flows. Asia's substantial intra-regional and inter-regional (e.g. 8.0% to Europe) export flows highlight its increasing role in global KIBS, driven by growing capabilities in IT and knowledge-based services. 4.7% of global trade flows are intra-Americas trade, and the Americas account for 19.8% of the global KIBS flows.

A significant portion of KIBS from the Americas is exported to Europe (9.6% of global trade), suggesting strong transatlantic KIBS connections. Africa (1.2% of global exports) and Oceania (0.9% of global exports) contribute the least to global KIBS flows. African KIBS exports are primarily directed to Europe, whereas Oceania's KIBS exports are more dispersed across all regions.

As we have seen above, intra-regional KIBS flows are strongest in Europe (35.2%) and Asia (10.7%) in terms of the share in total global trade flows, reflecting a high level of integration within these regions. Intra-regional flows in the Americas (4.7% of global trade) are moderate, while Africa and Oceania have minimal intra-regional KIBS trade. Many studies highlight Europe and, to a lesser extent, Asia as strong clusters for KIBS (e.g. Muller, Doloreux 2009).

Table 1. Global KIBS flows in 2005 (USD million) based on the BaTIS database of WTO-OECD.

Reporter	Destination					
	Africa	Americas	Asia	Europe	Oceania	Total
Africa	266	1394	1636	5232	91	8620
Americas	2915	36,231	26,764	66,745	2009	134,665
Asia	2747	24,731	45,111	44,715	2018	119,322
Europe	9411	55,188	51,771	274,048	3115	393,533
Oceania	214	1690	2440	1956	929	7229
Total	15,554	119,233	127,722	392,696	8,163	663,368

Table 2. Global KIBS flows in 2021 (USD million) based on the BaTIS database of WTO-OECD.

Reporter	Destination					
	Africa	Americas	Asia	Europe	Oceania	Total
Africa	981	4017	7750	14,384	418	27,551
Americas	7067	107,361	110,179	220,363	7188	452,158
Asia	13,327	108,978	245,093	182,821	15,549	565,769
Europe	22,073	173,786	204,770	804,595	14,545	1,219,769
Oceania	469	4496	7361	6869	2437	21,632
Total	43,918	398,639	575,153	1,229,032	40,137	2,286,879

Table 3. The structure of global KIBS flows in 2021 based on the BaTIS database of WTO-OECD.

Reporter	Destination					
	Africa	Americas	Asia	Europe	Oceania	Total
Africa	0.0	0.2	0.3	0.6	0.0	1.2
Americas	0.3	4.7	4.8	9.6	0.3	19.8
Asia	0.6	4.8	10.7	8.0	0.7	24.7
Europe	1.0	7.6	9.0	35.2	0.6	53.3
Oceania	0.0	0.2	0.3	0.3	0.1	0.9
Total	1.9	17.4	25.2	53.7	1.8	100.0

* Total global flows sum up to 100%.

Table 4. Global KIBS flows – CAGR 2005–2021 based on the BaTIS database of WTO-OECD.

Reporter	Destination					
	Africa	Americas	Asia	Europe	Oceania	Total
Africa	8.5	6.8	10.2	6.5	10.0	7.5
Americas	5.7	7.0	9.2	7.8	8.3	7.9
Asia	10.4	9.7	11.2	9.2	13.6	10.2
Europe	5.5	7.4	9.0	7.0	10.1	7.3
Oceania	5.0	6.3	7.1	8.2	6.2	7.1
Total	6.7	7.8	9.9	7.4	10.5	8.0

Table 5. Changes in the structure of global KIBS flows 2021 vs 2005 based on the BaTIS database of WTO-OECD.

Reporter	Destination					
	Africa	Americas	Asia	Europe	Oceania	Total
Africa	0.0	0.0	0.1	−0.2	0.0	−0.1
Americas	−0.1	−0.8	0.8	−0.4	0.0	−0.5
Asia	0.2	1.0	3.9	1.3	0.4	6.8
Europe	−0.5	−0.7	1.1	−6.1	0.2	−6.0
Oceania	0.0	−0.1	0.0	0.0	0.0	−0.1
Total	−0.4	−0.5	5.9	−5.5	0.5	0.0

Europe's dominant global role and the role of its intra-regional KIBS flows can be attributed to the level of economic development and the level of the EU's economic integration within a framework of a well-established common market. Asia's growing KIBS sector is driven by technology and innovation capabilities, especially in sectors like IT, and an obvious, at least at this stage, cost advantage.

