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**Migration of international higher education students to Germany**

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# **Migration of international higher education students to Germany**

Prof. Dr. Samia Satti Osman Mohamed Nour

(Fulda, Germany, April 15, 2024)

## **Abstract**

This paper employs both descriptive and comparative approaches to offer a comprehensive overview of the migration of international higher education students to Germany. It presents an in-depth and recent analysis of international student migration, utilising secondary data from UNESCO on global student mobility in tertiary education and statistics from German institutions on international students in Germany. This study contributes to existing literature by examining migration trends from the perspective of Germany as a receiving country and discussing migration patterns from various global regions. As Germany is one of the most popular destinations for international study, this paper adds valuable insights into the growing intersection of migration and the internationalisation of higher education. Furthermore, it highlights the impact of the COVID-19 pandemic on international student migration to Germany. The paper explores five key hypotheses: the first hypothesis examines the substantial increase in international student migration to Germany between 2000 and 2023, with considerable regional variation in distribution. The second hypothesis addresses the effect of the COVID-19 pandemic on international student migration flows to Germany in 2019-2020. The third hypothesis identifies the pull factors driving the increasing trend of international student migration, including economic incentives (such as low or no tuition fees, scholarships, and employment prospects), educational opportunities (such as high-quality institutions and research focus), and other factors. The fourth hypothesis explores the mixed impacts of international student migration, such as knowledge transfer, brain gain, and skill acquisition for return migrants, but also brain drain for non-return migrants. Finally, the fifth hypothesis investigates how the integration of international students into Germany's labour market benefits the country's economy.

**Keywords:** Migration, international higher education students, international student mobility, internationalisation of higher education, the COVID-19 Pandemic, Germany.

**JEL classification:** J60, J61, I23, I25

# Migration of international higher education students to Germany

## 1. Introduction

This section introduces the research by providing a brief overview of the problem, its significance, relevance, objectives, research questions, hypotheses, and the overall structure of the study.

The analysis of international migration has long been a focal point in scholarly literature, reflecting its growing importance on the global stage. Discussions around international migration often highlight its complex and multifaceted impacts, particularly the mixed positive and negative effects on economic, social, and cultural development in both origin and destination countries. A key area of debate revolves around the migration of highly skilled individuals, which has sparked extensive discourse in academic and policy circles.

Two central questions dominate this discourse: Does migration foster development or contribute to underdevelopment? Furthermore, does the migration of highly skilled individuals result in brain drain or brain gain? These questions have fuelled significant controversies within the international literature, as noted by Sika (2015: 151).

The relevance and significance of this research lie in the growing importance of higher education student migration as a valuable and multifaceted topic. This phenomenon can be analysed from the perspectives of both sending and host countries, encompassing various thematic areas. These include higher education policies, globalisation, knowledge creation and transfer, development, and demographic, economic, political, social, and cultural dimensions.

Higher education student migration has long been a critical area of concern due to its broad implications for multiple stakeholders, including students, researchers, scholars, policymakers, and higher education institutions in both developed and developing countries. Its significance has further increased with the growing internationalisation of higher education, making it a highly relevant and timely subject of debate.

For host countries, the migration of higher education students aligns with the increasing recognition of higher education institutions as drivers of economic potential, national income generation, and enhanced global competitiveness. For sending countries, it presents opportunities for knowledge transfer, skill acquisition, and brain gain through returning graduates. Additionally, for students who remain in host countries to join the labour market, their remittances contribute to household economies and potentially to broader economic development in their countries of origin.

The interplay between higher education student migration and the internationalisation of higher education underscores the importance of this research, which seeks to explore these dynamics and their implications for both sending and host countries.

Based on the above this paper aims to examine the migration of international higher education students to Germany from the perspective of a receiving country. It seeks to identify the factors driving this migration and contribute to the growing body of international literature on migration. The research aligns particularly with recent studies on *"Migration, Mobility, and Transnational Relations"*.

The study is motivated by the increasing significance and leading role of Germany in international migration, both globally and regionally within the European Union. The central themes explored in this research include the patterns, size, distribution, trends, causes, and consequences of international higher education student migration to Germany. In particular, this paper addresses the following research questions:

1. What are the patterns, size, distribution, and trends of international higher education student migration to Germany from the perspective of a receiving country?
2. What are the key factors driving the migration of international higher education students to Germany?
3. What are the major implications of this migration?

This study examines five hypotheses:

1. **Patterns and Distribution:** The first hypothesis posits that, from a receiving country perspective, the pattern and size of international higher education student migration to Germany increased substantially between 2000 and 2023. However, the distribution of these students exhibited considerable variation during the period 2017–2022.
2. **Impact of the COVID-19 Pandemic:** The second hypothesis suggests that the COVID-19 pandemic significantly influenced the migration of international higher education students to Germany during the years 2020–2022.
3. **Pull Factors Driving Migration:** The third hypothesis asserts that the rising trend of international higher education student migration to Germany is driven by various pull factors. These include economic factors (e.g., low or no tuition fees, scholarships, and funding opportunities; employment prospects), educational and research factors (e.g., the high quality of universities and research institutions, emphasis on research, and skill development), and other contributing factors.
4. **Mixed Impacts of Migration:** The fourth hypothesis argues that the migration of international higher education students to Germany results in mixed positive and negative impacts. These include the transfer of knowledge, brain gain, and skill acquisition for students who return to their home countries, but potential brain drain for those who choose to remain abroad.
5. **Labour Market Integration:** The fifth hypothesis contends that, from a receiving country perspective, the successful integration of migrant higher education students into society and the labour market provides tangible benefits for Germany.

Regarding its relevance and contribution, this paper enhances the international literature on migration by addressing economic aspects of migration from a receiving country perspective. Few studies in the existing literature focus specifically on the migration of students from this perspective (cf. Wolter, 2020).

One key contribution of this research lies in its examination of the migration of international higher education students to Germany. It provides an analysis of recent patterns, size, distribution, trends, causes, and consequences of this migration. Unlike earlier studies in the literature (cf. Wolter, 2020; Nour, 2014; 2019; 2020), this research offers a more comprehensive and in-depth exploration of these aspects.

The analysis is based on UNESCO secondary data on international student mobility in tertiary education, supplemented by statistics on international higher education students in Germany obtained from relevant German institutions. This approach allows for a robust and up-to-date understanding of the dynamics of international higher education student migration to Germany

This paper contributes to the international literature by presenting an in-depth analysis of the migration of international higher education students to Germany. A distinctive aspect of our study is its focus on migration from the perspective of a receiving country. We examine the migration of students to Germany from various countries and regions worldwide, offering a valuable contribution to the growing debate on the interplay between

migration and the internationalisation of higher education. This is particularly relevant given Germany's status as one of the most popular destinations for international students.

Our research further contributes by highlighting the impact of the COVID-19 pandemic on the migration of international higher education students to Germany.

Another notable merit of our study is the comparative analysis of the size, trends, and distribution of student migration to Germany in relation to the broader European region and the rest of the world. This comparative perspective enriches the relevance and scope of our findings, making them a valuable addition to the ongoing discussion on international student mobility.

Another merit of this study is its focus on the key issues surrounding the causes (push-pull factors) and consequences of the migration of international higher education students to Germany. This work is particularly significant and timely, aligning with the growing awareness among researchers and policymakers of the need to better understand recent developments in the context of increasing globalisation and Germany's deeper integration into the global economy.

This research also contributes to the ongoing debates in the international literature by exploring the interplay between the migration of higher education students to Germany and the internationalisation of higher education. It provides a receiving country perspective on the causes, consequences, and implications of this migration, offering insights that are both relevant and valuable.

A notable strength of our analysis lies in its precise and narrow scope. We focus exclusively on internationally mobile students who cross borders with the explicit intention of studying abroad. This targeted approach distinguishes our research from earlier studies that adopted a broader scope, examining internationally mobile highly skilled or low-skilled workers who migrated for employment purposes. By narrowing the focus, our findings contribute to a deeper understanding of international higher education student migration to Germany and address gaps in the existing literature.

Finally, an important merit of this research is its practical relevance from a policy perspective. Our analysis offers valuable insights to inform policymaking and provides the basis for developing recommendations to address the mixed positive and negative impacts of international higher education student migration to Germany.

### **Research Methodology**

This study employs secondary data and utilises descriptive and comparative methods to conduct an empirical investigation into the patterns, size, trends, distribution, causes, and consequences of international higher education student migration to Germany from a receiving country perspective. Similar to previous studies in the literature (cf. Nour, 2014; 2019; 2020), we rely on recent data from the UIS-UNESCO, which provides definitions of student mobility and data on international/mobile students as reported by host countries. To analyse the size, trends, and distribution of international higher education student migration to Germany, we use the outbound mobility ratio and inbound mobility ratio. These metrics allow for a comparative analysis of Germany's performance relative to the European Union region and other world regions.<sup>2</sup>

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<sup>2</sup> According to UIS-UNESCO (2012) Education Digest (2012), the international/mobile students are defined as foreign students who have crossed a national border and moved to another country with the objective to study and for the purpose of education and are now enrolled outside their country of origin. In order to estimate the number of students from a given country who are studying abroad, the outbound mobility ratios as well as regional totals for the most recent year since 1999 are used. The Gross outbound enrolment ratio is defined as the total number of tertiary students from a given country studying abroad expressed as a percentage of the population of tertiary age in that country. As for the mobility ratios, inbound mobility rate is defined as the total number of students from abroad studying in a given country, expressed as a percentage of total tertiary enrolment in that country. Outbound mobility ratio is defined by the total number of students from

## Structure of the Paper

The rest of this paper is structured as follows: Section 1 provides an introduction, including a general overview of the research problem, its importance and relevance, objectives, research questions, hypotheses, and the overall structure of the study. Section 2 offers a general overview of the importance of Germany's economy both globally and regionally within Europe. Section 3 presents a comprehensive literature review. Section 4 discusses key developments regarding the patterns, size, trends, distribution, and impacts of international higher education student migration to Germany as a receiving country. It also examines the push-pull factors—economic, political, cultural, and educational—that drive this migration, as well as its consequences. Finally, Section 5 concludes with a summary of findings and offers policy recommendations.

## 2. Overview of Germany's Economy: The Importance of Germany from Global and Regional Perspectives

This section provides an overview of the importance of Germany's economy, both globally and regionally within Europe. The migration of higher education students is often closely linked to economic, political, and social factors, as well as the resources devoted to the development of higher education and the broader economic structure that supports it.

Before delving into the migration of international higher education students to Germany, it is useful to first examine the country's economic importance on the global stage and within the European context.

Germany's significance can be explained by several key factors: its geographical location, demographic characteristics, income levels, and its economic indicators, such as GDP. A comparison of Germany's unemployment and inflation rates with those of other countries in the European Union provides further context to its economic standing. Additionally, examining Germany's level of innovation, as measured by R&D expenditures, offers insights into its global and regional competitiveness.

From the analysis, evidence suggests that Germany maintains a dominant position in the European Union in terms of economic, geographical, demographic, and innovative importance. This is reflected in its share of the total GDP, total geographical area, and total population within the European Union.

### 2.1. The Importance of Germany's Geography and Demographics to the European Union Region

From an organisational perspective, the Federal Republic of Germany is a federation consisting of sixteen constituent states, each with its own constitution and independent system of government administration.

Geographically, Germany is located in the western part of Central Europe and is considered the geographical heart of continental Europe. It is the largest economy in Europe. Germany is situated between the Baltic and North Seas to the north and the Alps to the south. It is bordered by Denmark to the north, Poland and the Czech Republic to the east, Austria and Switzerland to the south, and France, Luxembourg, Belgium, and the Netherlands to the west.<sup>3</sup>

Europe's total geographical area spans about 10 million square kilometres, with Germany covering a combined area of 357,581 square kilometres (138,063 square miles). This represents approximately 3.6% of the total geographical area of the European continent and 8.7% of the European Union's total geographical area. Germany is the sixth-largest country in Europe by geographical area, following Russia, Ukraine, France, Spain,

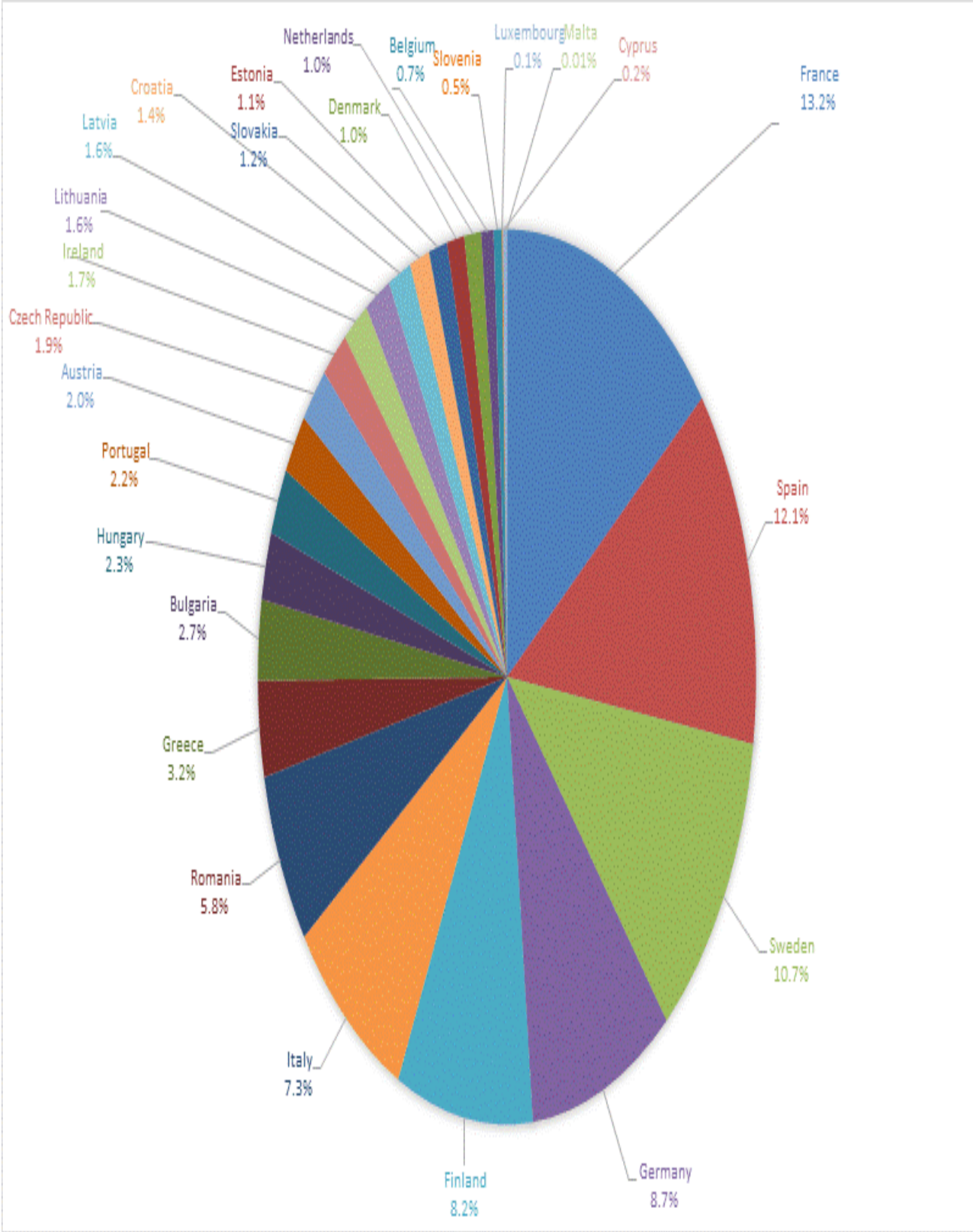
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a given country studying abroad, expressed as a percentage of total tertiary enrolment in that country. Net flow of mobile students is defined as the number of tertiary students from abroad (inbound students) studying in a given country minus the number of students at the same level from a given country studying abroad (outbound students). See UIS-UNESCO (2012) Education Digest (2012), pp. 67-68, 80

<sup>3</sup> Source: see <https://en.wikipedia.org/wiki/Germany> (Accessed on 18 February 2024).

and Sweden. It is the fourth-largest country within the European Union, after France, Spain, and Sweden (see Figure 1).

Figure 1- The share of Germany in European Union total geographical area, total GDP, and total population (%) (2022-2023).



Source: Adapted from Eurostat (2024) Demographic Yearbook – Table 3: Population by sex, rate of population increase, surface area and density (Report). United Nations Statistics Division. 2021. Retrieved 21 May 2023.

### *Global and Regional Demographic Importance of Germany*

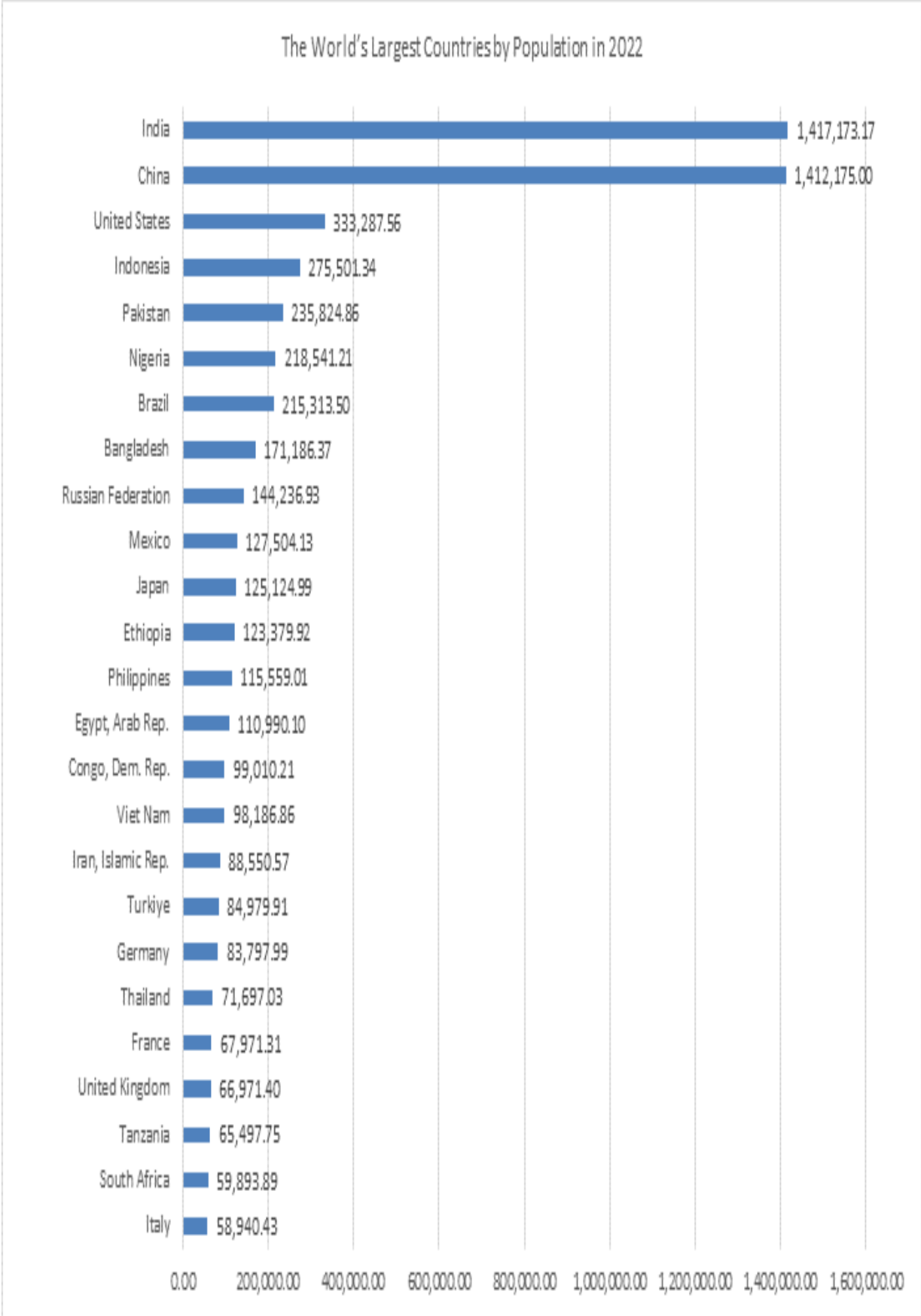
**Globally**, from a demographic perspective, data published by the World Bank in 2022 shows that four of the largest European countries—Russia, Germany, France, and the United Kingdom—rank among the 25 most populous countries in the world. With an estimated global population of approximately 7.95 billion in 2022, Germany's population is estimated at around 83.79 million, making it the nineteenth-most populous country globally. Germany contributes nearly 1.05% of the total world population in 2022 (see Figure 2).

**Regionally**, according to Eurostat data for December 2023, Germany has a population of 84.35 million, making it the second-most populous country in Europe, after Russia, and the most populous country within the European Union. Germany accounts for nearly a fifth (18.81%) of the total population of the European Union (see Figure 3). Together, Germany, France, and Italy comprise almost half (47.12%) of the total population of the European Union as of 1 January 2023 (see Figure 4).

The most recent statistics on Germany's population by age group in 2022 suggest an aging population. The distribution of the population by age groups reveals the following: Age group 40-60: 27.3%; Age group 20-40: 24.5%, Age group 60-80: 22.2%, Age group under 20: 18.8%, and Age group 80-100: 7.2%. This age distribution further highlights Germany's demographic trends and implications for its economy and society (see Figure 5).

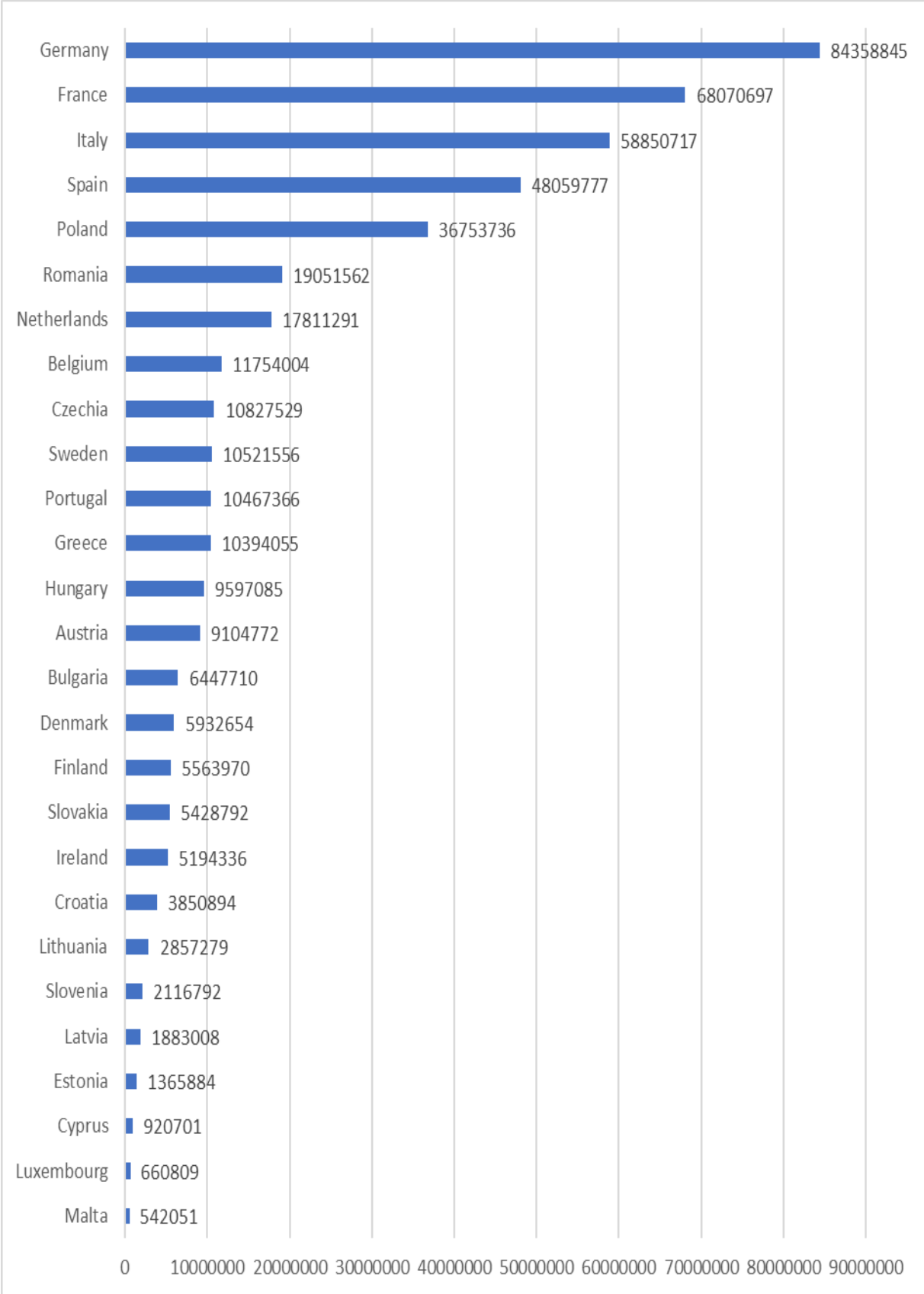


Figure 2 - The World's Largest Countries by Population 2022



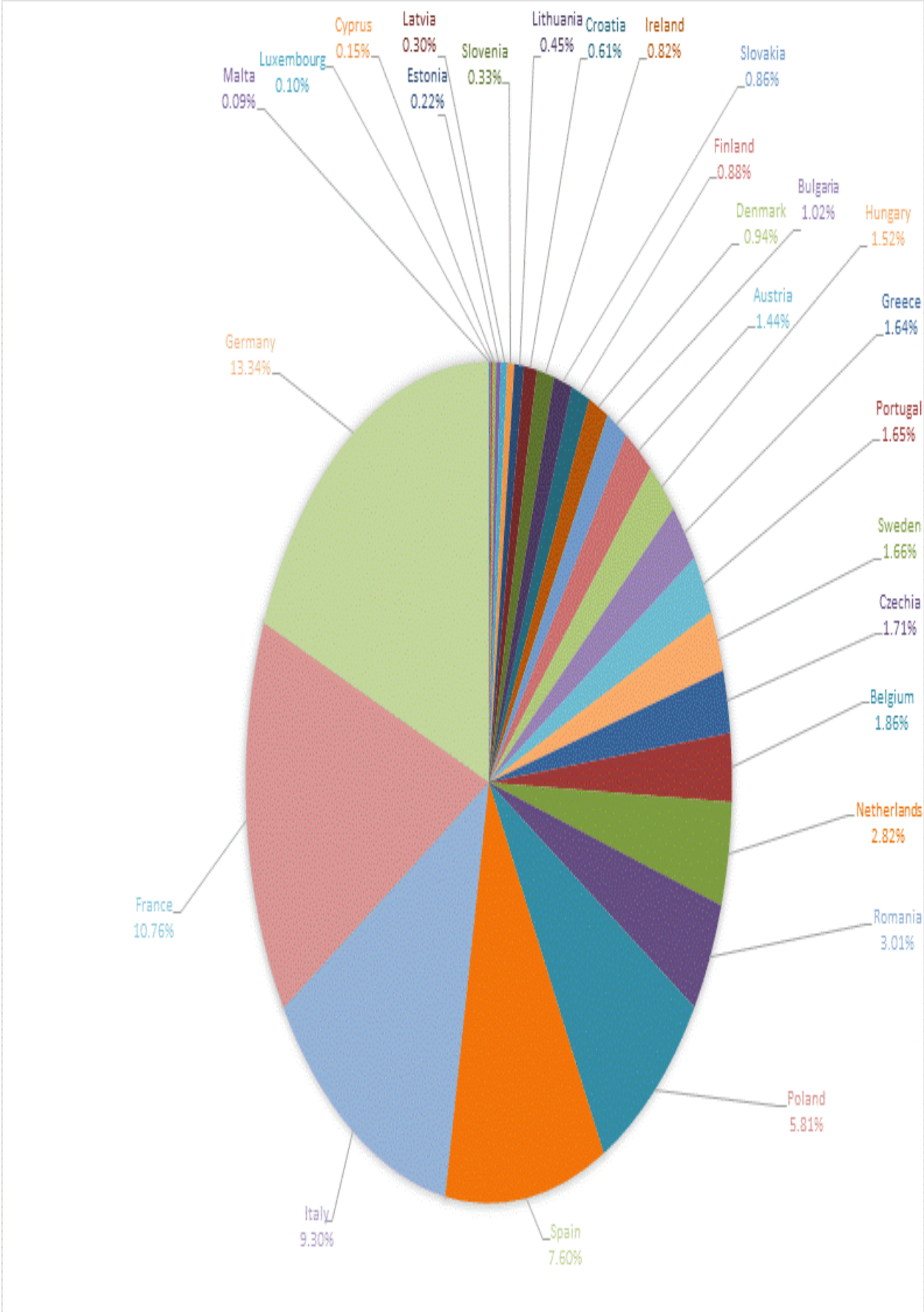
Source: Adapted from the World Bank Data (2022)

Figure 3 – Total population in selected European Union countries in 2023 (in total)



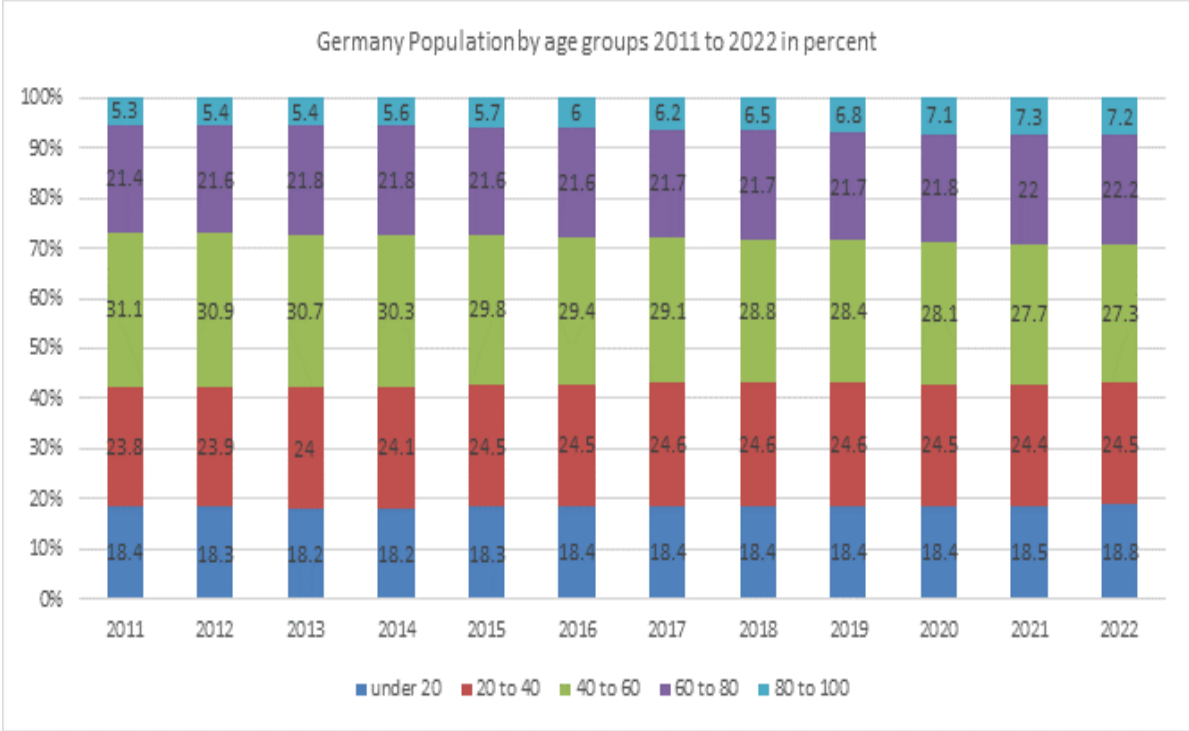
Source: Adapted from Eurostat (2024)

Figure 4 – Share in total population of selected European Union countries in 2023 (%)



Source: Adapted from Eurostat (2024)

Figure 5- Germany Population by age groups 2011 - 2022 in percent



Source: Adapted from Statistisches Bundesamt (Destatis) (2024) - Results based on the 2011 Census (As at 20 June 2023)

2.2. Importance of migration in Germany and the European Union countries

**Globally**, Germany is considered one of the most significant destinations for international migrants. According to the Population Division of the United Nations Department of Economic and Social Affairs and the World Migration Report (2022), Germany ranked as the second-most popular destination for international migrants both in 2000 and 2020. Specifically, Germany hosts the second-highest number of international migrants worldwide, after the United States. This ranking improved from third place in 2000 to second place by 2020 (see Figure 6).

**Regionally**, within the European Union, the Migration and Asylum in Europe Interactive Publications Report (2023) provides key data and trends regarding migration and asylum. The report shows that Germany was the leading destination for immigrants from outside the EU in 2021, receiving 439,000 people, or 19% of all immigrants to the EU from non-EU countries. Spain followed closely with 421,000 immigrants (19%), ahead of Italy (248,000 or 11%) and France (238,000 or 11%). Together, these four countries—Germany, Spain, Italy, and France—accounted for 60% of all immigrants entering the EU from non-EU countries in 2021.

In terms of emigration, 1.1 million people left the EU in 2021, with Spain recording the highest number of emigrants (239,000 or 21%), followed by Germany (158,000 or 14%) and France (120,000 or 11%). These three EU countries made up 46% of all emigrants from EU countries in 2021. Additionally, 1.4 million people moved between EU countries in the same year, with Germany receiving the largest number of immigrants from other EU nations (328,000 or 24% of total EU intra-EU migrants). Poland, Spain, the Netherlands, and Romania also had significant numbers of migrants from other EU countries.

In 2022, EU countries issued nearly 3.5 million first residence permits to non-EU citizens, with Poland granting the highest number (700,000 or 20%), followed by Germany (539,000 or 16%), Spain (467,000 or 14%), Italy

(338,000 or 10%), and France (324,000 or 9%). The report highlights that most first residence permits were issued to citizens from Ukraine (374,000 or 11%), Belarus (310,000 or 9%), and India (183,000 or 5%).

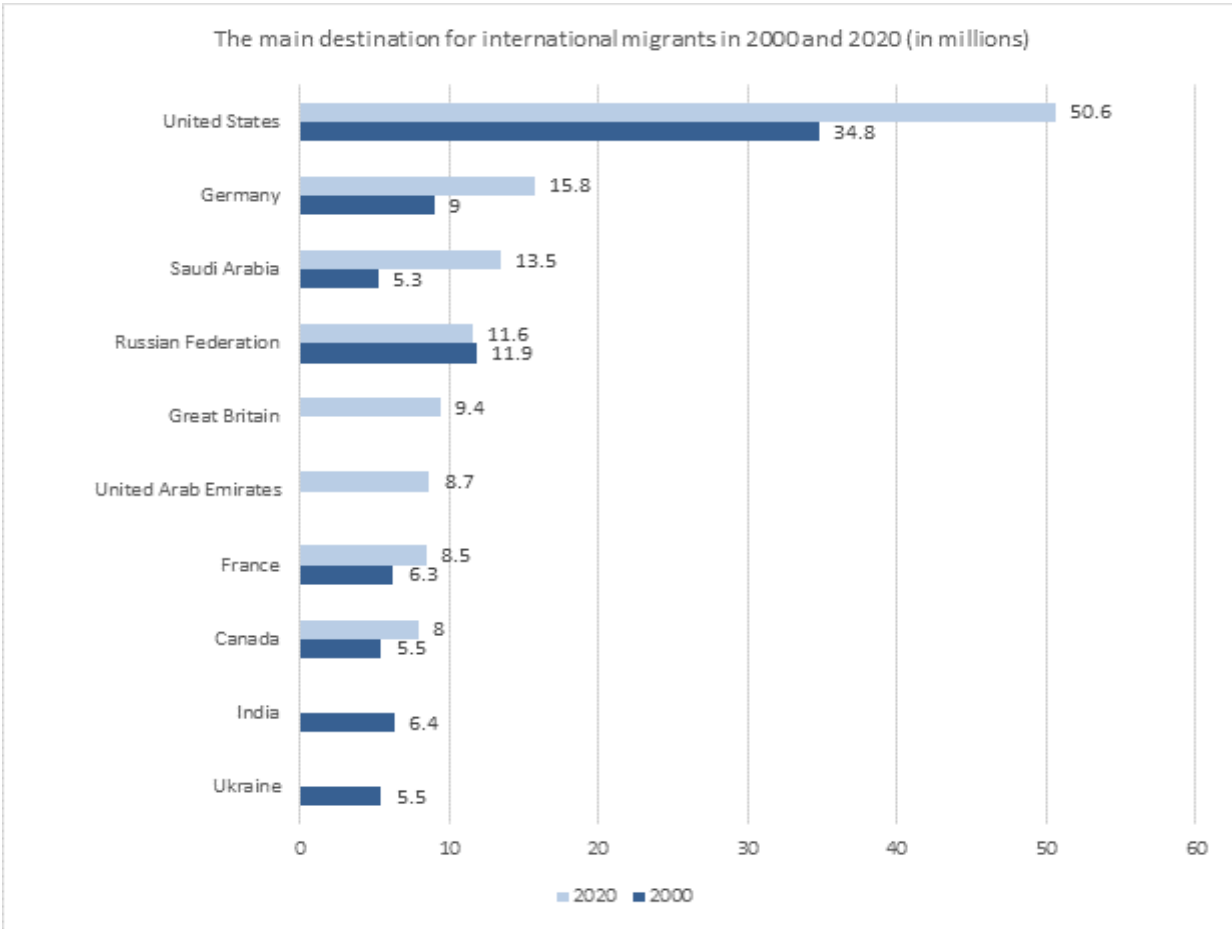
Asylum applications also saw significant numbers in 2022, with Germany receiving 218,000 first-time asylum applications (25% of the EU total), followed by France (138,000 or 16%), Spain (116,000 or 13%), Austria (110,000 or 13%), and Italy (77,000 or 9%). These five EU countries accounted for 75% of all first-time asylum applications in the EU in 2022.

The EU also issued significant numbers of EU Blue Cards (for highly qualified non-EU workers), with Germany issuing the highest number (63,000 or 77% of the total), followed by Poland (5,000 or 6%) and Lithuania and France (each with 3,900 or 5%).

Germany was also the leading EU country for student and research permits, issuing 132,000 (31% of all permits in the EU), followed by France (110,000 or 26%) and Spain (53,000 or 13%). The top nationalities of recipients were from China (42,000 or 10% of all permits in the EU), India (40,000 or 10%), the United States (21,000 or 5%), and Morocco (20,000 or 5%).

Finally, the EU issued a total of 10,500 intra-corporate transfer of staff residence permits, with Germany issuing 1,800 (17%), the second-highest after the Netherlands (3,300 or 31%). The majority of these permits were granted to citizens of India (43% of all permits), China (11%), and South Korea (11%) (see Figure 7).<sup>4</sup>

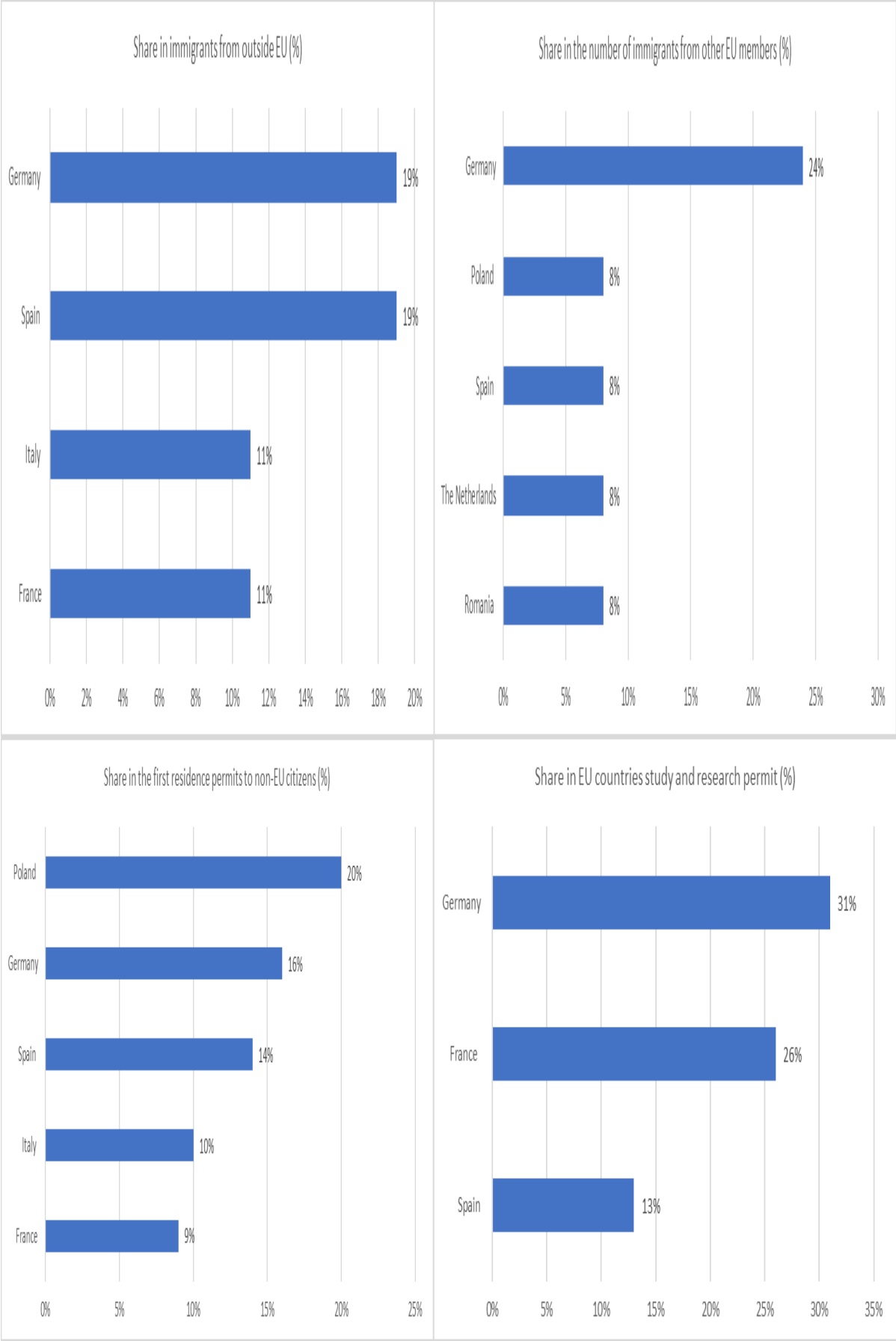
Figure 6 – The main destination for international migrants in 2000 and 2020 (in millions)

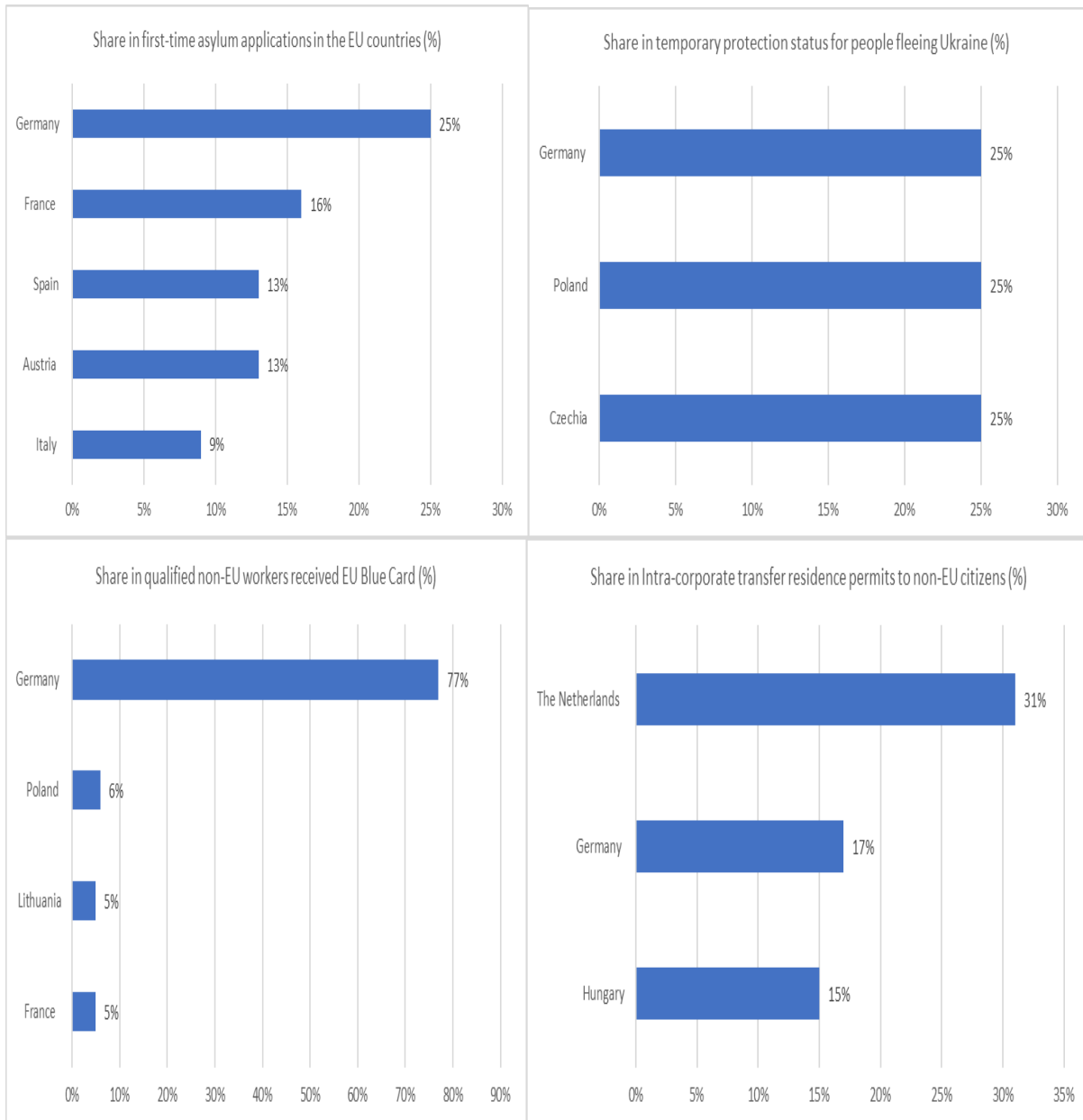


Source: Adapted from the World Migration Report (2022)

<sup>4</sup> Source: see Migration and asylum in Europe (2023) Edition Interactive Publications: see <https://ec.europa.eu/eurostat/web/interactive-publications/migration-2023#irregular-migration-and-return> (Accessed on 20 February 2024).

Figure 7 – Share of Germany and selected EU countries in total migrant population in European Union countries (2021-2022) (%)





Source: Adapted from Migration and asylum in Europe (2023) Edition Interactive Publications

### 2.3. The importance of Germany Economy to European Union region

**From an economic perspective**, globally, Germany holds a significant position as the third-largest economy in the world by nominal Gross Domestic Product (GDP), following the United States and China.<sup>5</sup> Germany is the largest manufacturing economy in Europe, and it ranks as the world’s third-largest economy by nominal GDP and the fifth-largest by purchasing power parity (PPP). Its GDP per capita, measured in purchasing power standards, amounts to 121% of the EU27 average, according to the KPMG Global Economic Outlook (2024).

**Regionally**, according to Eurostat and the International Monetary Fund (IMF) (June 2023), Germany’s GDP reached over 3.87 trillion Euros in 2022, making it the largest economy in Europe. Germany’s economy contributes nearly a quarter (24.48%) of the total GDP of the European Union region (see Figures 8-9). Despite a recent decline in GDP, Germany has sustained its position as the largest economy in Europe (see Figure 10). The

<sup>5</sup> See <https://taiwan.ahk.de/information-hub/country-info/germany-the-powerhouse-of-europe> accessed on 14 February 2024).

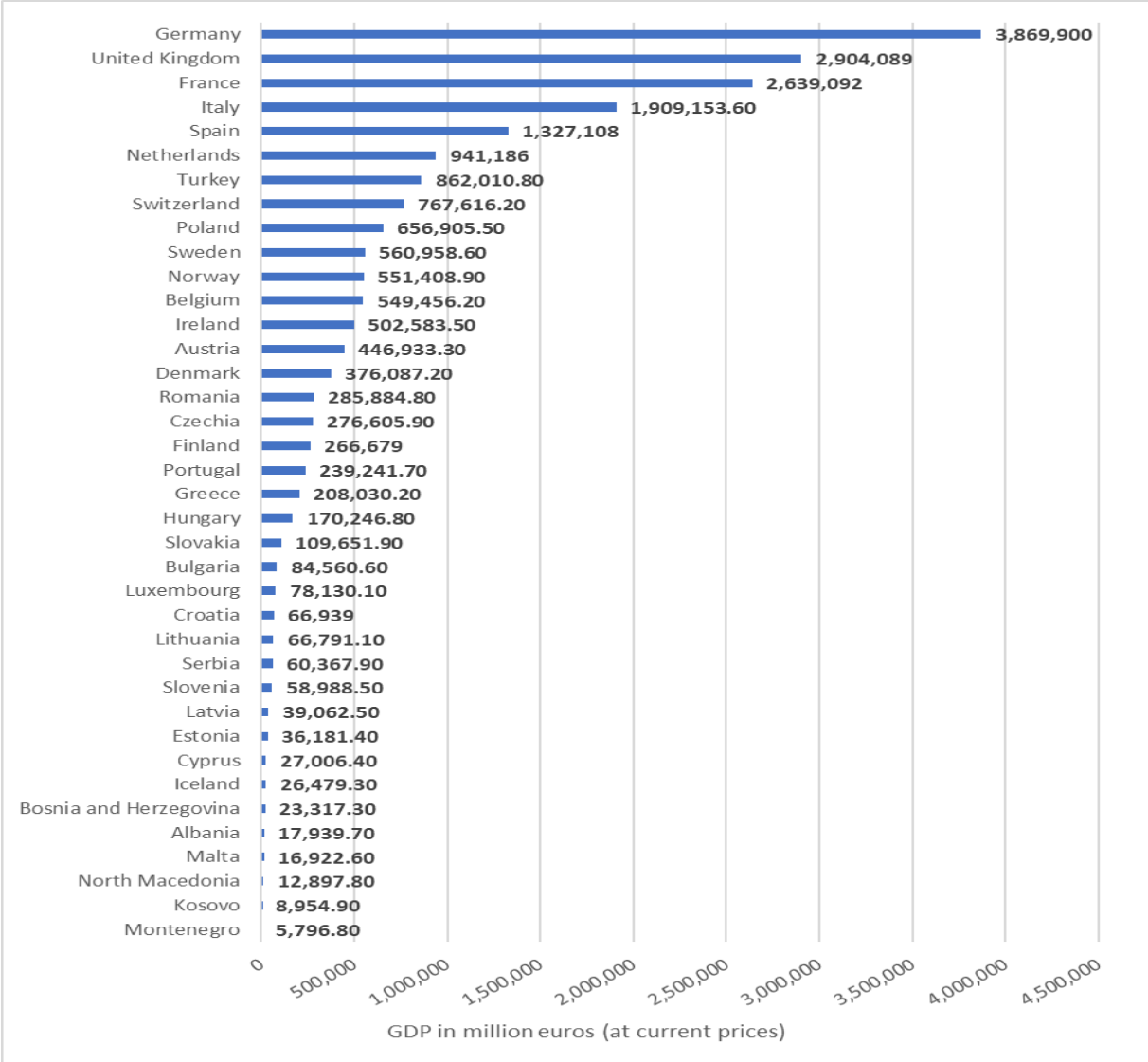
United Kingdom and France, with similarly sized economies, ranked as the second and third largest economies in Europe in 2022, followed by Italy and Spain.