The strong KIBS flows between regions, especially from the Americas and Asia to Europe, align, at least to a certain extent, with the idea of the transnationalisation of services, where firms expand their operations and offerings globally, overcoming geographical constraints (Nachum 1999). The Americas' significant exports to Europe reflect well-established and historically grounded networks facilitated by cultural proximity and institutional ties. At the same time, high intra-regional or intra-continental flows in Europe and Asia show that geographical and cultural proximity facilitates trade. We have to stress that the currently observed structure of trade differs from the one observed prior to the Great Financial Crisis in 2005 (Table 1).

The compound annual growth rate (CAGR) of global KIBS flows at 8.0% (Table 4) from 2005 to 2021 highlights robust growth; however, it reveals significant regional differences, with Asia leading at 10.2%, driven by strong intra-regional growth (11.2%) and increasing flows to Oceania (13.6%) and Africa (10.4%). The growth rate clearly proves Asia's expanding role in global KIBS. Africa also shows a notable CAGR of 7.5%, particularly in its trade with Asia (10.2%) and Oceania (10.0%). Europe's growth rate of 7.3%, below the global mean, however, is sustained by intra-European flows (7.0%) and trade with Asia (9.0%), pointing

to Europe's already established trade networks and strong competitive position but slower expansion relative to emerging markets.

We can look at the changes also through the shift in share analysis (Table 5). Like in the CAGR analysis above, the changes in the structure of global KIBS flows from 2005 to 2021 reveal a significant shift towards Asia, which saw a 6.8 percentage point increase in its share of global KIBS flows. This increase is primarily driven by intra-Asian trade (+3.9 points) as well as the flows to the Americas (+1.0) and Europe (+1.3). Africa and Oceania saw minimal changes, indicating a stable share in global KIBS, with minor gains in flows directed toward Asia and Europe. On the other hand, Europe experienced the largest decline, with a 6.0-point decrease in its share, due to a reduction in the global role of the intra-European trade (−6.1 points) as well as smaller decreases in the share of flows to Africa and the Americas and a slight gain in trade with Asia. This decline suggests that while Europe remains a major KIBS player, its relative share in global flows is diminishing as other regions, particularly Asia, strengthen their position in KIBS markets. We observe the rebalancing in global trade dynamics. Over the longer run, Asia's growing potential, clearly reshapes the global distribution of KIBS activities.

Overall, the growth rates in KIBS exports across continents are consistent with the theory. Factors such as regional specialisation, economic integration, and ongoing digitalisation greatly contribute to the observed growth patterns.

At the same time, Europe's weakening position in KIBS relative to competitors from Asia, particularly India but also the Philippines or Malaysia, can be attributed to several factors.

Table 6. KIBS RCA values for top 10 global exporters in 2021 based on the BaTIS database of WTO-OECD.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
USA	0.90	0.90	0.89	0.90	0.89	0.88	0.87	0.87	0.87	0.86	0.86	0.88	0.89	0.87	0.87	0.85	0.88
GBR	1.14	1.14	1.12	1.12	1.11	1.15	1.12	1.13	1.12	1.12	1.10	1.12	1.13	1.16	1.14	1.08	1.12
IRL	1.77	1.74	1.74	1.77	1.75	1.90	1.89	1.84	1.77	1.75	1.84	2.00	1.96	1.86	2.32	1.87	1.62
DEU	1.30	1.27	1.29	1.27	1.25	1.30	1.31	1.33	1.31	1.27	1.26	1.23	1.23	1.21	1.19	1.09	1.07
NLD	1.42	1.40	1.40	1.37	1.31	1.23	1.20	1.19	1.16	1.25	1.39	1.22	1.24	1.26	1.18	1.18	1.21
FRA	1.16	1.15	1.13	1.13	1.11	1.14	1.11	1.14	1.17	1.20	1.18	1.18	1.13	1.15	1.10	1.04	1.01
CHN	0.73	0.72	0.80	0.82	0.88	0.82	0.91	0.88	0.93	0.95	0.94	0.96	0.92	0.94	0.94	0.89	0.84
SGP	1.00	1.04	1.00	1.00	1.02	0.99	1.01	1.05	1.11	1.15	1.14	1.22	1.26	1.21	1.17	1.10	1.10
CHE	1.40	1.38	1.35	1.35	1.35	1.40	1.43	1.49	1.47	1.45	1.40	1.41	1.43	1.42	1.39	1.29	1.29
IND	1.58	1.53	1.51	1.48	1.45	1.51	1.44	1.46	1.44	1.40	1.42	1.41	1.38	1.38	1.34	1.24	1.28

*ISO-3 country codes. RCA indices are calculated relative to the global mean.

First, India has built a significant comparative advantage in KIBS, particularly in IT services and technical support, driven by a large, skilled, and cost-effective workforce with strong proficiency in English. Indian KIBS firms leverage their cost advantage and scalability to serve global clients at a lower price to an extent that many European firms cannot match.

Additionally, digitalisation and the rise of remote service delivery have enabled Indian KIBS firms to expand their reach without the need for physical proximity to clients. This shift allows Indian firms to overcome geographical barriers, reaching both EMEA as well as the American markets with relative ease. This, in turn, clearly challenged the spatial advantage that European firms traditionally enjoyed. Lastly, Europe's higher labour and operational costs make it challenging to compete solely on price. As wages continue to rise, European firms face increased pressure to shift from cost-driven models to those focused on innovation and high-value-added services. However, this transition or transformation is complex and requires substantial investment in skills development, digital infrastructure, and R&D. It obviously takes time to implement effectively.

Meanwhile, Asia, particularly India, continues to capture larger market shares by providing efficient, scalable KIBS solutions driven by a strategic focus on cost efficiency and specialised expertise. These apply particularly to more transactional functions. At the same stage, these roles and functions are most prone to being partially or completely automated by IPA/RPA or AI.

Focus on Central and Eastern Europe

Within Europe, an increasing role in KIBS is played by CEE states. The region attracted a significant amount of FDI in the KIBS sectors, with specialised centres initially serving back-office processes and gradually mid-office processes with increasingly higher value-added performed (ABSL 2023a, 2024). The initial price advantage related to low levels of wages disappeared with clear wage convergence. CAGR for CEE over the period 2005–2021 is above the global mean (Table 7). At the same time, we would like to note that the sector in CEE is mostly located in the capital regions – the main commercial and higher

Table 7. KIBS export values in USD million and CAGR for exports 2005–2021 based on the BaTIS database of WTO-OECD.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	CAGR 2005–2021
Poland	8449	10,364	13,440	17,300	15,197	18,388	20,360	20,123	21,479	24,951	24,235	26,253	30,587	36,663	39,753	41,943	48,107	11.5
Czechia	6864	8168	10,145	11,992	11,070	11,362	14,153	14,399	15,220	16,547	14,758	16,048	18,244	20,878	22,087	20,889	24,451	8.3
Romania	4004	5089	6601	8400	7438	7102	8501	8446	10,828	12,270	11,922	12,213	14,108	17,437	18,851	19,764	23,209	11.6
Hungary	6812	7625	9938	12,047	11,257	11,364	12,940	12,017	13,262	14,599	13,157	14,031	15,562	17,343	18,676	18,424	19,780	6.9
Slovakia	3083	3562	4374	5206	4474	4371	5191	5276	6736	6900	6075	6802	7397	8455	8605	8897	9815	7.5
Bulgaria	1428	1784	2371	2947	2469	2540	2872	3019	3027	3667	3559	3708	3926	4547	5222	5761	6950	10.4
Estonia	967	1115	1494	2029	1770	1847	2188	2357	2537	2887	2529	2747	3180	3887	3826	5050	6709	12.9
Lithuania	719	837	1023	1345	1180	1202	1382	1633	1942	2123	1955	2286	2810	3446	3947	4602	6206	14.4
Slovenia	1662	1958	2388	2967	2643	2642	3037	3040	3245	3594	3208	3485	4013	4410	4697	4854	5564	7.8
Croatia	2214	2449	2695	3160	2828	2827	3038	2923	2823	3092	2913	3085	3425	3991	4367	4384	5541	5.9
Latvia	845	986	1363	1667	1448	1481	1756	1802	1986	2077	1876	2169	2514	2991	3170	3377	4195	10.5
Albania	95	117	139	270	260	285	297	270	308	298	257	295	442	384	408	431	495	10.8

*Countries arranged by size of exports in 2021 in decreasing order.

university hubs, with Poland and Romania clearly showing a more polycentric nature (ABSL 2023a).