In 2022, the combined GDP of the 27 EU member states amounted to approximately 15.8 trillion Euros. Germany has consistently maintained the largest economy in Europe since 1980, even prior to the reunification of West and East Germany.<sup>6</sup>

The structure of Germany’s economy shows that the service sector contributes approximately 69% of total GDP, while the industrial sector accounts for 31%. Germany boasts the largest manufacturing sector in Europe, while agriculture contributes only 1% to the economy, as of 2017.

Germany’s unemployment rate was 3.1% in December 2023, as reported by Eurostat, which is the fourth-lowest in the EU (see Figures 11-12). The inflation rate, measured by the Harmonised Index of Consumer Prices (HICP), stood at 3.8% in December 2023, the fifteenth-lowest in the EU (see Figures 13-14). These figures indicate that Germany’s economy remains strong, characterised by a high GDP, low inflation rate, and low unemployment rate compared to other EU countries.

Figure 8 - Gross domestic product at current market prices of selected European Union countries in 2022 (in million euros)

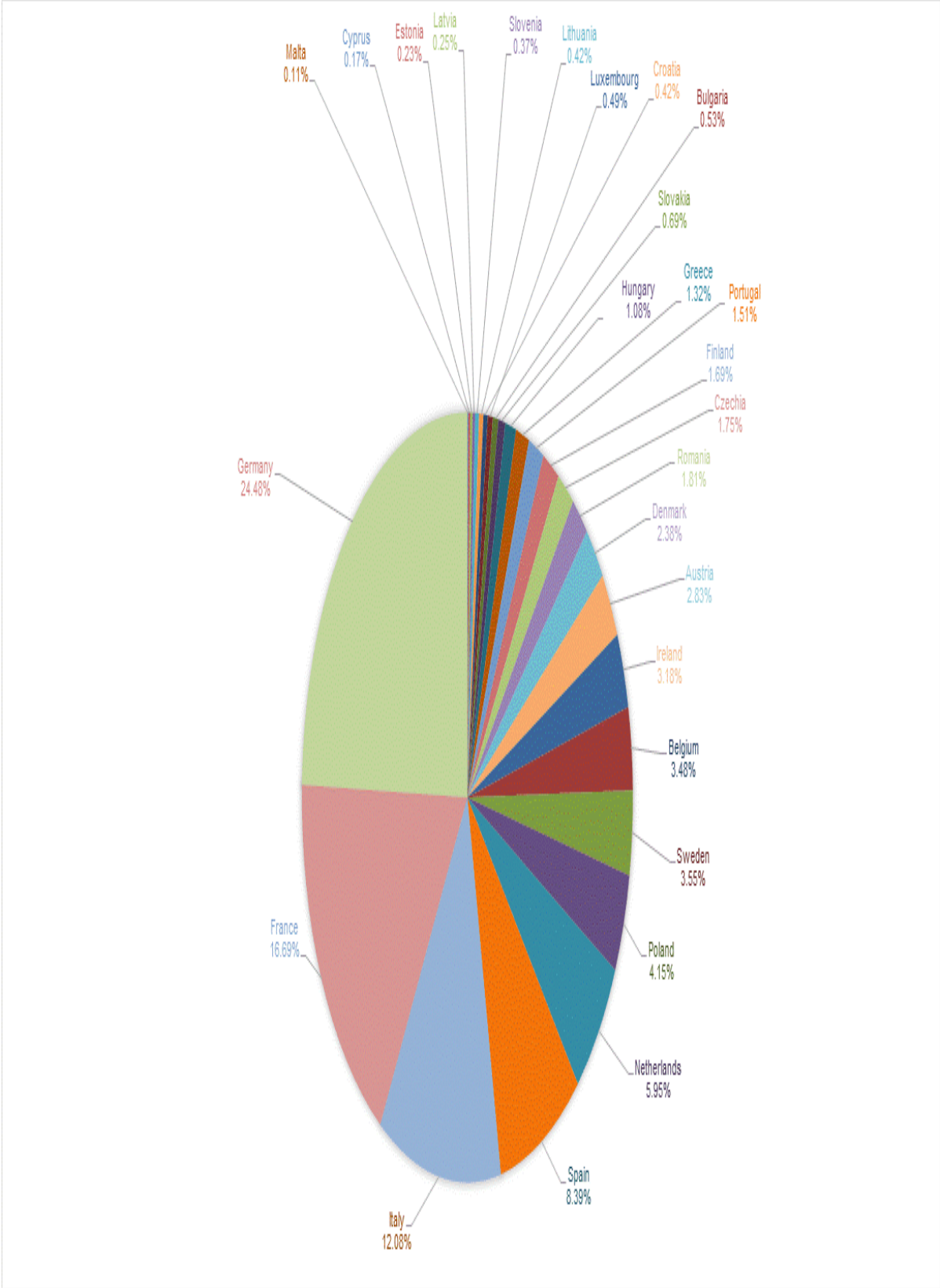


Source: Adapted from Europe; Eurostat; IMF (2022) cited in Statista (2024)<sup>7</sup>

<sup>6</sup> See <https://www.statista.com/statistics/685925/gdp-of-european-countries/> (Accessed on 14 February 2024).



Figure 9 – Share in Gross domestic product at current market prices of selected European Union countries in 2022 (%)

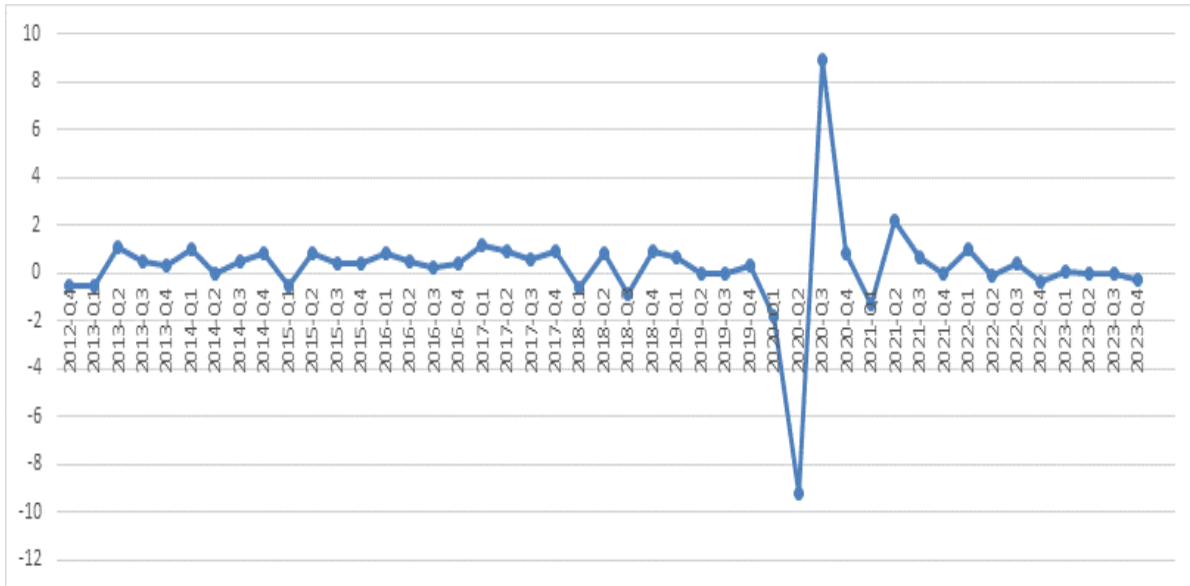


Source: Adapted from Europe; Eurostat; IMF (2022) cited in Statista (2024)

Citation: Eurostat, & IMF. (June 14, 2023). Gross domestic product at current market prices of selected European countries in 2022 (in million euros) [Graph]. In Statista. Retrieved February 15, 2024, from <https://www.statista.com/statistics/685925/gdp-of-european-countries/>

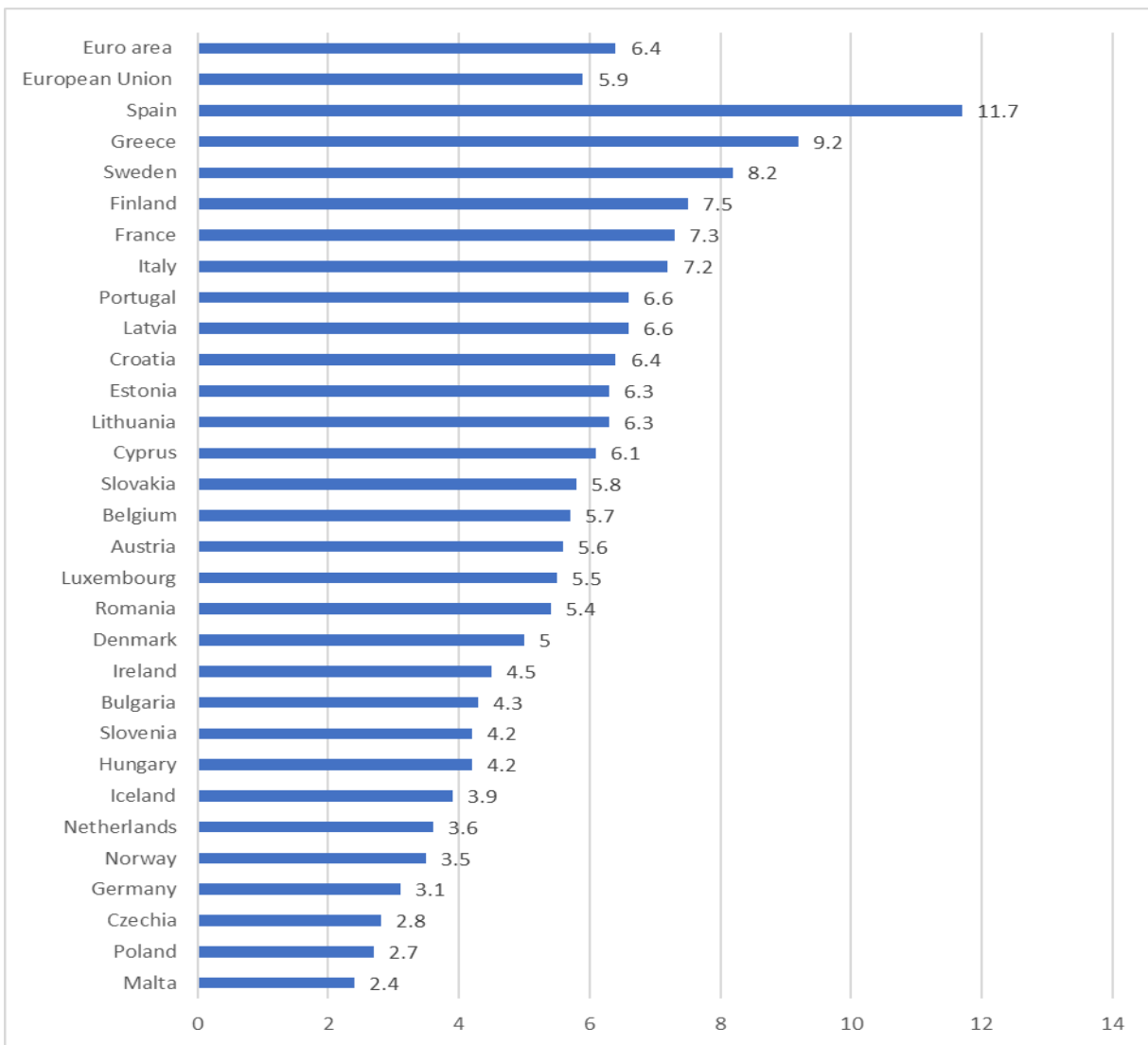
<sup>7</sup> See Eurostat, & IMF. (June 14, 2023). Gross domestic product at current market prices of selected European countries in 2022 (in million euros) [Graph]. In Statista. Retrieved February 15, 2024, from <https://www.statista.com/statistics/685925/gdp-of-european-countries/>

Figure 10 – GDP Growth Rate in Germany in (2012-2023) (in %)



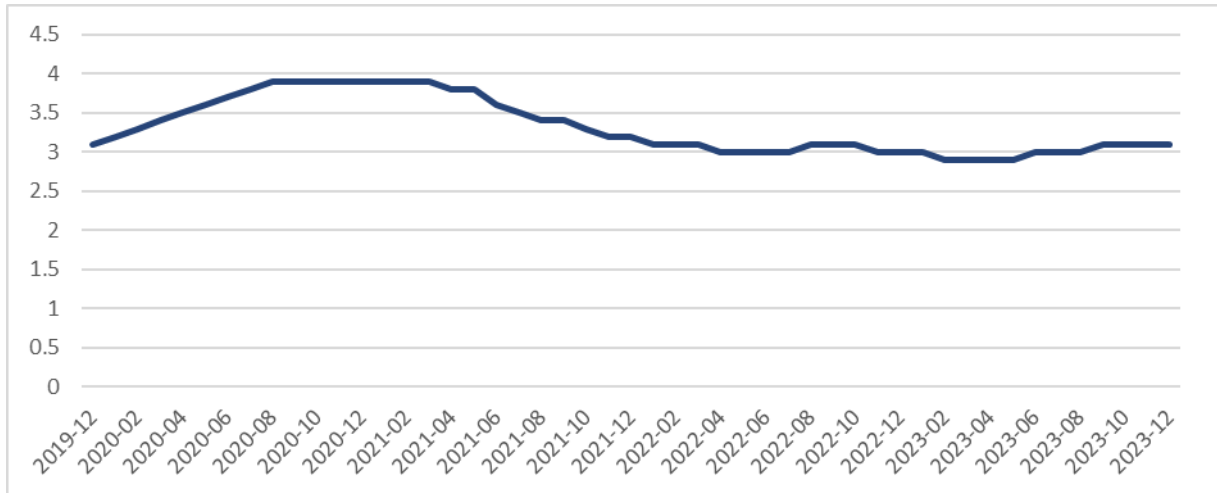
Source: Adapted from Europe; Eurostat; IMF (2022) cited in Statista (2024)

Figure 11 – Unemployment rate in selected European Union countries in 2023 (in %)



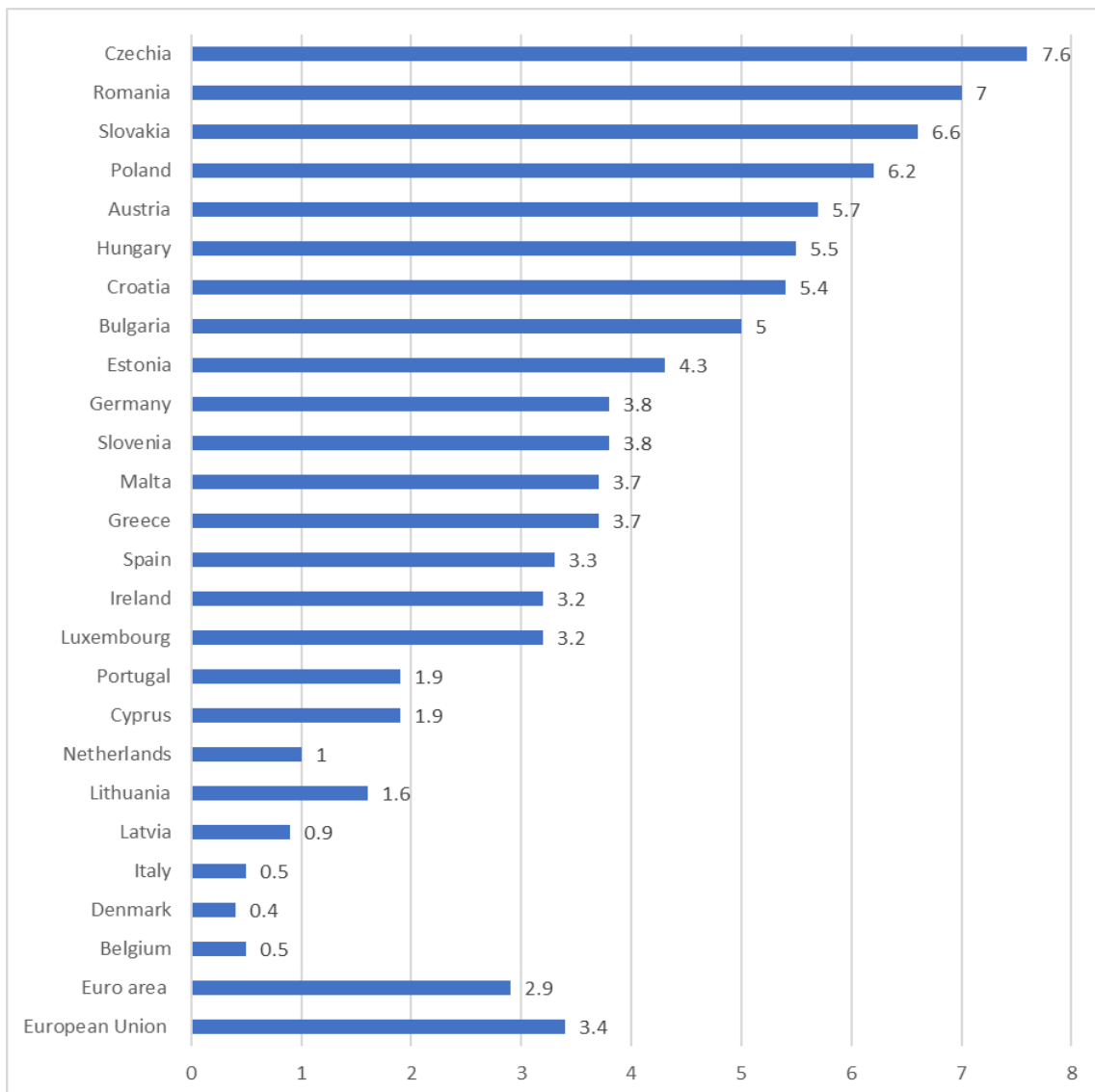
Source: Adapted from Eurostat (2024)

Figure 12 – Unemployment rate in Germany in (2020-2023) (in %)



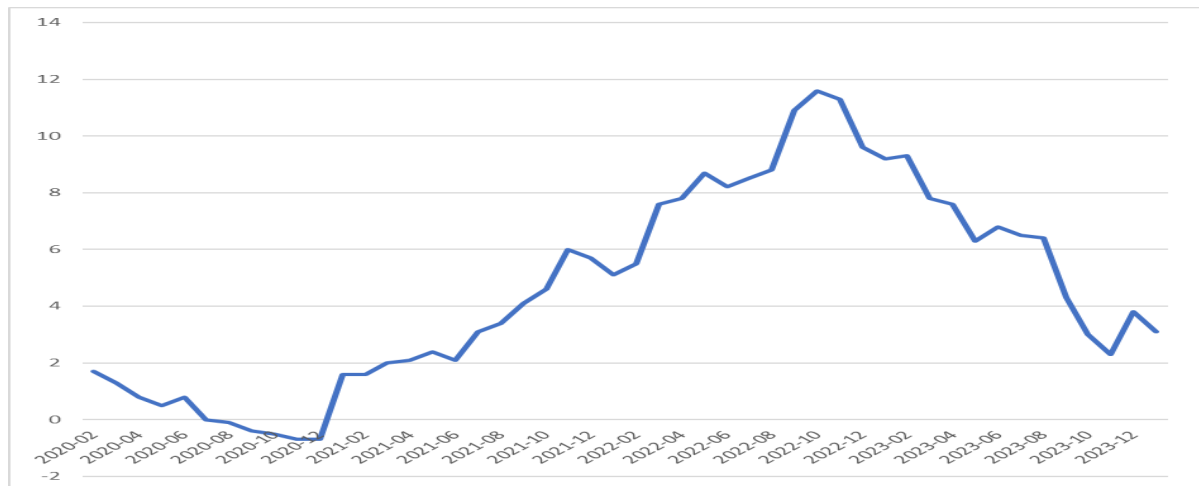
Source: Adapted from Eurostat (2024)

Figure 13 – Inflation rate in European Union countries in 2023 (in %) (measured in HICP – based on monthly data (annual rate of change))



Source: Adapted from Eurostat (2024)

Figure 14– Inflation rate in Germany (February 2020- January 2024) (%) (measured in HICP– based on monthly data (annual rate of change))



Source: Adapted from Eurostat (2024)

#### 2.4. The importance of education and structure of education in Germany to European Union region

Germany is regarded as one of the most advanced countries in terms of education globally. The responsibility for educational supervision in Germany is primarily organised at the state level, with each of the 16 states (Länder) having its own higher education laws and regulations. Education is not centrally organised, and German higher education institutions are highly independent, with many decisions, including application deadlines, determined by the individual universities or colleges.

There are more than 400 state-recognised institutions of higher education across Germany, offering approximately 20,000 different study programmes. Most German universities are public institutions, and students traditionally study without tuition fees. According to an OECD report from 2014, Germany ranks as the world’s third-largest destination for international study.

Germany offers a diverse range of higher education institutions, which provide various pathways for students. There are five main types of higher education institutions in Germany: universities, universities of applied sciences, universities and schools of art, film and music, Duale Hochschulen (dual study programmes), and state-funded and private universities.

1. **Universities** mainly focus on theoretical knowledge. Courses have a strong academic emphasis, and many universities specialise in specific subject areas, such as universities of technology (TU) or universities of education (PH). Universities in Germany offer bachelor's, master's, and doctoral programmes.
2. **Universities of Applied Sciences** offer more practice-oriented study programmes. These programmes place greater emphasis on vocational applications rather than theory. Courses are tailored to meet professional requirements in fields like technology, business, social services, or media. Some programmes include mandatory work placements or projects in companies, which can take place either in Germany or abroad. A few universities of applied sciences also offer doctoral programmes.
3. **Universities of Art, Film, and Music** provide creative subject areas, such as art, film, and music studies, including specialisations in areas like architecture, fine arts, acting, dance, industrial design, and fashion design. These institutions also train professionals for the film and television industries, including directors, camera operators, and screenwriters.

4. **Duale Hochschulen (Dual Study Programmes)** enable students to combine academic study with practical work experience. These programmes are primarily offered by universities of applied sciences and vocational academies (Berufsakademien). A dual study programme allows students to work for a company while studying at a higher education institution. Students typically sign a contract with a company, and the company often pays for the students' work and tuition fees.
5. **State-Funded and Private Universities:** The majority of universities and colleges in Germany are state-funded, with some being church-run. In addition, there are more than 120 private universities whose degrees are recognised by the state. Most of these private institutions are universities of applied sciences. While private universities charge higher fees, the majority of students in Germany (around 94.5%) attend state-funded universities. Only some 5.5 percent attend private universities.<sup>8</sup>

Germany's diverse and well-structured higher education system plays a key role in supporting innovation and economic growth, both within Germany and throughout the European Union.

The Federal Ministry of Education and Research (BMBF) launched the *Research in Germany* initiative in 2006 to support targeted measures that promote Germany's role as a leading destination for research and innovation, fostering international cooperation and visibility. The key objective is to raise awareness of the opportunities that Germany offers to international researchers and innovators and to implement targeted activities worldwide to promote Germany as a land of ideas and innovation, and as one of the world's leading research nations.<sup>9</sup>

The BMBF funds a consortium under the *Research in Germany* initiative, which includes the German Academic Exchange Service (DAAD), the German Research Foundation (DFG), and Fraunhofer, among others. With the respective expertise of its members, the consortium addresses target groups along the entire innovation chain, from individual researchers to innovative small and medium-sized enterprises (SMEs) and start-ups.

Moreover, Germany invests heavily in research and innovation, from grants for individual researchers to tax incentives for companies. Total expenditure on research and development exceeds 3% of GDP annually—more than most other major economies worldwide. Around 30,000 scientists and scholars from countries across the globe are supported by German funding organisations. Germany is an open and cosmopolitan country offering unique opportunities for international PhD students, post-docs, and senior researchers. With over 1,000 publicly funded research institutions, approximately 400 higher education institutions, and extensive industrial research, Germany's research and innovation environment is uniquely broad-based and diverse.

Germany provides access to cutting-edge research infrastructure, creative development opportunities, generous funding schemes, and a stable R&D framework. It promotes international and interdisciplinary networking while focusing on ecological and social responsibility.<sup>10</sup> Internationalisation is an essential basis for excellence in research and innovation in Germany. Researchers and academics from abroad are encouraged to join Germany's R&D landscape. The German Academic Exchange Service (DAAD), the world's largest funding organisation for international academic exchange, plays a central role in this effort.

On the supply side, UNESCO-UIS data reveals that globally, Germany ranks second after the US in terms of total government expenditure on education (US\$ millions), and it ranks first in Europe. Regionally in Europe, Germany ranked 19th in terms of current expenditure as a percentage of total expenditure in public institutions and 11th in terms of government expenditure on tertiary education as a percentage of GDP between 2017 and

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<sup>8</sup> See Higher Education Compass.

<sup>9</sup> Source: see <https://www.bmbf.de/bmbf/en/academia/research-in-germany/research-in-germany-land-of-ideas.html> (Accessed on 18 February 2024)

<sup>10</sup> Source: see <https://www.research-in-germany.org/en/research-landscape/why-germany.html> (Accessed on 18 February 2024)

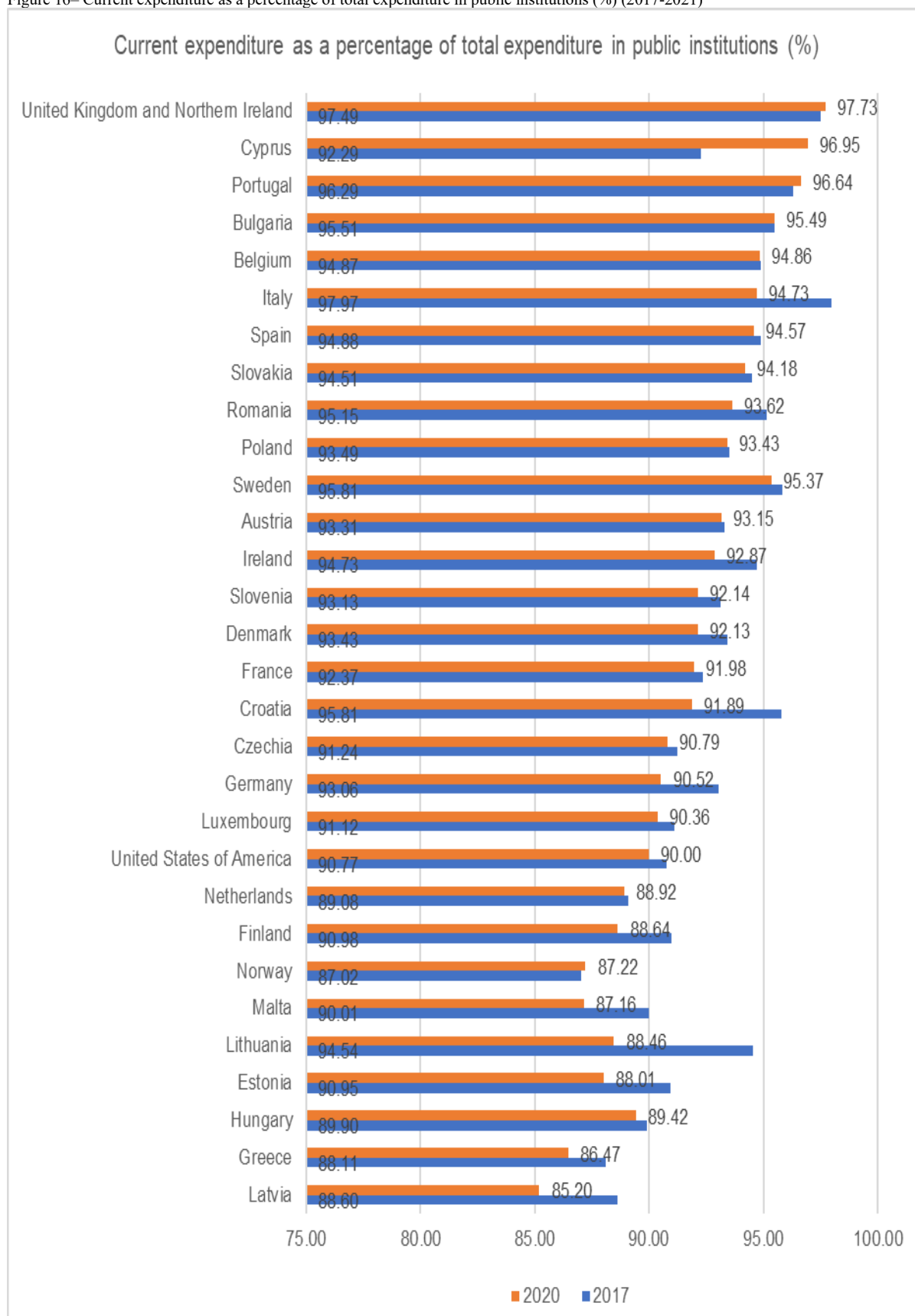
2021. Germany shows an increasing trend in both total government expenditure on education and government expenditure on tertiary education as a percentage of GDP during this period. However, there is a declining trend in terms of current expenditure as a percentage of total expenditure in public institutions. (See Table 1 – Figures 15-17)

Figure 15 – Government expenditure on education, US\$ (millions) (2017-2021)



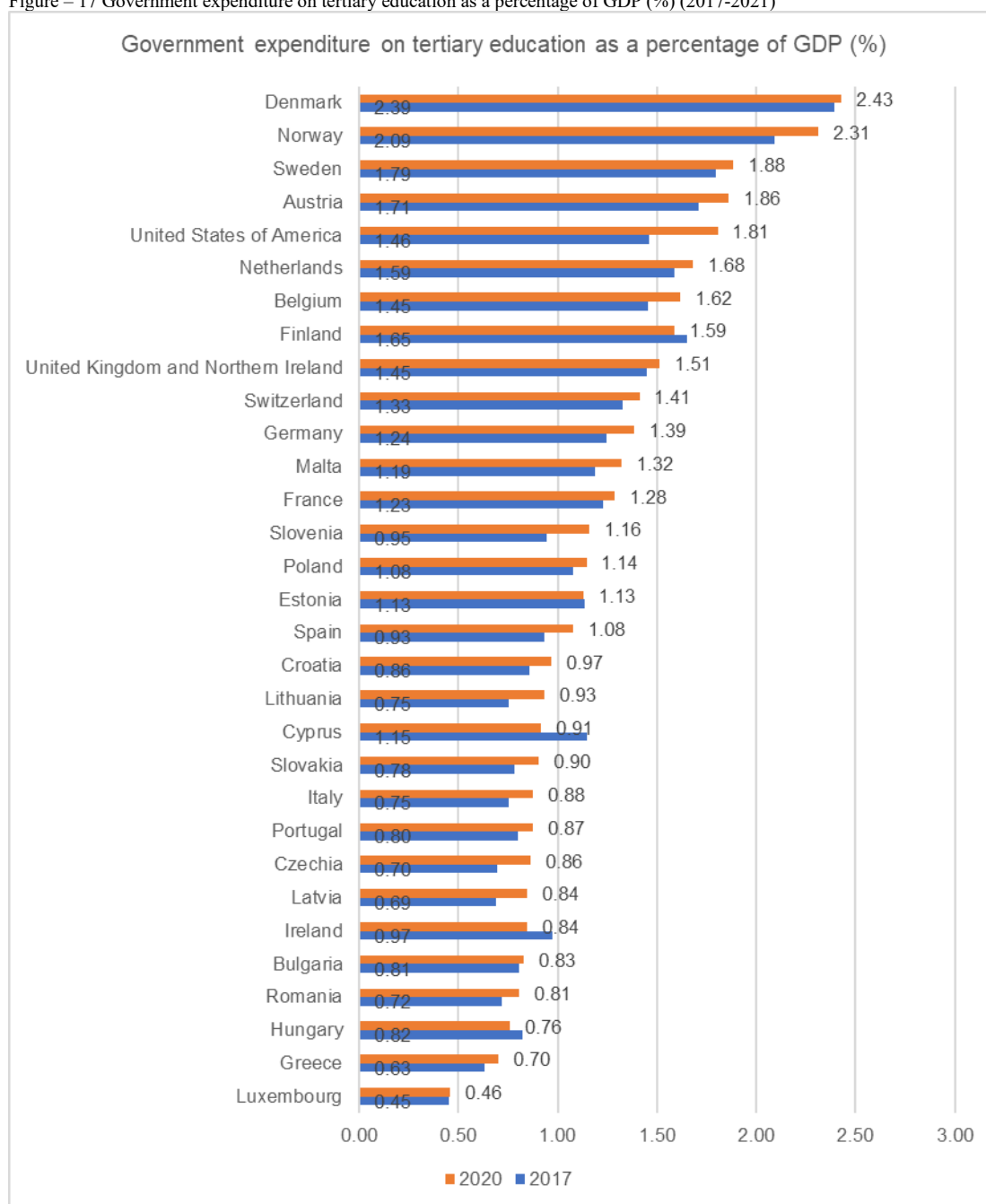
Source: Adapted from UNESCO-UIS Data

Figure 16– Current expenditure as a percentage of total expenditure in public institutions (%) (2017-2021)



Source: Adapted from UNESCO-UIS Data

Figure – 17 Government expenditure on tertiary education as a percentage of GDP (%) (2017-2021)



Source: Adapted from UNESCO-UIS Data

On the demand side, the UNESCO education dataset, which measures enrolment in tertiary education across all programmes during the period from 2017 to 2021, shows that Germany ranks among the top countries globally, as well as within Europe and the European Union. Regionally, Germany ranked at the top with 3,091,694 enrolments in 2017, increasing to 3,351,573 by 2021. This was followed by the United Kingdom and Northern Ireland (2,431,886 in 2017 and 2,993,903 in 2021), France (2,532,831 in 2017 and 2,809,289 in 2021), Spain (2,010,183 in 2017 and 2,261,063 in 2021), Italy (1,837,051 in 2017 and 2,096,778 in 2021), Poland (1,550,203 in 2017 and 1,347,799 in 2021), and the Netherlands (875,455 in 2017 and 987,564 in 2021). (See Figure 18)

Germany reported an increasing trend in tertiary education enrolment from 3,091,694 in 2017 to 3,280,032 in 2020, and to 3,351,573 in 2021. During the COVID-19 pandemic period (2019-2021), Germany experienced a minor decrease in enrolments, from 3,296,249 in 2019 to 3,280,032 in 2020. (See Figure 18)



According to the UNESCO education dataset, the gross enrolment ratio from primary to tertiary education during the period 2017-2021 shows that Germany ranked above the global, European, and European Union levels. Regionally, Germany ranked 16th, with a ratio of 96.30 in 2017 and 98.35 in 2021. This was preceded by Greece (114.40 in 2017 and 120.52 in 2021), Finland (117.47 in 2017 and 117.54 in 2021), Sweden (114.36 in 2017 and 117.47 in 2021), Belgium (118.22 in 2017 and 113.18 in 2021), Ireland (106.18 in 2017 and 107.32 in 2021), Spain (106.18 in 2017 and 106.95 in 2021), Denmark (104.45 in 2017 and 105.94 in 2021), Norway (101.25 in 2017 and 105.35 in 2021), Netherlands (102.72 in 2017 and 103.75 in 2021), Latvia (101.36 in 2017 and 101.36 in 2021), Austria (96.23 in 2017 and 100.36 in 2021), the United Kingdom and Northern Ireland (97.58 in 2017 and 99.47 in 2021), Cyprus (91.64 in 2017 and 99.37 in 2021), Portugal (97.49 in 2017 and 99.33 in 2021), and Estonia (97.65 in 2017 and 98.85 in 2021) respectively (see Figure 19).

During the period 2017-2021, Germany showed an increasing trend in the gross enrolment ratio from 96.30 in 2017 to 97.48 in 2020 and 98.35 in 2021. However, during the COVID-19 pandemic period (2019-2021), Germany experienced a minor decrease in the ratio, from 97.61 in 2019 to 97.48 in 2020.

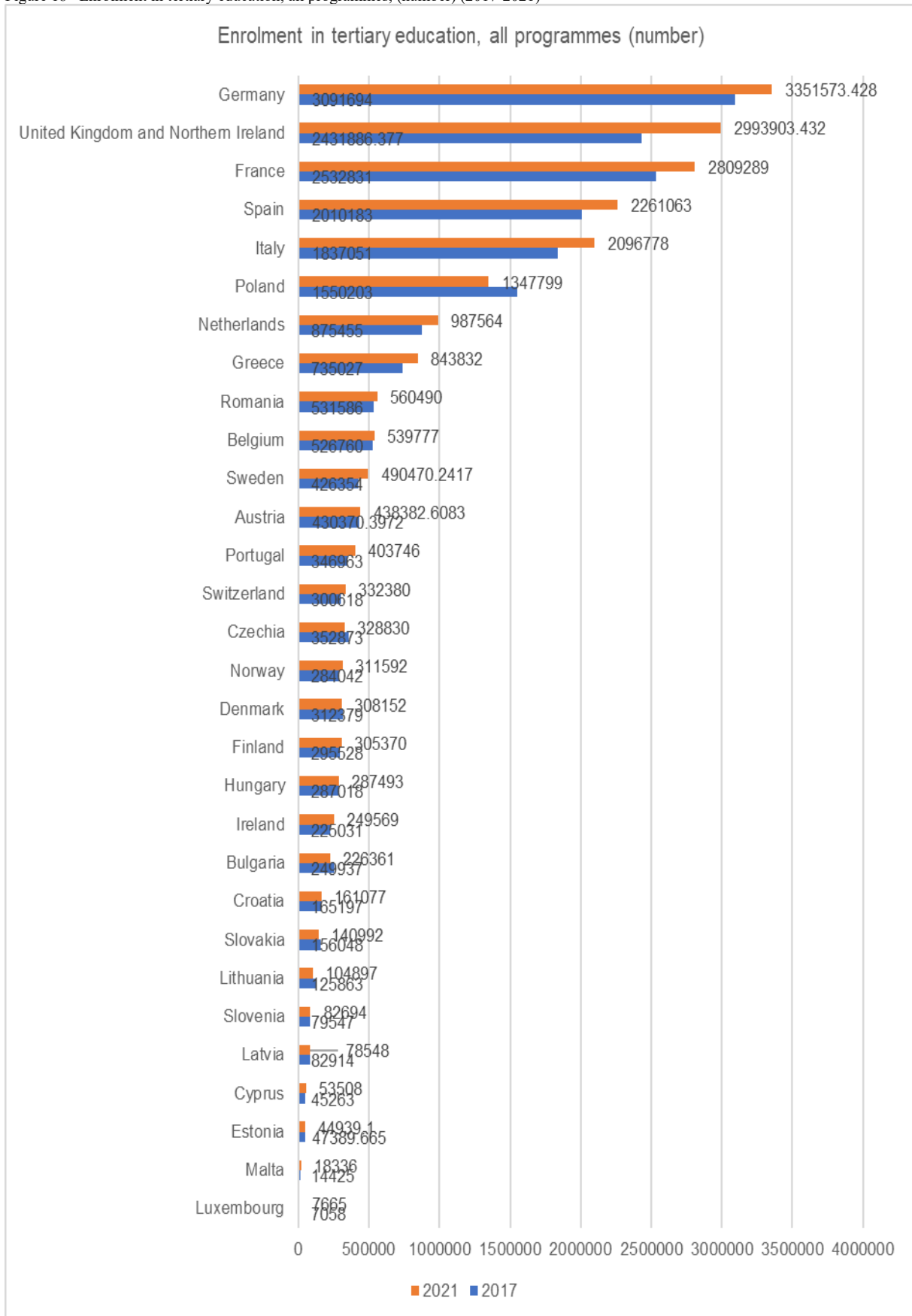
According to the UNESCO education dataset, the gross graduation ratio from first degree programmes (ISCED 6 and 7) in tertiary education during the period 2017-2021 indicates that Germany ranked above the global, European, and North American levels, being comparable to the European average. Regionally, Germany ranked 13th, with a ratio of 42.06 in 2017 and 47.99 in 2021. It was preceded by Finland (54.88 in 2017 and 64.46 in 2021), Norway (55.49 in 2017 and 61.10 in 2021), Switzerland (54.03 in 2017 and 61.10 in 2021), Denmark (55.60 in 2017 and 59.73 in 2021), Lithuania (54.70 in 2017 and 55.95 in 2021), Portugal (52.23 in 2017 and 55.52 in 2021), the United Kingdom and Northern Ireland (54.89 in 2021), France (53.56 in 2021), Malta (41.96 in 2017 and 53.44 in 2021), Greece (43.01 in 2017 and 51.63 in 2021), Belgium (30.62 in 2017 and 51.35 in 2021), Netherlands (49.41 in 2017 and 51.12 in 2021), and Austria (39.72 in 2017 and 48.99 in 2021) respectively (see Figure 20).

During the period 2017-2021, Germany showed an increasing trend in the gross graduation ratio from first degree programmes in tertiary education, rising from 42.06 in 2017 to 43.18 in 2020 and 47.99 in 2021. However, during the COVID-19 pandemic period (2019-2021), Germany experienced a decrease in this ratio, dropping from 47.52 in 2019 to 43.18 in 2020.

According to the UNESCO education dataset, the percentage of graduates from Science, Technology, Engineering, and Mathematics (STEM) programmes in tertiary education during the period 2017-2021 shows that Germany ranks among the top countries globally, as well as among the leading countries in Europe and the European Union. Regionally, Germany ranked at the top with 35.55% in 2017 and 35.14% in 2021, followed by Austria (30.60%), Romania (29.27%), Finland (27.25% in 2017 and 28.21% in 2021), Sweden (27.50% in 2017 and 28.17% in 2021), Slovenia (26.61% in 2017 and 28.14% in 2021), Estonia (28.84% in 2017 and 28.12% in 2021), Portugal (29.09% in 2017 and 27.72% in 2021), and Greece (29.40% in 2017 and 27.50% in 2021) respectively (see Figure 21).

During the period 2017-2021, Germany reported an initial increasing trend in the percentage of graduates from STEM programmes, rising from 35.55% in 2017 to 35.82% in 2020. However, this was followed by a minor decrease, from 35.82% in 2020 to 35.14% in 2021. During the COVID-19 pandemic period (2019-2021), Germany experienced a slight decrease in the percentage of STEM graduates, from 36.78% in 2019 to 35.82% in 2020.

Figure 18– Enrolment in tertiary education, all programmes, (number) (2017-2021)



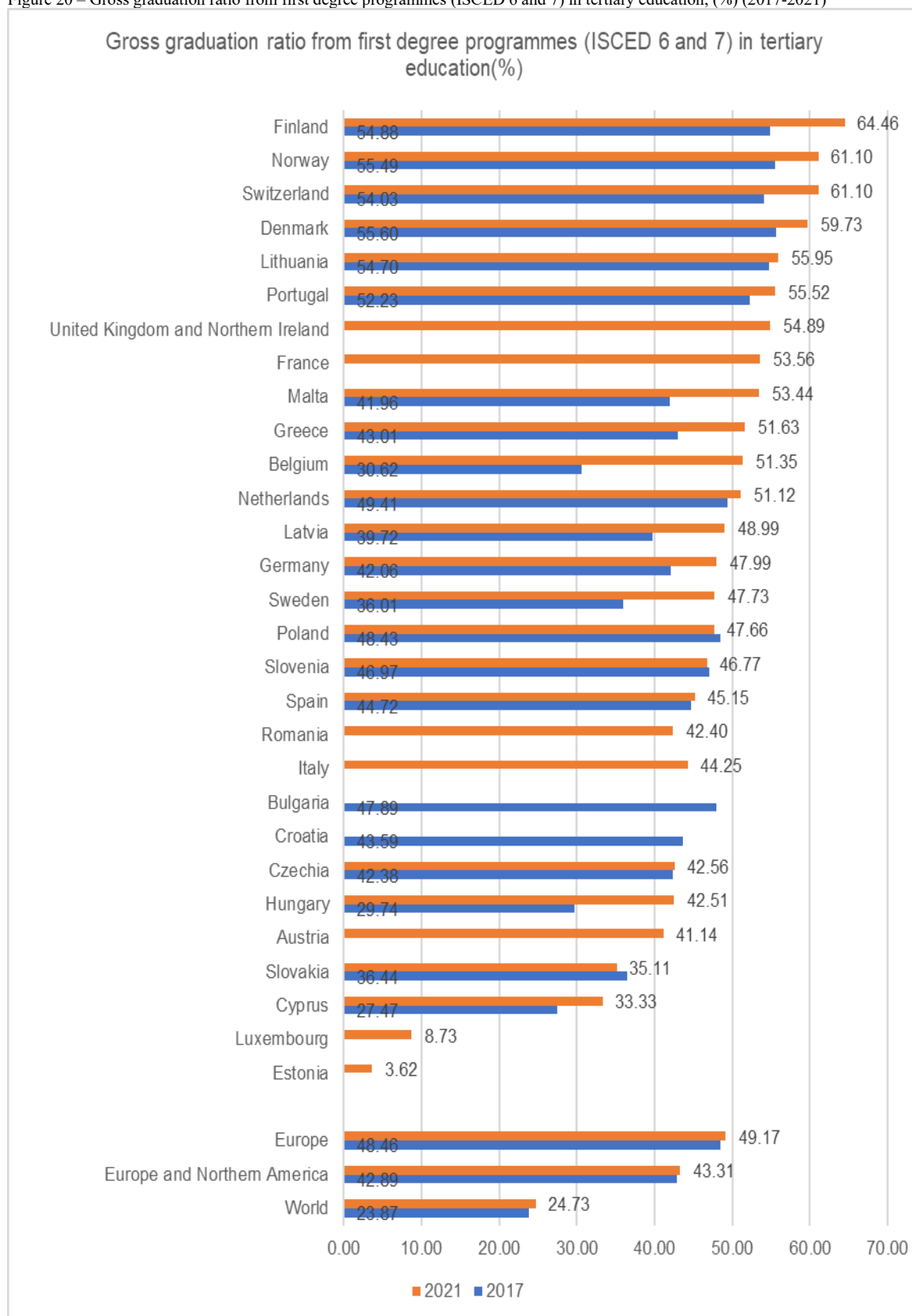
Source: Adapted from UNESCO-UIS Data

Figure 19– Gross enrolment ratio, primary to tertiary, (%) (2017-2021)



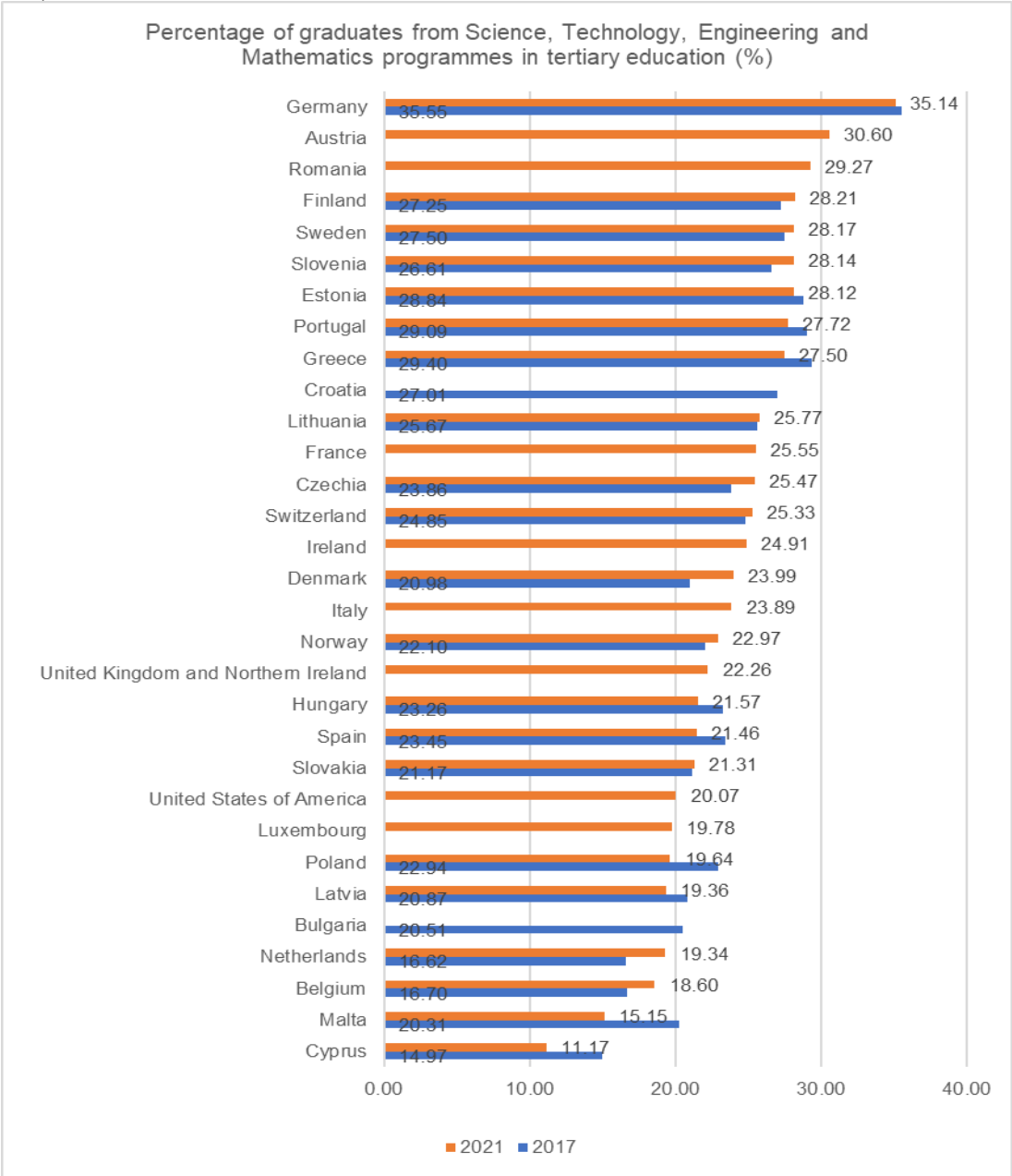
Source: Adapted from UNESCO-UIS Data

Figure 20 – Gross graduation ratio from first degree programmes (ISCED 6 and 7) in tertiary education, (%) (2017-2021)



Source: Adapted from UNESCO-UIS Data

Figure 21– Percentage of graduates from Science, Technology, Engineering and Mathematics programmes in tertiary education, (%) (2017-2021)



Source: Adapted from UNESCO-UIS Data

2.5. The Importance of Innovation and the Global Innovation Index in Germany to the European Union Region

Germany is a global powerhouse in industrial, scientific, and technological sectors, with a high level of innovation. It is considered one of the most competitive and innovative countries in the world. In the Global Innovation Index (GII) 2023, Germany ranks 8th globally and 6th regionally within the European Union, placing it among the top ten most innovative economies in the world.

According to the Global Innovation Index (GII) Report (2023), Germany is ranked 6th globally and 5th regionally within the European Union in the Output Sub-Index, which measures the results of innovation activity. Furthermore, Germany ranks 13th globally and 11th regionally in the Input Sub-Index, which assesses the resources used to drive innovation.

On a global scale, Germany excels in various aspects of innovation: 4th in Human Capital and Research, 7th in Creative Outputs, and 9th in Knowledge and Technology Outputs.

Germany also ranks highly in the following areas: 14th in Market Sophistication, 16th in Business Sophistication, 22nd in Institutions, and 23rd in Infrastructure.

These rankings demonstrate Germany's strong position as one of the world's leading innovation hubs and highlight its critical role in the European Union's innovation landscape (see Table 4 and Figures 22-23).

Germany ranks 4th in Human Capital and Research, 8th in both Tertiary Education and Graduates in Science and Engineering, 11th in the QS University Ranking, and 23rd in both Education and Tertiary Inbound Mobility. In terms of Research and Development (R&D), Germany is ranked 7th globally and 3rd in Global Corporate R&D Investors. The country is 9th in Gross Expenditure on R&D as a Percentage of GDP and 14th in terms of Researchers (FTE per million population). These rankings underscore Germany's leading role in global innovation and its significant contributions to research and development at both the European and global levels (see Table 4 and Figures 22-23).

Germany ranks among the top 30 in various innovation-related categories, including Business Sophistication (16th), Knowledge Workers (21st), Knowledge-Intensive Employment (20th), Firms Offering Formal Training (%) (25th), GERD Performed by Business as a Percentage of GDP (9th), and GERD Financed by Business as a Percentage of GDP (11th).

Germany also performs well in Innovation Linkages (10th), University–Industry R&D Collaboration (17th), State of Cluster Development (9th), GERD Financed by Abroad as a Percentage of GDP (16th), Joint Venture/Strategic Alliance Deals per billion PPP\$ GDP (26th), and Patent Families per billion PPP\$ GDP (1st).

In terms of Knowledge Absorption, Germany ranks 26th, while it ranks highly in Research Talent as a Percentage in Businesses (15th), Knowledge and Technology Outputs (9th), Knowledge Creation (6th), Patents by Origin per billion PPP\$ GDP (5th), PCT Patents by Origin per billion PPP\$ GDP (10th), and Utility Models by Origin per billion PPP\$ GDP (15th). Germany also ranks 35th in Scientific and Technical Articles per billion PPP\$ GDP and 3rd in Citable Documents H-index.

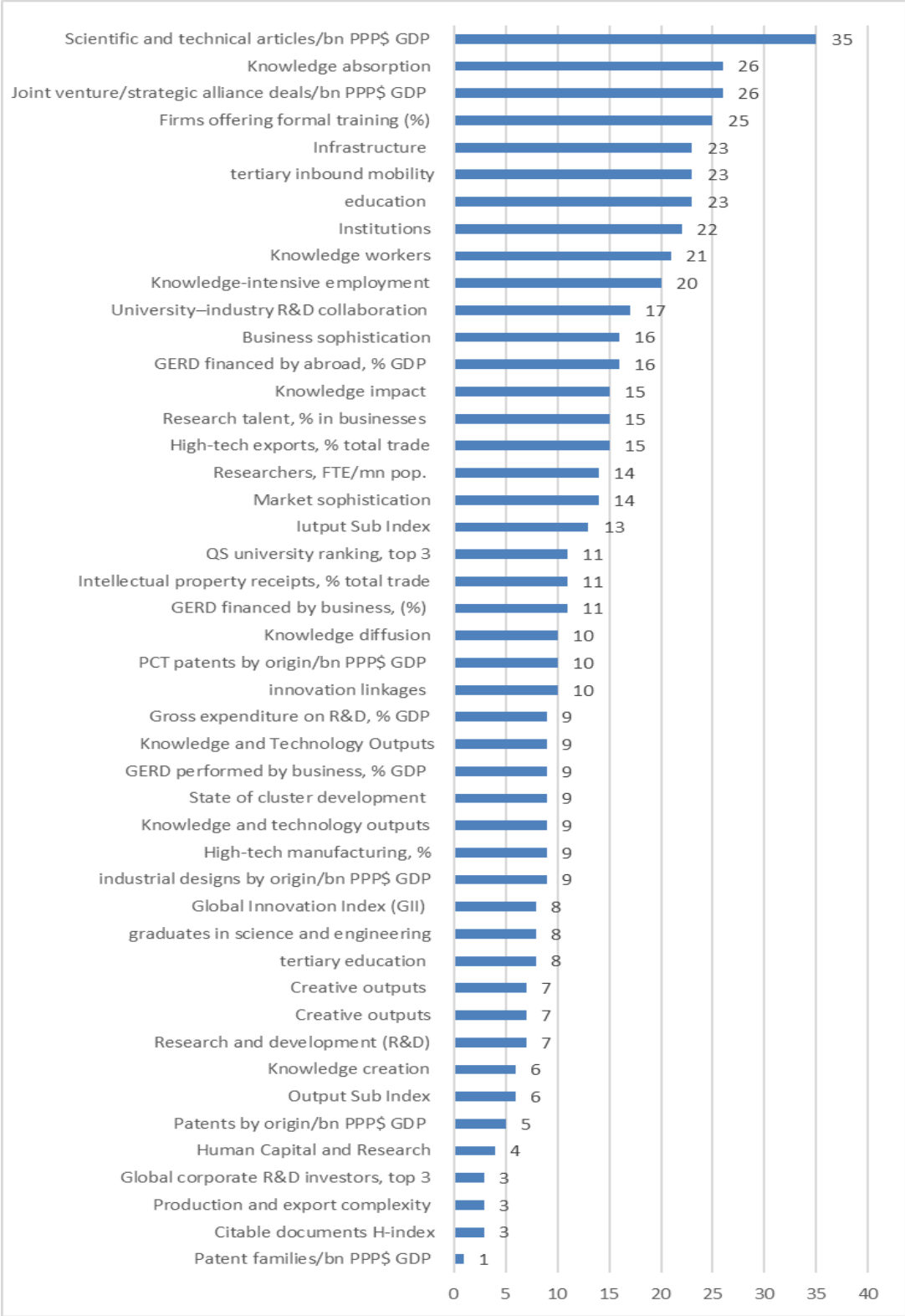
Further, Germany ranks 15th in Knowledge Impact, 9th in High-Tech Manufacturing as a Percentage of Total Manufacturing, 10th in Knowledge Diffusion, 11th in Intellectual Property Receipts as a Percentage of Total Trade, 3rd in Production and Export Complexity, and 15th in High-Tech Exports as a Percentage of Total Trade. Additionally, Germany performs well in Creative Outputs (7th), Intangible Assets (7th), and Intangible Asset Intensity (13th). The country ranks 24th in Trademarks by Origin per billion PPP\$ GDP, 8th in Global Brand Value as a Percentage of GDP for the Top 5,000 Brands, and 9th in Industrial Designs by Origin per billion PPP\$ GDP (see Table 4 and Figures 22-23).

Germany ranks as the 8th most innovative economy globally and leads several key innovation indicators among both world and European economies. Germany holds the top position worldwide in Patent Families per billion PPP\$ GDP (1st). It also ranks 3rd globally in Global Corporate R&D Investors, and in Production and Export Complexity (3rd).

Germany is 4th in Human Capital and Research, 5th in Patents by Origin per billion PPP\$ GDP, and 6th in both Knowledge Creation and the Output Sub Index. The country ranks 7th in both Research and Development (R&D) and Creative Outputs, and 8th in Tertiary Education and Graduates in Science and Engineering.

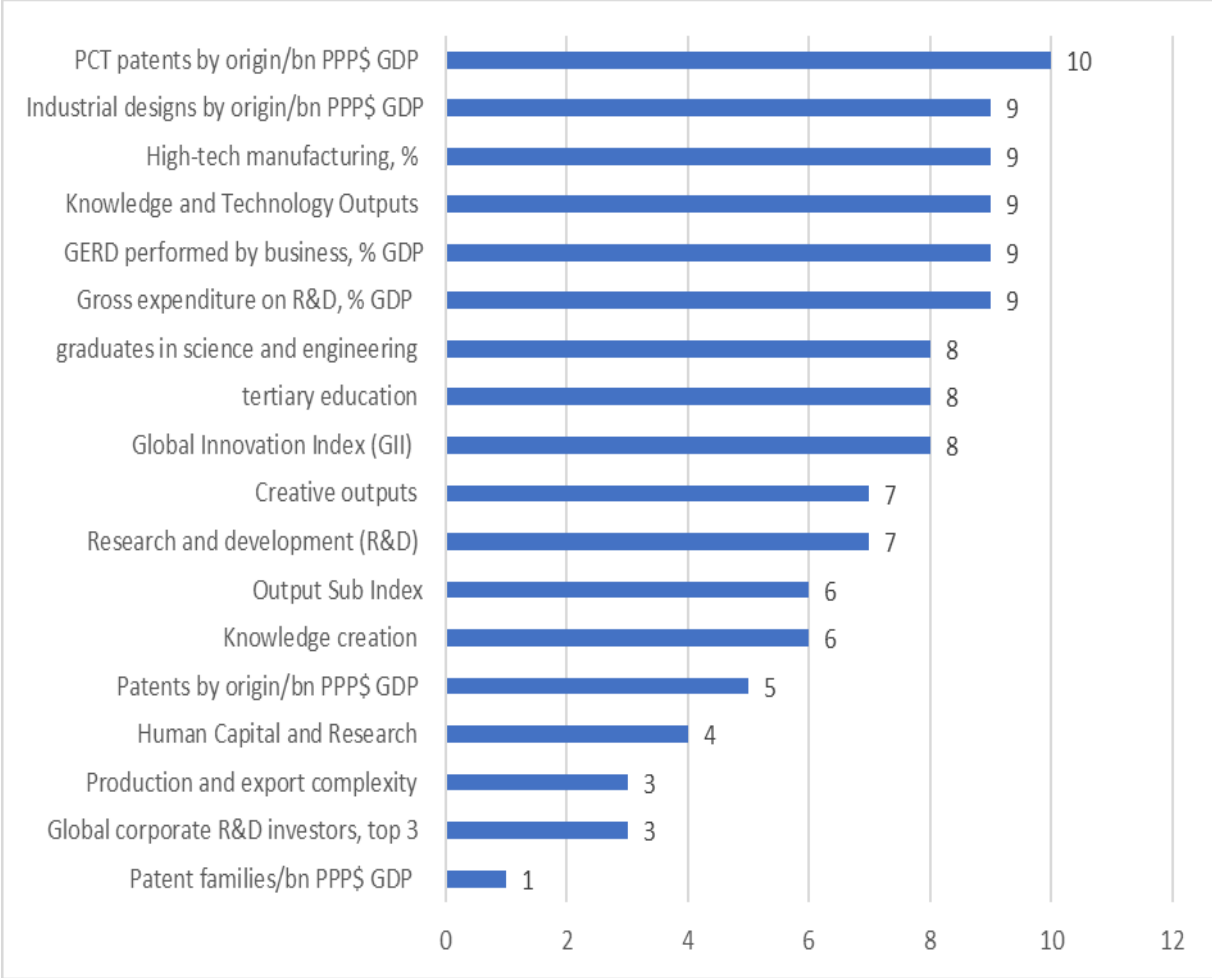
Germany also ranks 9th in several indicators, including Gross Expenditure on R&D as a Percentage of GDP, GERD Performed by Business as a Percentage of GDP, Knowledge and Technology Outputs, High-Tech Manufacturing, and Industrial Designs by Origin per billion PPP\$ GDP. Additionally, Germany is ranked 10th in PCT Patents by Origin per billion PPP\$ GDP (see Table 4 and Figures 22-23).

Figure 22 – Germany Rank in selected Indicators related to Global Innovation Index (2023)



Source: Adapted from World Intellectual Property Organization (WIPO) (2023). Global Innovation Index 2023: Innovation in the face of uncertainty. Geneva: WIPO. DOI:10.34667/tind.48220. Germany Country Profile, p. 123.

Figure 23 – Germany Rank in some selected Indicators related to Global Innovation Index (2023)



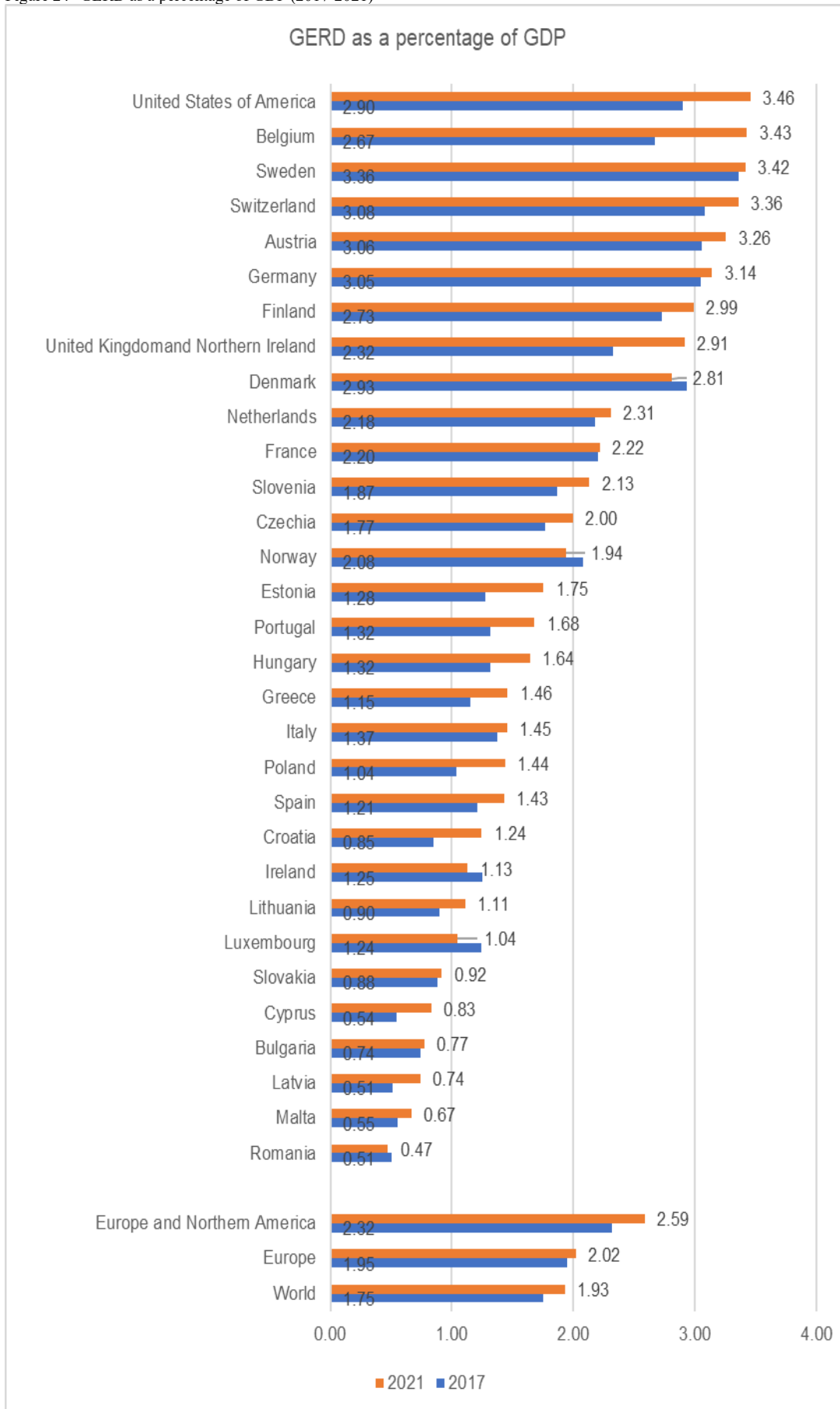
Source: Adapted from World Intellectual Property Organization (WIPO) (2023). Global Innovation Index 2023: Innovation in the face of uncertainty. Geneva: WIPO. DOI:10.34667/tind.48220. Germany Country Profile, p. 123

The UNESCO Science, Technology, and Innovation Dataset Indicator, measuring GERD as a percentage of GDP during the period 2017–2021, shows that Germany ranks above the world, European, and European Union averages. Globally, Germany ranked 6th with GERD as a percentage of GDP at 3.05 in 2017 and 3.14 in 2021, following the United States (2.90, 3.46), Belgium (2.67, 3.43), Sweden (3.36, 3.42), Switzerland (3.08, 3.36), and Austria (3.06, 3.26). Regionally, Germany ranks 5th, following Belgium, Sweden, Switzerland, and Austria, respectively. (see Figure 24). Germany showed an increasing trend in GERD as a percentage of GDP, rising from 3.05 in 2017 to 3.13 in 2020 and 3.14 in 2021.

The UNESCO Science, Technology, and Innovation Dataset Indicator, measuring Researchers per million inhabitants (FTE) during the period 2017–2021, indicates that Germany ranks above the global, European, and European Union levels. Regionally, Germany ranked 9th with 5,087.2543 in 2017 and 5,535.9543 in 2021, following Sweden (7,308.6591, 8,130.7911), Finland (6,731.7922, 7,870.6534), Denmark (7,683.4421, 7,707.7252), Norway (6,395.4398, 7,227.9307), Belgium (4,757.9255, 6,581.8923), Austria (5,416.8937, 6,341.7387), Netherlands (5,302.3446, 6,074.3107), and Switzerland (5,258.5432, 6,022.7465) in 2017 and 2021, respectively. (see Figure 25). Over this period, Germany reported an increasing trend in the number of researchers per million inhabitants (FTE), from 5,087.2543 in 2017 to 5,413.82418 in 2020 and 5,535.95429 in 2021.

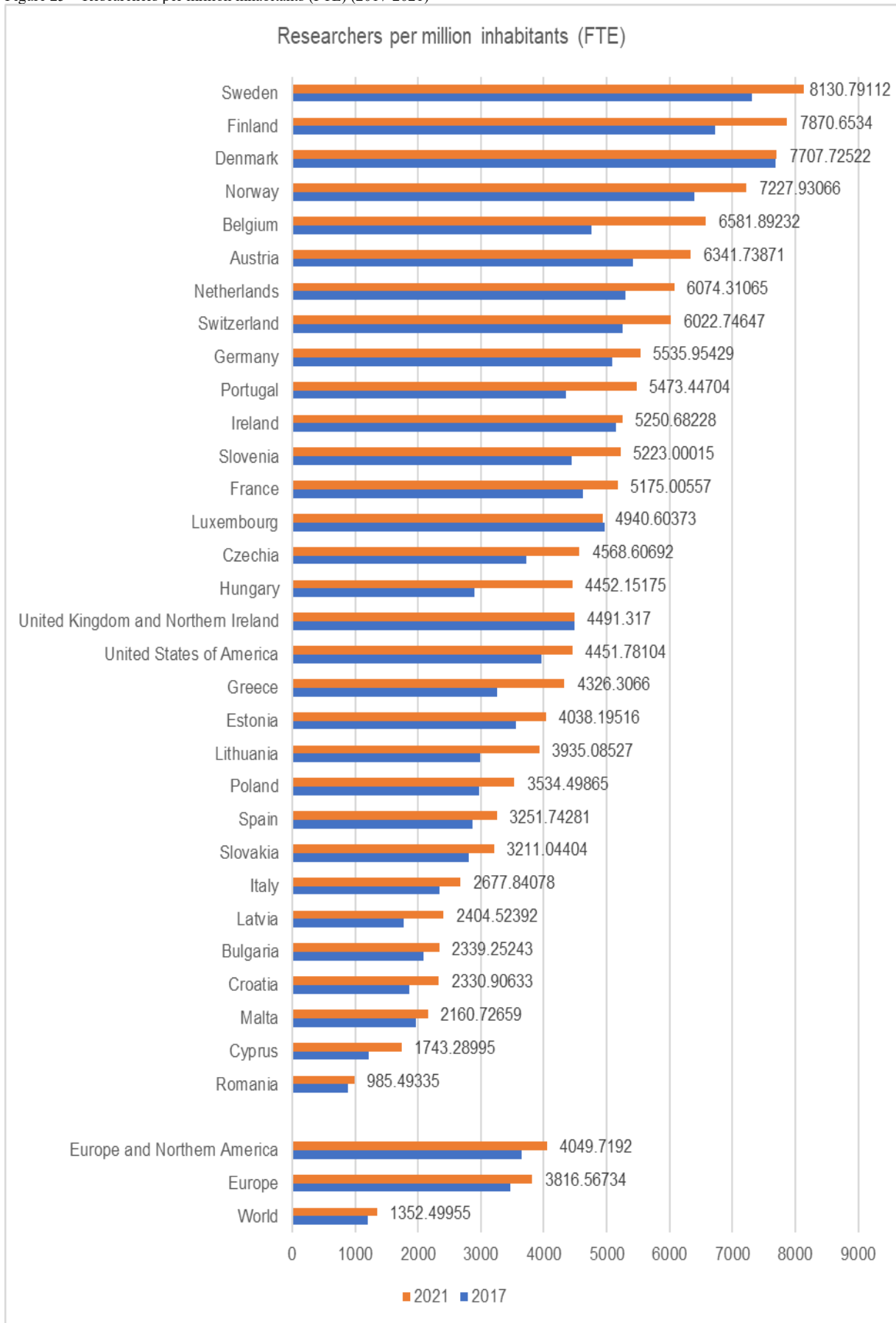


Figure 24- GERD as a percentage of GDP (2017-2021)



Source: Adapted from UNESCO-UIS Data

Figure 25 – Researchers per million inhabitants (FTE) (2017-2021)



Source: Adapted from UNESCO-UIS Data

### **3. Literature review**

In this section, we review the literature on migration, with a particular focus on the migration of higher education students. The topics of migration and student mobility are extensively documented in the international literature from various perspectives. Existing studies offer numerous explanations for the migration of higher education students. Notably, considerable debate centres around three key issues: the evolution, trends, scale, extent, patterns, and distribution of student migration; the causes, motivations, determinants, and push-pull factors driving student migration; and the impacts, implications, and consequences of this phenomenon. Specifically, the determinants and effects of student migration on both sending and host countries are thoroughly addressed in the international literature.

#### *3.1. The evolution, trend, size, breadth, patterns, and distribution of the migration of higher education students*

The first group of studies in the international literature focuses on explaining the evolution, trends, size, breadth, patterns, and distribution of international higher education student migration. Some research examines the economics of international migration (cf. Chiswick and Miller, 2014) and spontaneous student mobility within the European Union (cf. Gordon and Jallade, 1996).

Numerous studies highlight the historical and ongoing development of higher education student migration, asserting that international student mobility is not a new phenomenon. These studies argue that debates around student mobility have long been prominent in both sending and host countries, with a more visible upward trend emerging in recent decades. This trend correlates with the global expansion of the higher education sector.

On the one hand, there is growing consensus in the literature regarding the increasing scale and extent of international student mobility. Over the past decades, the movement of higher education students has experienced significant growth. For instance, several studies explore the rising mobility of international students (Brooks and Waters, 2011). Empirical evidence also highlights Germany as a key destination, attracting a substantial number of international students (cf. Bessey, 2012).

On the other hand, there is less agreement and ongoing debate concerning the geographical distribution and patterns of international student migration. For example, a recent study examining the determinants of transnational student mobility found that cross-national student exchange networks have remained stable over time. Countries such as the USA, the UK, France, and Germany continue to attract the largest share of international students (cf. Vögtle and Windzio, 2016).

In contrast, other studies highlight significant shifts in mobility patterns due to the rise of transnational higher education and education hubs in Asia and other emerging economies. Countries such as China, India, Singapore, South Korea, Malaysia, Hong Kong, and certain Middle Eastern nations have transformed global student mobility patterns, intensifying competition among world regions for international students (cf. Mok, 2012; Shields and Edwards, 2010; Rivza and Teichler, 2007). These studies argue that whereas international students in the 1970s and 1980s predominantly chose destinations in Europe, the UK, and North America, today, many are considering Asia-Pacific as a viable alternative. This shift represents a fundamental reconfiguration of mobility patterns (cf. Mok and Ong, 2011; Altbach, 1989).

The emerging trend suggests that students are increasingly moving not only from the "periphery" (developing economies) to the "core" (developed economies) but also from the "periphery" to the "semi-periphery" (emerging economies). Some scholars further argue that the patterns of international student mobility have become significantly more complex. Although new destinations are unlikely to displace the dominance of

Western countries in the near future, the growing appeal of emerging economies indicates that competition for international students—and the associated revenues—is likely to intensify (cf. Mok, 2012).

### *3.2. The causes, motivation and determinants (push-pull factors) of migration of higher education students*

The second group of studies in the international literature provides broader explanations and valuable insights into the causes, motivations, and determinants of international student mobility, considering both the perspectives of sending and host countries.

To elucidate the factors driving the migration of higher education students, the literature proposes a range of theoretical explanations, including historical, geographical, cultural, political, institutional, social, and economic factors. These explanations also encompass micro- and macro-level analyses, supply-demand dynamics, demographic trends, educational policies, human capital gaps, and labour market or wage differentials (cf. Brooks and Waters, 2011; Findlay et al., 2012; King and Raghuram, 2013).

This diversity of theoretical approaches indicates that the determinants of cross-national student mobility are highly contested in the literature, with much research focusing on specific, individual perspectives. However, relatively few studies offer a comprehensive theoretical framework that integrates multiple perspectives.

Some notable contributions attempt to bridge this gap by exploring a combination of approaches, including the micro perspective, macro perspective, rational choice theory, globalisation or the global knowledge economy, the human capital approach, critical perspectives, and world culture theory (cf. Shields, 2013; Vögtle and Windzio, 2016). These integrated frameworks provide a more holistic understanding of the complex and multifaceted drivers of international student mobility.

In the international migration literature, the traditional push–pull model of international student mobility (Bessey, 2012; Karemera et al., 2000; Mayda, 2005) and the motivations for migration of international students (cf. Wilkins, et. al., 2012), has been widely utilised as an analytical tool to understand and interpret the reasons, determinants, and push-pull factors influencing the migration of higher education students between sending and host countries. Many studies on international student mobility adopt the push–pull model to identify the factors that drive individuals to study abroad and those that attract them to specific destinations.

Within this framework, international migration flows between countries are modelled as a function of the characteristics of both the sending and host countries. For instance, some studies provide demographic explanations, suggesting that an increase in the population of the origin country and the resulting "demographic pressure" (Hatton and Williamson, 2001) may push more individuals to seek education abroad, while the cost of mobility acts as a deterrent to migration.

Other studies combine geographical, economic, and political factors to explain student mobility. These studies provide evidence that geographic proximity encourages mobility, while politically free countries are more likely to send students abroad (cf. Bessey, 2012). Additionally, research has examined how characteristics of the origin countries, such as economic conditions, influence the volume of students seeking higher education abroad. For example, some studies argue that economic development levels in sending countries are negatively correlated with tertiary student emigration, while higher integration into the global economy is positively correlated with increased student mobility (cf. McMahon, 1992).

Some research also emphasises institutional factors and the impact of globalisation, particularly within the context of the global knowledge economy. From this perspective, international student mobility is seen as

part of a worldwide trend towards the internationalisation of knowledge and research in an interconnected global economy (cf. Altbach, 1991). Foreign students are thus viewed as "embodiments" of this trend.

From an institutional perspective, the growth in student mobility is partly attributed to the increasing recognition of international education as an export activity. Higher education institutions actively market their programmes internationally to generate economic returns (cf. She and Wotherspoon, 2013). For many countries, international education serves as a key element of the integration between higher education systems and the knowledge economy (cf. Kauppinen, 2015).

Economic explanations for the migration of higher education students include various micro- and macro-level perspectives, supply-demand dynamics, and demographic and labour market factors. The push-pull model, widely applied in migration studies, explores the determinants of international student mobility, particularly from a micro-level perspective.

From a micro perspective, the theory of rational choice posits that students, as rational actors, make decisions to study abroad based on the goal of maximising their lifetime earnings (Rosenzweig, 2006; Beine et al., 2014). Individual decisions to study overseas are influenced by the growing internationalisation of education and economies, which encourages students to develop skills deemed essential for competing in an increasingly global labour market for highly skilled workers (Tremblay, 2005).

At the macro level, explanations often assess the supply and demand sides of international student mobility (Findlay, 2010). These explanations argue that demographic and labour market changes over recent decades, combined with the transition to knowledge-based economies, have created a demand for highly skilled workers in OECD countries. In this context, international students are viewed as a significant source of skilled labour for host societies, with international education recognised as a key pathway for labour migration (Liu-Farrer, 2014). Consequently, OECD countries have increasingly prioritised attracting international students as part of their strategies to expand knowledge economies. Meanwhile, sending countries have expressed concerns about the developmental impact of losing human capital to migration (Findlay, 2011).

In recent years, universities have become pivotal facilitators of skilled migration flows (Hawthorne and To, 2014). Studies have identified several factors contributing to a global trend of increasing highly skilled migration. These include the worldwide rise in tertiary education enrolment, the booming number of migration-prone graduates, and persistent income inequalities between countries, which affect both low- and highly skilled workers. Additionally, improved access to information about employment conditions abroad and diminishing gaps in education quality between countries have facilitated the portability of skills across borders. These factors collectively contribute to the emergence of a truly global labour market in specific sectors (Fargues and Venturini, 2015).

Educational policy and human capital gap explanations focus on disparities between sending and host countries in terms of the supply and demand for educational opportunities and the quality of education. These explanations suggest that one of the primary drivers of international student mobility is the unmet demand for higher education in students' home countries (Beine et al., 2013a, 2014; Agarwal and Winkler, 1985; Lee and Tan, 1984). Additionally, the low quality of domestic higher education (Wilkins et al., 2012) and the perceived superiority of international programmes compared to local ones (Wilkins et al., 2012) are significant motivators. The perceived quality gap between foreign and domestic degrees further reinforces this trend (Aslangbengui and Montecinos, 1998; Gordon and Jallade, 1996; Mazarrol and Soutar, 2002).

These explanations suggest that student migration arises from inadequacies in the availability and quality of educational opportunities in the home country (Beine et al., 2013a, 2014; Rosenzweig, 2006). According to this model, students who choose to study abroad aim to access higher-quality education and often intend to return to their home country after graduation. Consequently, an increase in the availability of higher education in the countries of origin tends to reduce the number of students seeking education abroad (Rosenzweig, 2006).

The human capital perspective assumes that the rise in international student mobility is linked to an increased demand for technical, specialised, and post-secondary education, prompting students to seek better opportunities abroad (Shields, 2013). This explanation posits that students make the decision to study internationally when the perceived benefits of obtaining a foreign education outweigh the associated costs.

The labour market and wages gap explanations focus on disparities between sending and host countries in terms of labour market opportunities and returns to education or wages. The labour market explanation suggests that studying abroad is particularly linked to the lack of adequate labour market opportunities in students' home countries (Levatino, 2016). Similarly, the wages gap explanation posits that seeking education abroad can be a strategy for permanent migration to escape the low returns on education in the country of origin. According to this perspective, global wage disparities drive this trend, as an increase in higher education opportunities in the countries of origin often correlates with a rise in the number of individuals seeking education abroad (Beine et al., 2013a, 2014).

Other explanations include the critical perspective, which emphasises the role of power relationships and hegemony as key drivers of international student mobility. This perspective argues that the primary beneficiaries of cross-national student migration are transnational and national elites who gain access to the world's most prestigious universities (Shields, 2013: 613).

Finally, the cultural explanation highlights the influence of cultural factors in shaping patterns of international student mobility (Bessey, 2010; Dreher and Poutvaara, 2005; Tremblay, 2001; Kondakci, 2011). This approach views the increasing number of international students as being "driven primarily by cultural values rather than rational choice," asserting that cultural factors play a significant role in determining the direction and patterns of student migration (Shields, 2013: 615; Boli et al., 1985; Boli and Thomas, 1997).

### *3.3. The impact, implications and consequences of migration of higher education students*

The third group of studies in the international literature focuses on the impacts, consequences, and implications of the migration of higher education students from both the sending and receiving countries' perspectives. Some studies explore the impact of international student migration from the viewpoint of the sending countries (cf. Wilkins et al., 2012), while others examine the effects from the perspective of the host countries (cf. Brown, 2009; Kelly et al., 2014). Several studies provide a comprehensive understanding of the implications of student mobility, migration, and the internationalisation of higher education (Brooks and Waters, 2011).

Some studies investigate the mobility of knowledge and examine how the geographical mobility of people and spatial movement influence the production, dissemination, and transfer of knowledge (Jöns, Heffernan, and Meusburger, 2017). Recent research also contributes to the understanding of labour market outcomes, exploring the evolving and complex relationship between the global mobility of highly skilled international students and recent changes to immigration policy in the UK, which now restrict such mobility (Moskal, 2016).

A number of studies argue that international skilled migration has become more controversial as it has increased in frequency. Policymakers and development specialists in origin countries often perceive migration as either a “brain drain” or “brain flight,” depending on whether they view migration as the result of the pull factors of destination countries or the voluntary decisions of migrants. Critics of the "brain drain" argument see developing countries as victims of exploitation by more advanced economies, while those supporting the "brain flight" view suggest that migration reflects individuals prioritising personal ambitions over collective interests (Fargues and Venturini, 2015).

Several studies also focus on Germany’s position in this context. For instance, one study notes that Germany ranks as the most attractive study destination in Europe, offering the best value for international students (Watkins, 2023a, b). Studies analysing migration and higher education in Germany have found that Germany hosts diverse migrant groups in its higher education sector. Wolter (2020), for example, discusses four distinct groups of migrants in German higher education, each with a different migration status: first, domestic students with a migration background; second, international students; third, refugees, who represent a smaller group within the sector; and fourth, academic staff with a migration background.

This study provides empirical evidence to characterise these groups within the context of specific policy discourses about migrants in German higher education. What these groups have in common is their contribution to addressing the need for highly qualified professionals in various sectors of the German labour market. From a policy perspective, these groups are viewed primarily as valuable human resources. However, they differ in how they have been affected by the controversial public debate surrounding migration in Germany. There remains significant potential for expanding participation among all four groups, which aligns with the objectives of higher education institutions and Germany’s broader policy to internationalise its higher education sector. The future success of this endeavour will depend not only on the quality of German higher education and the labour market but also on Germany's ability to maintain its reputation as an open and inclusive society.<sup>11</sup>

#### **4. Pattern, size, trend, causes and consequences of migration of higher education students to Germany from a receiving country perspective**

Given the political, economic, demographic, educational, research, and innovation significance of Germany as outlined above, this section highlights Germany's leading role in attracting international higher education students both globally and regionally within Europe and the European Union. The section explores key developments in the pattern, size, trend, and distribution of international student migration to Germany and other world countries. It examines the push-pull factors—economic, political, and educational—that drive the migration of higher education students to Germany. Furthermore, the consequences of this migration are assessed to determine its broader impact. The analysis also aims to evaluate whether the motivations, determinants, and implications of international student mobility, as discussed in the international literature and summarised in earlier sections, are applicable in the context of Germany.

##### *4.1. Pattern of migration of higher education students to Germany*

This subsection delves into the major characteristics and stylised facts surrounding the pattern, size, trend, and distribution of higher education student migration to Germany. It provides an overview of Germany’s leading

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<sup>11</sup> See Wolter, A. (2020) ‘Migration and Higher Education in Germany,’ (2020) Chapter 3 in M. Slowey et al. (eds.), ‘Inequality, Innovation and Reform in Higher Education, Lifelong Learning,’ Book Series 25, Springer Nature Switzerland AG, 2020.

position as a global and regional hub for international higher education students in the world and regionally in Europe and the European Union region. Germany's attractiveness as a destination country is examined through its distinct patterns of student migration, the size and trends of incoming international student cohorts, and the geographical and disciplinary distribution of these students. The analysis focuses on identifying the defining features of Germany's role as a receiving country for international higher education students, backed by comparative regional and global data.

#### *4.1.1. Overview of migration of international students at the global level*

Globally, UNESCO-UIS data on the Global Flow of Tertiary-Level Students highlights a continuous and rapid increase in international student numbers since 1975. For instance, the total number of international students worldwide rose from 0.8 million in 1975 to 6.4 million in 2020 (see Figure 26).

The distribution of international students by host region and region of origin in 2020 (measured as a proportion of all international students worldwide, %) varies significantly across world regions:

**Host Regions:** Among the 6.4 million international students, the top host region in 2020 was Western Europe (29%), followed by Asia and the Pacific (22%), North America (20%), North Africa and the Middle East (8%), Eastern Europe and Central Asia (8%), Central and South-Eastern Europe (7%), Latin America (4%), and Sub-Saharan Africa (2%) (see Figure 27).

**Regions of Origin:** The Asia and Pacific region (43%) was the leading source of international students, followed by North Africa and the Middle East (13%), Western Europe (12%), Eastern Europe and Central Asia (9%), Sub-Saharan Africa (8%), Latin America (7%), Central and South-Eastern Europe (5%), and North America (3%) (see Figure 27).

The trend in international student numbers from 2010 to 2020 indicates a steady increase, rising from 3.8 million in 2010 to 6.4 million in 2020. However, the share of international students hosted by different regions has shown varying patterns during this period: Western Europe: A decreasing trend from 36% in 2010 to 29% in 2020. Asia and the Pacific: An increasing trend from 21% in 2010 to 22% in 2020. North America: A slight decline from 22% in 2010 to 20% in 2020. North Africa and the Middle East: Growth from 5% in 2010 to 8% in 2020. Central and South-Eastern Europe: An increase from 4% in 2010 to 8% in 2020. Eastern Europe and Central Asia: A consistent share of around 7% throughout the period. Latin America: Growth from 2% in 2010 to 4% in 2020. Sub-Saharan Africa: A decline from 3% in 2010 to 2% in 2020 (see Figure 28). These trends reflect the dynamic nature of global student mobility, shaped by regional capacities, opportunities, and challenges in higher education.

The distribution and trend of international students worldwide, by region of origin during the period 2010–2020, indicate a significant increase in total numbers, rising from 3.8 million in 2010 to 6.4 million in 2020. However, the share of students from different regions has shifted over time: Asia and the Pacific: An increasing trend, growing from 40% in 2010 to 43% in 2020. North Africa and the Middle East: An increase from 11% in 2010 to 13% in 2020. Western Europe: A slight decrease, dropping from 14% in 2010 to 12% in 2020. Eastern Europe and Central Asia: A marginal increase from 8% in 2010 to 9% in 2020. Sub-Saharan Africa: A small decline, falling from 9% in 2010 to 8% in 2020. Latin America: A steady share, remaining at 7% throughout the period. Central and South-Eastern Europe: A noticeable decline, from 8% in 2010 to 5% in 2020. North America: A constant share of 3% during this period. These patterns highlight the changing dynamics of student mobility, with



Asia and the Pacific region consolidating its role as the leading source of international students, while other regions show varying trends (see Figure 28)

#### *Key Host and Origin Countries for International Students in 2020*

**Host Countries:** The distribution of international students by host country in 2020 highlights the following: The United States (15.0%) is the leading host country. Followed by the United Kingdom (8.7%), Australia (7.2%), Germany (5.8%), and Canada (5.1%). Other significant hosts include Russia (4.4%), France (4.0%), China (3.7%), United Arab Emirates (3.4%), and Japan (3.2%). Remaining countries collectively account for 39.5% (see Figures 28–29).

**Countries of Origin:** China (16.8%) is the top country of origin for international students globally. Followed by India (8.3%), Vietnam (2.2%), South Korea (2.0%), and Germany (2.0%). Other notable countries include the United States (1.9%), France (1.8%), Kazakhstan (1.5%), Nepal (1.5%), and Brazil (1.4%). Other countries together account for 60.6% of all international students (see Figure 29).

**Mobility Balances:** The mobility balance (ratio of incoming to outgoing students) of major host and origin countries in 2020 reveals: Germany (74%) ranks third globally, following Russia (83%) and Japan (86%). Germany's incoming students (74%) significantly exceed its outgoing students (26%), a ratio of nearly 3:1 (see Figure 32).

**Proportions:** Host countries with the highest number and proportion of international students are detailed in Figure 30. Countries of origin with the highest number and proportion of internationally mobile students are presented in Figure 31.

#### *Germany's Role in International Student Mobility in 2020*

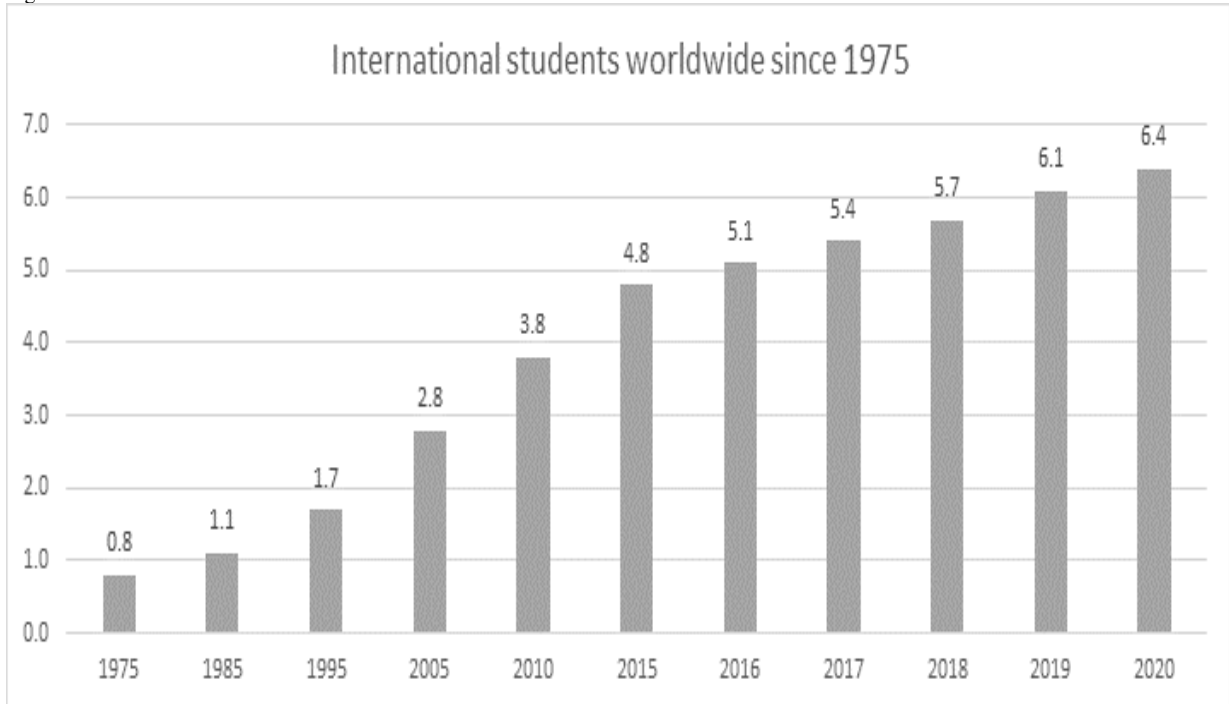
**Global Rankings:** Host Country: Germany ranks 4th globally as a popular destination for incoming international students. Country of Origin: Germany ranks 5th globally as a key source of outgoing international students. **Mobility Balance:** Germany ranks 3rd globally, with a mobility balance of 74% incoming students compared to 26% outgoing students.

**Incoming Students to Germany:** Germany is the 4th largest host for international students in 2020. The top five countries of origin for international students in Germany are: China (10.7%), India (6.8%), Syria (4.3%), Austria (3.9%), Russia (3%). These five countries collectively contribute 28.7% of all international students hosted by Germany. Students from other countries account for the remaining 71.2% (see Figures 33–34).

**Outgoing Students from Germany:** Germany ranks 5th globally as a source country for international students. The top five preferred host countries for German students are: Austria (24%), Netherlands (16.8%), United Kingdom (9.8%), Switzerland, United States (8.8%). These five destinations account for 64.8% of all German international students. Other host countries collectively account for the remaining 35.2% (see Figures 33–35).

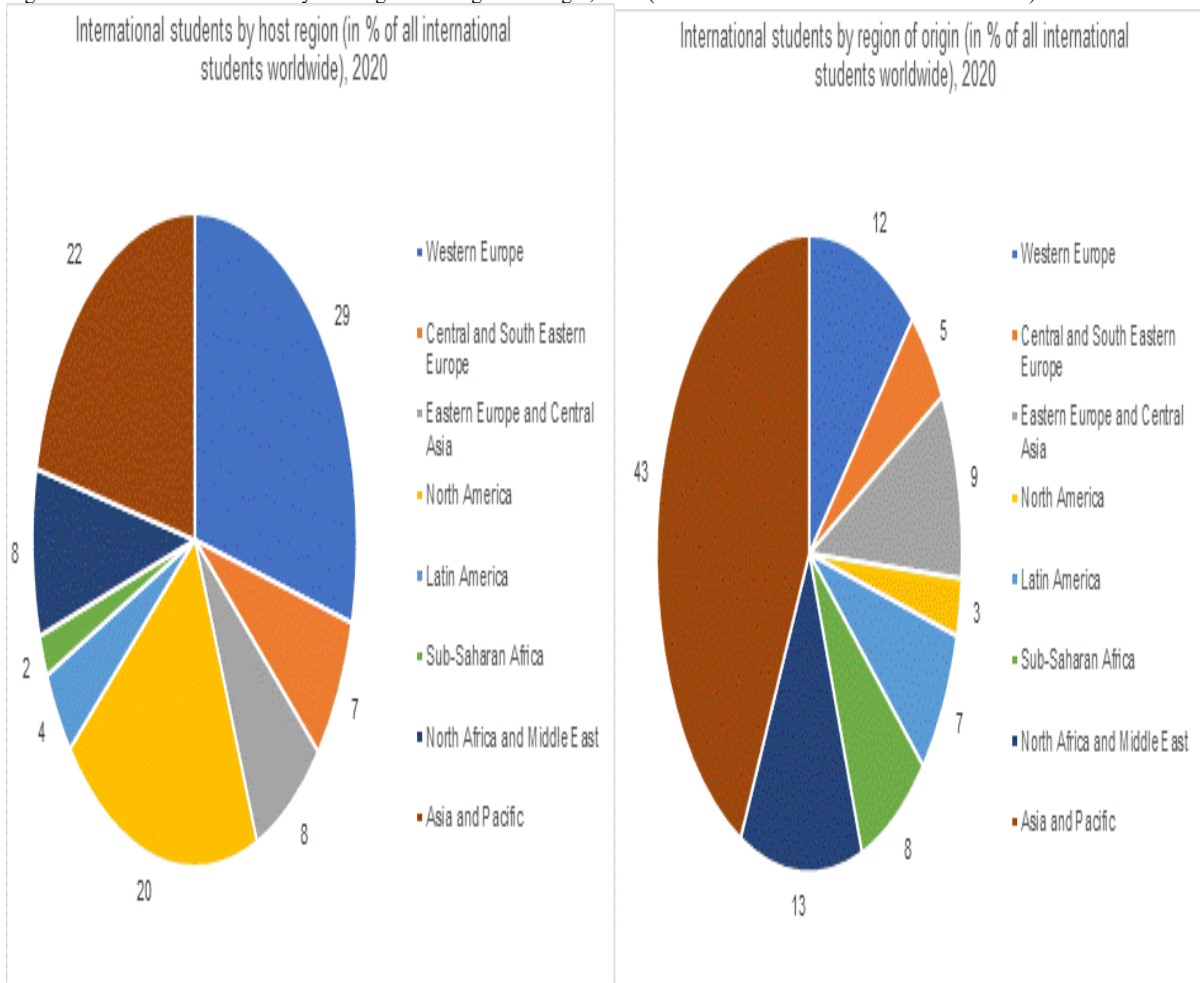
This overview highlights Germany's pivotal role in global student mobility, both as a host and a sending country.