As to the CEE group, the joined analysis of export value and CAGR over 2005–2021 (Table 7) shows that Poland, Czechia, Romania, and Hungary stand out as CEE leaders in terms of export value; this is obviously size-dependent. The 2005–2021 CAGR values are the largest for Lithuania (+14.4%), Estonia (+12.9%), Romania (+11.6%), and Poland (+11.5%), with the CEE CAGR mean at 9.6%.

As to RCA values (Table 8), thus relative to the global mean, the only CEE country with a clear advantage is Hungary (1.07 in 2021), with values close to one for Czechia (0.99), Estonia (0.98), and Romania (0.96). The value of RCA is below zero for Poland despite its export size – the largest in the region. Albania and Croatia have low export values and RCA indices, indicating minimal specialisation and focus on KIBS. Latvia is small in number but shows increasing potential in terms of RCA. Taking all three elements into account: export value in 2021, RCA in 2021, and CAGR 2005–2021, the potential is the highest in Poland, followed by Czechia and Hungary, with Romania converging.

This analysis indicates that although Poland, Czechia, Romania, and Hungary lead the KIBS export scene in the CEE region, other countries exhibit different degrees of involvement and competitiveness. Some of these nations show promise for growth, yet they lack a comparative advantage. Poland and Romania enjoy an advantage relative to the rest of the region determined by the pure size of their economies and the size of the talent pool to utilise. The position of Romania is stronger in terms of price competitiveness. In contrast, the position of Poland, Slovenia, and Czechia is weakened by the already well-advanced price and wage convergence to Western European standards. The focus of KIBS in these countries should be more driven by higher value added to clients at lower cost, driven mostly by productivity and innovation (ABSL 2024). The CEE region, in that sense, is fast converging on problems observed in the western part of Europe.

Discussion of the results

The obtained results reveal that Europe, while holding the largest share in global KIBS exports in 2021, faces a gradual decline in comparative advantage over other continents when observed over the longer run (2005–2021). This, from a theoretical perspective, aligns well with intra-industry trade theory, which suggests adjustments to take place within similar economies. This observation aligns well with the findings of Muller and Zenker (2001), who highlight that KIBS depend heavily on knowledge and technological advancement, making them particularly sensitive to shifts in innovation and economic integration. Europe's high intensity of internal trade is a function of the overall level of development, the similarity of countries, and the existence of a coherent and robust framework for trade. However, its loss of market share in KIBS, especially in Asia and the Americas, aligns with newer theories like the Melitz model (2003), where the most productive firms dominate international trade.

Table 8. KIBS RCA values for CEE states (2005–2021) based on the BaTIS database of WTO-OECD.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
ALB	0.15	0.15	0.15	0.19	0.20	0.23	0.21	0.22	0.23	0.20	0.19	0.19	0.25	0.18	0.18	0.22	0.16
BGR	0.57	0.61	0.57	0.59	0.55	0.63	0.62	0.61	0.56	0.59	0.63	0.59	0.58	0.58	0.60	0.70	0.69
CZE	0.91	0.93	0.94	0.90	0.92	0.92	0.99	1.02	1.01	1.02	0.97	0.98	0.98	0.99	1.01	0.94	0.99
EST	0.60	0.60	0.67	0.71	0.72	0.72	0.69	0.72	0.69	0.71	0.72	0.74	0.77	0.76	0.75	0.95	0.98
HRV	0.52	0.49	0.45	0.45	0.45	0.46	0.44	0.43	0.42	0.41	0.42	0.40	0.40	0.40	0.42	0.54	0.46
HUN	1.04	1.06	1.09	1.10	1.10	1.13	1.13	1.12	1.13	1.11	1.08	1.05	1.03	1.03	1.05	1.10	1.07
LTU	0.43	0.42	0.42	0.44	0.48	0.48	0.44	0.48	0.49	0.47	0.46	0.48	0.49	0.50	0.47	0.48	0.54
LVA	0.72	0.68	0.68	0.66	0.66	0.72	0.69	0.69	0.69	0.67	0.65	0.70	0.72	0.75	0.75	0.78	0.88
POL	0.85	0.85	0.82	0.88	0.88	1.02	0.96	0.94	0.89	0.90	0.92	0.89	0.89	0.91	0.89	0.85	0.84
ROU	0.78	0.84	0.91	0.92	0.96	0.92	0.93	0.90	1.01	0.99	0.99	0.95	0.95	0.99	0.99	0.95	0.96
SVK	0.96	0.95	0.96	1.00	1.04	0.97	0.97	0.95	1.09	1.05	1.00	1.01	1.00	0.99	0.94	0.90	0.93
SVN	0.81	0.83	0.81	0.80	0.80	0.82	0.83	0.85	0.83	0.85	0.84	0.82	0.80	0.77	0.77	0.79	0.78

*ISO-3 country codes. RCA indices are calculated relative to the global mean.