Figure 26 – International students worldwide since 1975



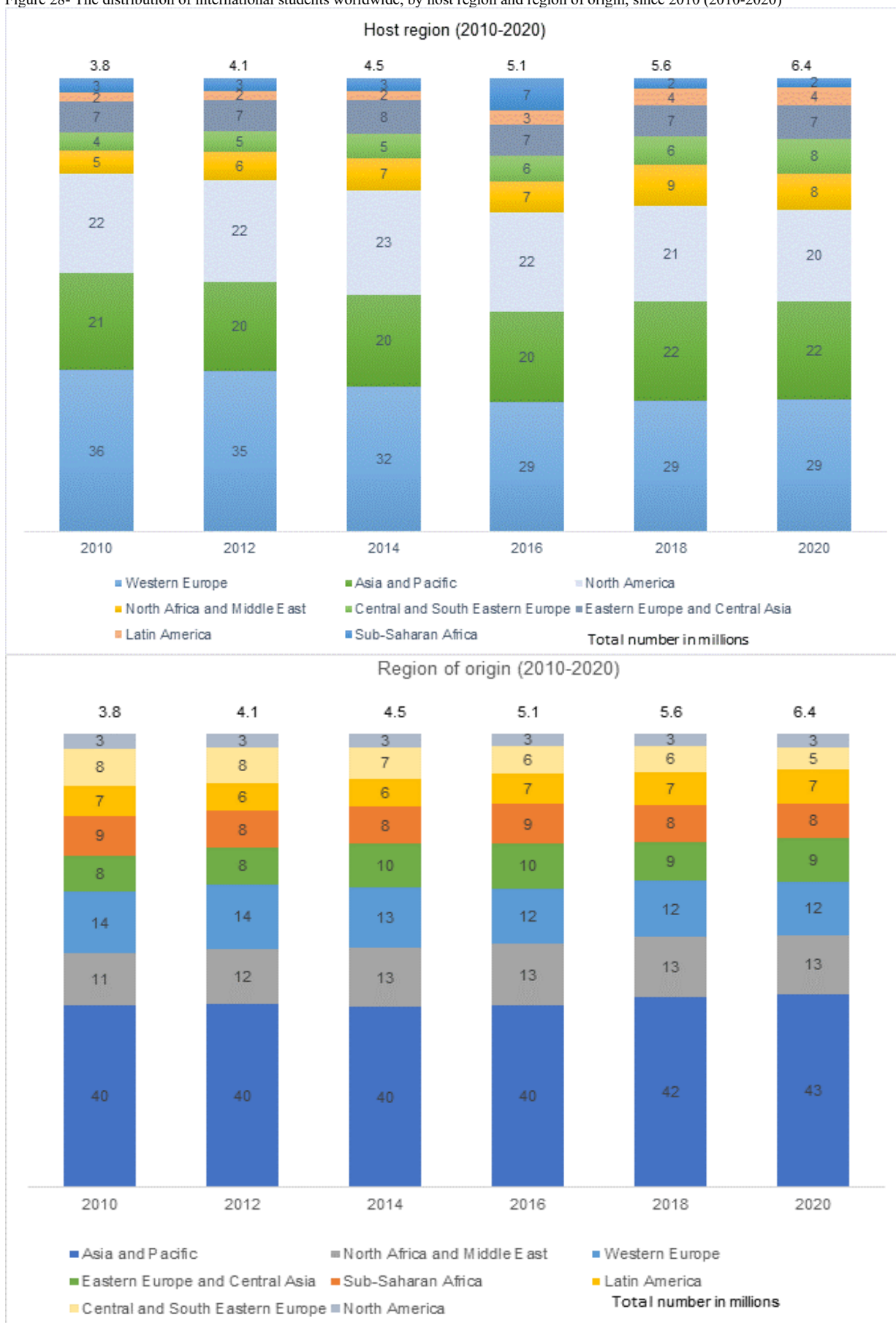
Source: UNESCO, Student Statistics; country-specific reporting periods

Figure 27- International students by host region and region of origin, 2020 (in % of all international students worldwide)



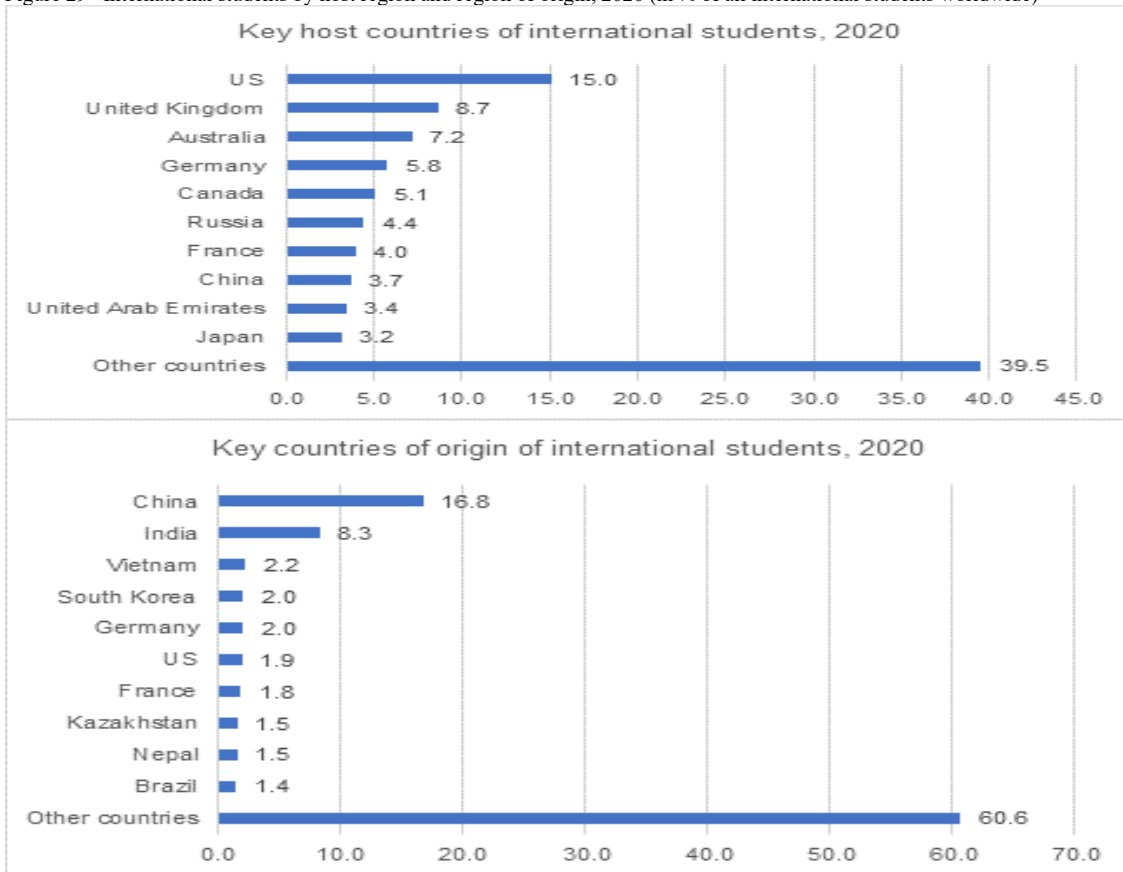
Source: UNESCO, Student Statistics; country-specific reporting periods

Figure 28- The distribution of international students worldwide, by host region and region of origin, since 2010 (2010-2020)



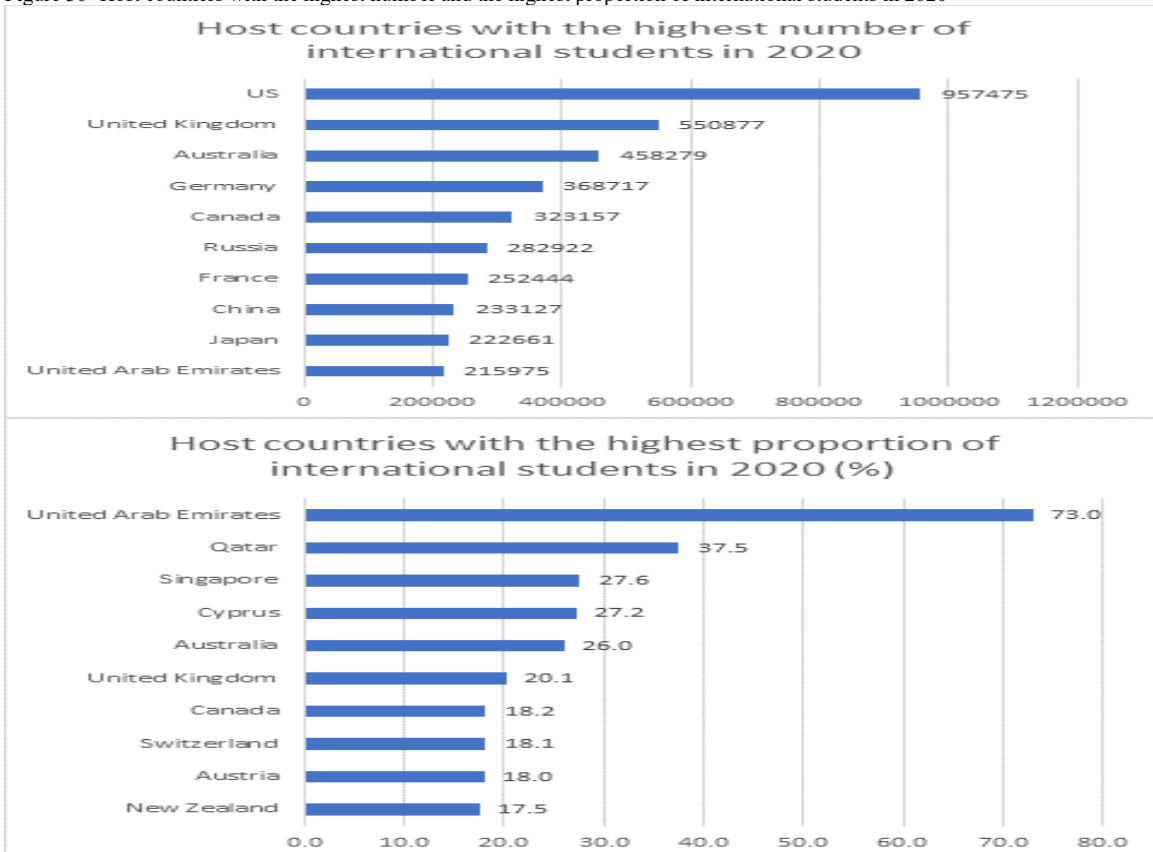
Source: UNESCO, student statistics; country-specific reporting periods; DAAD calculations

Figure 29– International students by host region and region of origin, 2020 (in % of all international students worldwide)



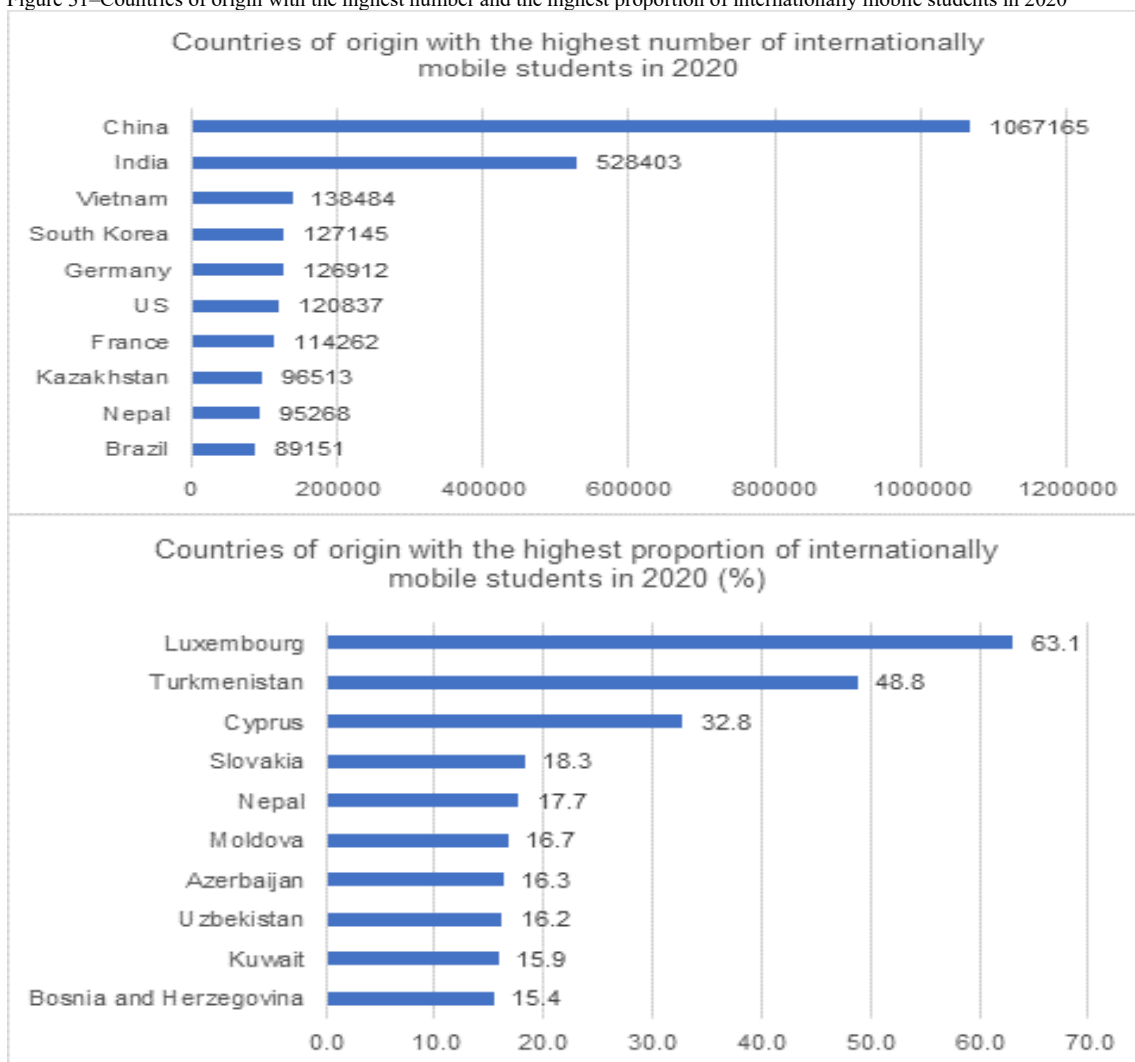
Source: UNESCO, Student Statistics; country-specific reporting periods

Figure 30- Host countries with the highest number and the highest proportion of international students in 2020



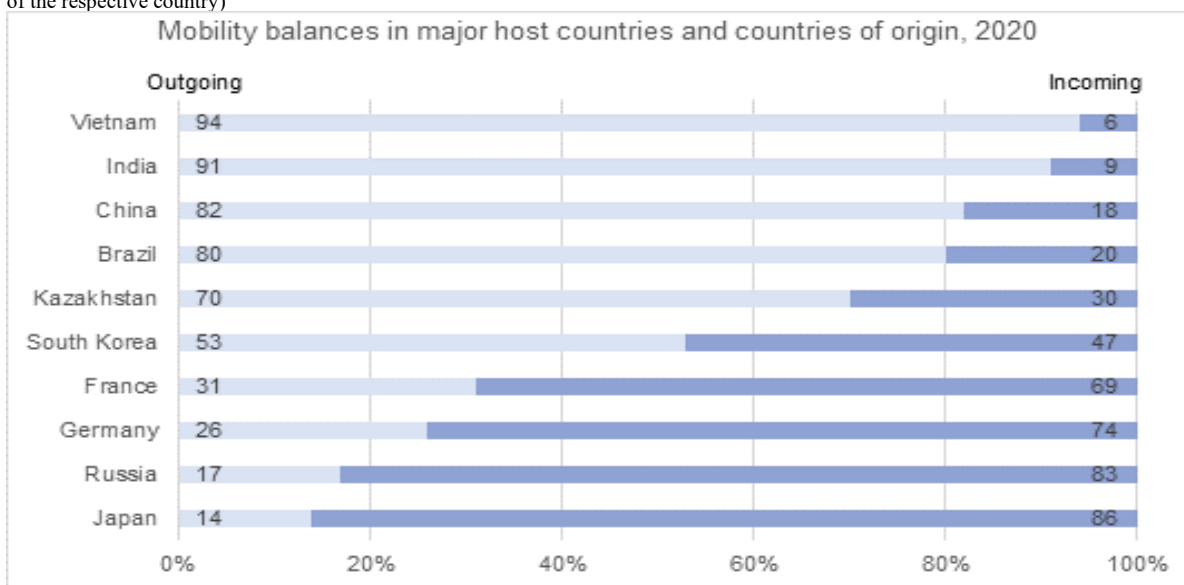
Sources: UNESCO/OECD, student statistics; country-specific reporting periods; DAAD calculations

Figure 31–Countries of origin with the highest number and the highest proportion of internationally mobile students in 2020



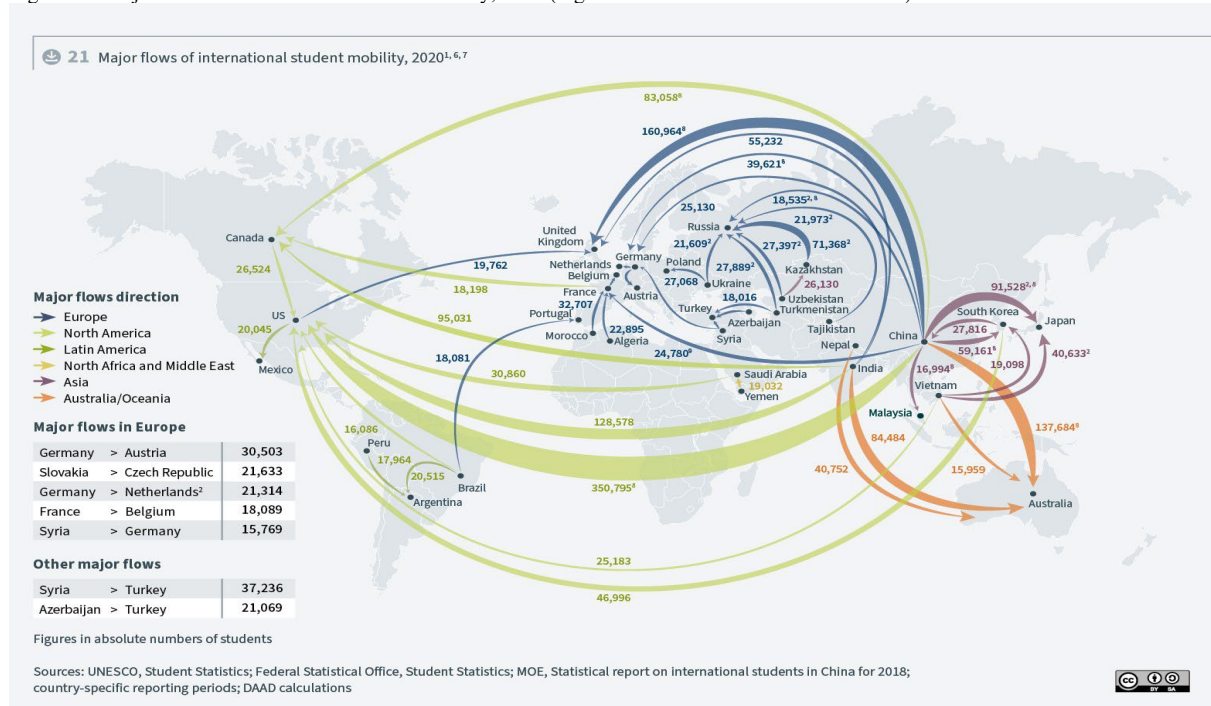
Sources: UNESCO, student statistics; MOE, statistical report on international students in China for 2018; Federal Statistical Office, "Deutsche Studierende im Ausland" survey;

Figure 32- Mobility balances in major host countries and countries of origin, 2020 (Number and in % of all incoming and outgoing students of the respective country)



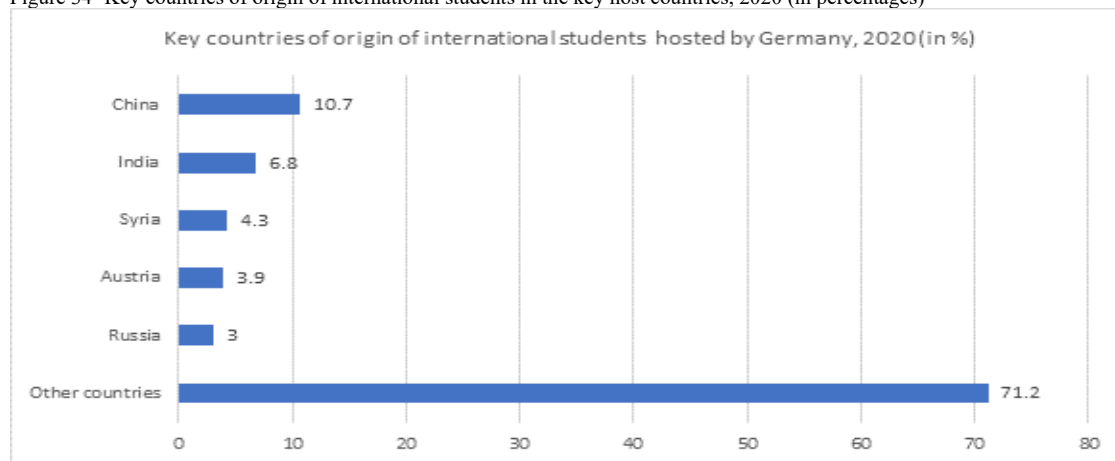
Sources: UNESCO, student statistics; Federal statistical office, student statistics, 'Deutsche Studierende im Ausland'; MOE, statistical report on international students in China for 2018; country-specific reporting periods; DAAD calculations

Figure 33- Major flows of international student mobility, 2020 (Figures for absolute numbers of students)



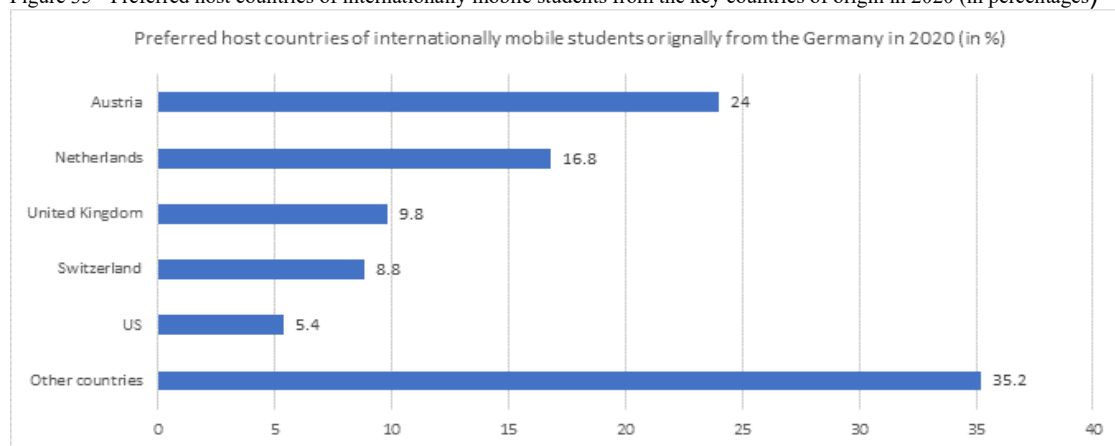
Source: UNESCO, Student Statistics; country-specific reporting periods

Figure 34- Key countries of origin of international students in the key host countries, 2020 (in percentages)



Source: adapted from UNESCO, student statistics; country-specific reporting periods; DAAD calculations

Figure 35 - Preferred host countries of internationally mobile students from the key countries of origin in 2020 (in percentages)



Sources: Adapted from UNESCO, student statistics; MOE, statistical report on international students in China for 2018; country-specific reporting periods; DAAD calculations

Over the period 2017 to 2021, Germany demonstrated a significant increase in its share of hosting internationally mobile students from various regions. For students originating from Central and Eastern Europe, Germany hosted 10.17% of the total globally in 2017, which rose to 12.88% by 2021. Within Europe, Germany's share increased from 11.81% in 2017 to 14.30% in 2021, and within the European Union, its share rose from 16.48% to 21.79% over the same period. Similarly, for students from North America and Western Europe, Germany hosted 7.87% of the total globally in 2017, increasing to 10.43% in 2021. Within Europe, its share grew from 10.82% to 13.49%, while within the European Union, the share surged from 15.97% in 2017 to 22.52% in 2021. These trends underscore Germany's growing importance as a leading destination for internationally mobile students, particularly within the European Union, where its share has increased significantly for both regions of origin . (see Table 8, and Figures 36-38).

Between 2017 and 2021, Germany exhibited notable changes in the distribution of internationally mobile students from various regions. For students from other or unknown regions, Germany hosted 4.84% of the global total in 2017, which decreased to 3.33% in 2021. However, within Europe, Germany's share of these students was significantly higher, at 24.16% in 2017 and slightly declining to 22.95% in 2021. Within the European Union, Germany's share of students from other or unknown regions increased substantially, from 34.74% in 2017 to 46.00% in 2021. 2021 respectively (see Table 8, and Figures 36-38).

For students from Arab States, Germany hosted 3.97% of the global total in 2017, which grew to 7.39% by 2021. Within Europe, Germany's share of these students increased from 11.24% in 2017 to 18.57% in 2021. Within the European Union, the growth was even more pronounced, with Germany hosting 16.15% of Arab State students in 2017 and expanding to 27.03% in 2021. These figures highlight Germany's increasing prominence as a destination for students from Arab States and underscore its growing role within the European Union in hosting students from diverse and less-defined regions. (see Table 8, and Figures 36-38).

Between 2017 and 2021, Germany saw a significant role in hosting internationally mobile students from East Asia and the Pacific, as well as from Latin America and the Caribbean. For East Asia and the Pacific, Germany hosted 3.13% of the total students worldwide in 2017, which increased to 3.88% in 2021. Within Europe, Germany's share of students from this region rose from 13.23% in 2017 to 14.82% in 2021. Within the European Union, the increase was even more striking, with Germany hosting 31.64% of students from East Asia and the Pacific in 2017, growing to 42.14% in 2021. (see Table 8, and Figures 36-38).

Similarly, Germany's share of students from Latin America and the Caribbean also expanded over this period. Globally, it hosted 3.75% of these students in 2017, rising to 4.77% in 2021. Within Europe, Germany's share increased from 12.71% in 2017 to 16.13% in 2021. Within the European Union, Germany hosted 14.89% of students from Latin America and the Caribbean in 2017, which grew to 18.80% in 2021. These figures illustrate Germany's growing importance as a hub for international students from these diverse regions, particularly within the European Union. (see Table 8, and Figures 36-38).

Between 2017 and 2021, Germany's role as a host country for internationally mobile students from South and West Asia, Sub-Saharan Africa, and all regions globally increased significantly. For students from South and West Asia, Germany hosted 4.07% of the total globally in 2017, rising to 5.37% in 2021. Within Europe, its share was 22.32% in 2017 and slightly declined to 20.22% in 2021. However, within the European Union, Germany's share grew notably from 34.58% in 2017 to 46.66% in 2021. (see Table 8, and Figures 36-38).

For Sub-Saharan Africa, Germany hosted 3.16% of the total students globally in 2017, increasing to 4.52% in 2021. Within Europe, the share rose from 9.24% in 2017 to 11.15% in 2021, and within the European Union, the increase was from 13.28% in 2017 to 15.86% in 2021. (see Table 8, and Figures 36-38).

Overall, Germany's share of total mobile students from all regions globally grew from 4.92% in 2017 to 6.01% in 2021. Within Europe, its share rose from 13.17% to 15.63%, and within the European Union, it increased from 20.16% in 2017 to a substantial 27.22% in 2021. These trends highlight Germany's rising prominence as a key destination for internationally mobile students, particularly within the European Union. (see Table 8, and Figures 36-38).

Between 2017 and 2021, the share of inbound internationally mobile students from Central and Eastern Europe globally and regionally showed a declining trend. Globally, their share of the total internationally mobile students hosted by all world regions decreased from 8.92% in 2017 to 7.54% in 2020. Regionally, the share hosted by Europe declined from 20.56% in 2017 to 17.40% in 2021, while the share hosted by European Union countries dropped from 22.55% in 2017 to 19.88% in 2021. Within Germany, the decline was more pronounced, with the share falling from 18.44% in 2017 to 15.92% in 2021. (see Table 8, and Figures 36-38).

Similarly, the share of inbound internationally mobile students from North America and Western Europe also decreased. Globally, their share fell from 14.42% in 2017 to 13.57% in 2020. Regionally, their share hosted by Europe decreased from 28.03% in 2017 to 26.18% in 2021, while the share hosted by European Union countries dropped from 29.06% in 2017 to 27.32% in 2021. For Germany, the decline was from 23.03% in 2017 to 22.60% in 2021. (see Table 8, and Figures 36-38).

In contrast, the global share of mobile students from other unknown regions increased from 14.41% in 2017 to 15.83% in 2020. However, regionally, the trends were different. Their share hosted by Europe declined from 7.72% in 2017 to 5.93% in 2021, and within European Union countries, the share dropped from 8.21% in 2017 to 5.15% in 2021. In Germany, the decline was sharper, with the share decreasing from 14.15% in 2017 to 8.71% in 2021. These trends reflect a shifting pattern in the regional distribution of internationally mobile students over the studied period. (see Table 8, and Figures 36-38).

Between 2017 and 2021, the share of inbound internationally mobile students from the Arab States exhibited divergent trends globally and regionally. Globally, their share of the total mobile students hosted by all world regions showed a slight decline, from 9.52% in 2017 to 9.37% in 2020. Regionally, however, the share hosted by Europe increased from 8.99% in 2017 to 10.10% in 2021. Within European Union countries, the share rose from 9.57% in 2017 to 12.08% in 2021, and in Germany, the increase was even more pronounced, growing from 7.67% in 2017 to 12.00% in 2021. (see Table 8, and Figures 36-38).

Conversely, the share of mobile students from East Asia and the Pacific declined globally and regionally during the same period. Globally, their share fell from 26.53% in 2017 to 25.68% in 2020. Regionally, the share hosted by Europe decreased slightly, from 16.80% in 2017 to 16.36% in 2021. Within European Union countries, the share dropped from 10.75% in 2017 to 10.02% in 2021, and in Germany, it declined from 16.87% in 2017 to 15.51% in 2021. These trends reflect the varying dynamics in the mobility of students from these regions across different host regions globally and within Europe. (see Table 8, and Figures 36-38).

Between 2017 and 2021, the share of inbound internationally mobile students from Latin America and the Caribbean showed mixed trends globally and regionally. Globally, their share of the total mobile students hosted by all world regions experienced a modest increase, rising from 6.56% in 2017 to 6.84% in 2020. Regionally, the



share hosted by Europe exhibited a slight decline, decreasing from 5.17% in 2017 to 5.11% in 2021. In contrast, their share hosted by European Union countries increased from 6.75% in 2017 to 7.64% in 2021, and Germany also recorded an increase, with the share growing from 4.99% in 2017 to 5.28% in 2021. (see Table 8, and Figures 36-38).

For students from South and West Asia, the trends over the same period indicated significant growth. Globally, their share of total inbound internationally mobile students hosted by all world regions rose from 12.24% in 2017 to 14.42% in 2020. Regionally, the share hosted by Europe increased markedly, from 5.96% in 2017 to 11.19% in 2021. Similarly, the share hosted by European Union countries rose from 5.89% in 2017 to 8.44% in 2021. Germany experienced substantial growth, with the share of South and West Asian students increasing from 10.11% in 2017 to 14.48% in 2021. These patterns reflect a growing presence of students from South and West Asia, especially in Europe and Germany, compared to the more stable trends for students from Latin America and the Caribbean. (see Table 8, and Figures 36-38).

Between 2017 and 2021, the share of inbound internationally mobile students from Sub-Saharan Africa exhibited a decline globally but showed growth regionally within Europe. Globally, the share of students from Sub-Saharan Africa in total inbound internationally mobile students hosted by all world regions decreased from 7.41% in 2017 to 6.75% in 2020. Regionally, however, the share hosted by Europe increased from 6.77% in 2017 to 7.72% in 2021, while the share hosted by European Union countries rose from 7.21% in 2017 to 9.46% in 2021. Germany mirrored this positive regional trend, with its share of students from Sub-Saharan Africa growing from 4.75% in 2017 to 5.51% in 2021. (see Table 8, and Figures 36-38).

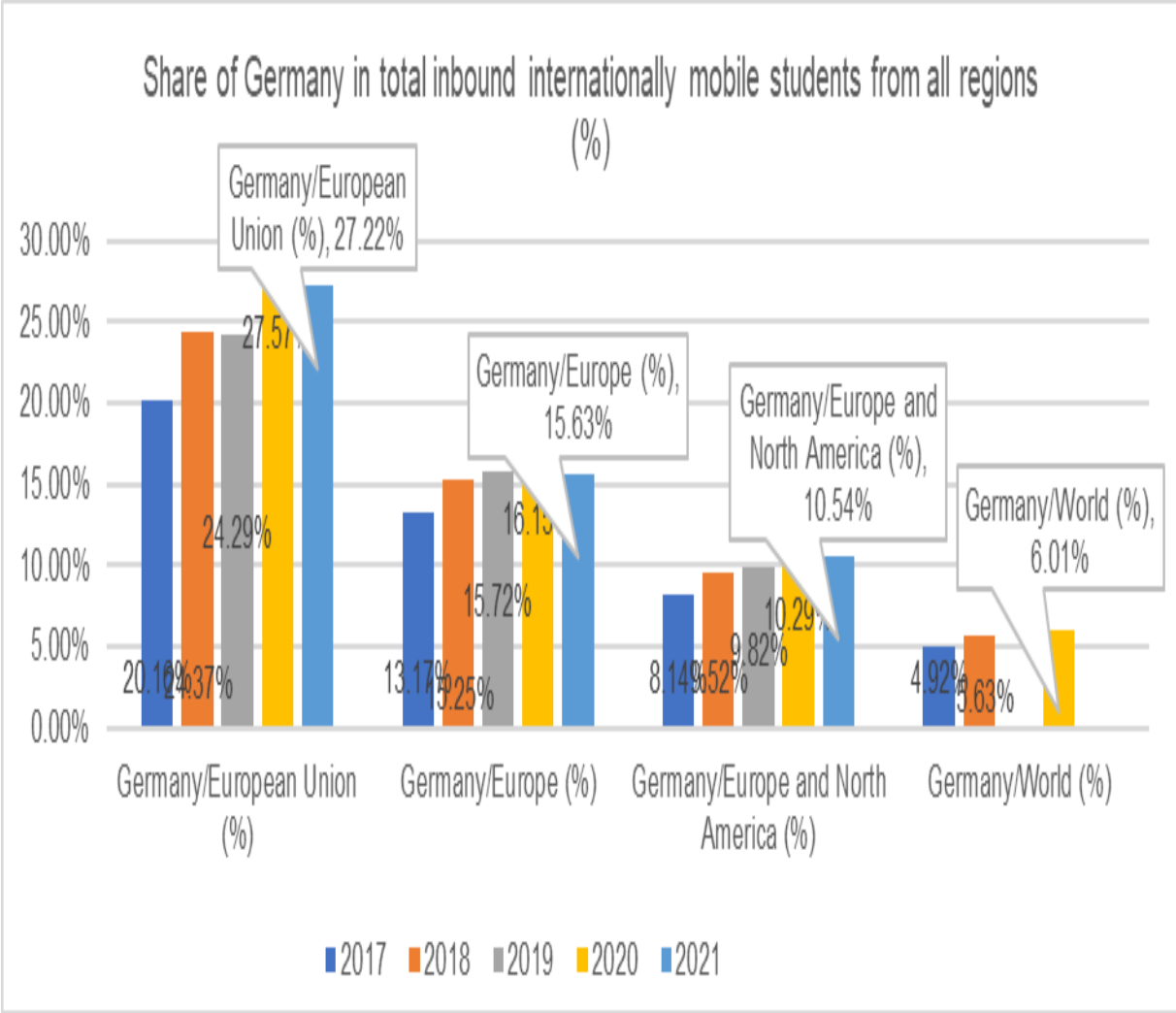
Globally, the distribution of total inbound internationally mobile students from all regions during 2017–2020 highlights East Asia and the Pacific as the leading region of origin. In 2017, 26.53% of internationally mobile students hosted by all world regions originated from East Asia and the Pacific, decreasing slightly to 25.68% in 2020. Other significant regions of origin included Other Unknown Regions (14.41% in 2017, increasing to 15.83% in 2020), South and West Asia (12.24% in 2017, increasing to 14.42% in 2020), and North America and Western Europe (14.42% in 2017, declining to 13.57% in 2020). The Arab States contributed 9.52% in 2017 and 9.37% in 2020, followed by Central and Eastern Europe (8.92% in 2017, decreasing to 7.54% in 2020), Latin America and the Caribbean (6.56% in 2017, increasing to 6.84% in 2020), and Sub-Saharan Africa (7.41% in 2017, decreasing to 6.75% in 2020). These trends underscore the diversity of the regions contributing to international student mobility and their evolving proportions over time. (see Table 8, and Figures 36-38).

Regionally, the distribution of total inbound internationally mobile students from all world regions over the period (2017-2021) by region of origin reveals that for Europe, the majority of international students hosted by the region originated from North America and Western Europe, accounting for 28.03% in 2017 and decreasing to 26.18% in 2021. This was followed by Central and Eastern Europe, with shares of 20.56% in 2017 and 17.40% in 2021. East Asia and the Pacific also contributed significantly, with 16.80% in 2017 and 16.36% in 2021. Other regions, such as South and West Asia, the Arab States, Sub-Saharan Africa, Other unknown regions, and Latin America and the Caribbean, showed varying contributions. South and West Asia's share grew from 5.96% in 2017 to 11.19% in 2021, the Arab States increased from 8.99% to 10.10%, Sub-Saharan Africa from 6.77% to 7.72%, and Other unknown regions from 7.72% to 5.93%. The Latin American and Caribbean region showed a slight decline from 5.17% to 5.11%. (see Table 8, and Figures 36-38).

For the European Union region, North America and Western Europe remained the top region of origin, contributing 29.06% in 2017 and decreasing to 27.32% in 2021. Central and Eastern Europe followed with 22.55% in 2017, dropping to 19.88% in 2021. The Arab States region’s share increased from 9.57% to 12.08%, while East Asia and the Pacific’s contribution slightly declined from 10.75% to 10.02%. Sub-Saharan Africa, South and West Asia, Latin America and the Caribbean, and Other unknown regions also saw changes. Sub-Saharan Africa’s share grew from 7.21% to 9.46%, while South and West Asia increased from 5.89% to 8.44%. The share of students from Latin America and the Caribbean rose from 6.75% to 7.64%, and Other unknown regions declined from 8.21% to 5.15%. (see Table 8, and Figures 36-38).

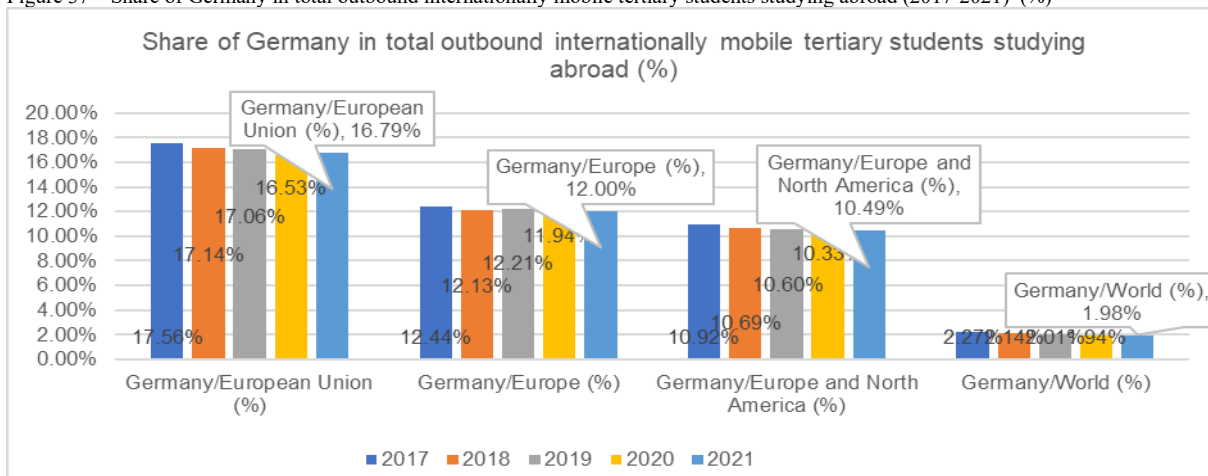
At the national level, Germany hosted the highest proportion of students from North America and Western Europe, accounting for 23.03% in 2017 and slightly decreasing to 22.60% in 2021. The second-largest group of international students came from Central and Eastern Europe, which dropped from 18.44% in 2017 to 15.92% in 2021. East Asia and the Pacific’s share decreased from 16.87% to 15.51%, while South and West Asia’s share increased from 10.11% to 14.48%. The proportion of students from the Arab States grew from 7.67% to 12.00%, while Other unknown regions saw a decrease from 14.15% to 8.71%. The share of students from Sub-Saharan Africa increased from 4.75% to 5.51%, and Latin America and the Caribbean’s share rose from 4.99% to 5.28%.(see Table 8, and Figures 36-38).

Figure 36– Share of Germany in total inbound internationally mobile tertiary students studying abroad, (2017-2021) (%)



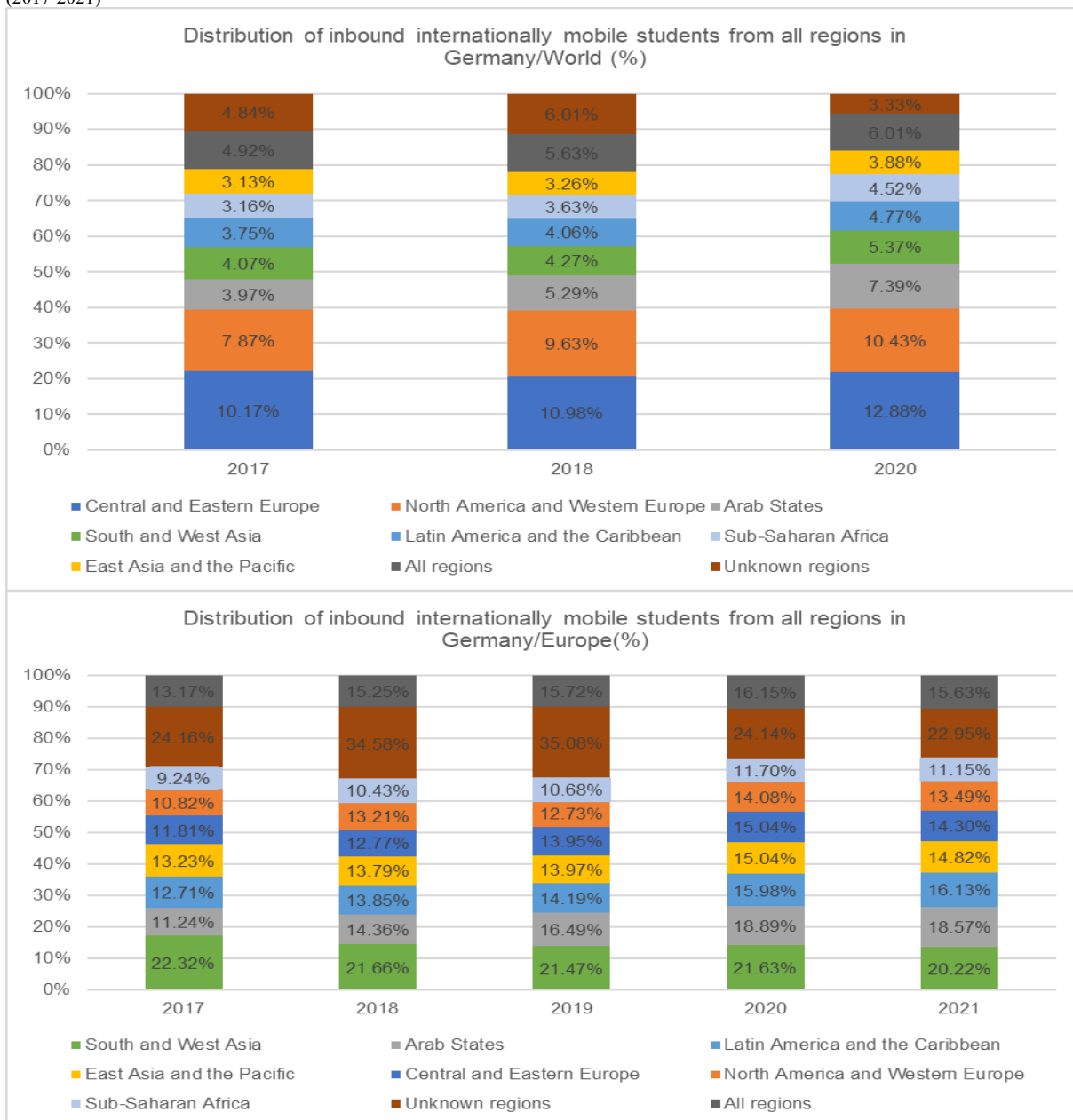
Source: Author’s own calculations based on data from UNESCO-UIS

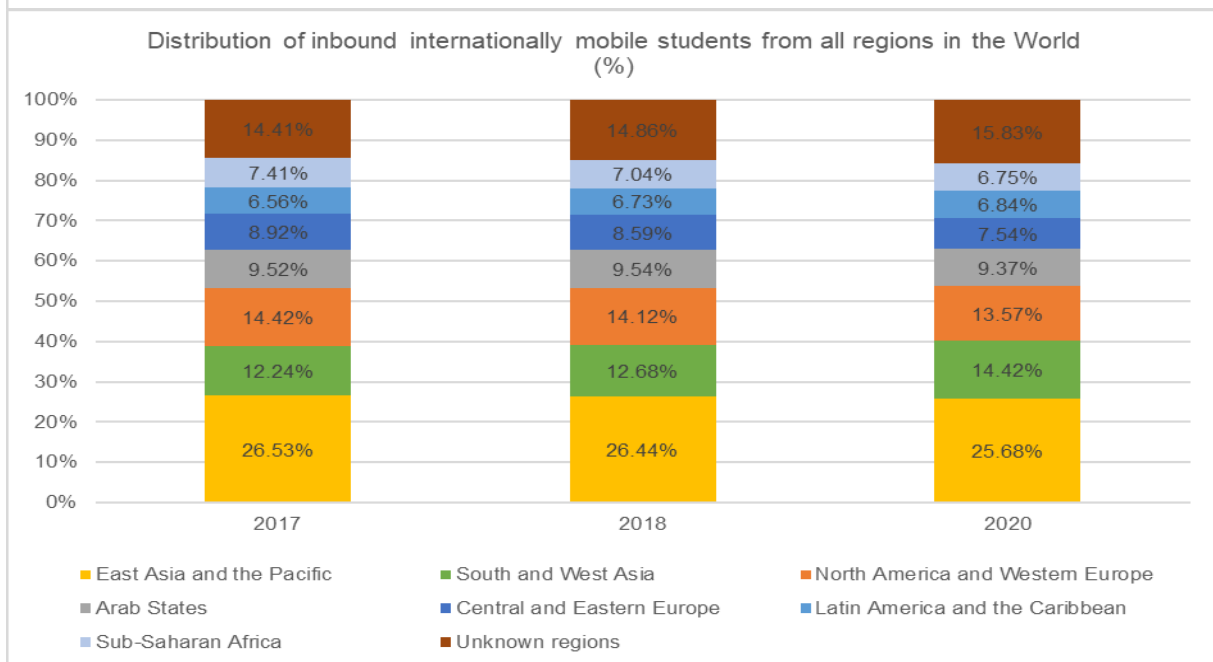
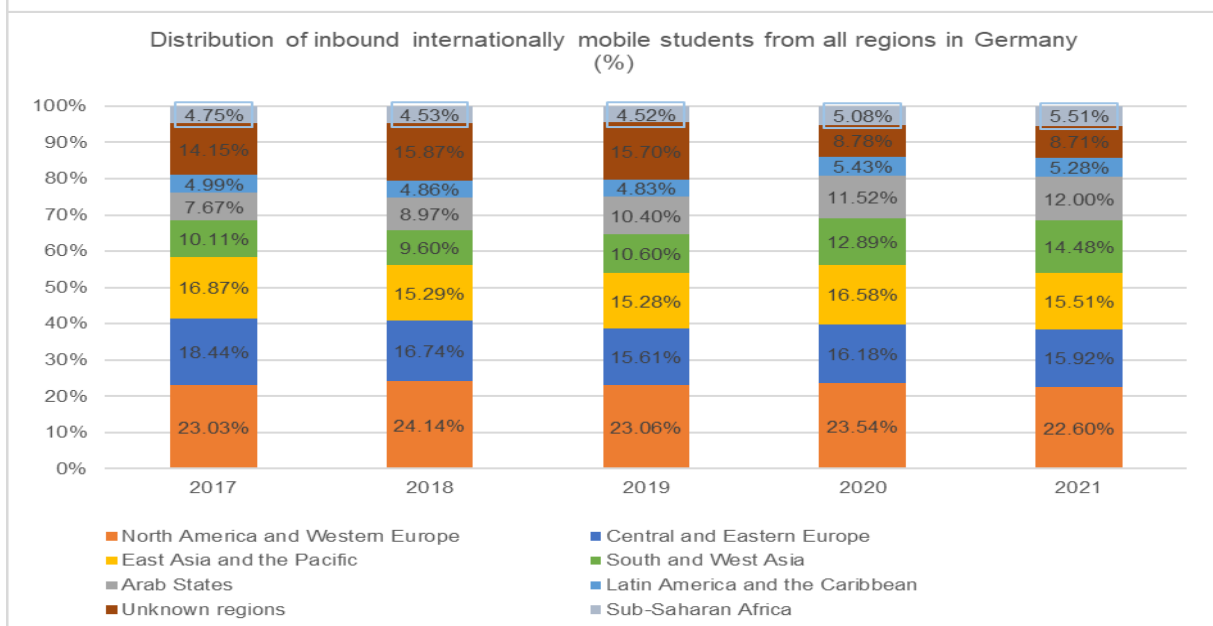
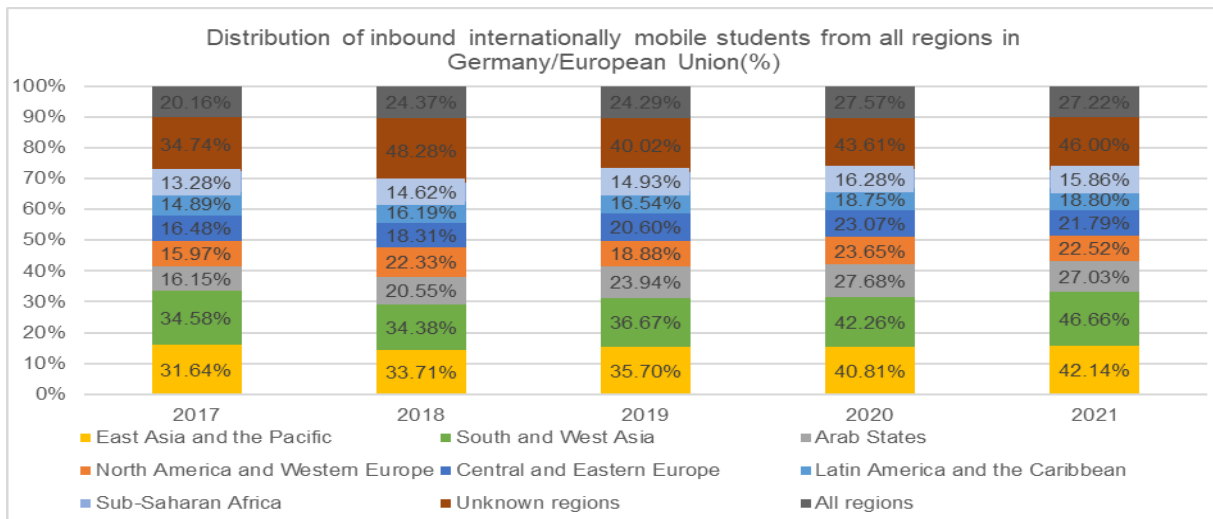
Figure 37 – Share of Germany in total outbound internationally mobile tertiary students studying abroad (2017-2021) (%)



Source: Author’s own calculations based on data from UNESCO-UIS

Figure 38– Distribution of total inbound and total outbound internationally mobile tertiary students studying abroad, from top regions (%) (2017-2021)







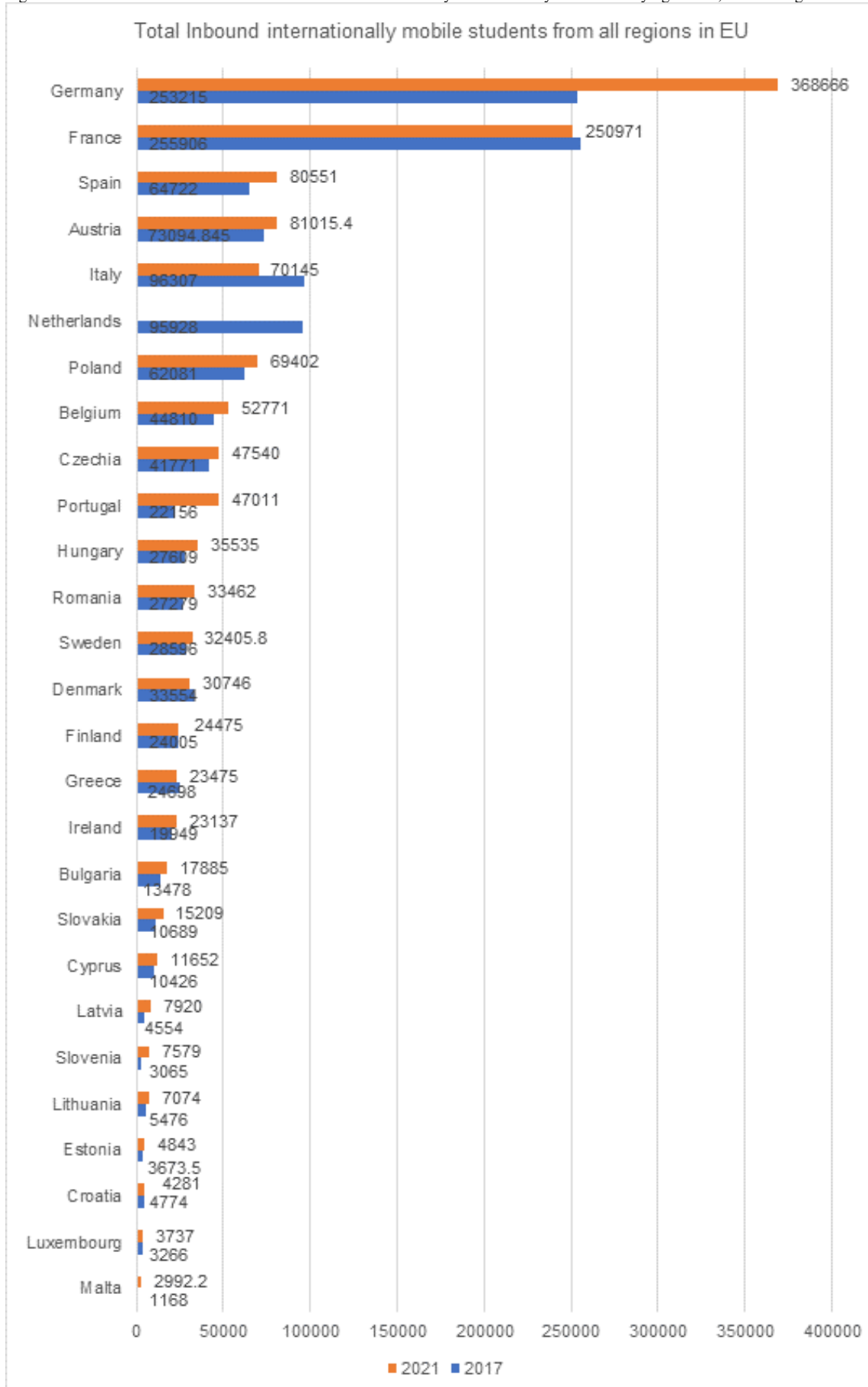
Source: Author's own calculations based on data from UNESCO-UIS

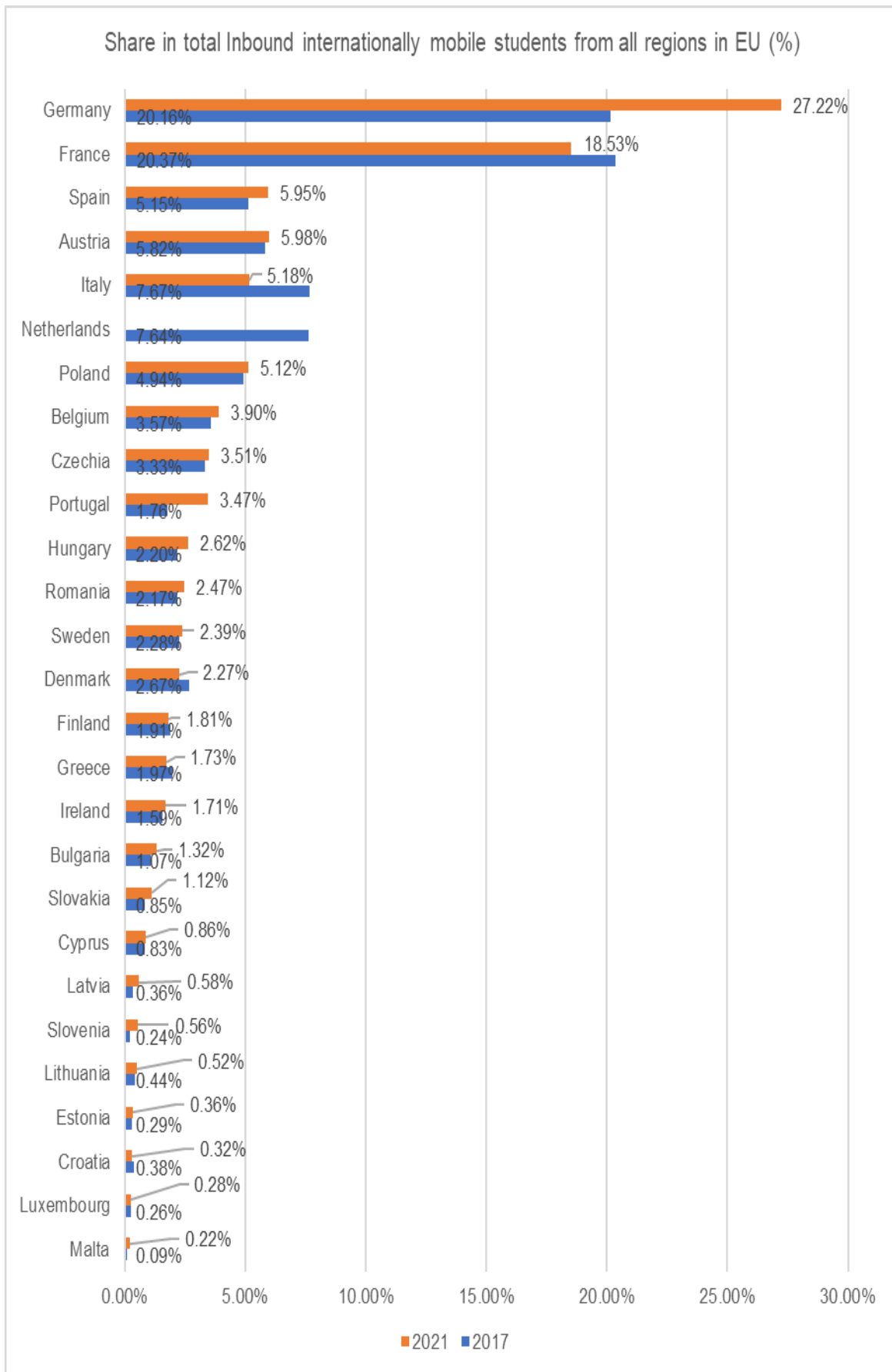
#### 4.1.2. Overview of migration of international students at the regional level in Europe and the European Union

The UNESCO-UIS dataset indicates that Germany holds a leading position in the European Union in terms of hosting international students. Germany was ranked first in the European Union for total inbound mobile students, contributing 20.16% in 2017 and rising to 27.22% in 2021 of the total inbound student mobility within the European Union (see Figure 39). Over this period, Germany's share of inbound mobile students increased significantly, moving from nearly one-fifth to nearly one-third of the total hosted in the European Union.

In addition to being a top destination for inbound students, Germany also ranks first in the European Union for outbound mobility ratio. It accounted for 17.56% of the European Union's total outbound student mobility in 2017, which slightly declined to 16.79% in 2021 (see Figure 40). Despite its leading position in absolute numbers, Germany ranked 11th in terms of inbound mobility ratio and 16th in outbound mobility ratio, reflecting its relatively balanced role in international student exchanges (see Figures 41–42).

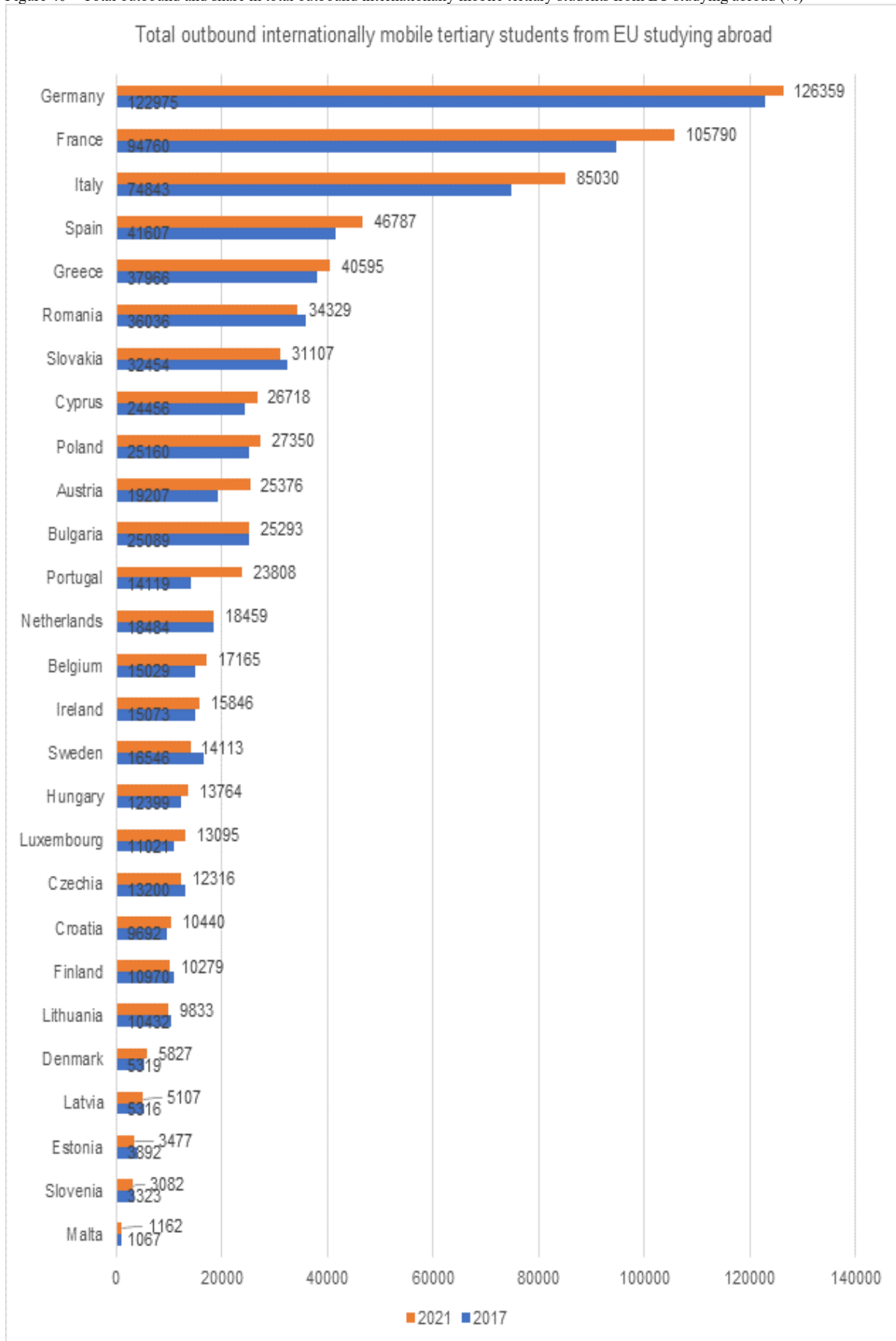
Figure 39– Total inbound and share in total outbound internationally mobile tertiary students studying abroad, from all regions in EU (%)





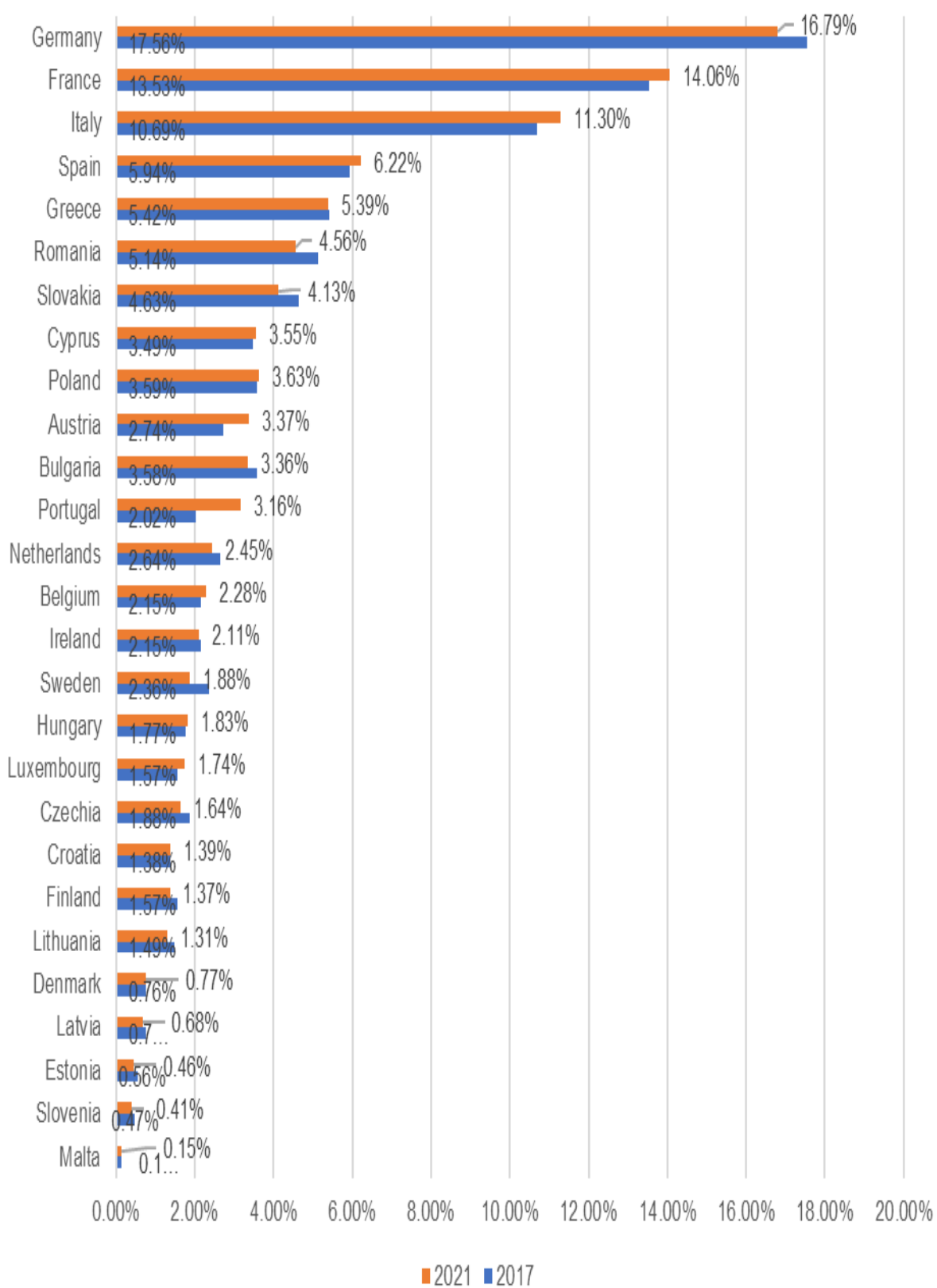
Source: Adapted from UNESCO-UIS Data

Figure 40 – Total outbound and share in total outbound internationally mobile tertiary students from EU studying abroad (%)



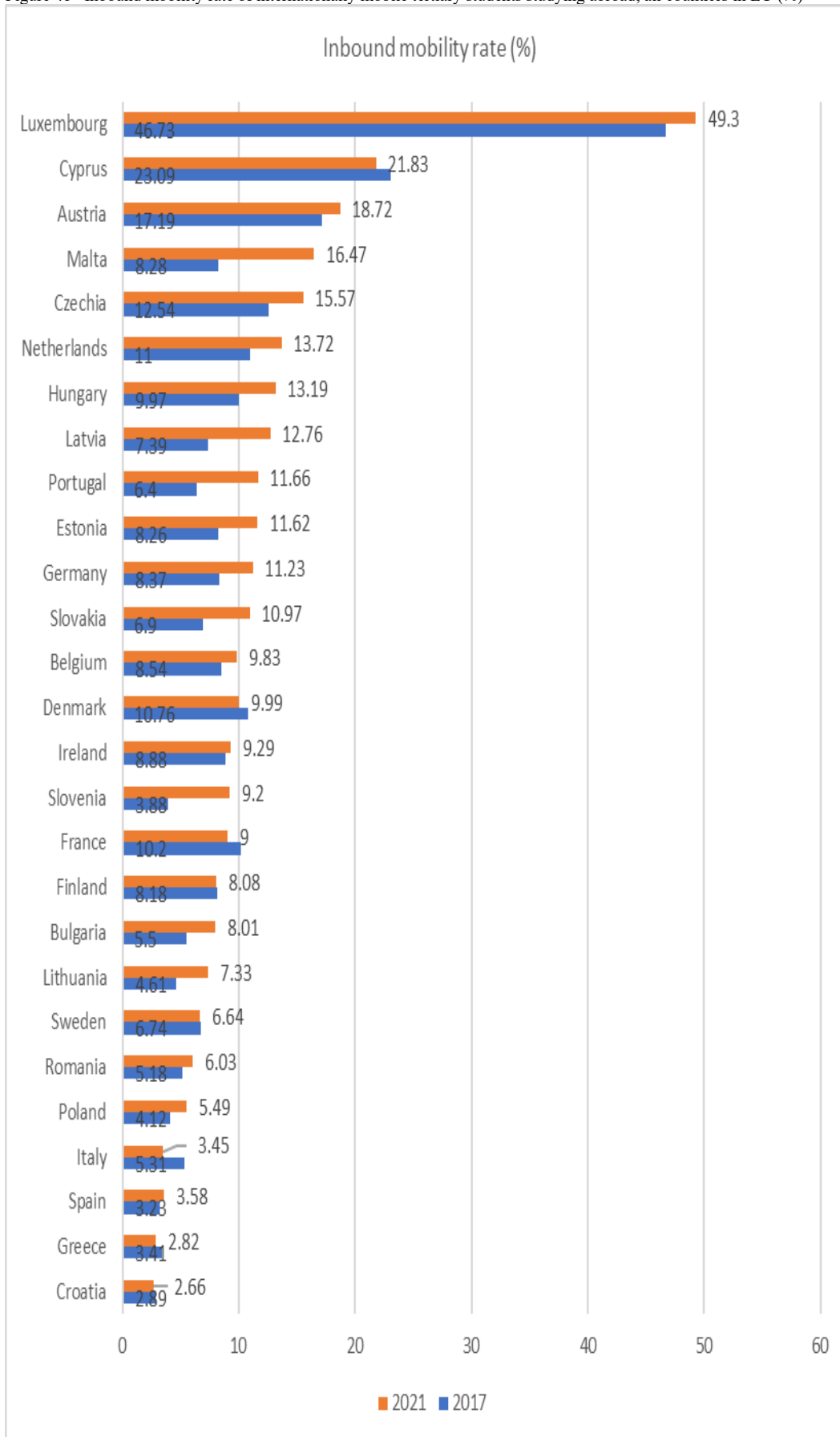


### Share in total outbound internationally mobile tertiary students studying abroad in EU(%)



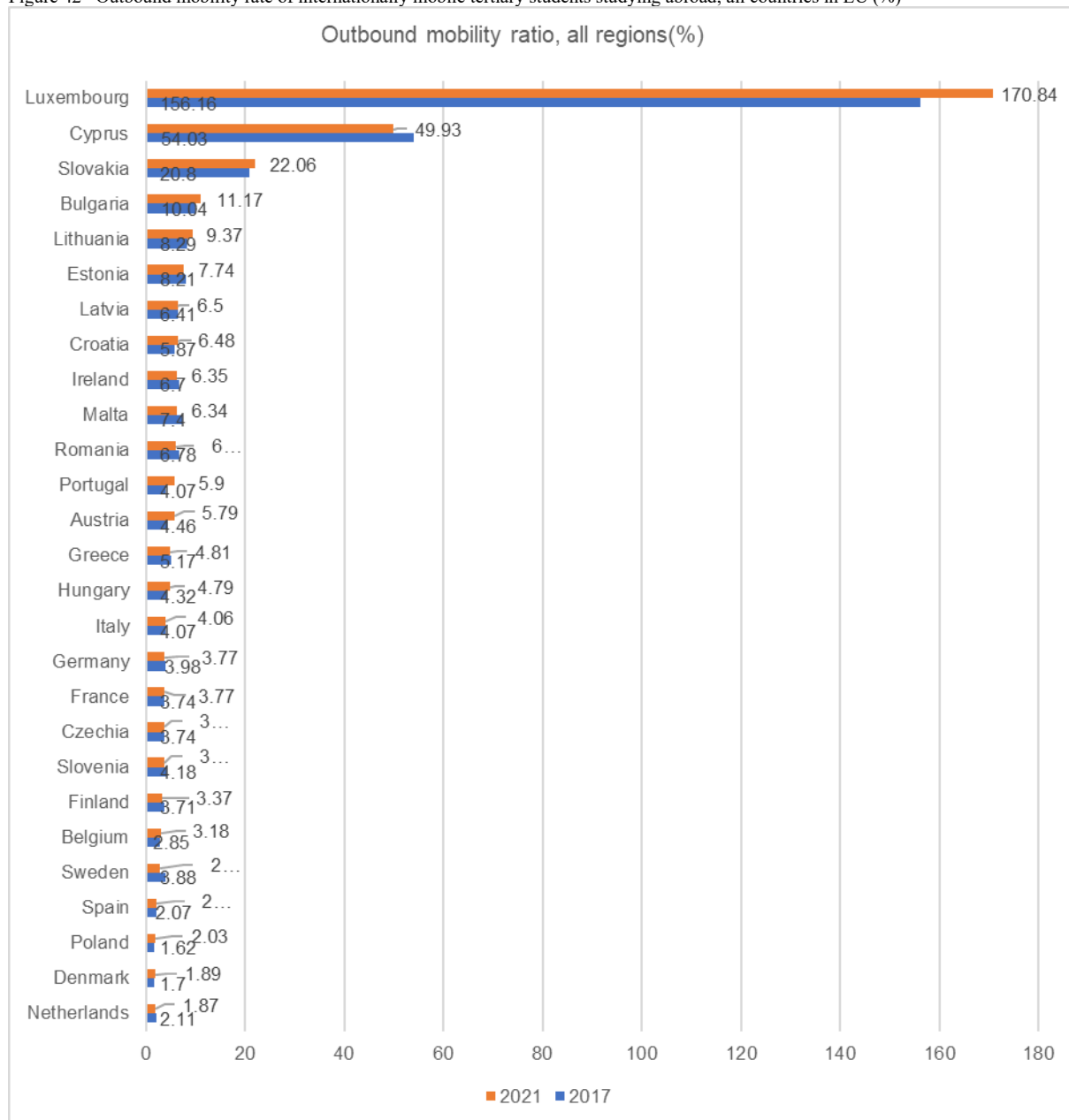
Source: Adapted from UNESCO-UIS Data

Figure 41– Inbound mobility rate of internationally mobile tertiary students studying abroad, all countries in EU (%)



Source: Adapted from UNESCO-UIS Data

Figure 42– Outbound mobility rate of internationally mobile tertiary students studying abroad, all countries in EU (%)



Source: Adapted from UNESCO-UIS Data

*Regional Analysis of Student Mobility within the European Union and the European Higher Education Area*

Data from the European Commission's *Education and Training Monitor 2022* on student mobility rates in the European Union (EU) by country of origin shows that Germany ranked 7th in 2020. Luxembourg led with a mobility rate of 85.4%, followed by Cyprus (35.6%), the Netherlands (24.3%), Slovakia (20.9%), France (19%), Finland (17.6%), and Germany at 17.1% (see Figures 43–44). This positioning highlights Germany’s moderate mobility rate relative to other EU countries despite its significant role as a key player in European student exchanges.

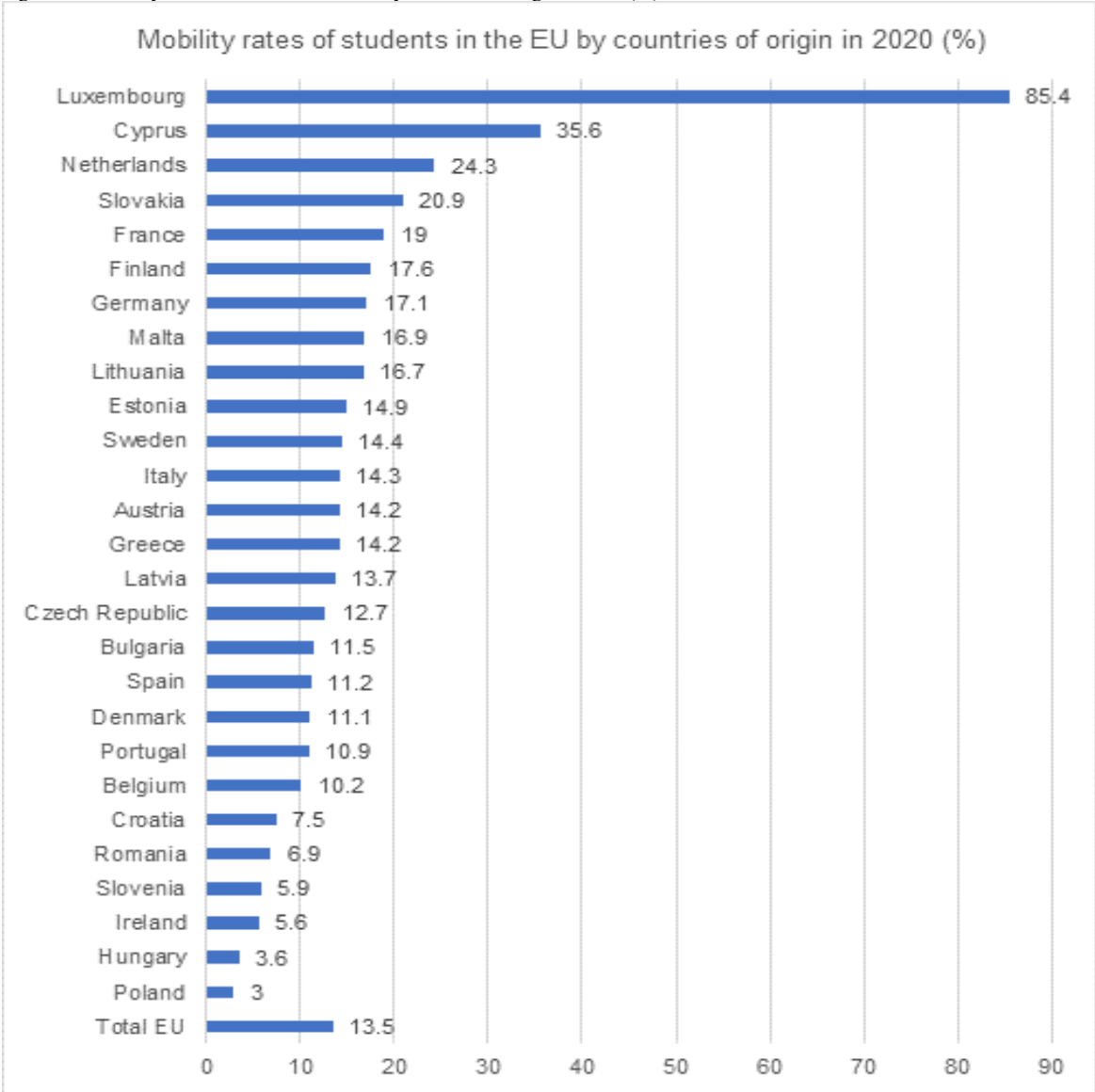
UNESCO and OECD statistics on major student mobility flows within the European Higher Education Area (EHEA) in 2020 reveal Germany's prominence as a source and host of international students. Germany ranked second globally, with 30,503 students moving to Austria, following Kazakhstan, which had the largest flow of 71,368 students to Russia (see Figure 45). Germany also exhibited substantial diversity in student mobility,

receiving students primarily from Austria, Russia, Turkey, Italy, France, Spain, Ukraine, Bulgaria, Switzerland, Poland, and Luxembourg (see Figure 45).

Further insights from UNESCO and DAAD data on key host countries in the EHEA indicate that Germany ranked at the top in hosting incoming students both from European Higher Education Area (EHEA) and non-EHEA countries in 2020 (see Figure 46). Notably, 60% of international students hosted in Germany were from non-EHEA countries, while the remaining 40% were from EHEA countries, emphasising Germany’s global appeal as a higher education destination.

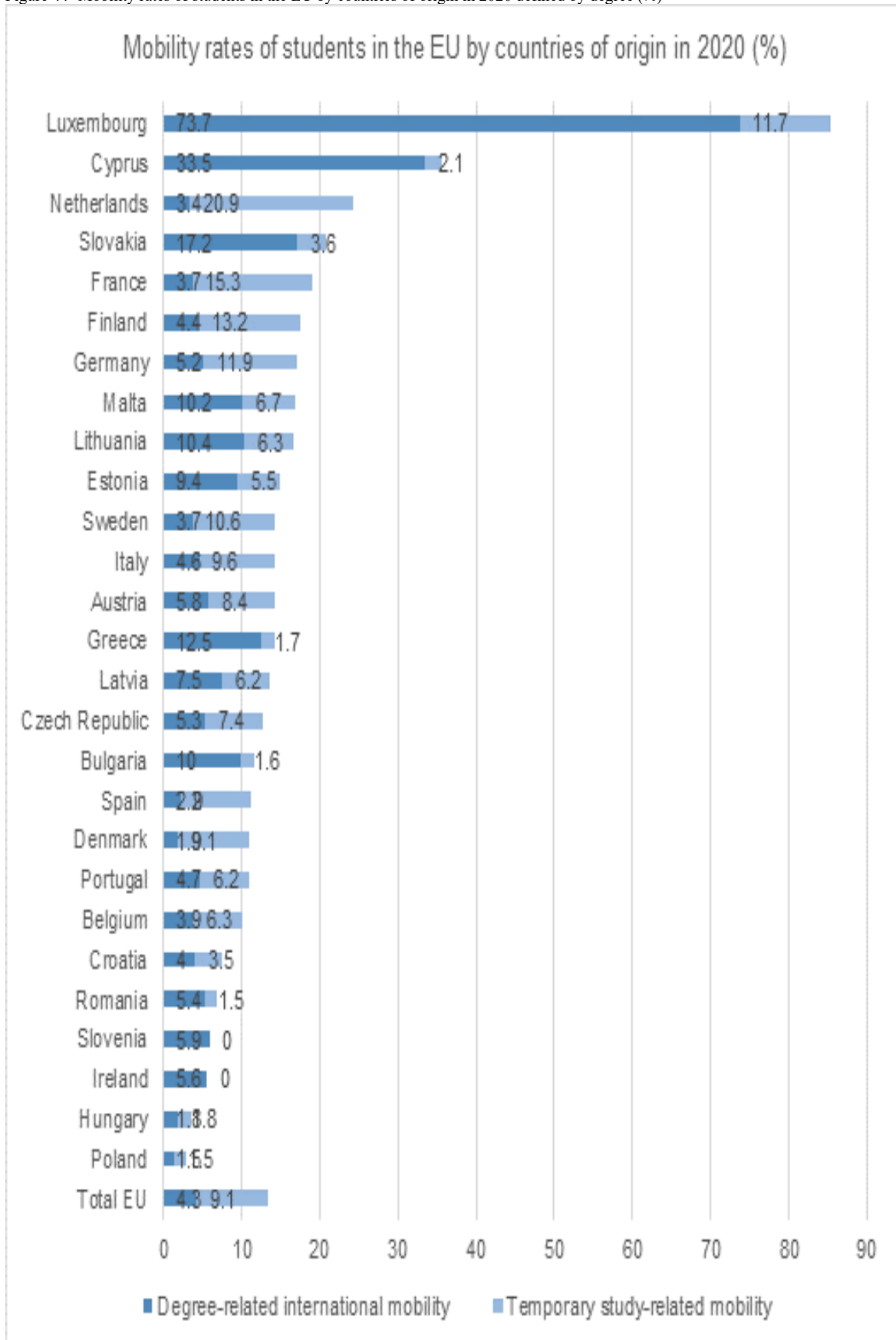
In terms of outgoing student mobility, Germany ranked first among European Higher Education Area (EHEA) countries for sending students to other EHEA countries and placed 4th globally for sending students to non-EHEA countries, following France, Russia, and the UK (see Figure 47). This dual role of Germany as a leading host and sender in international student mobility underscores its pivotal position in shaping the landscape of global higher education exchanges

Figure 43- Mobility rates of students in the EU by countries of origin in 2020 (%)



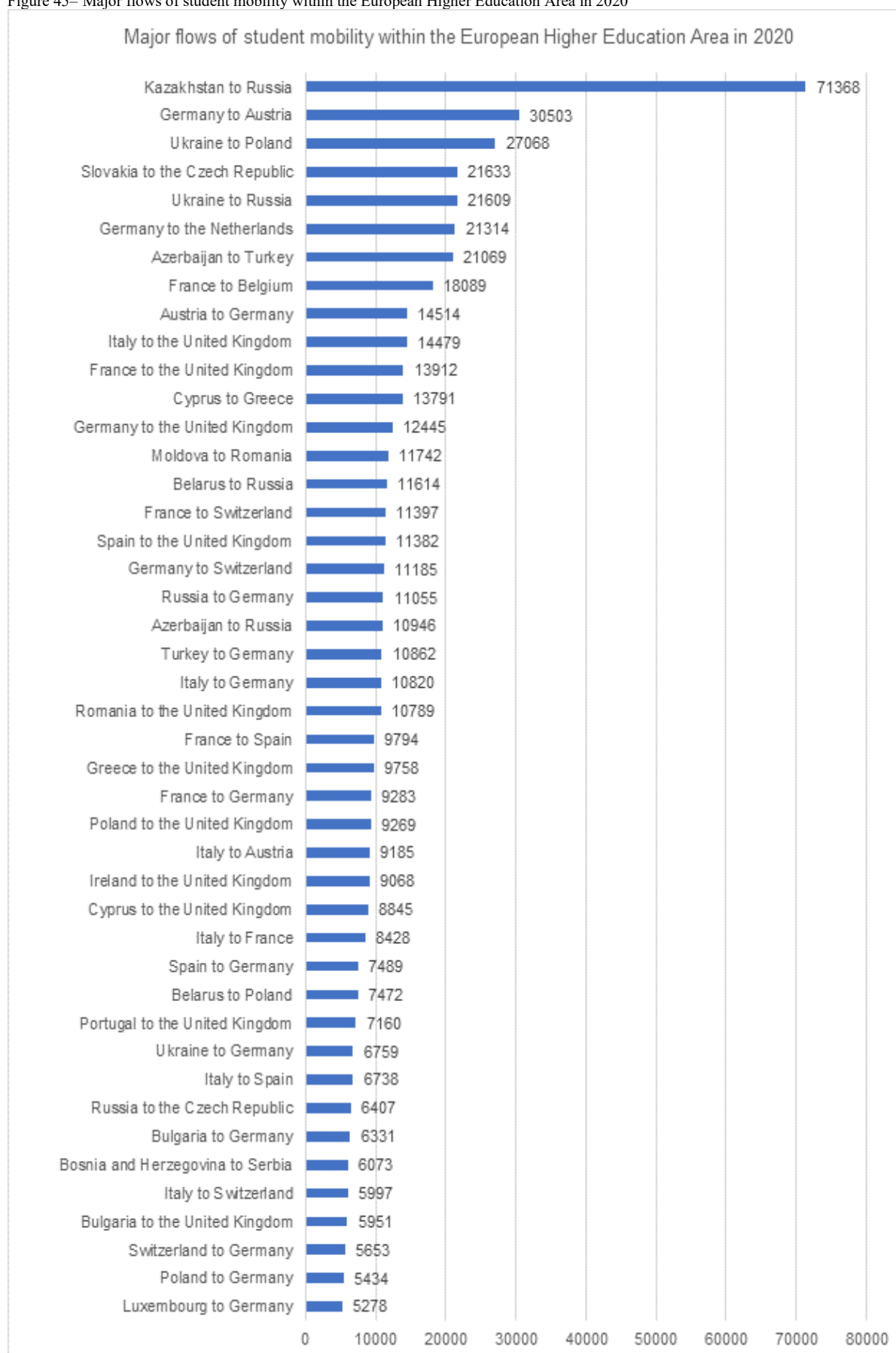
Source: European Commission, Education and Training Monitor 2022

Figure 44- Mobility rates of students in the EU by countries of origin in 2020 defined by degree (%)



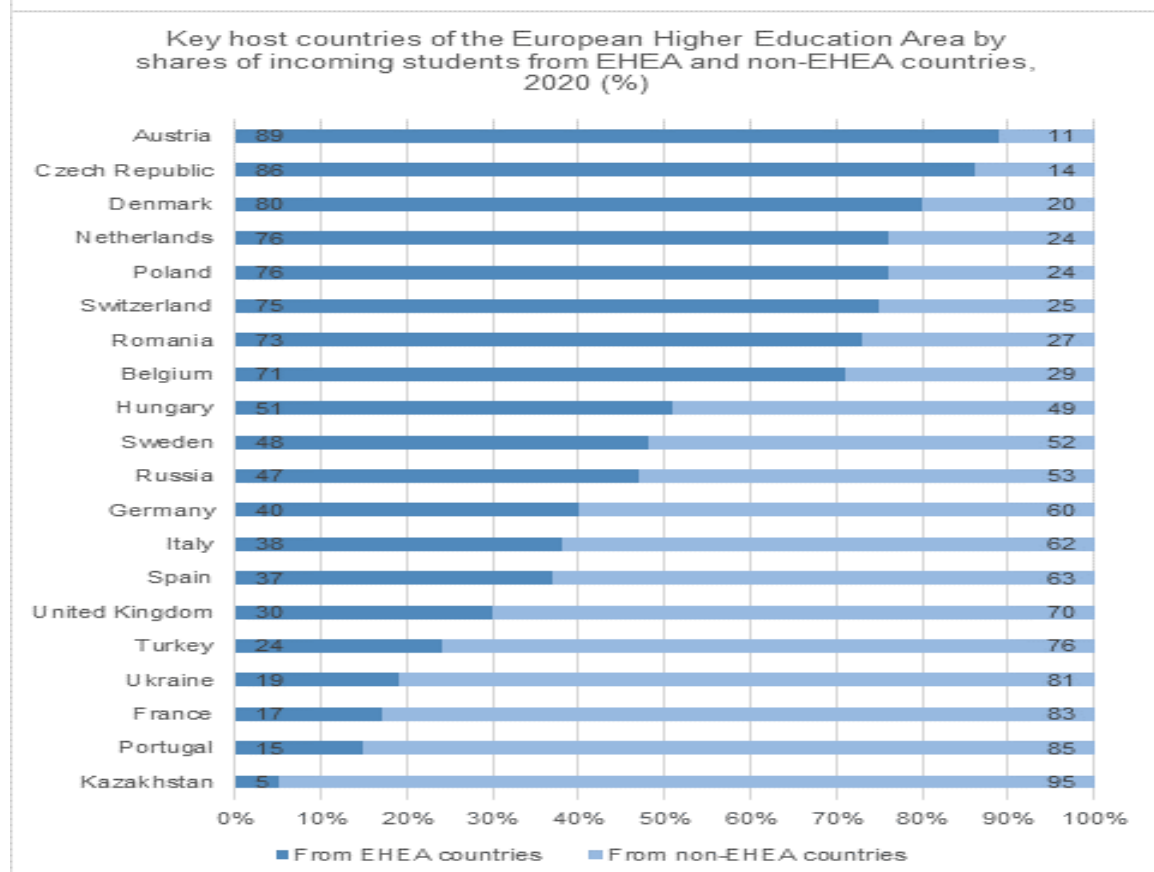
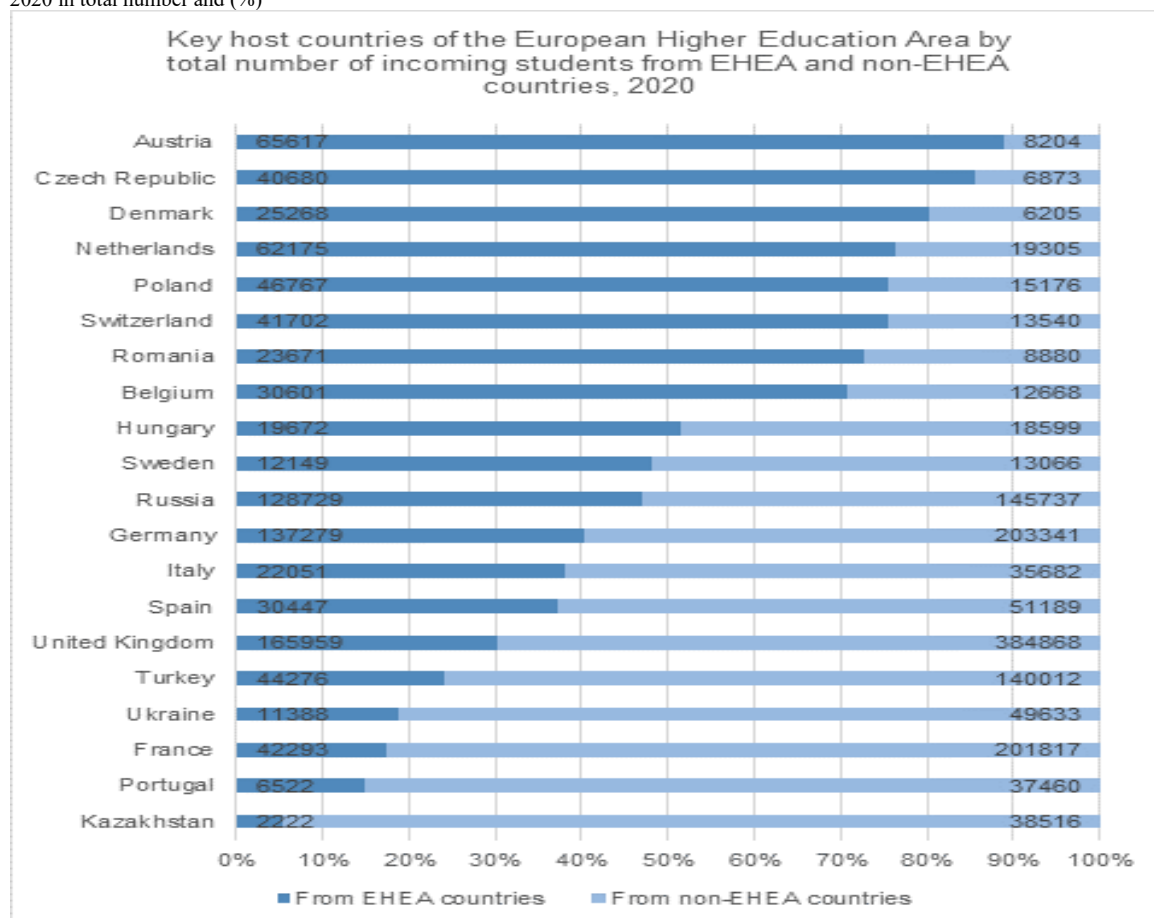
Source: European Commission, Education and Training Monitor 2022

Figure 45– Major flows of student mobility within the European Higher Education Area in 2020



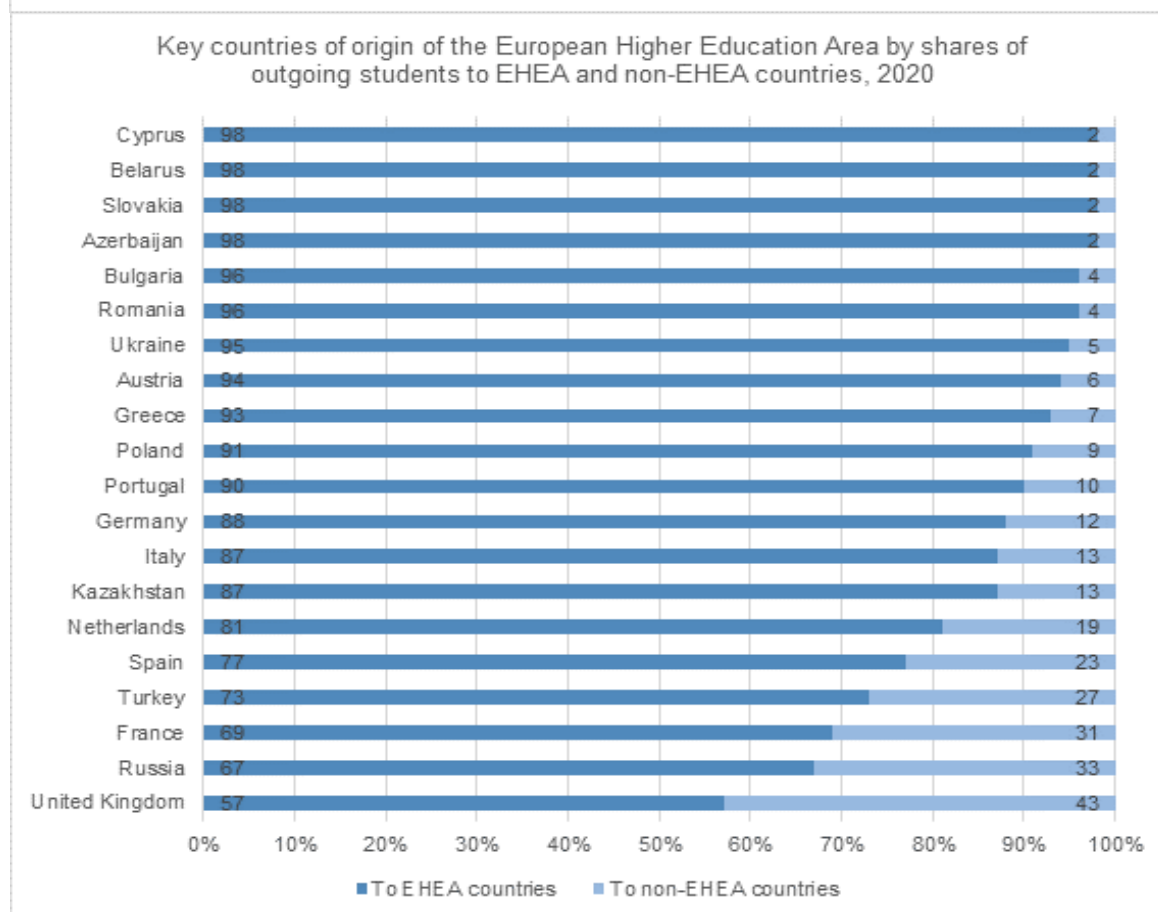
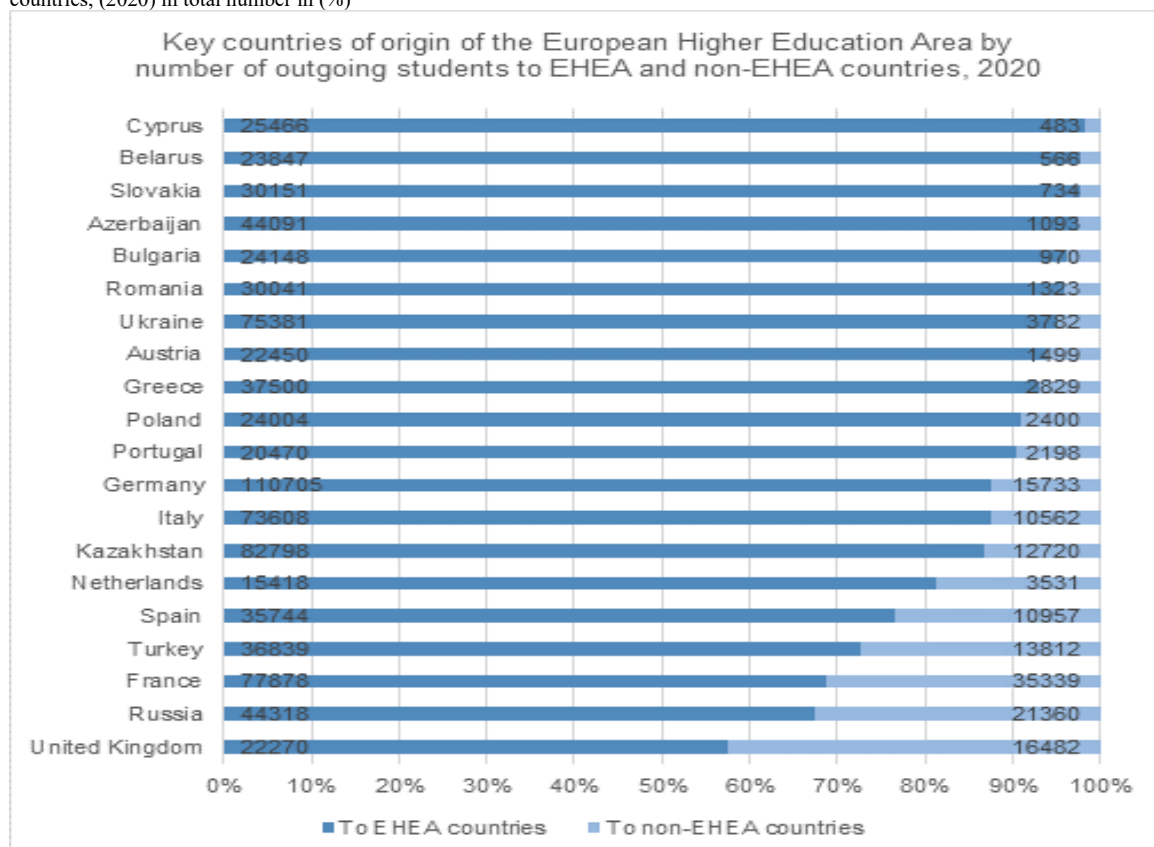
Sources: UNESCO/OECD, student statistics

Figure 46- Key host countries of the European Higher Education Area by shares of incoming students from EHEA and non-EHEA countries, 2020 in total number and (%)



Source: UNESCO, student statistics; DAAD calculations

Figure 47- Key countries of origin of the European Higher Education Area by shares of outgoing students to EHEA and non-EHEA countries, (2020) in total number in (%)



Sources: UNESCO, student statistics; Federal Statistical Office, "Deutsche Studierende im Ausland" survey; MOE, statistical report on international students in China for 2018;



#### *4.1.3. Overview of migration of international students in Germany- pattern, size, trend of migration of higher education students to Germany from a receiving country perspective*

The migration patterns of international higher education students to Germany, as reflected in the UNESCO–UIS dataset for 2017-2021, reveal significant trends in both inbound and outbound mobility. With a population of 84.35 million and a GNI per capita of PPP\$ 69,210 USD in 2022 (World Bank), Germany has consistently exhibited growth in its role as both a host and sending country for international students.

Key Trends:

**Increasing Inbound Mobility:** The total number of inbound students hosted by Germany increased substantially from 253,215 in 2017 to 368,666 in 2021 (see Table 9 and Figure 48). This indicates a positive trend in Germany's appeal as a destination for international students, highlighting its growing role as a global hub for higher education.

**Outbound Mobility:** On the outbound side, the total number of German students studying abroad increased from 122,975 in 2017 to 126,359 in 2021 (see Table 9 and Figure 48). This shows that while Germany is an important host country, it also maintains a considerable level of student mobility to other parts of the world.

**Mobility Ratios:** **Outbound Mobility Ratio:** Germany's outbound mobility ratio showed a slight decline, from 3.97 in 2017 to 3.77 in 2021 (see Table 9 and Figure 49). This suggests a gradual reduction in the proportion of German students going abroad relative to its population. **Inbound Mobility Ratio:** In contrast, Germany's inbound mobility ratio increased from 8.37 in 2017 to 11.22 in 2021 (see Table 9 and Figure 49). This indicates that Germany has become a more attractive destination for international students, with its inbound mobility rising at a faster pace than its outbound mobility.

**Global Comparison:** Germany's performance in both inbound and outbound mobility ratios places it above the global average, as well as above other high-income countries, Europe, and Northern America. This is a clear indicator of Germany's prominent role in the global student mobility landscape.

**Net Flow of Students:** Between 2019 and 2021, Germany saw a positive and increasing trend in the net flow of international students (inbound minus outbound). This reflects the country's growing influence and appeal in international education, with more students coming to Germany than leaving it, reinforcing its position as a major destination for higher education globally (see Table 9).

These trends reflect the evolving role of Germany as a key player in global higher education, with increasing numbers of international students choosing to study there while maintaining a steady flow of outbound students.