CEE countries show strong regional competitiveness in KIBS, increasingly driven by high-value-added services. This development follows Dunning's (1988) OLI framework, where FDI flows into CEE reflect the region's emerging location advantage such as skilled labour and proximity to Western Europe, which are attractive for KIBS expansion. Furthermore, the gradual transition of CEE countries from back-office functions to mid- and high-value services aligns with Roberts' (1999) stages approach to internationalisation. In this approach, firms gradually increase commitment to foreign markets as they build knowledge and experience and can simultaneously progress in the value-added ladder. However, rising wages in the CEE pose a clear challenge.

Finally, the study's results highlight a trend toward nearshoring and regional trade within Europe and Asia. This correlates with recent perspectives on FDI that prioritise resilience and knowledge transfer over traditional cost-saving strategies. The observed shift is consistent with Baldwin and Freeman's (2022) discussions on supply chain resilience and the impact of geopolitical shifts. As CEE countries adapt by moving toward knowledge-intensive services and high-value innovation, the findings align with the broader literature's emphasis on the role of human capital, regionalisation, and firm-level competitiveness in sustaining growth.

Conclusions

The analysis of global KIBS flows from 2005 to 2021 highlights high dynamics and the increasing role of the KIBS sector in international trade. Europe dominates global KIBS exports, as it is still responsible for over half of global flows, with RCA at the continent level above one, indicative of comparative advantage. What is particularly interesting is the strong position of intra-European trade related to the functioning of the common market within the EU-27. Europe's share in global KIBS exports is gradually declining, however, with Asia and the Americas gaining ground. Looking from a European perspective, this requires urgent action. At the same time, CEE countries are increasingly significant in the KIBS sector, attracting FDI and reinvestments,

dynamically increasing export potential (9.6% CAGR mean for CEE), and gradually improving their competitive position in higher-value services. However, like in Western Europe, they already face challenges related to wage convergence and the need to transition from cost-based competitiveness and standardised products to higher value-added services, more tailored to customer needs but at the same time more complex.

The KIBS sector in CEE has evolved (ABSL 2023a, b). It was initially centred on lower-cost back-office functions. It is now incorporating mid-office, high-value services such as IT, risk management, and R&D. Poland and Hungary lead CEE in KIBS export volume and competitiveness. At the same time, countries like Romania, Slovakia, and Czechia show moderate growth but lack strong comparative advantages. The ongoing price and wage convergence within the EU pose challenges for CEE's competitive potential, as higher living standards and wage increases reshape the key cost-benefit analysis crucial for the sector.

To sustain and enhance the competitiveness of the KIBS sector in Europe, the EU should prioritise policies that foster innovation, digital transformation, and skills development. As highlighted in Mario Draghi's recent report on innovation and competitiveness (Draghi 2023), EU institutions should bolster support for R&D, particularly in digital technologies and high-value services, which are vital for KIBS growth. Investing in digital infrastructure (including data centres, cloud infrastructure, etc.) and efficient innovation ecosystems will enable KIBS firms to deliver globally competitive services. Additionally, policies should address talent development and retention, focusing in particular on the development of digital and technical (STEM) skills required to support KIBS firms' transition from cost-driven models to high-value-added services and functions.

Looking from the CEE perspective, Draghi's insights underline the need for targeted support to sustain growth in KIBS exports and facilitate the shift toward higher value-added services. Governments in CEE should, in particular, encourage partnerships between universities and industry to address the skills gap, particularly in technical and digital domains critical to KIBS. They should also create incentives for firms to

invest in R&D and advanced technologies, aligning national strategies with the EU's broader goals for innovation and resilience. Enhancing CEE's competitive positioning in KIBS will help maintain its role as a main nearshoring destination as well as backshoring location within Europe, enabling it to meet the demands of a fragmented global trade network and more regionalised value chains.

We have to stress certain limitations of the approach utilised in the present article. The paper primarily focuses on aggregate KIBS flows, which obviously overlooks firm-level variations that significantly impact internationalisation strategies. Additionally, the reliance on historical data up to 2021 limits the analysis's relevance in capturing post-pandemic structural changes in global KIBS flows. Data-allowing these limitations could be eliminated in future analyses.

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