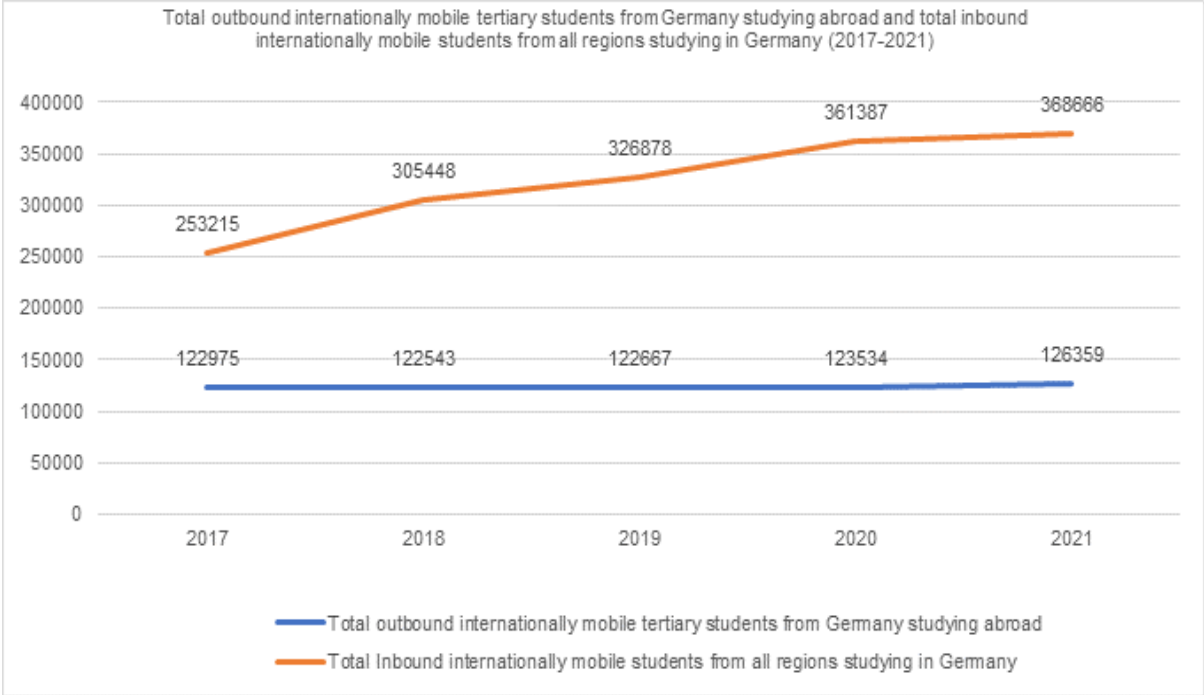
According to UNESCO-UIS (2023) data on internationally mobile tertiary students from Germany over the period from 2017 to 2021, several key trends can be observed in both outbound and inbound student mobility. In terms of German students studying abroad, nearly two-thirds (64.45%) of them chose ten primary destination countries. The largest share of German students abroad was in Austria, accounting for 27.01%, followed by Switzerland with 9.57%, the United Kingdom with 7.62%, the United States with 4.24%, Turkey with 3.94%, France with 3.20%, Hungary with 2.70%, Denmark with 2.65%, Sweden with 1.81%, and Spain with 1.71%. These countries represent key destinations for German students, with Austria and Switzerland being particularly significant due to their geographical proximity and cultural similarities, while the United Kingdom and the United States remain attractive for academic and professional reasons.

On the other hand, Germany hosts a diverse international student population, with nearly half of the international students coming from the top ten countries. The largest group of international students in Germany comes from

China, which represents 10.20% of the total international student body, followed by India with 7.65%, Syria with 4.42%, Austria with 4.31%, Turkey with 3.08%, Russia with 2.96%, Iran with 2.81%, Italy with 2.68%, France with 2.41%, and Cameroon with 2.20% over the period (2017-2021) respectively. This diverse representation indicates Germany's broad appeal as an educational destination, attracting students from both European countries and non-European regions, particularly China, India, Syria, and Turkey. (see Figures 50-55).

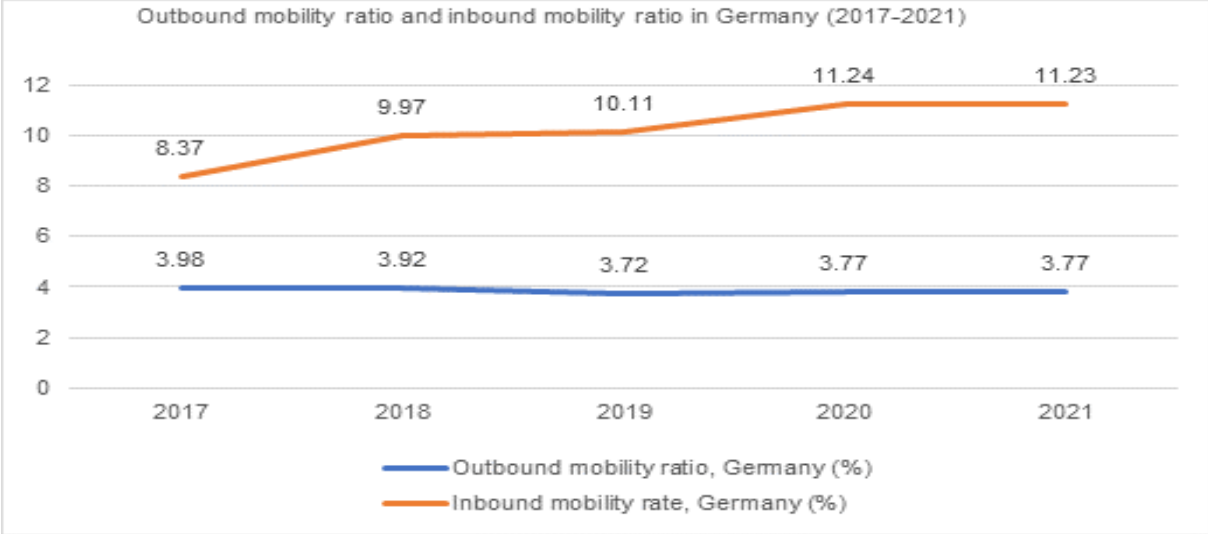
These trends underscore Germany's prominent role in international student mobility, both as a major destination for foreign students and as a significant source of outbound student mobility. The data highlights the geographical and cultural factors influencing student mobility patterns, with Germany maintaining strong ties to both neighbouring European countries and distant regions across the globe.

Figure 48– Total outbound internationally mobile tertiary students from Germany studying abroad and Total Inbound internationally mobile students from all regions studying in Germany (2017-2021)



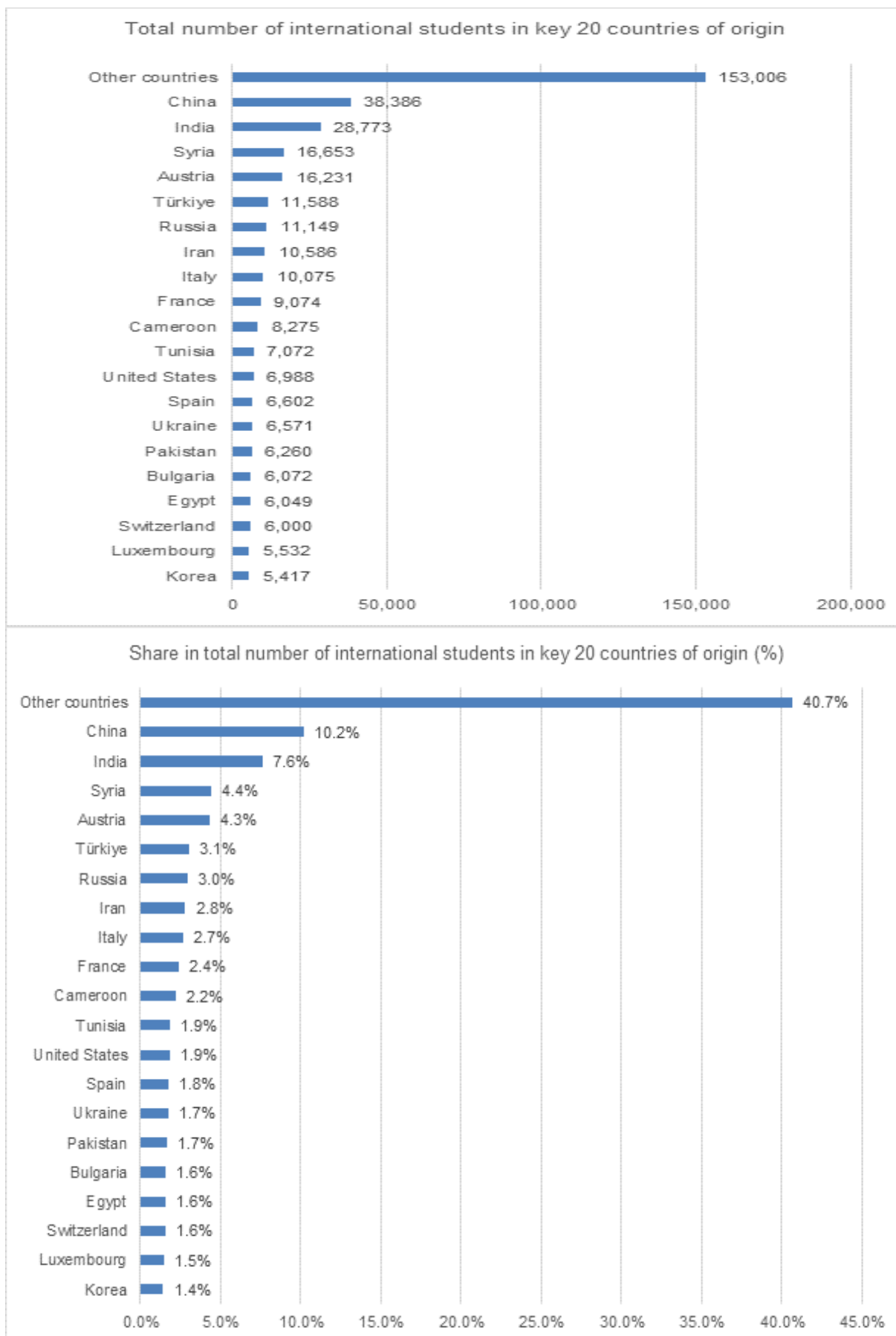
Source: Adapted from UNESCO-UIS Data

Figure 49- Outbound mobility ratio and inbound mobility ratio in Germany (2017-2021)



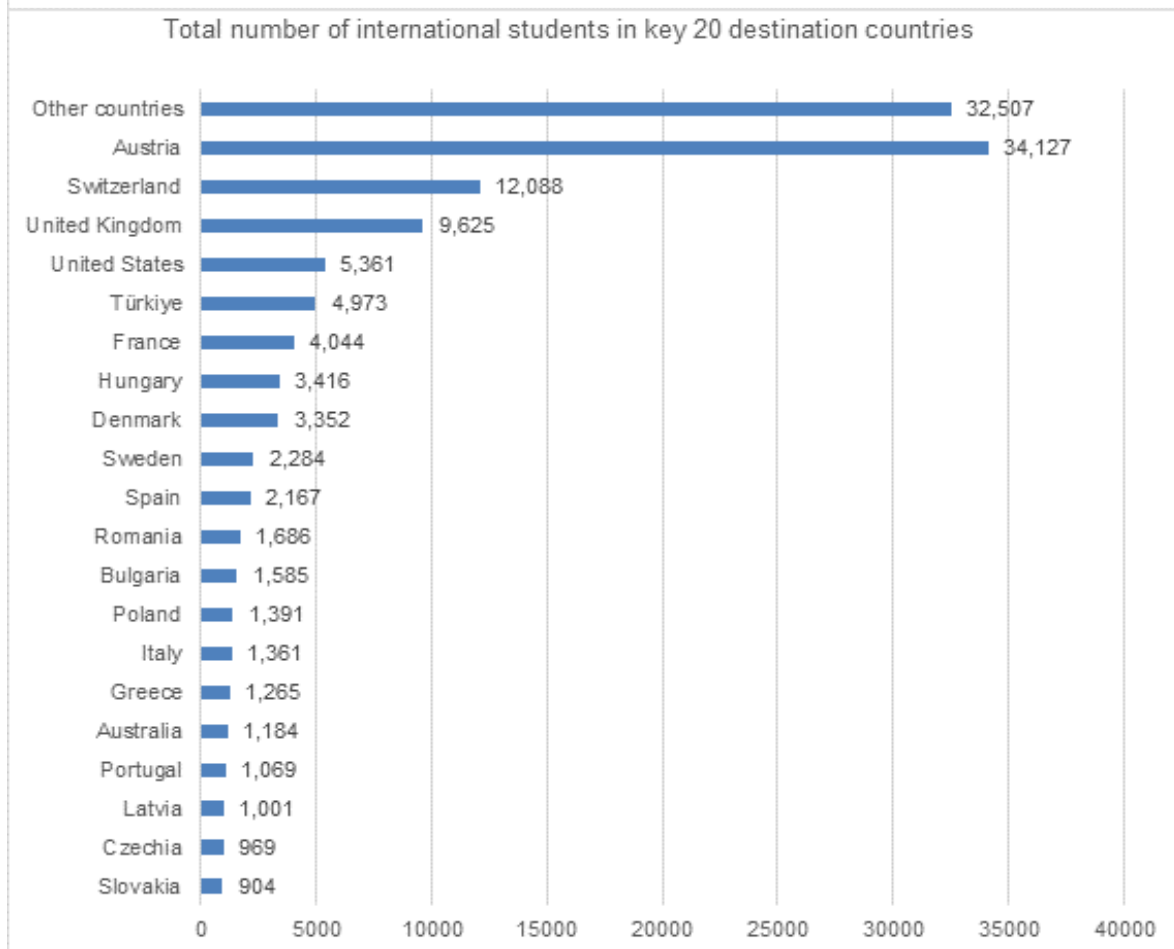
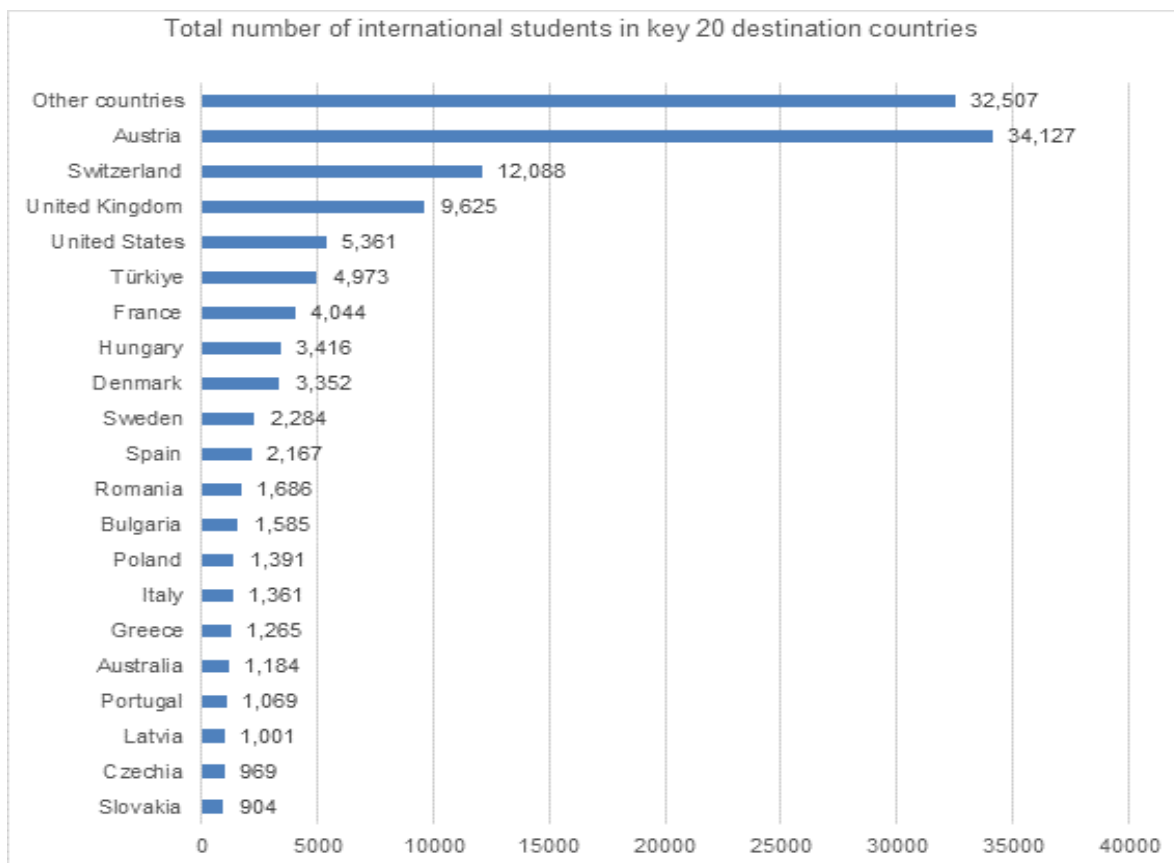
Source: Adapted from UNESCO-UIS Data

Figure 50- Total number and share in total number of international students in key 20 Countries of origin



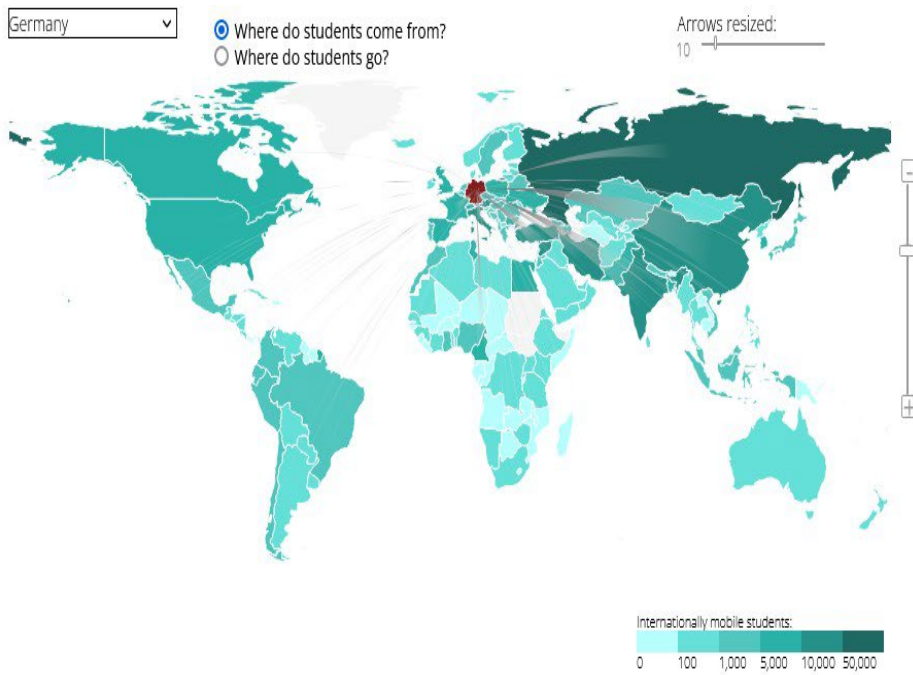
Source: Adapted from UNESCO-UIS Data

Figure 51 - Total number and share in total number of international students in key 20 destination countries



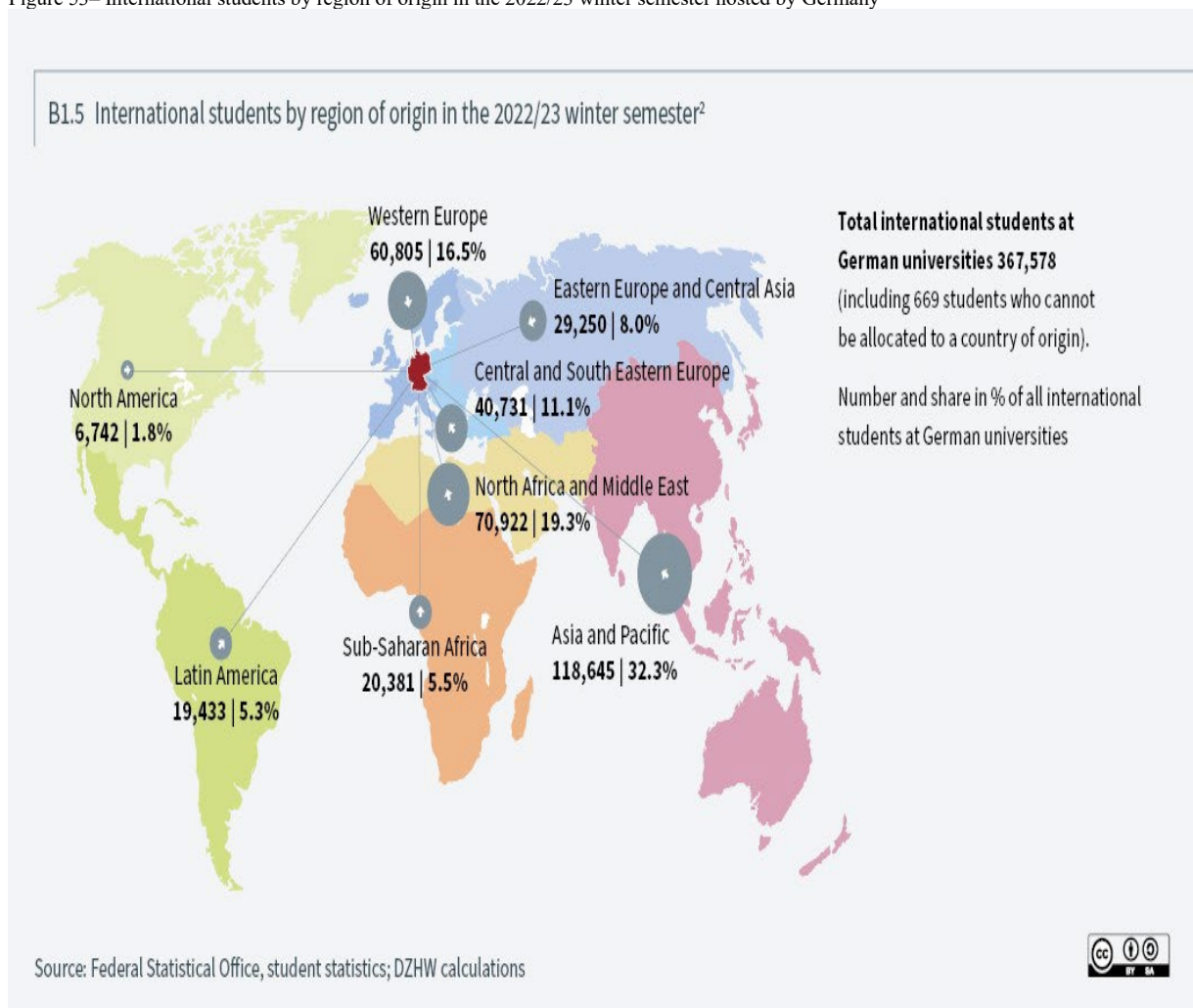
Source: Adapted from UNESCO-UIS Data

Figure 52– Global Flow of Tertiary-Level International Students from all regions studying in and hosted by Germany



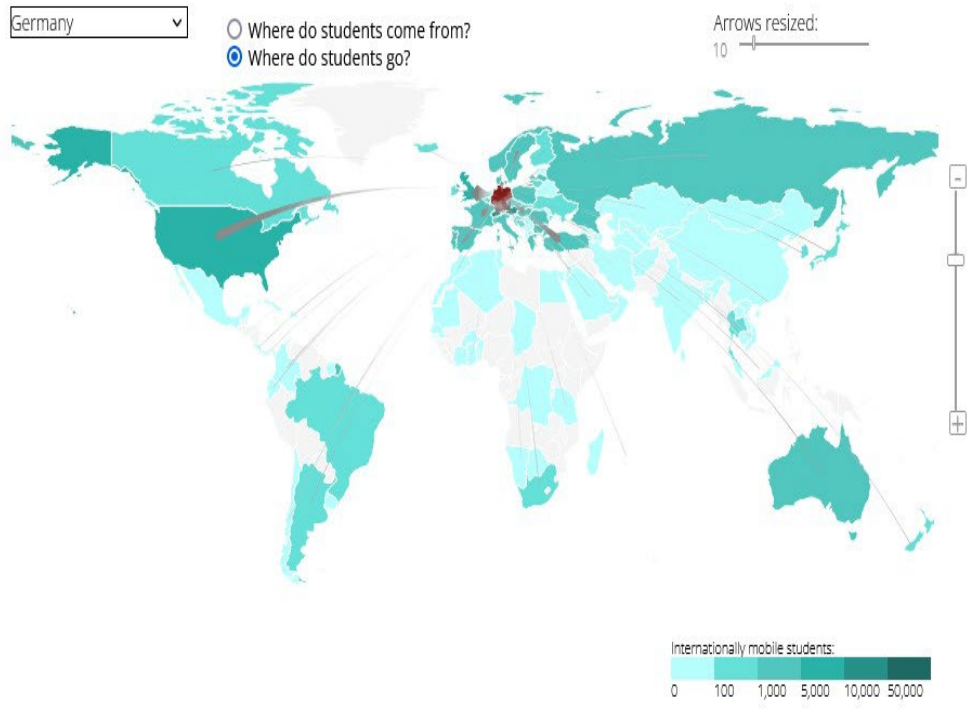
Source: Adapted from UNESCO-UIS Data

Figure 53– International students by region of origin in the 2022/23 winter semester hosted by Germany



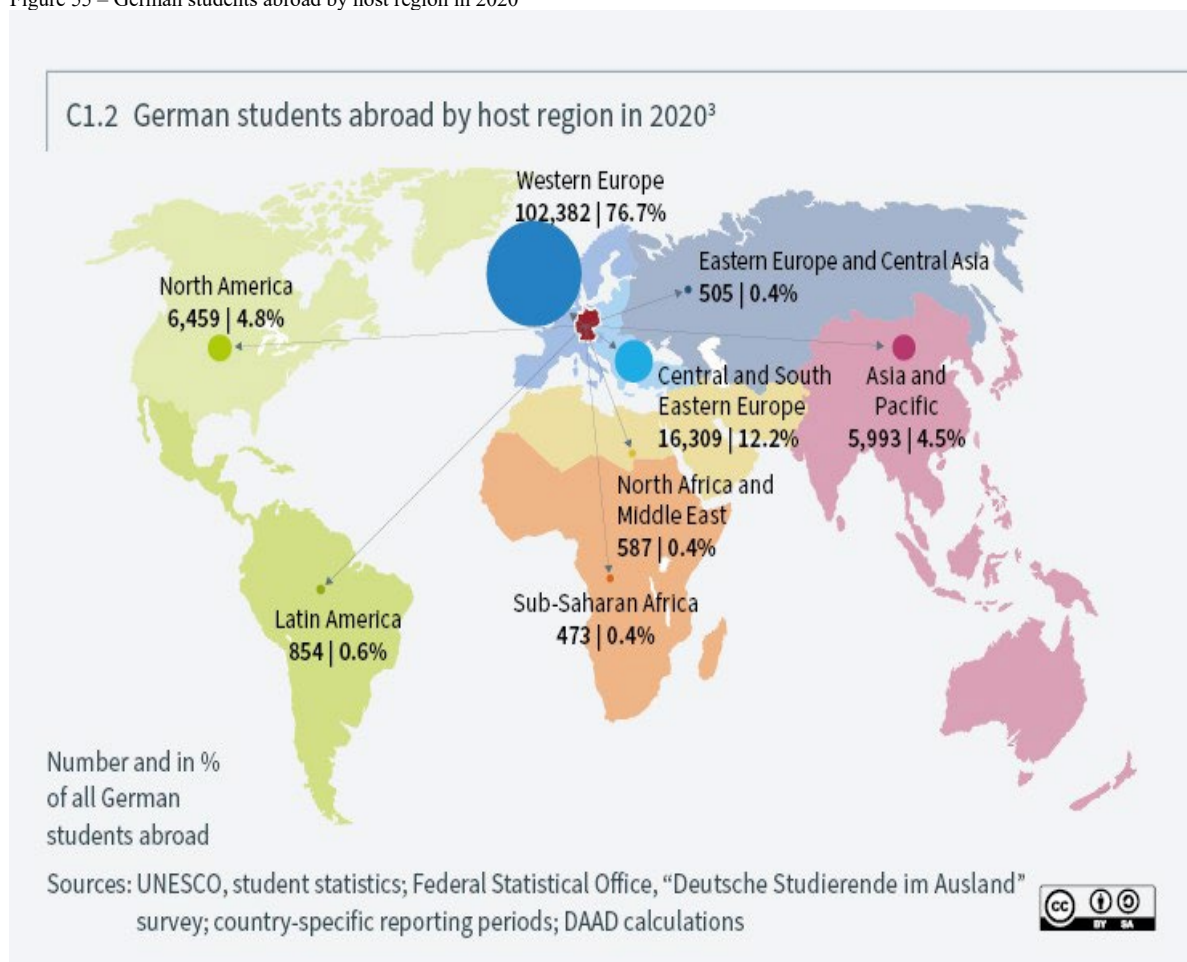
Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 54 – Global Flow of Tertiary-Level German Students studying abroad in key regions/countries



Source: Adapted from UNESCO-UIS Data

Figure 55 – German students abroad by host region in 2020



Sources: UNESCO, student statistics; Federal Statistical Office, "Deutsche Studierende im Ausland" survey; country-specific reporting periods; DAAD calculations

#### *4.1.3.1. International students by intention to graduate and type of university in Germany*

According to data from the Federal Statistical Office on student statistics, there has been a rapid and continuous increase in the flow of international students to Germany since the winter semester of 2018/19. The total number of international students in Germany rose sharply from 302,157 in the 2018/19 academic year to 367,578 in the 2022/23 academic year (see Figure 56). The data also highlights the growing trend of international students by intention to graduate and the type of university attended, which has been observed since the winter semester of 2011/12 and the summer semester of 2018 (see Figure 57).

Specifically, the total number of international students across all institutions in Germany grew from 192,853 in the winter semester of 2011/12 to 367,578 in the winter semester of 2022/23. Within universities, the number of international students studying for a degree increased significantly, rising from 127,693 in 2011/12 to 225,546 in 2021/22. However, the number of international students not pursuing a degree in universities decreased from 20,472 in 2011/12 to 16,764 in 2021/22. In universities of applied sciences, the number of degree-seeking international students grew rapidly from 41,598 in 2011/12 to 102,538 in 2021/22, while those not studying for a degree increased from 3,090 in 2011/12 to 4,590 in 2021/22.

Looking at the summer semester data, the total number of international students in all institutions increased from 273,798 in 2018 to 339,774 in 2022. Within universities, the number of international students pursuing a degree rose from 179,188 in 2018 to 215,311 in 2022, while those not studying for a degree declined from 21,375 in 2018 to 20,122 in 2022. In universities of applied sciences, the number of degree-seeking international students grew from 68,516 in 2018 to 98,980 in 2022, and the number of non-degree-seeking international students increased from 4,719 in 2018 to 5,361 in 2022.

The distribution of international students by intention to graduate and the type of university reveals that the majority of international students prefer studying at universities rather than universities of applied sciences, as the total number of degree-seeking international students at universities is consistently higher than at universities of applied sciences. Additionally, the majority of international students in Germany prefer pursuing a degree, as the number of degree-seeking international students in both universities and universities of applied sciences exceeds the number of international students not studying for a degree (see Figure 57).

The Federal Statistical Office student statistics and data reveals a clear upward trend in the number of international first-year students in Germany by type of university since 2011 (see Figure 58). For instance, the total number of international first-year students across all institutions increased from 80,078 in 2011 to 117,927 in 2021. Within universities, the number of international first-year students studying for a degree grew rapidly, rising from 35,454 in 2011 to 59,715 in 2021. At the same time, the number of international first-year students not studying for a degree in universities decreased from 26,449 in 2011 to 21,526 in 2021. In universities of applied sciences, the number of international first-year students studying for a degree also rose sharply from 13,996 in 2011 to 31,151 in 2021, while the number of international first-year students not studying for a degree increased from 4,179 in 2011 to 5,535 in 2021.

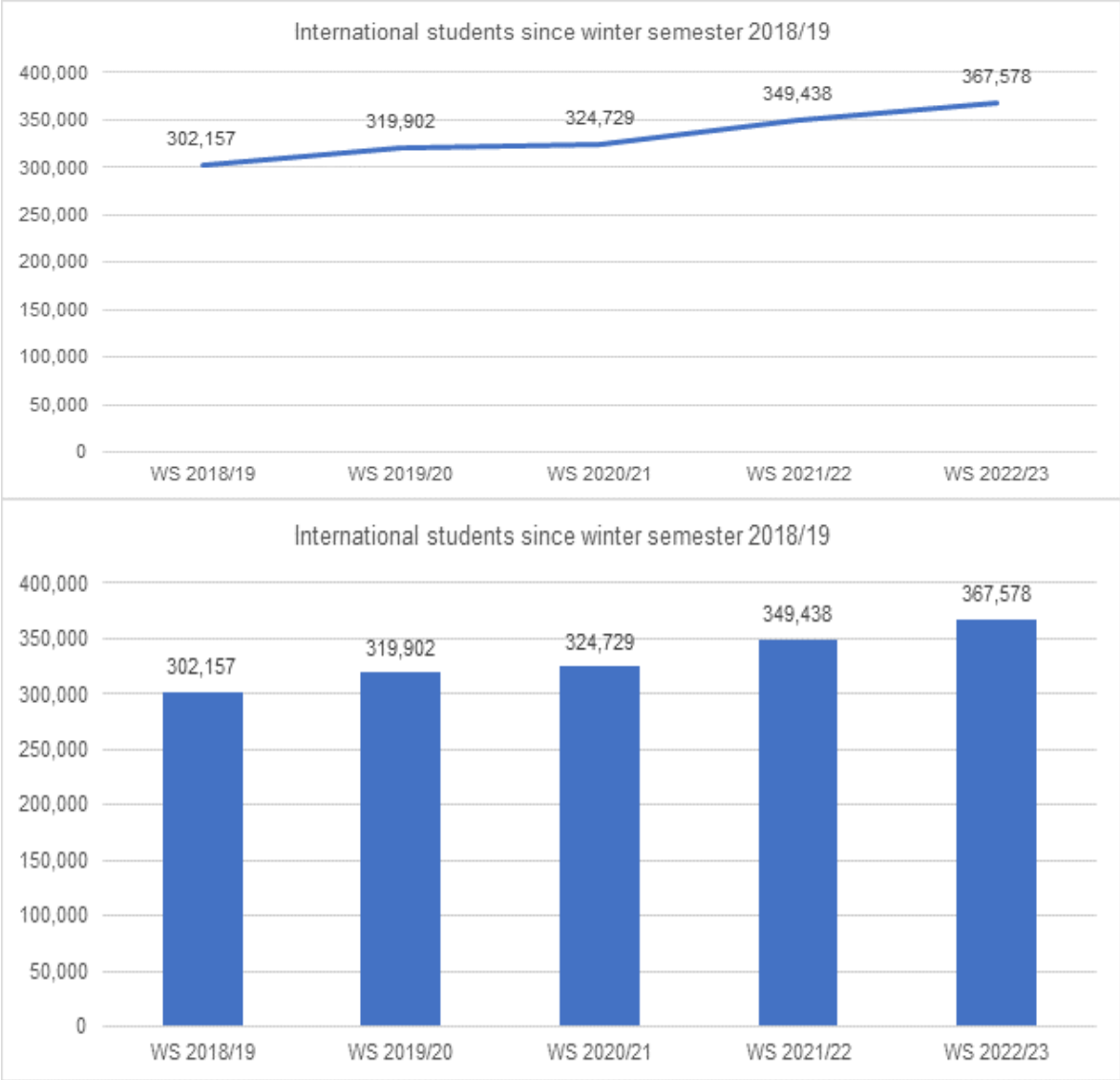
The distribution of international first-year students by type of university since 2011 shows that the majority of international first-year students prefer studying at universities rather than at universities of applied sciences, as the number of international first-year students in universities is consistently higher than in universities of applied sciences. Furthermore, the data suggests that the majority of international first-year students prefer studying for a

degree in Germany, as the number of students studying for a degree at both universities and universities of applied sciences surpasses the number of students not studying for a degree

The Federal Statistical Office student statistics and data highlight a significant upward trend in the number of international students in Germany by type of university since the winter semester of 2009/10 (see Figure 59). For example, the total number of international students across all institutions steadily increased from 181,249 in the winter semester of 2009/10 to 324,729 in the winter semester of 2020/21, and further to 349,438 in the winter semester of 2021/22. A similar trend is evident in universities, where the number of international students rose from 139,787 in the winter semester of 2009/10 to 228,292 in the winter semester of 2020/21, and to 242,310 in the winter semester of 2021/22. In universities of applied sciences, the number of international students also grew consistently, from 41,462 in the winter semester of 2009/10 to 96,437 in the winter semester of 2020/21, and to 107,128 in the winter semester of 2021/22.

The data reveals that the majority of international students prefer studying at universities rather than universities of applied sciences, as the number of international students in universities is consistently higher than in universities of applied sciences.

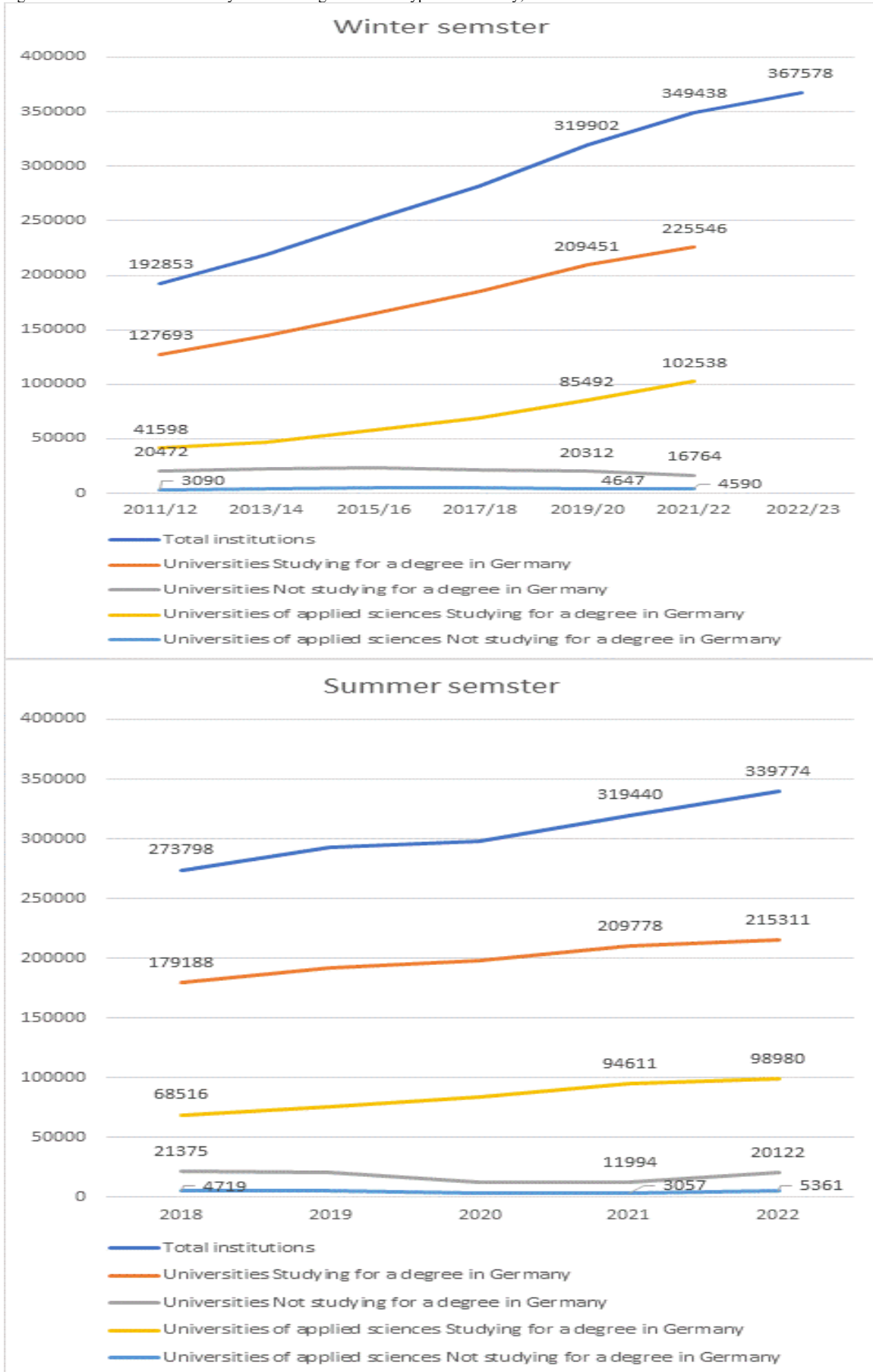
Figure 56- International students in Germany since winter semester 2018/19 (in number)



Source: Federal Statistical Office, student statistics

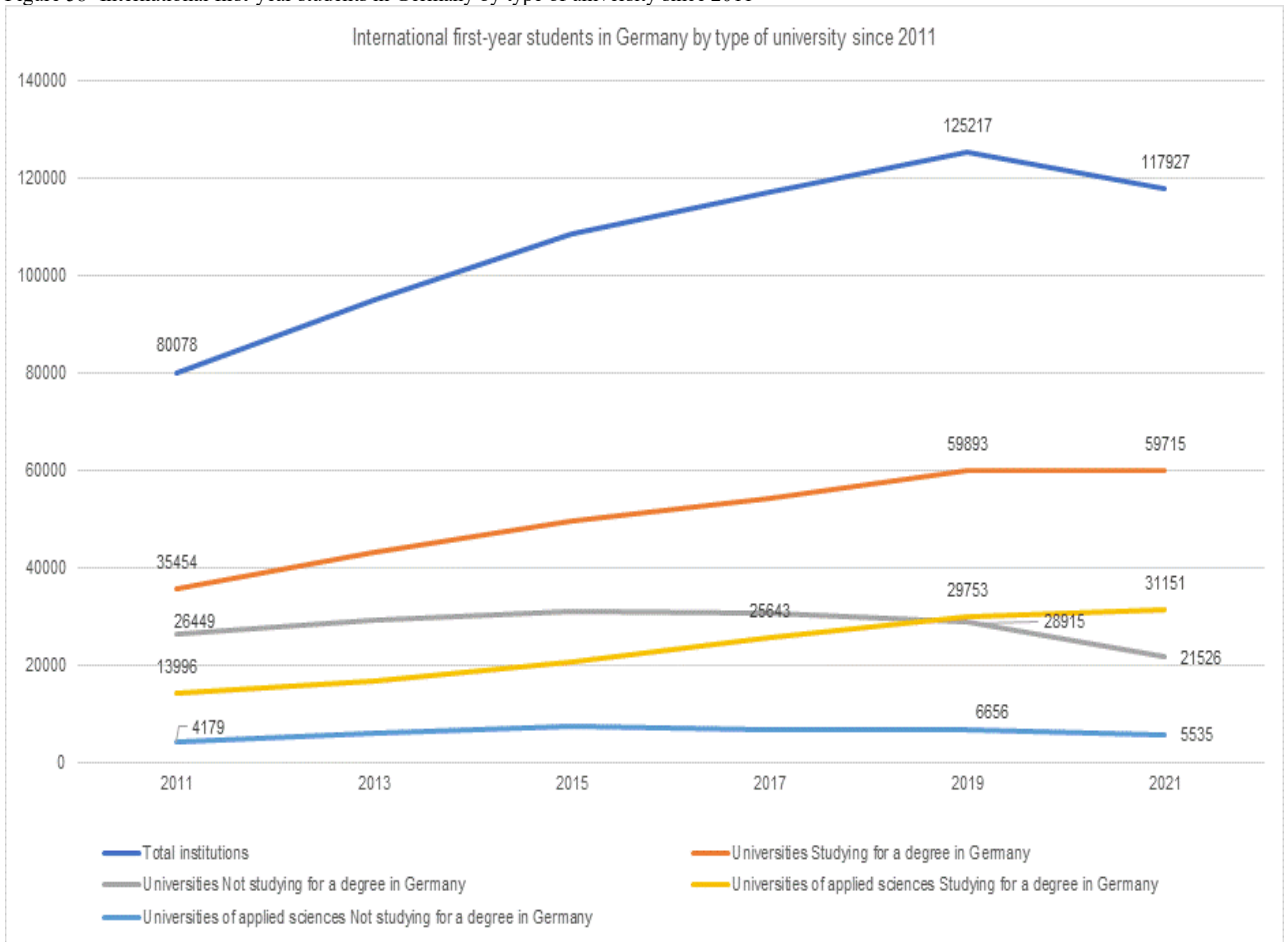


Figure 57- International students by intention to graduate and type of university, since winter semester 2011/12 and summer semester 2018



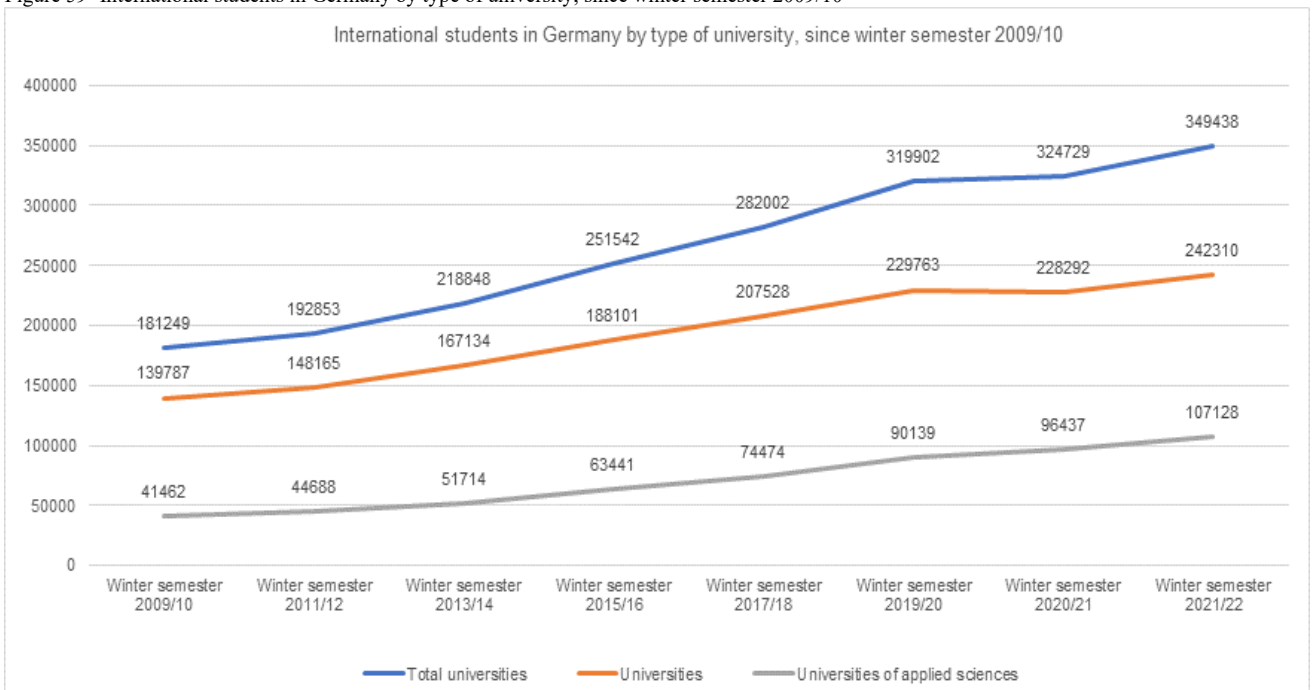
Source: Federal Statistical Office student statistics

Figure 58- International first-year students in Germany by type of university since 2011



Source: Federal Statistical Office student statistics

Figure 59- International students in Germany by type of university, since winter semester 2009/10



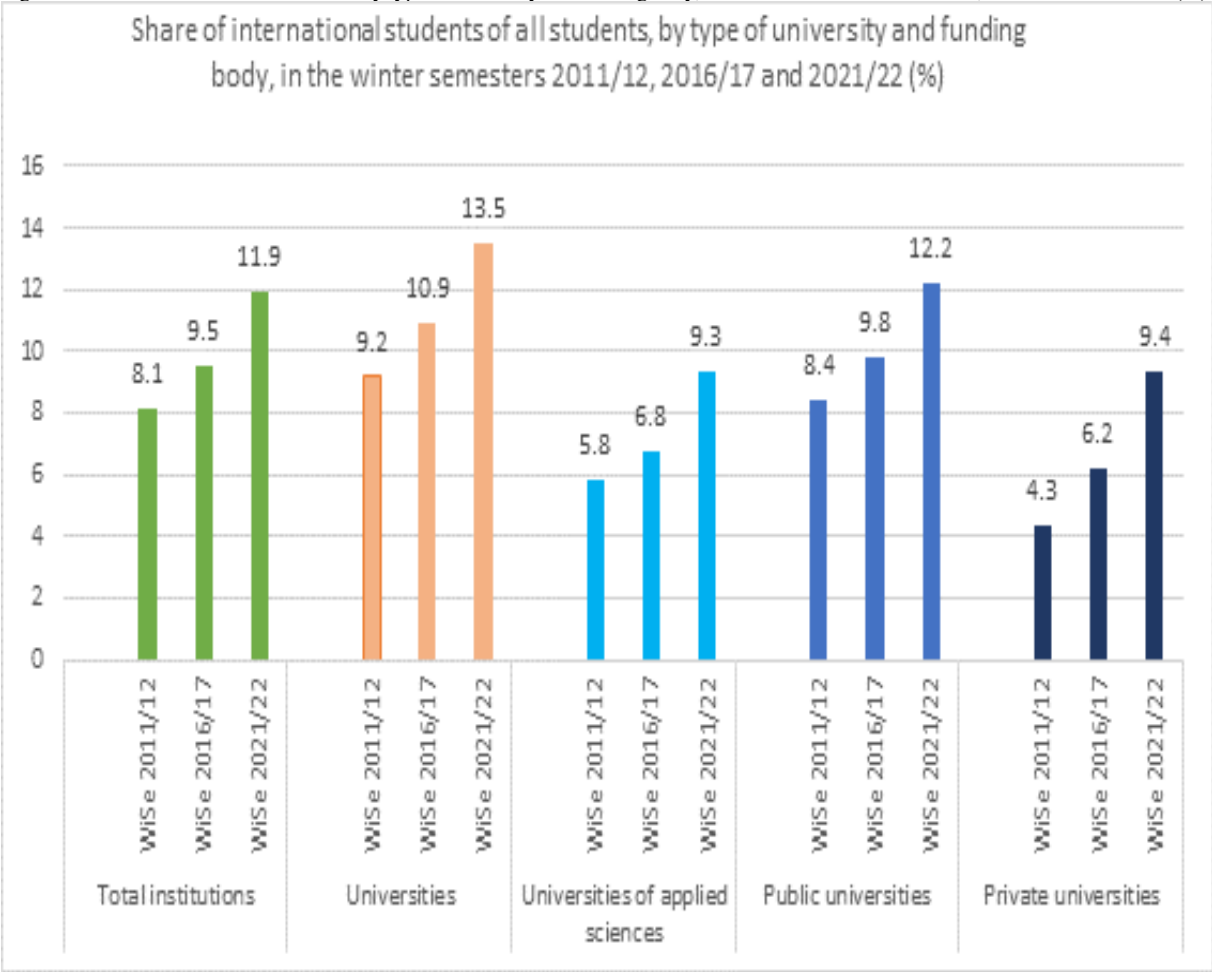
Source: Federal Statistical Office; DZHW calculations

The Federal Statistical Office student statistics and data, along with DZHW calculations, explain the increasing trend in the share of international students by type of university and funding body in the winter semesters of 2011/12, 2016/17, and 2021/22. The data shows a consistent increase in the share of international students in total institutions, from 8.1% in the winter semester of 2011/12 to 9.5% in 2016/17, and 11.9% in 2021/22. In universities, the share of international students increased from 9.2% in the winter semester of 2011/12 to 10.9% in 2016/17, and 13.5% in 2021/22. Similarly, in universities of applied sciences, the share of international students grew from 5.8% in the winter semester of 2011/12 to 6.8% in 2016/17, and 9.3% in 2021/22.

The data also reveals an increasing trend in the share of international students based on funding body. The share of international students in public universities rose from 8.4% in the winter semester of 2011/12 to 9.8% in 2016/17, and 12.2% in 2021/22. In private universities, the share of international students increased from 4.3% in the winter semester of 2011/12 to 6.2% in 2016/17, and 9.4% in 2021/22.

Overall, the majority of international students prefer studying at universities rather than universities of applied sciences, as indicated by the higher share of international students in universities compared to universities of applied sciences. Furthermore, the data shows that international students are more likely to study at public universities than at private universities, as the share of international students in public universities is consistently higher than in private universities (see Figure 60).

Figure 60- Share of international students by type of university and funding body, in the winter semesters 2011/12, 2016/17 and 2021/22 (%)



Sources: Federal Statistical Office student statistics; DZHW calculations

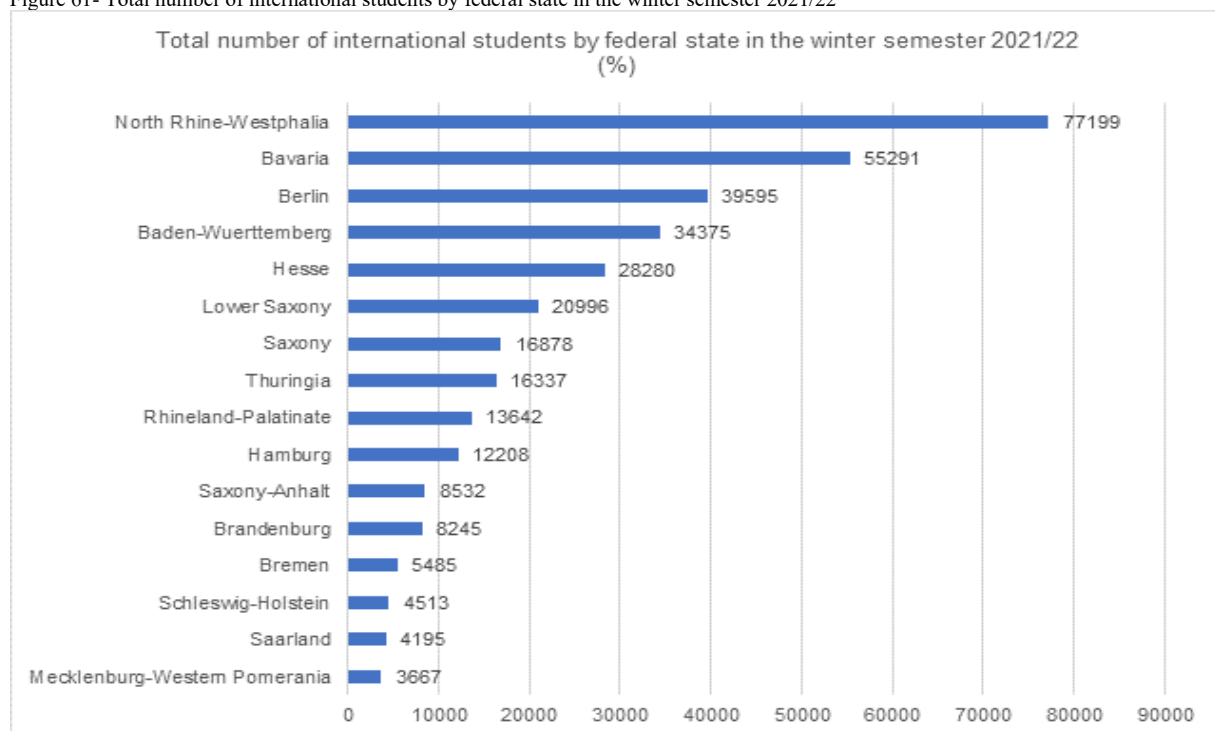
#### 4.1.3.2. Distribution of international students studying in Germany by Federal States in Germany

The Federal Statistical Office student statistics and data, along with DZHW calculations, provide insights into the distribution of international students by federal state in Germany for the winter semester 2021/22, and the development from the 2016/17 to 2021/22 winter semesters. In terms of the total number of international students across all states (349438), North Rhine-Westphalia leads with 77,199 international students, followed by Bavaria with 55,291, Berlin with 39,595, Baden-Württemberg with 34,375, and Hesse with 28,280. Other states with notable international student populations include Lower Saxony (20,996), Saxony (16,878), Thuringia (16,337), Rhineland-Palatinate (13,642), Hamburg (12,208), Saxony-Anhalt (8,532), Brandenburg (8,245), Bremen (5,485), Schleswig-Holstein (4,513), Saarland (4,195), and Mecklenburg-Western Pomerania (3,667) (see Table 11, Figure 61).

Regarding the share of international students relative to the total number of students in each state, Berlin ranks at the top with 19.4%, followed by Brandenburg (16.3%), Saxony (15.9%), Saxony-Anhalt (15.6%), Bremen (14.7%), and Bavaria (13.7%). Saarland (13.2%), Thuringia (13.1%), Rhineland-Palatinate (11.3%), Hesse (10.8%), Lower Saxony (10.6%), Hamburg (10.2%), North Rhine-Westphalia (10.1%), Baden-Württemberg (9.6%), Mecklenburg-Western Pomerania (9.4%), and Schleswig-Holstein (6.7%) follow in this ranking (see Table 11, Figure 62).

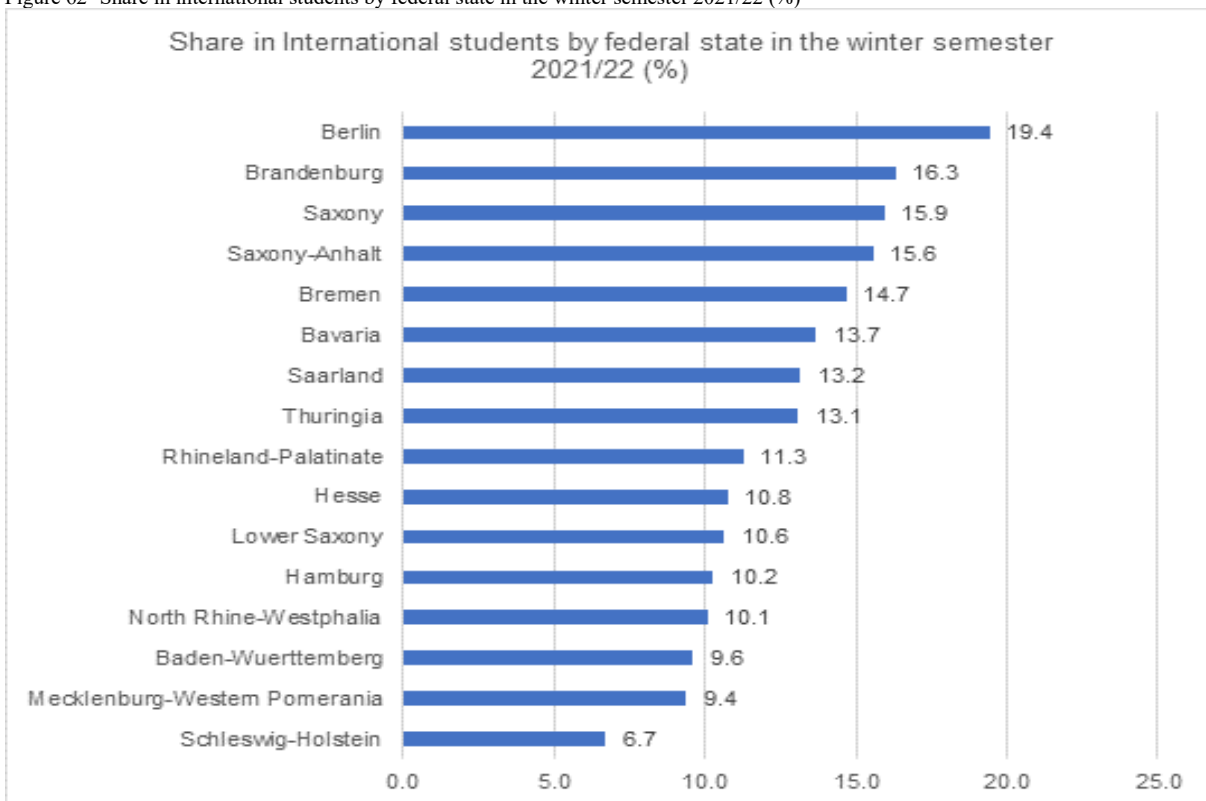
In terms of the development of international student numbers between the winter semester 2016/17 and 2021/22, the largest increase in international students was reported in Thuringia (178%), followed by Bavaria (61%), Rhineland-Palatinate (47%), Berlin (45%), Hamburg (41%), Saxony-Anhalt (40%), and Mecklenburg-Western Pomerania (37%). North Rhine-Westphalia, Bremen, Lower Saxony, and Brandenburg experienced increases in the range of 28 to 33%, while Hesse, Schleswig-Holstein, Saarland, Saxony, and Baden-Württemberg had more modest increases or decreases. Notably, Baden-Württemberg experienced a slight decrease in the number of international students by 9% (see Table 11, Figure 63).

Figure 61- Total number of international students by federal state in the winter semester 2021/22



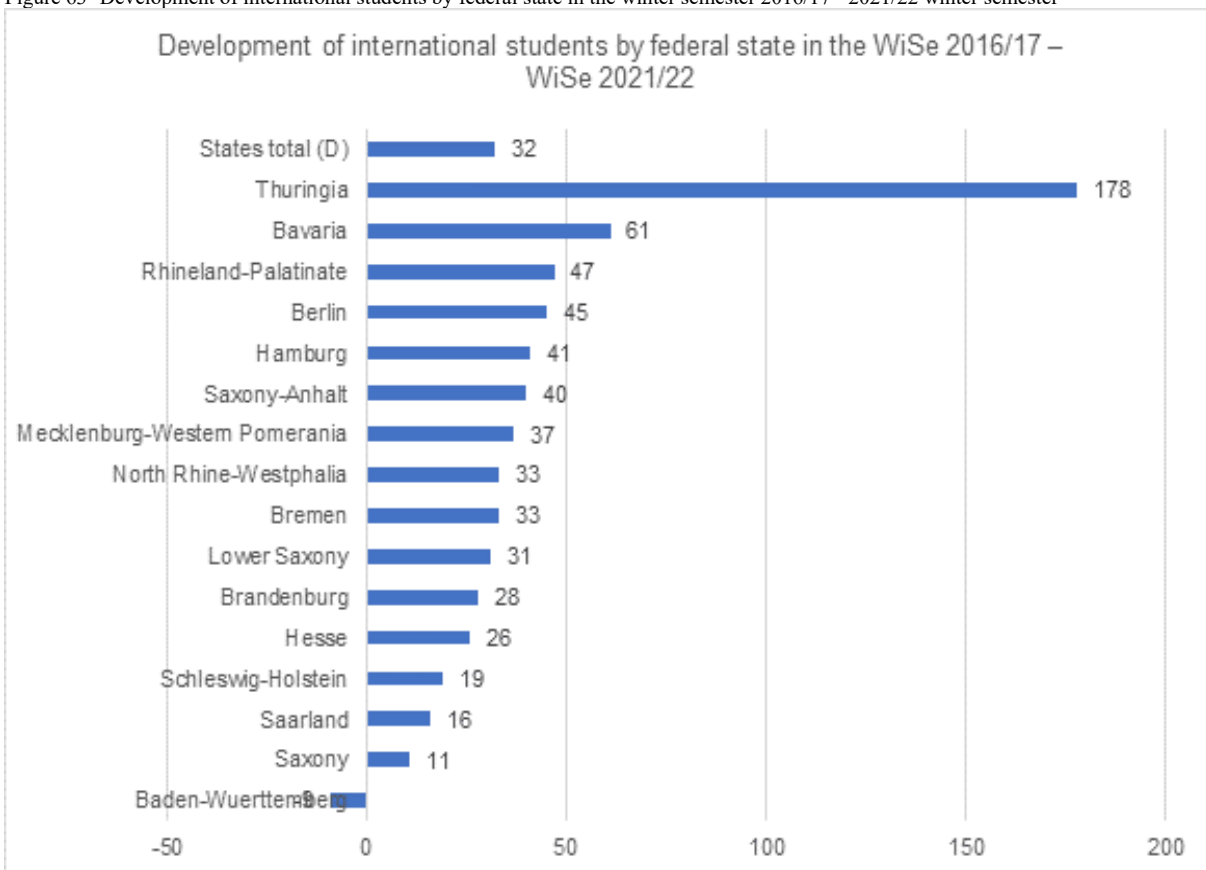
Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 62- Share in international students by federal state in the winter semester 2021/22 (%)



Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 63- Development of international students by federal state in the winter semester 2016/17 - 2021/22 winter semester



Sources: Federal Statistical Office student statistics; DZHW calculations

#### *4.1.3.3. Distribution and development of international students studying in Germany by region of origin*

The Federal Statistical Office student statistics and data, along with DZHW calculations, provide a detailed overview of the distribution and development of international students in Germany by region of origin since the winter semester of 2012/13. The data highlights a substantial increase in the total number of international students from various regions over the years. For example, the number of students from Western Europe increased from 41,797 in the 2012/13 winter semester to 60,805 in the 2022/23 winter semester. Similarly, international students from Central and South Eastern Europe grew from 33,743 to 40,731, while students from Eastern Europe and Central Asia increased from 24,995 to 29,250. North American students showed a steady increase from 4,801 to 6,742, while Latin American students grew from 11,686 to 19,433. Students from North Africa and the Middle East saw a significant rise, from 24,108 to 70,922. Sub-Saharan Africa also experienced growth, with numbers rising from 11,073 to 20,381, and the Asia and Pacific region saw a dramatic increase, from 52,143 to 118,645. The overall number of international students in Germany increased from 204,644 in 2012/13 to 367,578 in 2022/23 (see Figure 64).

In the 2022/23 winter semester, the distribution of international students at German universities by region of origin reveals that the largest group of international students comes from the Asia and Pacific region, with 118,645 students, accounting for 32.3% of the total. This is followed by students from North Africa and the Middle East, who number 70,922 (19.3%), and Western Europe with 60,805 students (16.5%). Students from Central and South Eastern Europe represent 11.1% of the total, with 40,731 students, while those from Eastern Europe and Central Asia account for 8.0% (29,250 students). Sub-Saharan Africa contributes 5.5% (20,381 students), and Latin America accounts for 5.3% (19,433 students). North America has a smaller share, with 6,742 students (1.8%), and other regions not classified by geographic area make up 0.2% (669 students) (see Figure 65)

The Federal Statistical Office student statistics and data, along with DZHW calculations, provide insights into the distribution of international students at German universities by region of origin since the winter semester of 2012/13. The data highlights the changing trends in the share of international students from different regions over time.

The majority of international students studying in Germany have consistently come from the Asia and Pacific region, with their share increasing over the years: 25.5% in 2012/13, 29.6% in 2017/18, 31.2% in 2021/22, and 32.3% in 2022/23. The North Africa and Middle East region also shows a steady rise, accounting for 11.8% in 2012/13, 15.9% in 2017/18, and 19.3% in both 2021/22 and 2022/23.

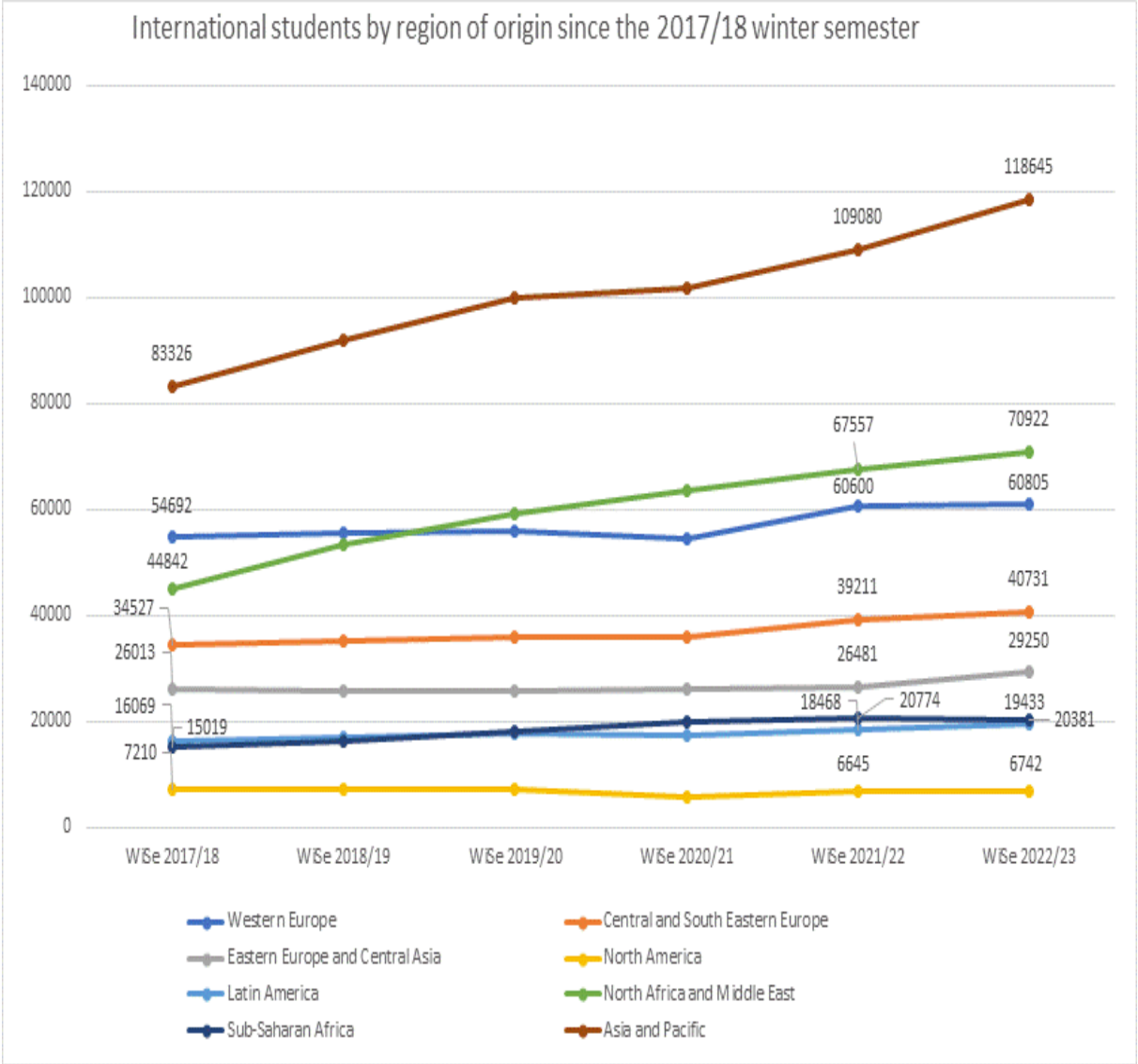
On the other hand, the share of students from Western Europe has decreased slightly over the years: 20.4% in 2012/13, 19.4% in 2017/18, 17.3% in 2021/22, and 16.5% in 2022/23. The Central and South Eastern Europe region's share has also declined from 16.5% in 2012/13 to 11.1% in 2022/23, with similar trends observed in Eastern Europe and Central Asia, where the share dropped from 12.2% in 2012/13 to 8% in 2022/23. Latin America has maintained a relatively stable share, fluctuating between 5.3% and 5.7%, while the share of students from North America has remained the lowest, decreasing from 2.4% in 2012/13 to 1.8% in 2022/23 (see Figure 66).

The Federal Statistical Office student statistics and data, along with DZHW calculations, reveal significant variations in the distribution and share of international students at German universities by region of origin since the winter semester of 2012/13.

On the one hand, there has been a notable increase in the share of international students from certain regions. The Asia and Pacific region saw a consistent rise, with its share growing from 25.5% in 2012/13 to 29.6% in 2017/18, 31.2% in 2021/22, and 32.3% in 2022/23. Similarly, the North Africa and Middle East region's share grew from 11.8% in 2012/13 to 15.9% in 2017/18, and remained steady at 19.3% in both 2021/22 and 2022/23. Sub-Saharan Africa also experienced an increase, rising from 5.4% in 2012/13 to 5.3% in 2017/18, reaching 5.9% in 2021/22, and slightly decreasing to 5.5% in 2022/23.

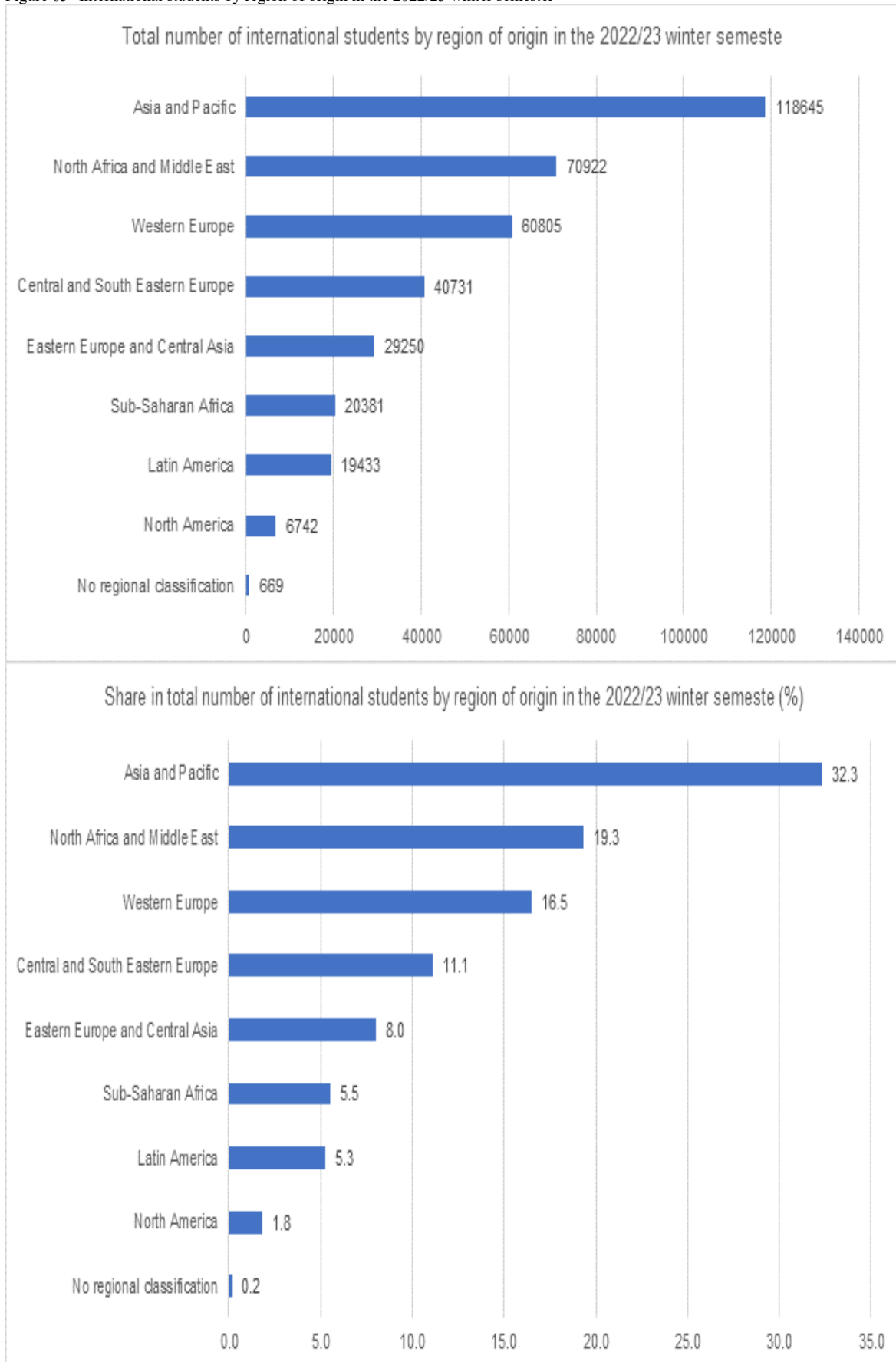
On the other hand, the share of international students from several regions has decreased over the same period. The Western Europe region's share dropped from 20.4% in 2012/13 to 19.4% in 2017/18, 17.3% in 2021/22, and 16.5% in 2022/23. The Central and South Eastern Europe region's share decreased from 16.5% in 2012/13 to 12.2% in 2017/18, 11.2% in 2021/22, and 11.1% in 2022/23. Similarly, the share of international students from Eastern Europe and Central Asia decreased from 12.2% in 2012/13 to 9.2% in 2017/18, 7.6% in 2021/22, and 8% in 2022/23. Latin America and North America also experienced declines, with shares falling from 5.7% in 2012/13 to 5.3% in 2021/22 and 5.3% in 2022/23 for Latin America, and from 2.4% in 2012/13 to 2.6% in 2017/18, 1.9% in 2021/22, and 1.8% in 2022/23 for North America (see Figure 66).

Figure 64- International students by region of origin since the 2017/18 winter semester



Sources: Federal Statistical Office student statistics; DZHW calculations

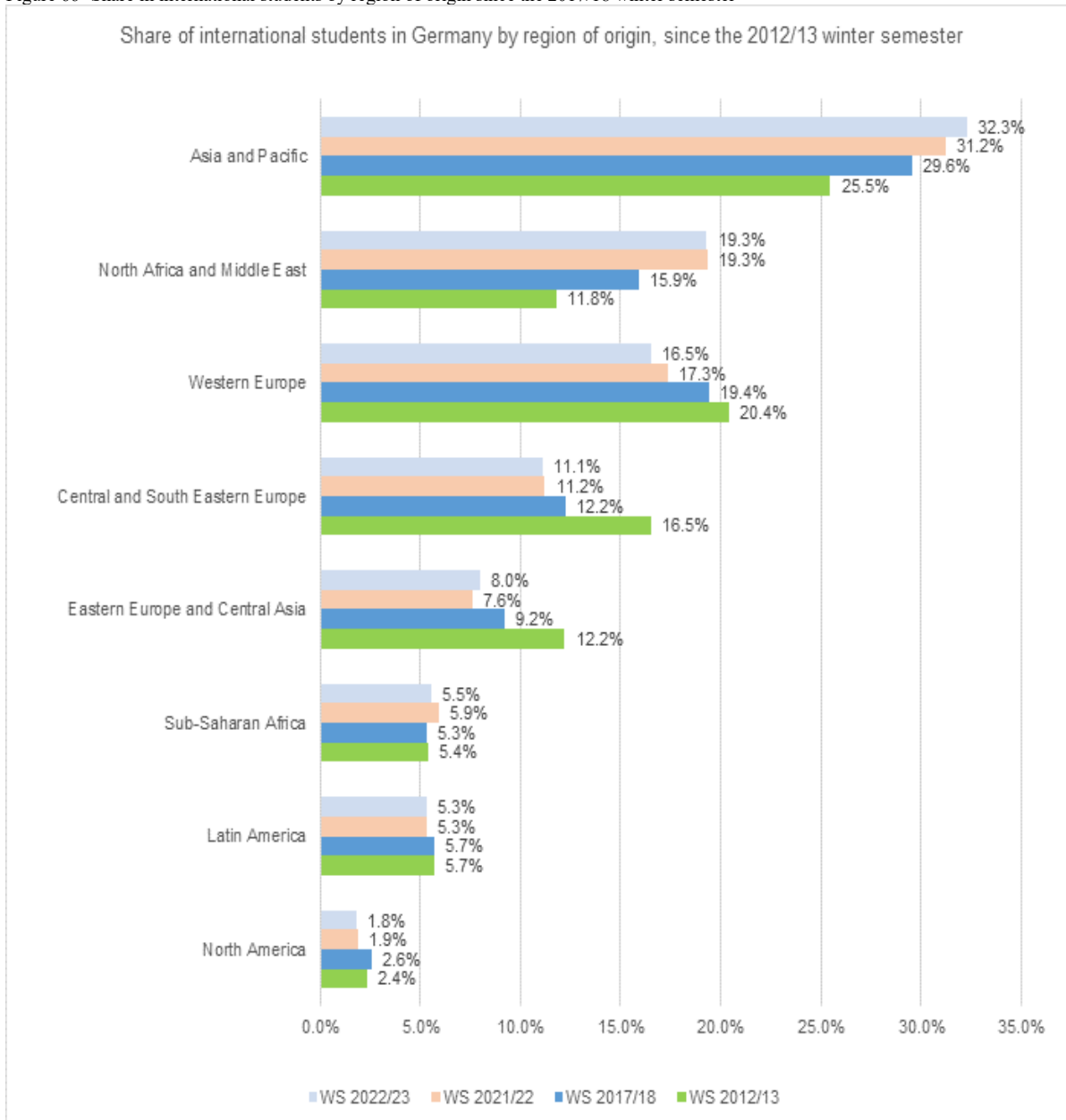
Figure 65- International students by region of origin in the 2022/23 winter semester



Sources: Federal Statistical Office, examination statistics; DZHW calculations



Figure 66- Share in international students by region of origin since the 2017/18 winter semester



Sources: Federal Statistical Office student statistics; DZHW calculations

#### 4.1.3.5. Distribution of international students studying in Germany during the COVID-19 Pandemic (2019-2020)

The Federal Statistical Office student statistics and data, along with DZHW calculations, reveal the distribution of international students by region of origin during the COVID-19 pandemic, specifically between the 2019/20 winter semester and the 2020/21 winter semester.

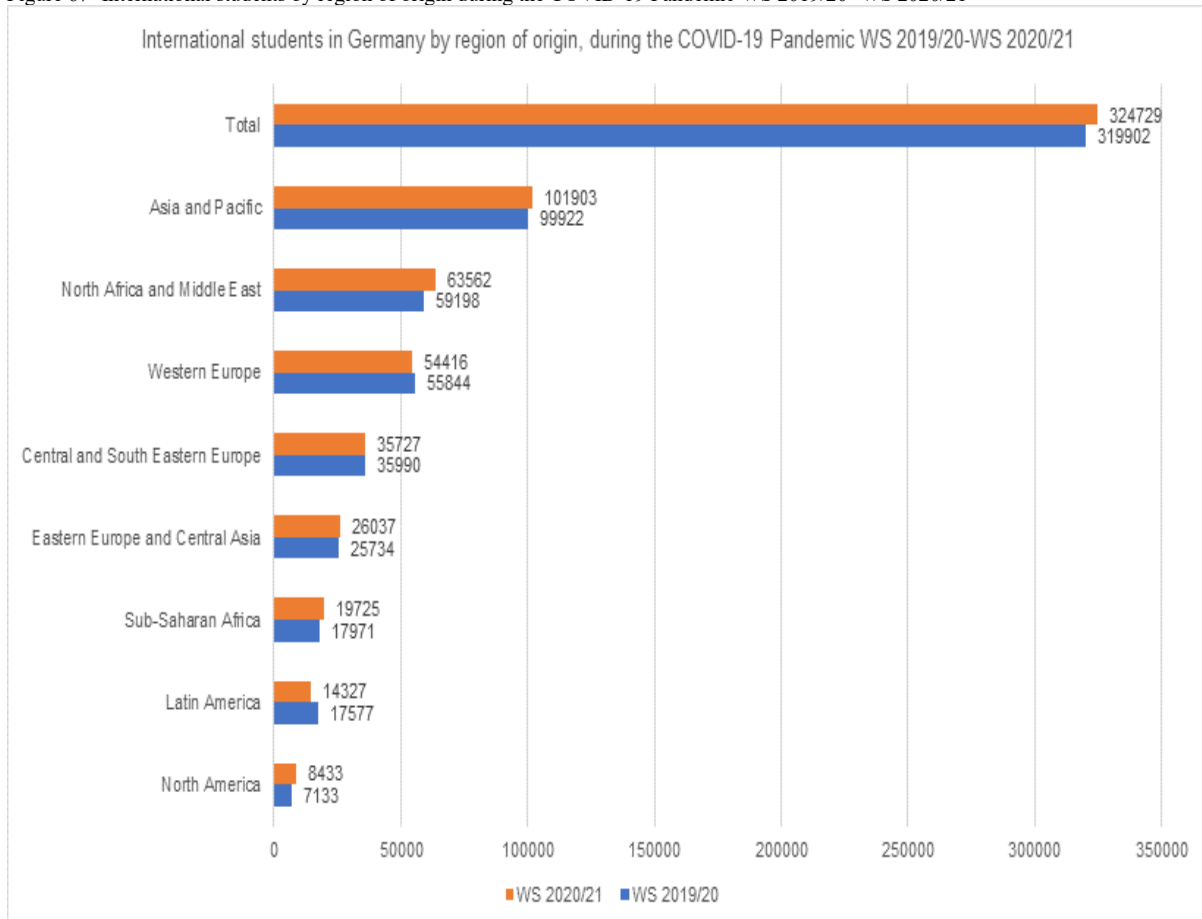
On the one hand, certain regions experienced a decrease in the number of international students studying in Germany during this period. For instance, the number of international students from Western Europe decreased from 55,844 in the 2019/20 winter semester to 54,426 in the 2020/21 winter semester. Similarly, the number of students from Central and South Eastern Europe decreased from 35,990 to 35,709, from North America decreased from 7,133 to 5,590, and from Latin America decreased from 17,577 to 17,170.

On the other hand, some regions reported an increase in the number of international students despite the challenges posed by the COVID-19 pandemic. The number of international students from Eastern Europe and

Central Asia increased from 25,734 to 26,037, from North Africa and the Middle East increased from 59,198 to 63,562, from Sub-Saharan Africa increased from 17,971 to 19,725, and from Asia and the Pacific increased from 99,922 to 101,903.

Despite the overall impact of the pandemic, the total number of international students from all regions in Germany increased from 319,902 in the 2019/20 winter semester to 324,729 in the 2020/21 winter semester (see Figure 67).

Figure 67- International students by region of origin during the COVID-19 Pandemic WS 2019/20- WS 2020/21



Sources: Federal Statistical Office student statistics; DZHW calculations

#### 4.1.3.6. Distribution and development of international students studying in Germany by countries of origin

The Federal Statistical Office student statistics and data, along with DZHW calculations, provide insights into the distribution and development of international students studying in Germany by key countries of origin in the 2022/23 winter semester, as well as the trends from the 2017/18 to the 2022/23 winter semester.

In the 2022/23 winter semester, the largest number of international students in Germany came from India (42,578), accounting for 11.6% of the total international student population, followed by China (39,137), with 10.6%. Other leading countries included Syria (15,563) (4.2), Austria (14,762) (4.0), Turkey (14,732) (4.0), Iran (13,279) (3.6), Russia (10,490) (2.9), Italy (10,247) (2.8), Ukraine (9,069) (2.5), Pakistan (8,208) (2.2), Egypt (7,777) (2.1), Cameroon (7,345) (2.0), Morocco (7,045) (1.9), France (6,997) (1.9), and Spain (6,876) (1.9). (Figures 68-69)

The development of international students from various countries between the 2016/17 and 2021/22 winter semesters reveals that the largest increase in the number of international students studying in Germany was from

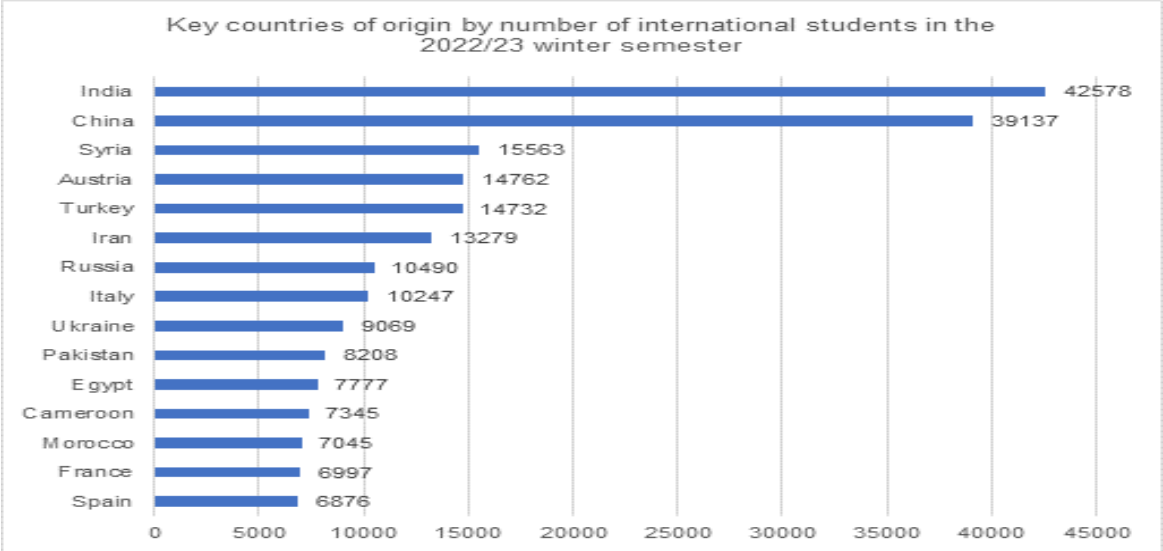
India (146 students). Following India, significant increases were observed in students from Egypt (104), Turkey (93), Syria (81), Iran (76), Pakistan (67), Austria (33), Morocco (33), Ukraine (29), Italy (15), Spain (11), and China (6). In contrast, no change was observed for students from Cameroon, and minor decreases were reported from Russia (-3) and France (-3). (Figure 70)

The Federal Statistical Office student statistics and data, along with DZHW calculations, highlight the countries with the greatest increase or decrease in the percentage of international students studying in Germany between the winter semesters of 2019/20 and 2022/23.

The greatest increase in the percentage of international students was reported for those coming from India (42,578), which ranked at the top, followed by Sri Lanka (733), Cyprus (627), Australia (544), Uganda (381), Saudi Arabia (353), Estonia (324), Honduras (252), Myanmar (241), and Senegal (125). (Figure 71)

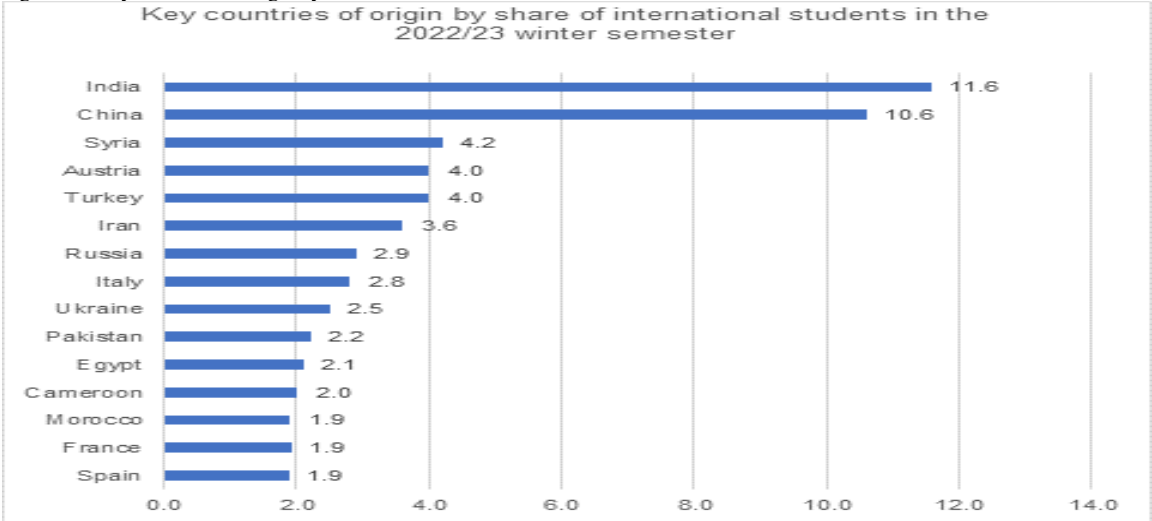
In terms of the largest increase in the total number of international students, Myanmar reported the greatest growth (174), followed by Honduras (87), India (71), Sri Lanka (75), and Uganda (70). On the other hand, a decrease in the number of international students was observed from Saudi Arabia (-15), Estonia (-16), Senegal (-19), Cyprus (-21), and Australia (-24). (Figure 72)

Figure 68- Key countries of origin by number of international students in the 2022/23 winter semester



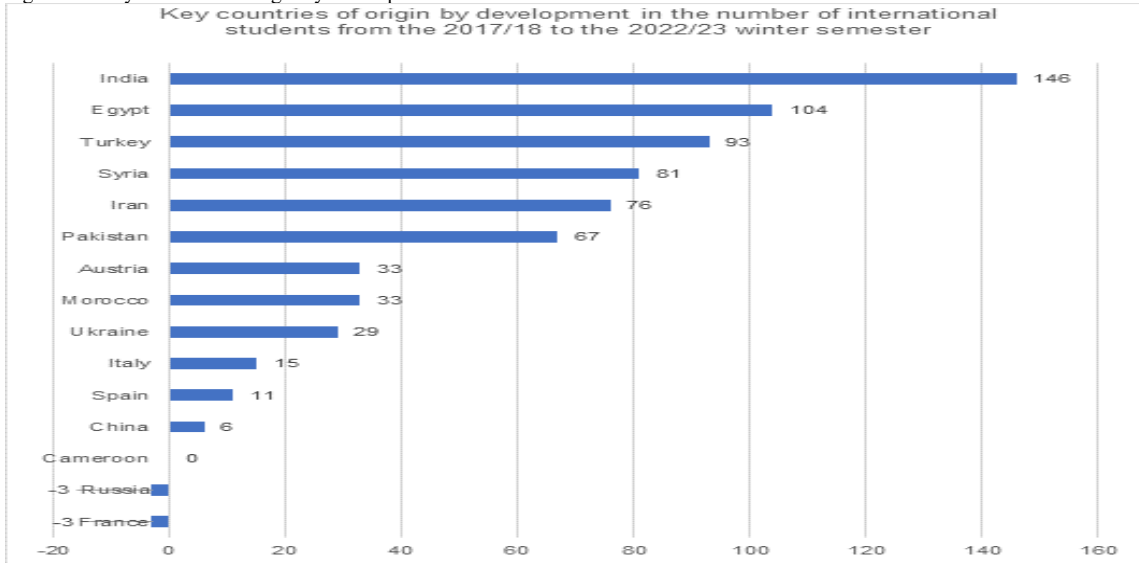
Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 69- Key countries of origin by share of international students in the 2022/23 winter semester



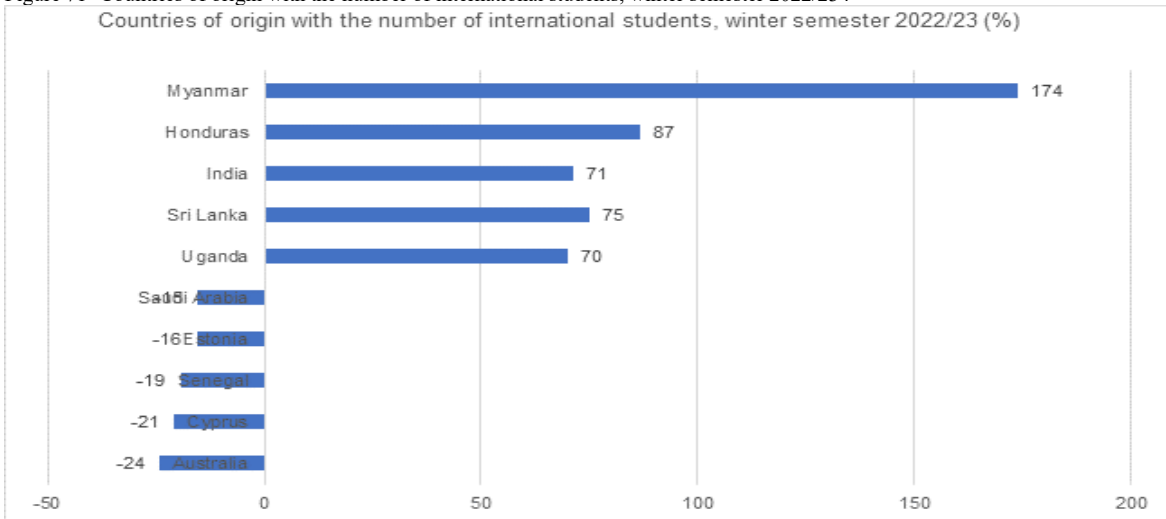
Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 70- Key countries of origin by development in the number of international students from the 2017/18 to the 2022/23 winter semester



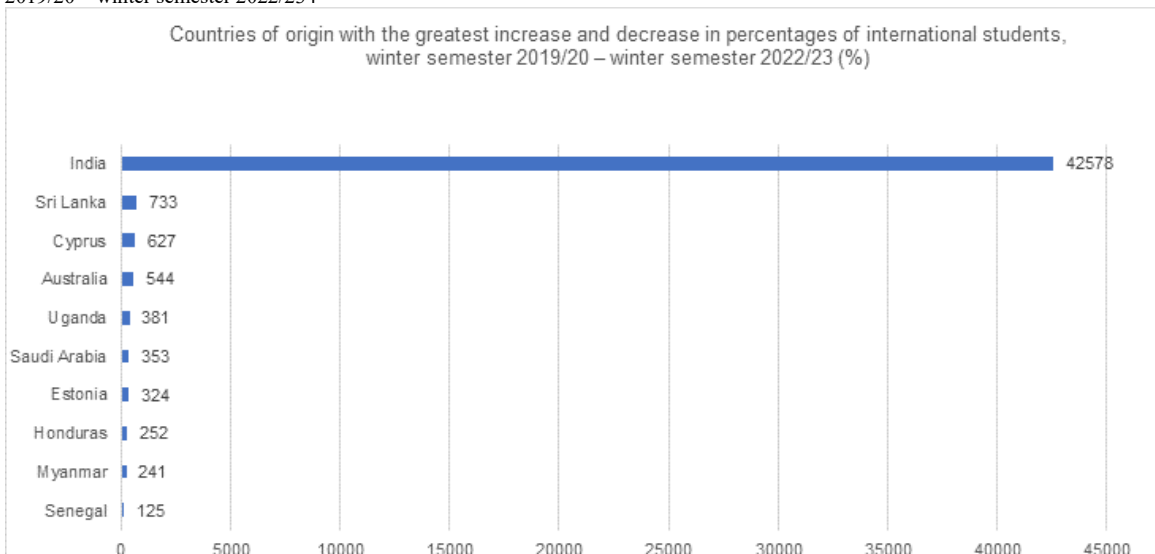
Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 71- Countries of origin with the number of international students, winter semester 2022/234



Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 72- Countries of origin with the number greatest increase and decrease in percentages of international students, winter semester 2019/20 – winter semester 2022/234



Sources: Federal Statistical Office student statistics; DZHW calculations

#### 4.1.3.7. *Distribution of international students intending to graduate in Germany*

The Federal Statistical Office's student statistics and data offer insights into the distribution of international students intending to graduate, categorised by degree type, since the winter semester (WiSe) 2011/12. The data shows a clear upward trend in the total number of students intending to graduate, from 169,291 in WiSe 2011/12 to 312,366 in WiSe 2020/21, and 328,084 in WiSe 2021/22.

For Bachelor's degree students intending to graduate, there has been a notable increase, from 64,213 in WiSe 2011/12 to 127,241 in WiSe 2020/21, and 130,478 in WiSe 2021/22. Similarly, Master's degree students intending to graduate also show significant growth, rising from 46,592 in WiSe 2011/12 to 137,261 in WiSe 2020/21, and 148,901 in WiSe 2021/22. Doctorate degree students intending to graduate increased from 22,137 in WiSe 2011/12 to 27,613 in WiSe 2020/21, and 28,745 in WiSe 2021/22.

In contrast, students intending to graduate with other degrees have shown a decreasing trend, from 36,349 in WiSe 2011/12 to 20,251 in WiSe 2020/21, and 19,960 in WiSe 2021/22.

In the winter semester of 2011/12, the majority of international students intending to graduate were enrolled in Bachelor's degree programmes, followed by Master's degree students, students pursuing other degrees, and Doctorate degree students. However, by the winter semesters of 2020/21 and 2021/22, Master's degree students became the largest group of international students intending to graduate, followed by Bachelor's degree students, Doctorate degree students, and students pursuing other degrees (see Figure 73).

The Federal Statistical Office student statistics and DZHW calculations provide insights into the distribution of international and German students intending to graduate during the 2021/22 winter semester, categorized by type of university and degree. Among international students across all institutions, the majority were Master's degree students (148,901 or 45.4%), followed by Bachelor's degree students (130,478 or 39.8%), Doctorate degree students (28,745 or 8.8%), and other degrees students (19,960 or 6.1%). In universities, Master's degree students constituted the largest group (112,161 or 49.7%), followed by Bachelor's degree students (66,178 or 29.3%), Doctorate degree students (28,661 or 12.7%), and other degrees students (18,546 or 8.2%). In universities of applied sciences, Bachelor's degree students formed the majority (64,300 or 62.7%), followed by Master's degree students (36,740 or 35.8%), other degrees students (1,414 or 1.4%), and Doctorate degree students (84 or 0.1%).

For German students across all institutions, Bachelor's degree students were the largest group (1,591,572 or 63.7%), followed by Master's degree students (495,172 or 19.8%), other degrees students (334,069 or 13.4%), and Doctorate degree students (78,348 or 3.1%). At universities, Bachelor's degree students represented the majority (775,077 or 51.8%), followed by Master's degree students (343,019 or 22.9%), other degrees students (302,672 or 20.2%), and Doctorate degree students (78,039 or 5.2%). In universities of applied sciences, Bachelor's degree students again formed the largest group (816,495 or 81.6%), followed by Master's degree students (152,153 or 15.2%), other degrees students (31,397 or 3.1%), and Doctorate degree students (309 or 0.1%). (See Figure 74)

The Federal Statistical Office student statistics and DZHW calculations examine the distribution of the share of international students intending to graduate, categorized by type of university and degree, in the 2021/22 winter semester. The data indicates that, across all institutions, the largest share of international students intending to graduate are Doctorate degree students (26.5%), followed by Master's degree students (22.6%), Bachelor's degree students (7.3%), and other degrees students (5.5%). Within universities, Doctorate degree students also

form the largest group (26.6%), followed by Master's degree students (24.1%), Bachelor's degree students (7.6%), and other degrees students (5.6%). Similarly, in universities of applied sciences, Doctorate degree students account for the largest share (21.1%), followed by Master's degree students (19.0%), Bachelor's degree students (7.0%), and other degrees students (4.3%).

The analysis further reveals that international students intending to graduate are more inclined to study in universities than in universities of applied sciences. This preference is reflected in the overall share of international students intending to graduate: 11.2% across all institutions, 12.7% in universities, and 9.0% in universities of applied sciences. (See Figure 75)

The Federal Statistical Office student statistics and data highlight the distribution of international first-year students intending to graduate, categorized by type of degree, since the 2016 academic year. The data reveal an overall increasing trend in the total number of first-year students intending to graduate, rising from 74,196 in 2016 to 84,969 in 2020 and reaching 90,866 in 2021. For Bachelor's degree first-year students, the trend shows an increase from 29,054 in 2016 to 30,745 in 2020, followed by a decrease to 28,298 in 2021. In contrast, Master's degree first-year students exhibit a consistent upward trend, growing from 35,626 in 2016 to 45,931 in 2020 and further to 51,931 in 2021.

Doctorate degree first-year students initially show a declining trend, decreasing from 5,670 in 2016 to 4,765 in 2020, before increasing to 5,955 in 2021. Meanwhile, the number of first-year students in other degree programs decreases from 3,846 in 2016 to 3,528 in 2020 but rises again to 4,682 in 2021. Across this period, the majority of international first-year students intending to graduate are enrolled in Master's degree programs, followed by Bachelor's degree, Doctorate degree, and other degree programs, respectively. (See Figure 76)

The Federal Statistical Office student statistics and data, along with DZHW calculations, detail the distribution of the number and share of international students intending to graduate by region of origin in the winter semester 2021/22. Out of a total of 328,084 international students intending to graduate from all regions, the majority originate from the Asia and Pacific region, accounting for 105,965 students (32.3%), making it the top region for international students. This is followed by the North Africa and Middle East region with 65,702 students (20.0%), the Western Europe region with 51,379 students (15.7%), and the Central and South Eastern Europe region with 36,096 students (11.0%). Additionally, the Eastern Europe and Central Asia region contributes 25,302 students (7.7%), the Sub-Saharan Africa region 20,406 students (6.2%), and the Latin America region 17,099 students (5.2%). The North America region accounts for 5,516 students (1.7%), while 619 students (0.2%) are classified under "other" with no regional classification. These figures highlight the diverse origins of international students in Germany. (See Figure 77)

The Federal Statistical Office student statistics and DZHW calculations provide an analysis of the number and share of international students intending to graduate, classified by key countries of origin, for the winter semesters 2016/17 and 2021/22. In the winter semester 2016/17, the majority of international students intending to graduate were from China, totalling 32,618 students (13.7%), making it the leading country of origin. This was followed by India with 14,877 students (6.2%), Russia with 10,531 students (4.4%), Austria with 10,414 students (4.4%), and Cameroon with 7,367 students (3.1%). Other significant countries of origin included Iran (6,939; 2.9%), Ukraine (6,696; 2.8%), Bulgaria (6,649; 2.8%), Italy (6,293; 2.6%), Turkey (5,927; 2.5%), France (5,507; 2.3%), and Morocco (4,912; 2.1%). Additional contributions came from Syria (4,751; 2.0%), Indonesia

(4,601; 1.9%), Poland (4,566; 1.9%), South Korea (4,550; 1.9%), Tunisia (4,420; 1.9%), Pakistan (4,354; 1.8%), Spain (4,089; 1.7%), and Luxembourg (4,032; 1.7%) respectively (See Figures 78-79).

In the winter semester 2021/22, China continued to be the top country of origin, with 39,005 students (11.9%), followed by India with a significantly increased total of 33,417 students (10.2%). Syria rose to third place with 16,651 students (5.1%), followed by Austria (14,472; 4.4%), Turkey (11,419; 3.5%), and Iran (11,417; 3.5%). Russia contributed 10,121 students (3.1%), while Italy accounted for 7,854 students (2.4%) and Cameroon for 7,641 students (2.3%). Other notable countries included Pakistan (7,053; 2.1%), Egypt (6,660; 2.0%), Tunisia (6,558; 2.0%), Morocco (6,475; 2.0%), Ukraine (6,140; 1.9%), Bangladesh (5,978; 1.8%), Vietnam (5,870; 1.8%), Indonesia (5,487; 1.7%), Bulgaria (5,470; 1.7%), France (5,385; 1.6%), and South Korea (5,210; 1.6%) respectively (See Figures 80-81).

These figures illustrate the shifting trends and diversification in the countries of origin of international students in Germany over the years.

The Federal Statistical Office student statistics and DZHW calculations provide insights into the largest percentage increases and decreases in international students intending to graduate, classified by countries of origin, between the winter semesters of 2019/20 and 2021/22. The data reveals that the greatest number of international students intending to graduate in the winter semester 2021/22 originated from Bangladesh (5,978), followed by Bulgaria (5,470), Georgia (1,887), Ghana (1,837), and Cyprus (654). Additional significant contributions came from South Africa (601), Sri Lanka (574), Algeria (488), Mauritius (448), Australia (440), Ethiopia (426), Uganda (382), Saudi Arabia (342), Estonia (303), Singapore (243), Democratic Republic of the Congo (212), Mauritania (136), Senegal (131), Myanmar (131), and Montenegro (109) (See Figure 82).

In terms of percentage growth, Myanmar experienced the highest increase (79%), followed by South Africa (78%), Uganda (74%), Mauritania (49%), Mauritius (49%), Bangladesh (49%), the Democratic Republic of the Congo (46%), Algeria (46%), Ghana (42%), and Sri Lanka (40%). On the other hand, a decline in the percentages of international students intending to graduate during the same period was observed for several countries. Georgia and Montenegro both saw a decrease of -6%, Bulgaria experienced a -7% decline, followed by Ethiopia (-8%), Australia (-9%), Estonia (-12%), Senegal (-12%), Saudi Arabia (-16%), Cyprus (-16%), and Singapore (-19%) (See Figure 83).

This data highlights dynamic trends in international student mobility, with significant growth from some countries while others saw notable declines in representation

The Federal Statistical Office student statistics and DZHW calculations provide insights into the distribution of international and German students intending to graduate, categorized by type of university and subject group in the 2021/22 winter semester. For international students across all institutions, Engineering emerged as the most popular subject, accounting for 43.1% (141,269 students). This was followed by Law, Economics, and Social Sciences (24.4%; 80,057 students), Mathematics and Natural Sciences (11.7%; 38,450 students), Humanities (8.5%; 27,758 students), Medicine and Health Sciences (5.1%; 16,747 students), Art and Art History (4.9%; 16,134 students), Agricultural, Forestry, and Food Sciences, Veterinary Medicine (2.3%; 7,422 students), and other subjects outside structured fields (0.1%; 247 students).

In universities, Engineering remained the leading subject for international students, with 38.0% (85,715 students) pursuing this field, followed by Law, Economics, and Social Sciences (20.3%; 45,877 students), Mathematics and Natural Sciences (15.3%; 34,556 students), Humanities (11.9%; 26,877 students), Medicine and Health

Sciences (6.4%; 14,544 students), Art and Art History (5.5%; 12,442 students), Agricultural, Forestry, and Food Sciences, Veterinary Medicine (2.4%; 5,306 students), and other subjects (0.1%; 229 students). In universities of applied sciences, Engineering was even more dominant, with 54.2% (55,554 students) choosing this field. It was followed by Law, Economics, and Social Sciences (33.3%; 34,180 students), Mathematics and Natural Sciences (3.8%; 3,894 students), Art and Art History (3.6%; 3,692 students), Medicine and Health Sciences (2.1%; 2,203 students), Agricultural, Forestry, and Food Sciences, Veterinary Medicine (2.1%; 2,116 students), Humanities (0.9%; 881 students), and other subjects (0.02%; 18 students).

For German students, the trends differed. Across all institutions, Law, Economics, and Social Sciences topped the list with 40.7% (1,017,542 students), followed by Engineering (24.0%; 598,778 students), Humanities (12.2%; 305,032 students), Mathematics and Natural Sciences (10.6%; 265,885 students), Medicine and Health Sciences (7.0%; 174,662 students), Art and Art History (3.2%; 79,215 students), Agricultural, Forestry, and Food Sciences, Veterinary Medicine (2.2%; 55,708 students), and other subjects (0.1%; 2,339 students). In universities, the most popular subject was again Law, Economics, and Social Sciences (33.5%; 502,113 students), followed by Humanities (19.7%; 295,263 students), Engineering (16.9%; 252,818 students), Mathematics and Natural Sciences (16.6%; 248,670 students), Medicine and Health Sciences (7.8%; 117,618 students), Art and Art History (3.2%; 48,265 students), Agricultural, Forestry, and Food Sciences, Veterinary Medicine (2.1%; 31,906 students), and other subjects (0.1%; 2,154 students). At universities of applied sciences, Law, Economics, and Social Sciences was the clear favourite, with 51.5% (515,429 students), followed by Engineering (34.6%; 345,960 students), Medicine and Health Sciences (5.7%; 57,044 students), Art and Art History (3.1%; 30,950 students), Agricultural, Forestry, and Food Sciences, Veterinary Medicine (2.4%; 23,802 students), Mathematics and Natural Sciences (1.7%; 17,215 students), Humanities (1.0%; 9,769 students), and other subjects (0.02%; 185 students). (See Figure 84)

The Federal Statistical Office student statistics and DZHW calculations illustrate the trend of international students intending to graduate, categorized by subject group, since the winter semester 2016/17. The data reveals a consistent increase in the total number of international students intending to graduate across most subject groups over the observed period.

In Humanities, the number of international students rose from 25,811 in the winter semester 2016/17 to 27,413 in 2020/21 and further to 27,758 in 2021/22. Similarly, in Law, Economics, and Social Sciences, the figure increased from 60,660 in 2016/17 to 75,468 in 2020/21 and reached 80,057 in 2021/22. For Mathematics and Natural Sciences, the number grew from 26,051 in 2016/17 to 35,757 in 2020/21 and 38,450 in 2021/22. Medicine and Health Sciences also saw an upward trend, increasing from 13,525 in 2016/17 to 16,129 in 2020/21 and 16,747 in 2021/22.

In Agricultural, Forestry, and Food Sciences, Veterinary Medicine, the numbers rose from 5,679 in 2016/17 to 7,200 in 2020/21 and 7,422 in 2021/22. Engineering experienced the most significant growth, with figures rising from 93,113 in 2016/17 to 134,168 in 2020/21 and 141,269 in 2021/22. Art and Art History also saw a modest increase from 13,273 in 2016/17 to 15,974 in 2020/21 and 16,134 in 2021/22.

However, in the category "Outside the fields of study structure/other subjects," the trend was less consistent, with the number increasing slightly from 238 in 2016/17 to 257 in 2020/21 before decreasing to 247 in 2021/22. (See Figure 85)

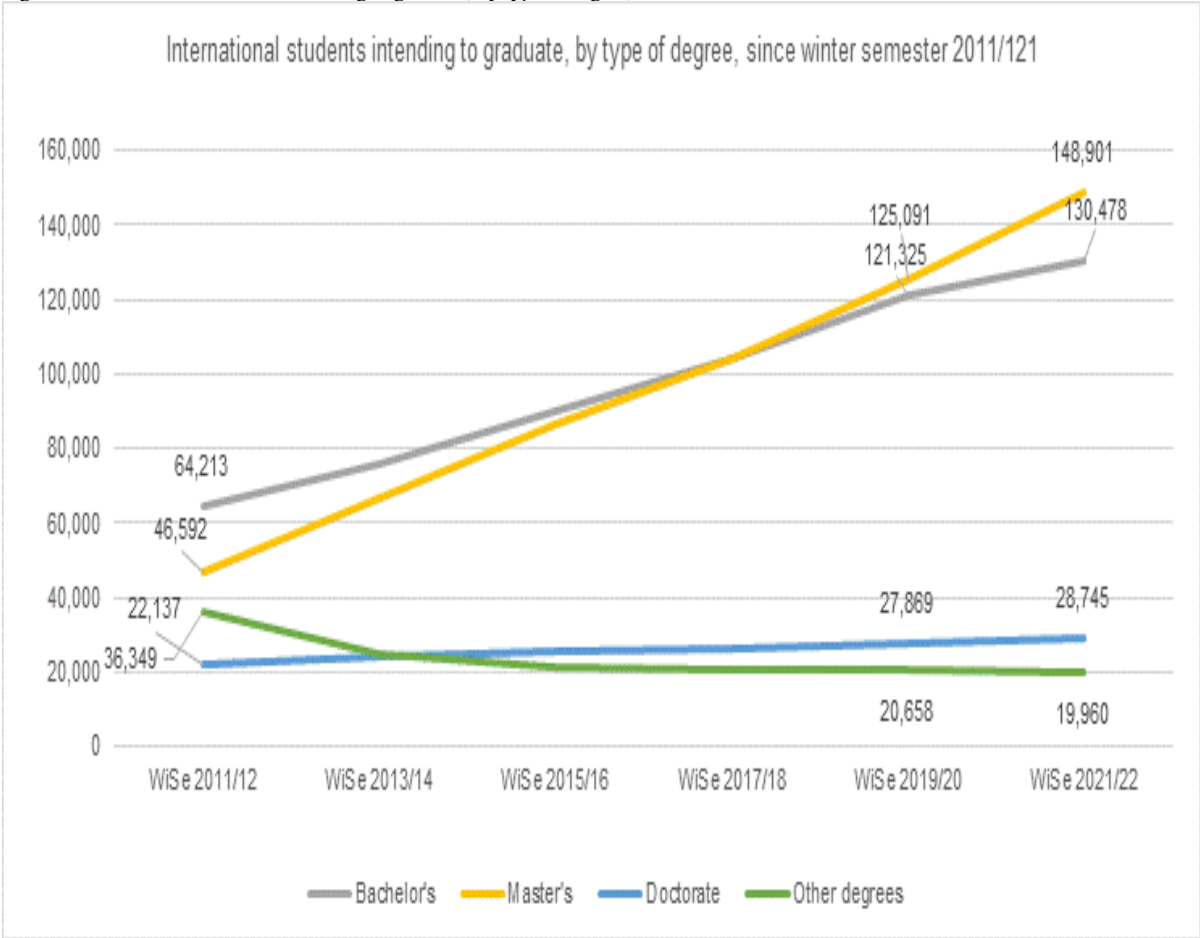


The Federal Statistical Office student statistics and DZHW calculations provide insights into the share of international students intending to graduate as a proportion of all students, categorized by type of university and subject group, in the winter semester 2021/22. The data highlights that across all institutions, the most popular subject among international students intending to graduate was Engineering (18.2%), followed by Art and Art History (16.1%), Mathematics and Natural Sciences (12.2%), Agricultural, Forestry and Food Sciences, Veterinary Medicine (11.6%), Medicine and Health Sciences (8.5%), Humanities (8.0%), and Law, Economics, and Social Sciences (7.0%).

At universities, Engineering remained the top subject (24.2%), followed by Art and Art History (19.4%), Agricultural, Forestry and Food Sciences, Veterinary Medicine (14.1%), Mathematics and Natural Sciences (11.8%), Medicine and Health Sciences (10.8%), Law, Economics, and Social Sciences (8.1%), and Humanities (8.0%). Meanwhile, in universities of applied sciences, Mathematics and Natural Sciences were the most popular (17.6%), followed by Engineering (13.1%), Art and Art History (10.2%), Agricultural, Forestry and Food Sciences, Veterinary Medicine (8.1%), Humanities (8.0%), Law, Economics, and Social Sciences (6.0%), and Medicine and Health Sciences (3.6%).

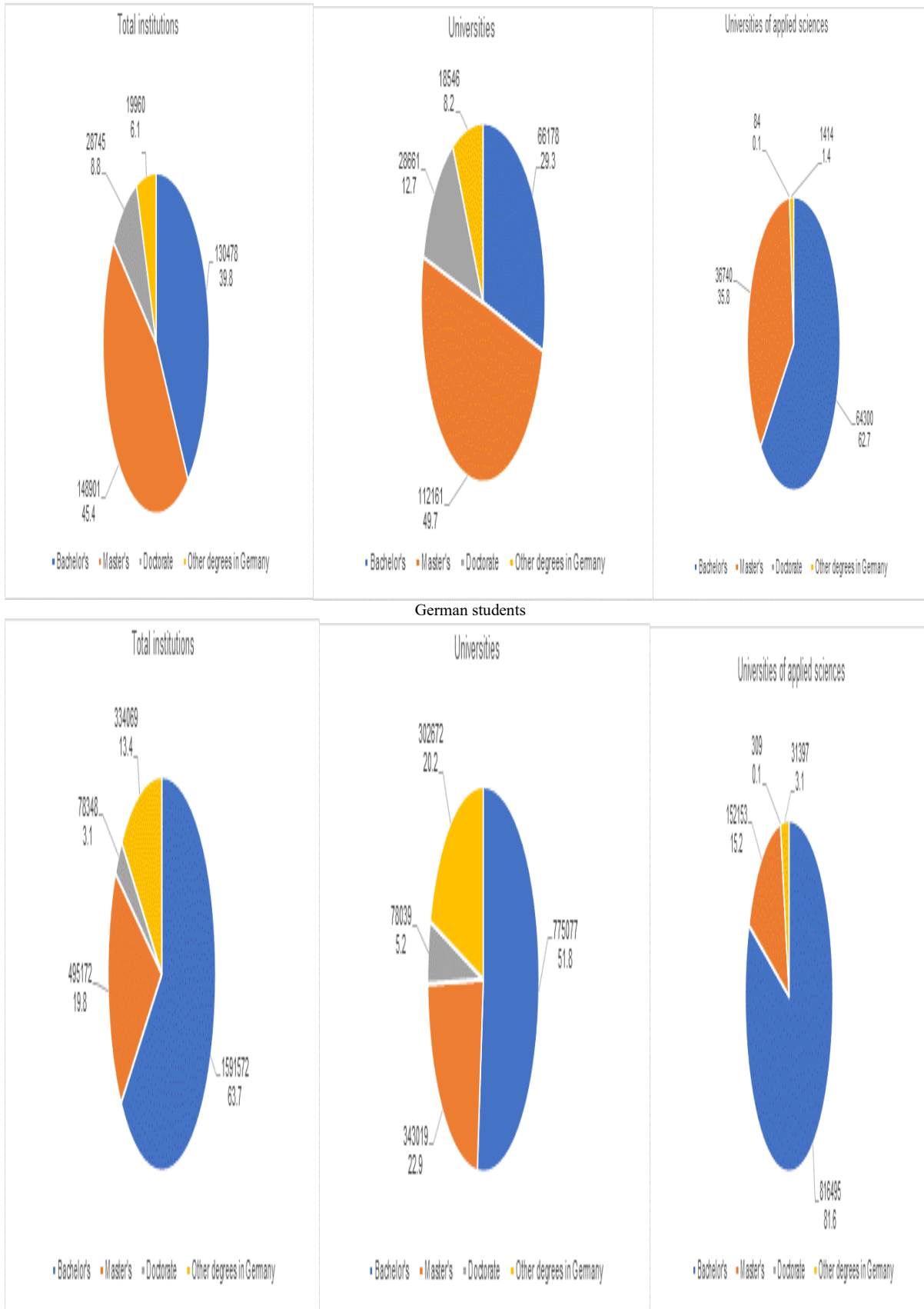
Overall, the share of international students intending to graduate was higher in universities (12.6%) compared to universities of applied sciences (8.9%), with a total share across all subjects at 11.2%. This suggests that universities were more popular among international students than universities of applied sciences. (See Figure 86).

Figure 73- International students intending to graduate, by type of degree, since winter semester 2011/121



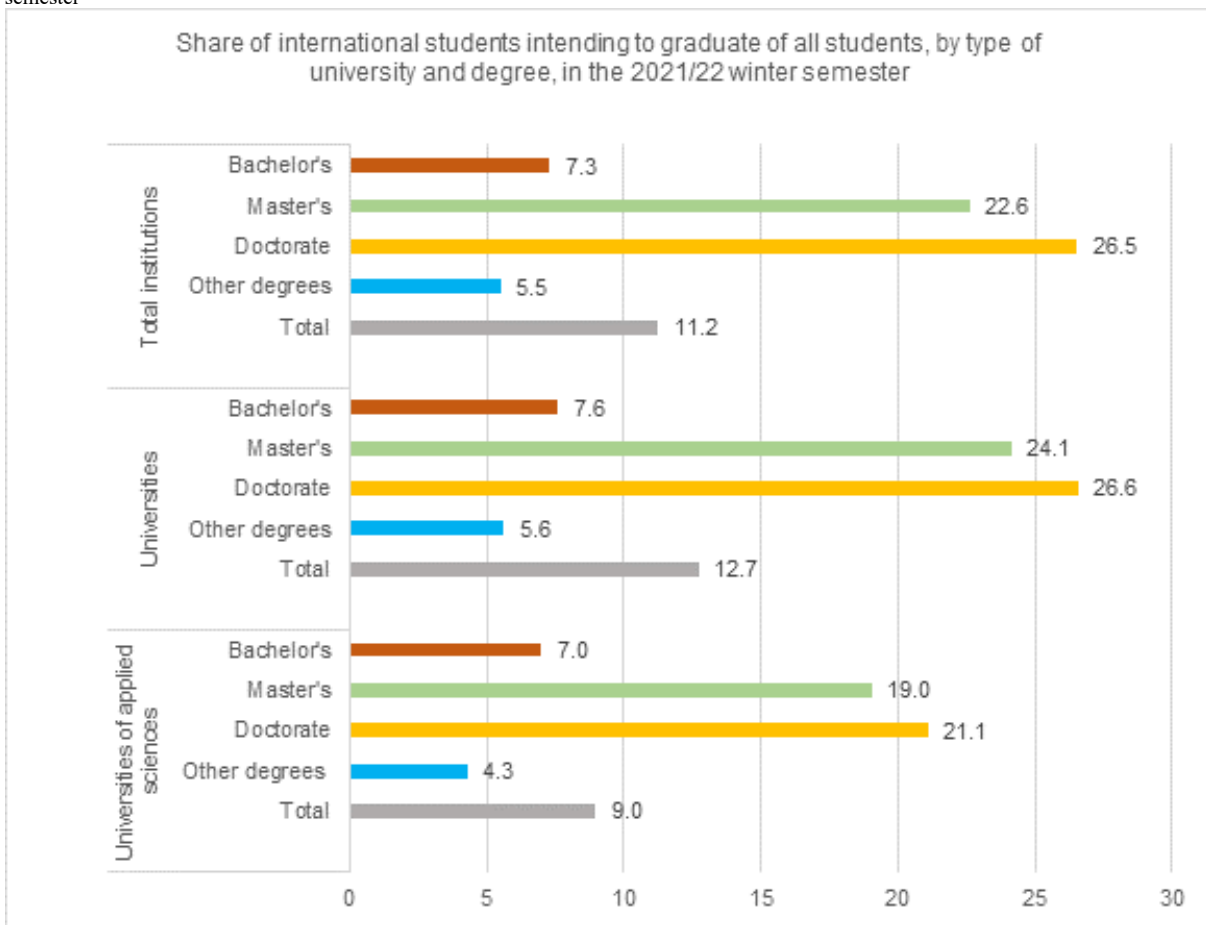
Source: Federal Statistical Office student statistics

Figure 74- International and German students intending to graduate, by type of university and degree, in the 2021/22 winter semester



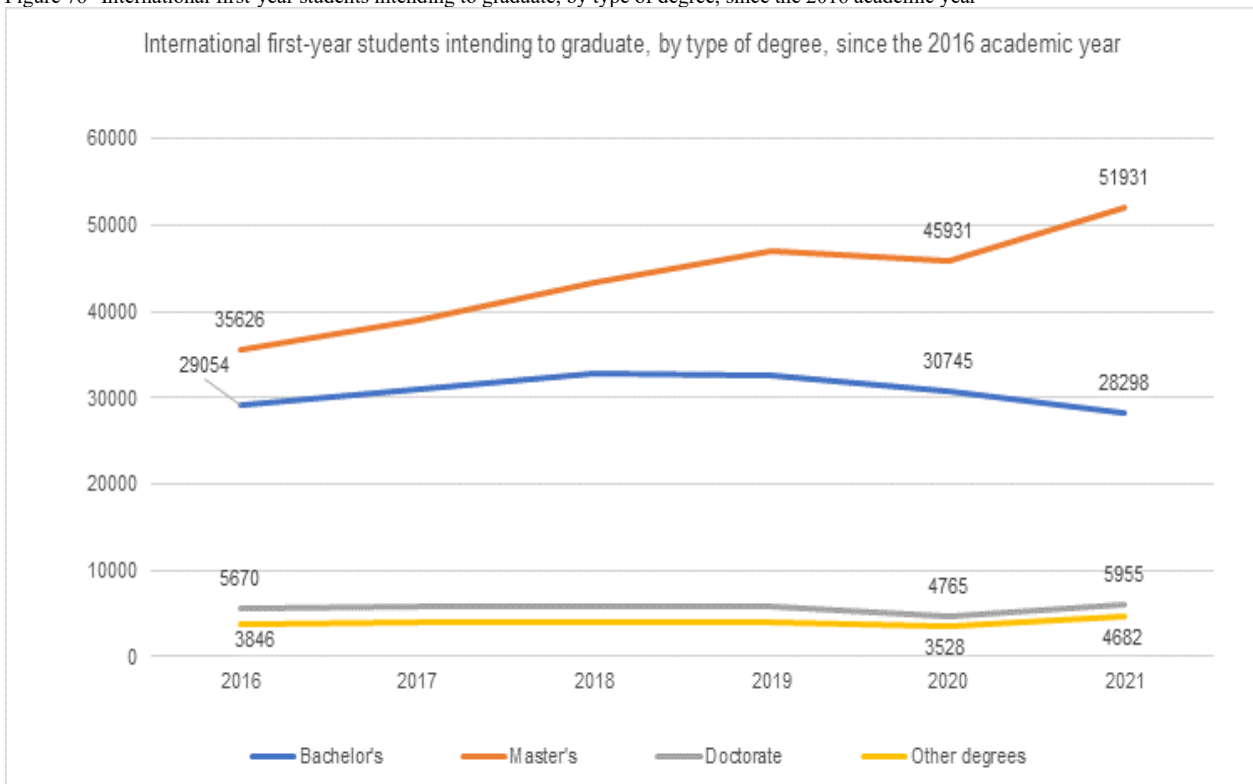
Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 75- Share of international students intending to graduate of all students, by type of university and degree, in the 2021/22 winter semester



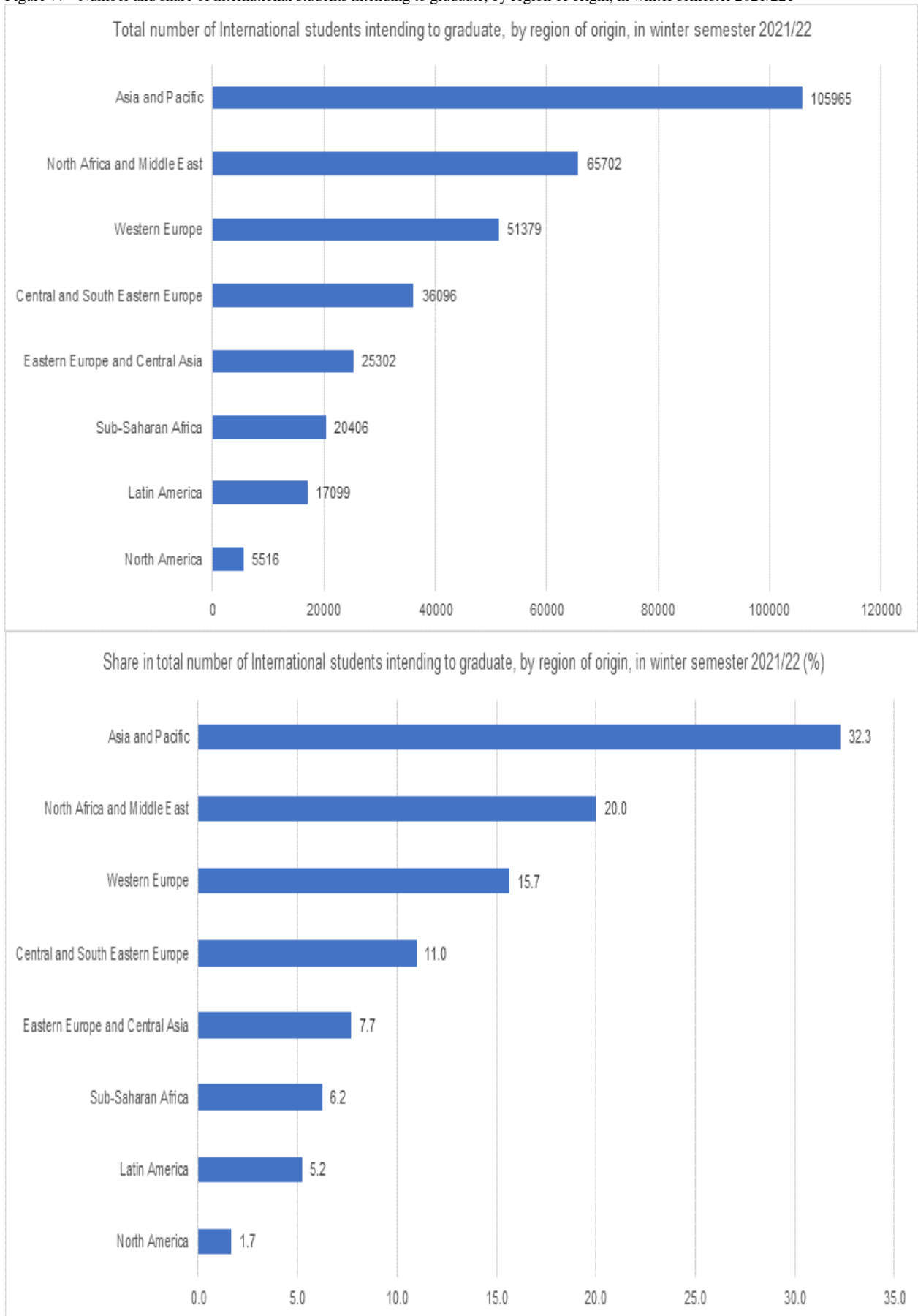
Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 76- International first-year students intending to graduate, by type of degree, since the 2016 academic year



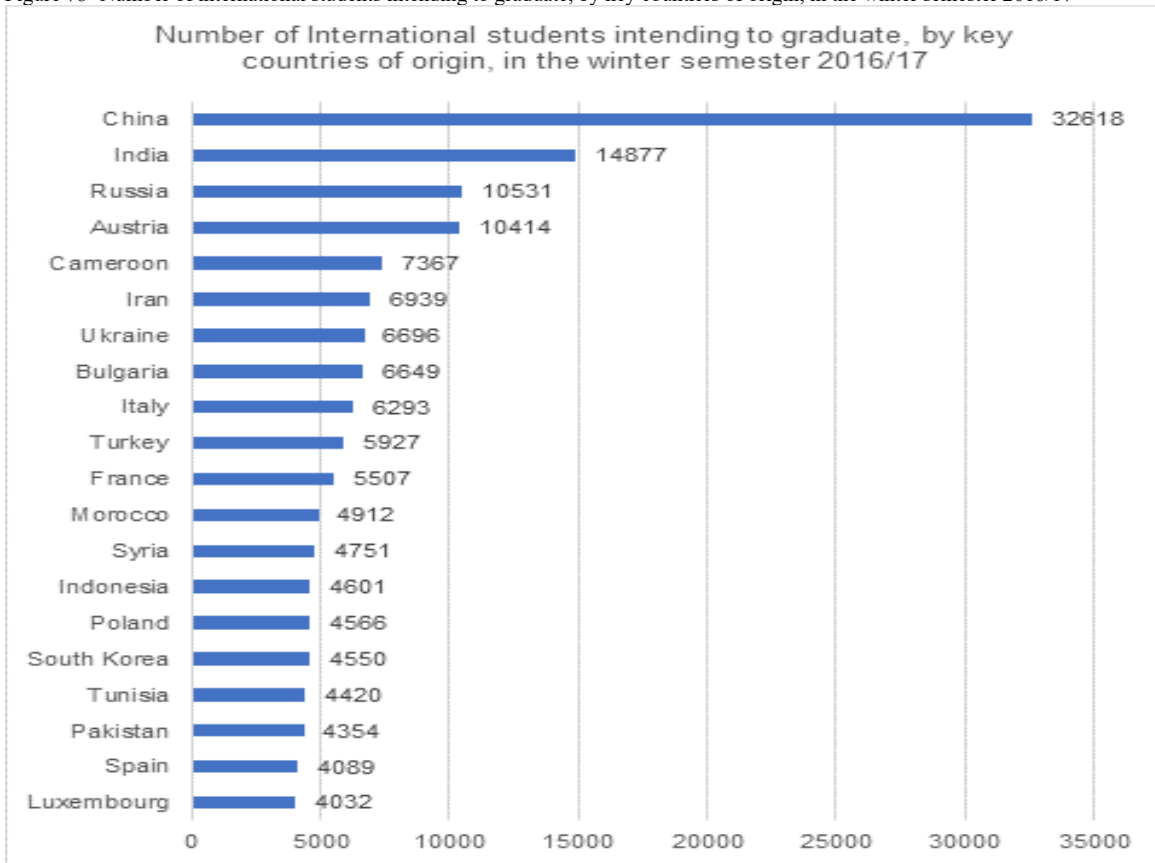
Source: Federal Statistical Office student statistics

Figure 77- Number and share of international students intending to graduate, by region of origin, in winter semester 2021/22



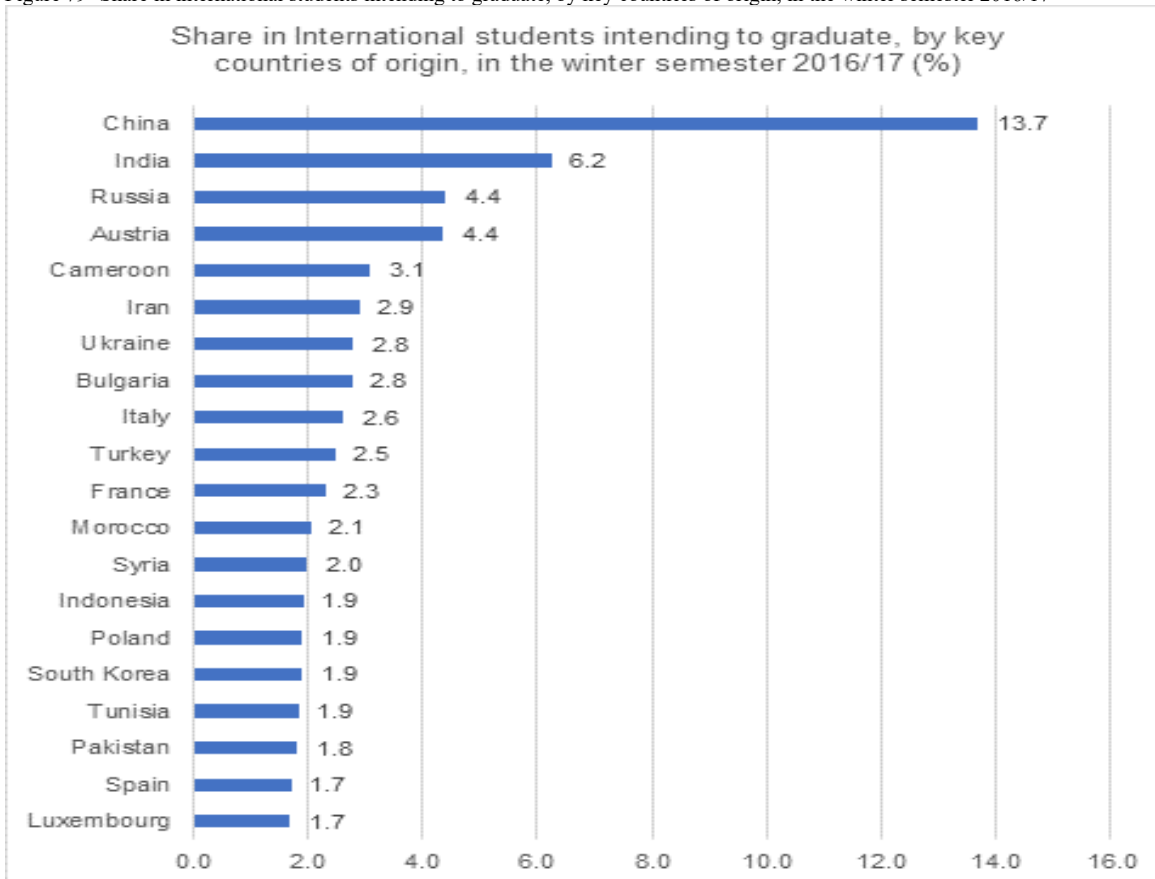
Sources: Federal Statistical Office, examination statistics; DZHW calculations

Figure 78- Number of international students intending to graduate, by key countries of origin, in the winter semester 2016/17



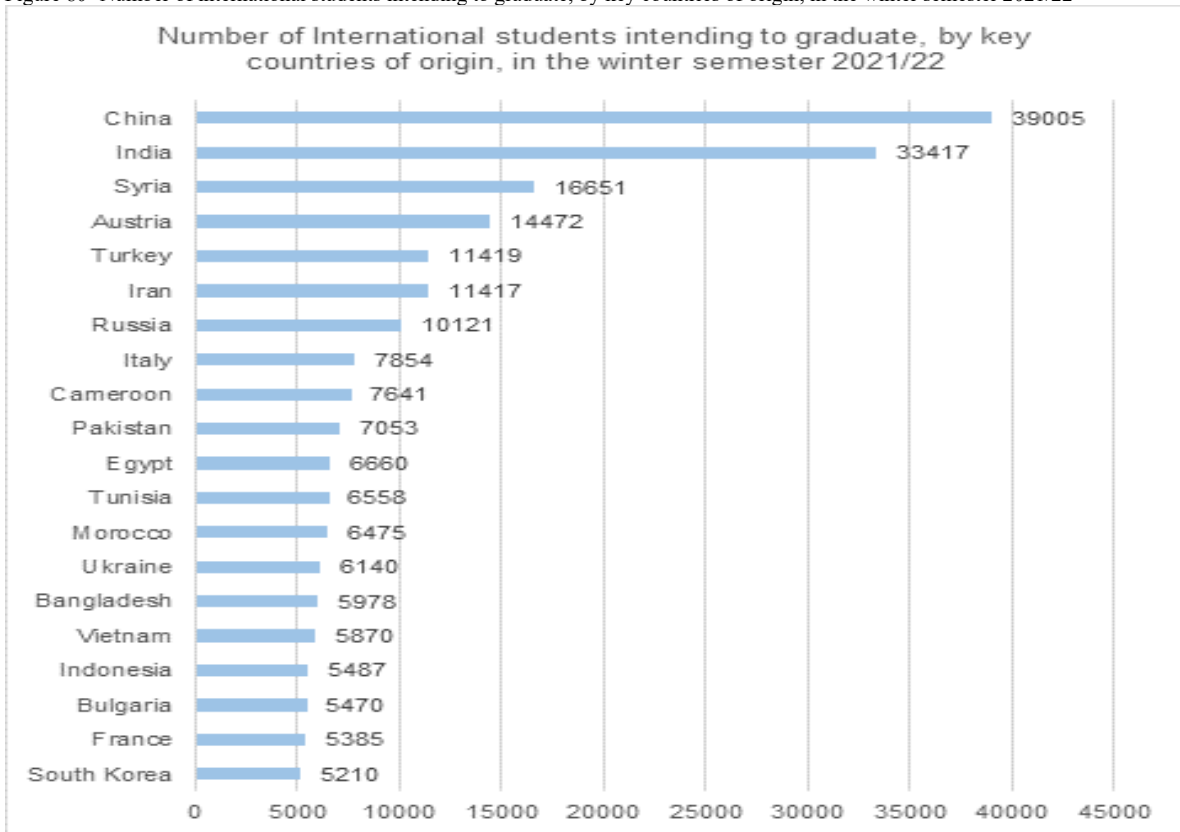
Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 79- Share in international students intending to graduate, by key countries of origin, in the winter semester 2016/17



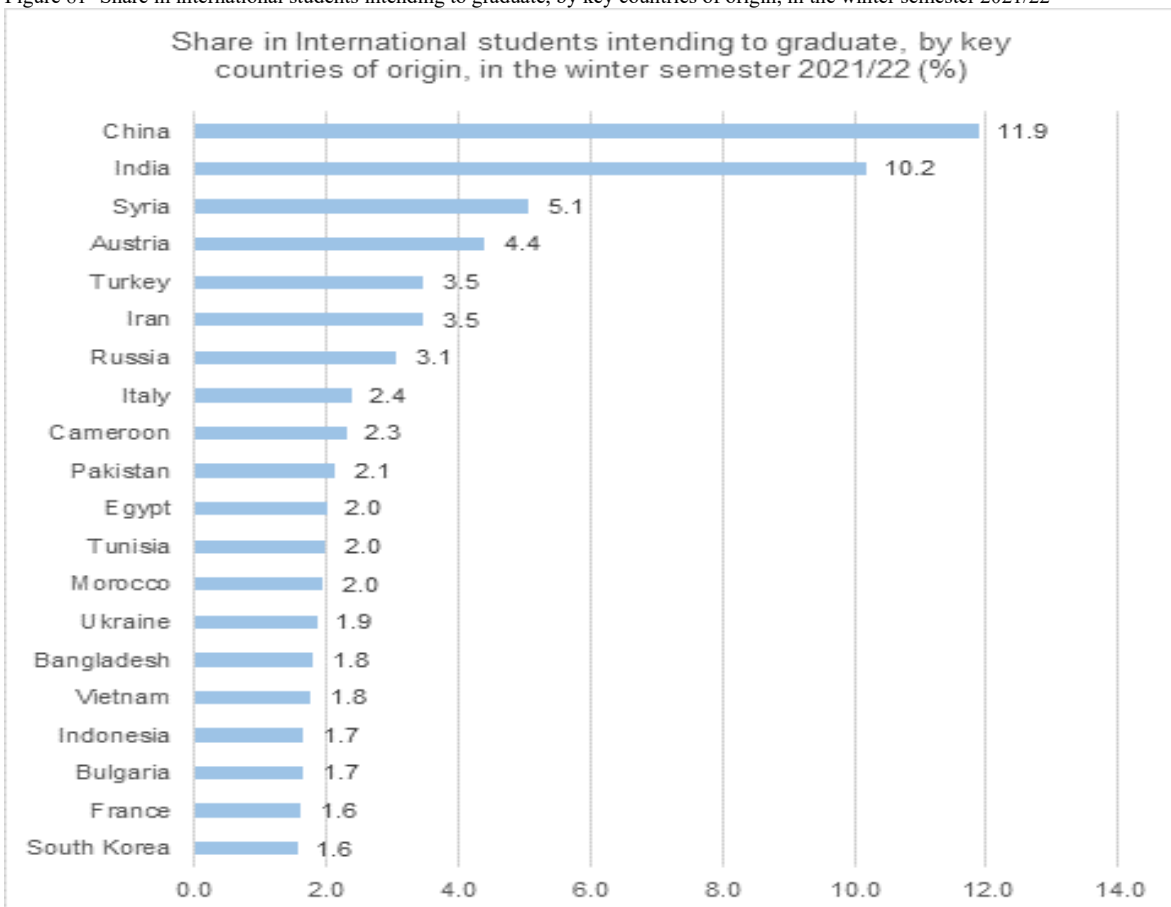
Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 80- Number of international students intending to graduate, by key countries of origin, in the winter semester 2021/22



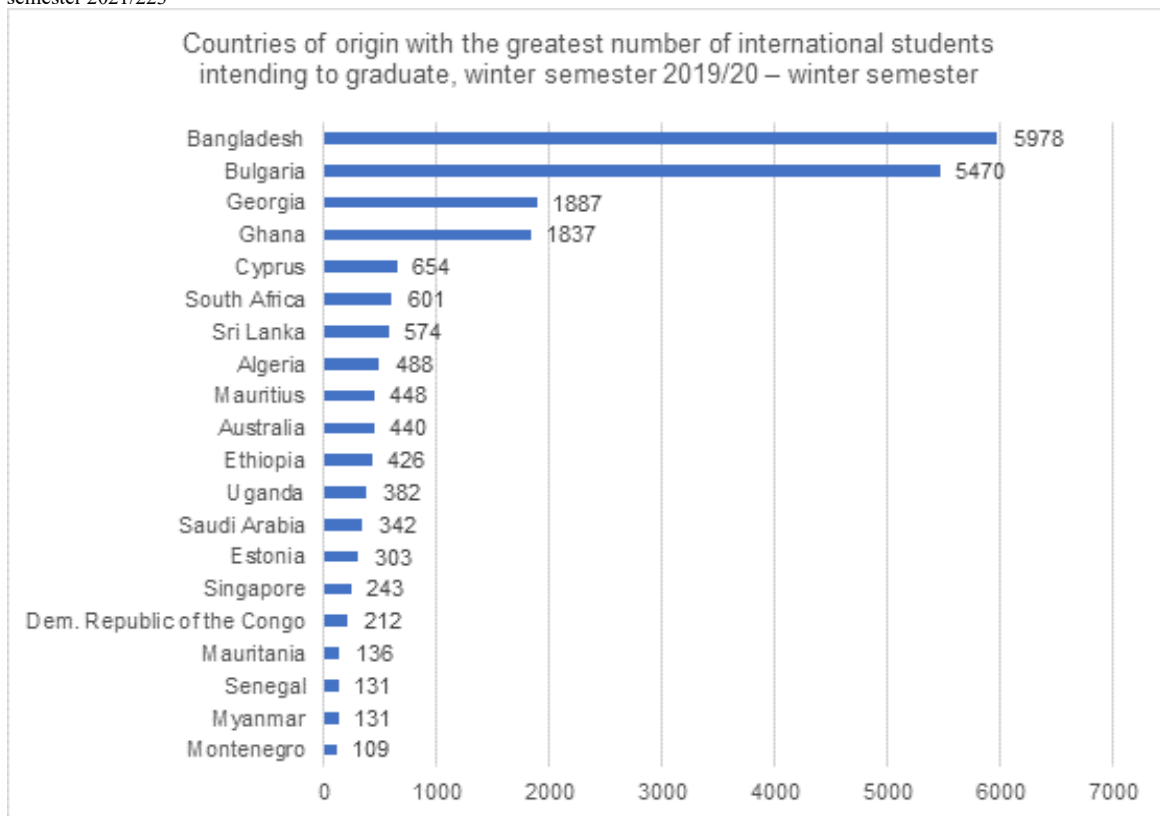
Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 81- Share in international students intending to graduate, by key countries of origin, in the winter semester 2021/22



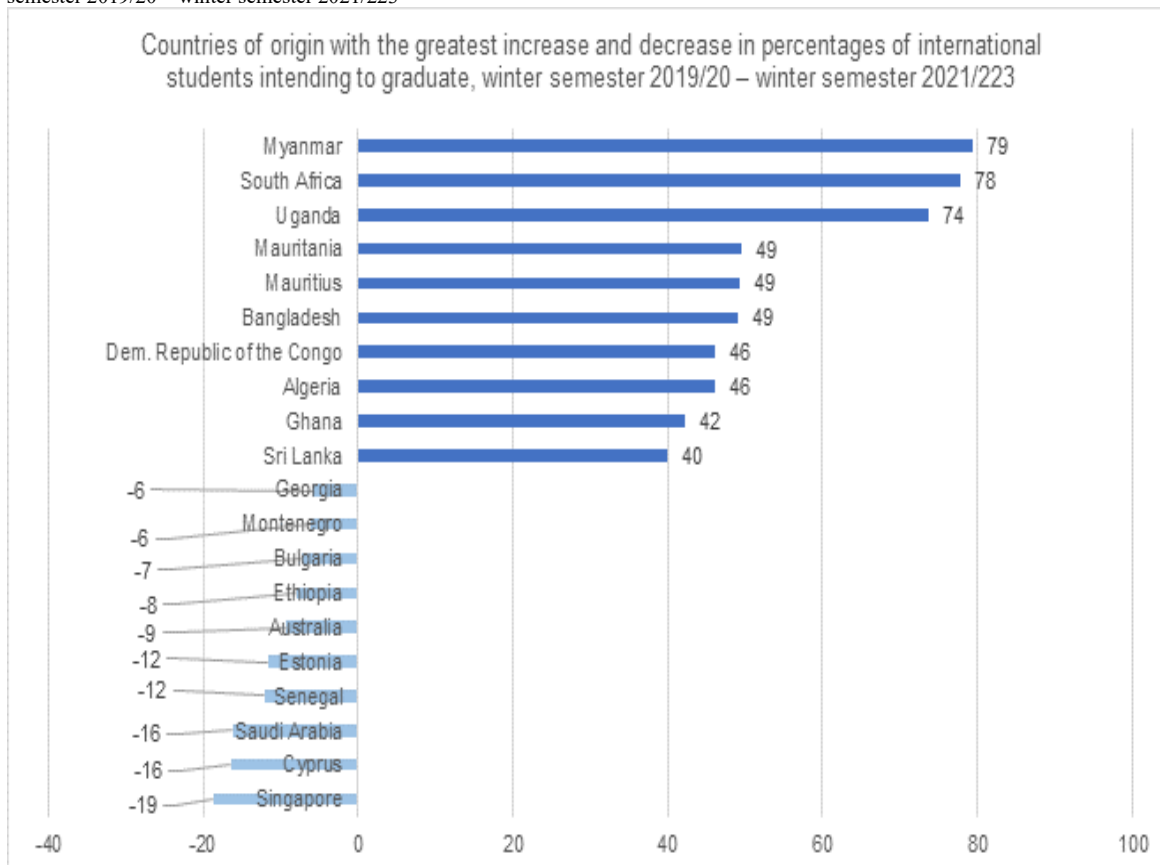
Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 82- Countries of origin with the greatest number of international students intending to graduate, winter semester 2019/20 – winter semester 2021/223



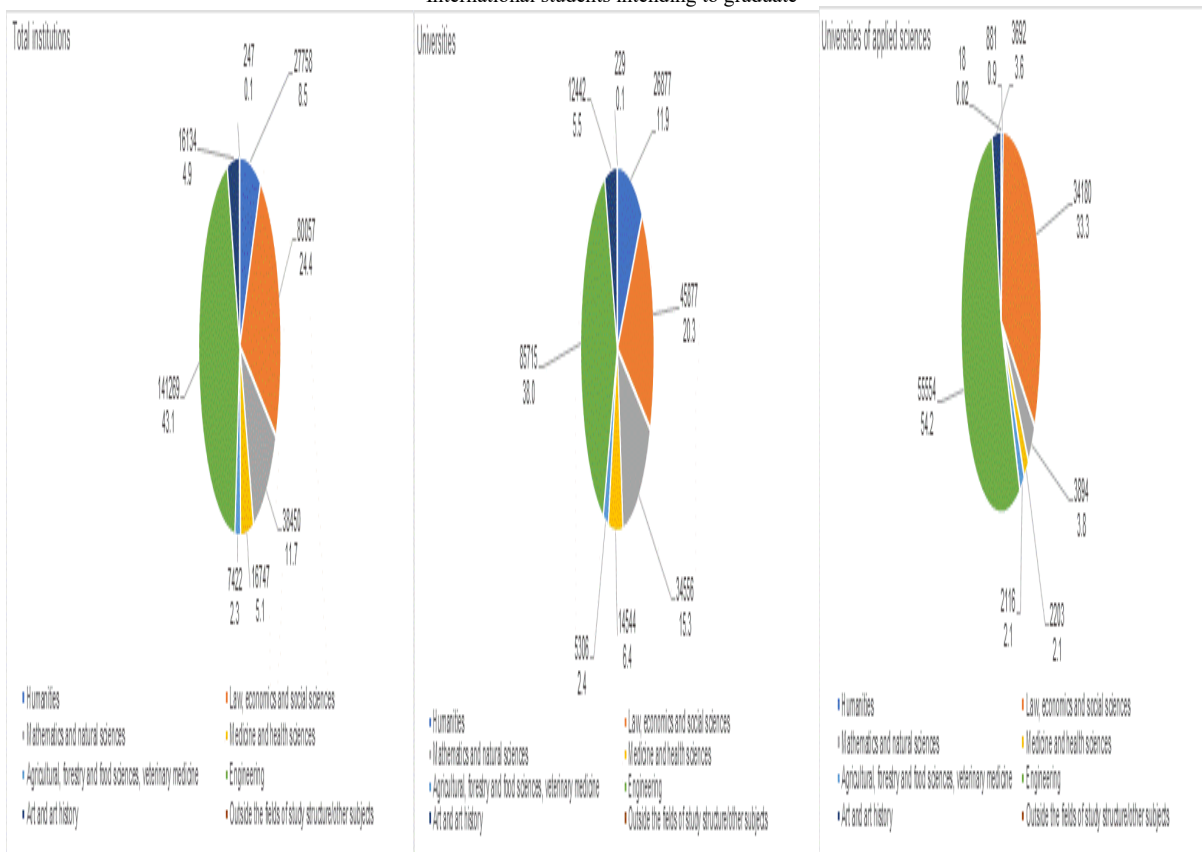
Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 83- Countries of origin with the greatest increase and decrease in percentages of international students intending to graduate, winter semester 2019/20 – winter semester 2021/223

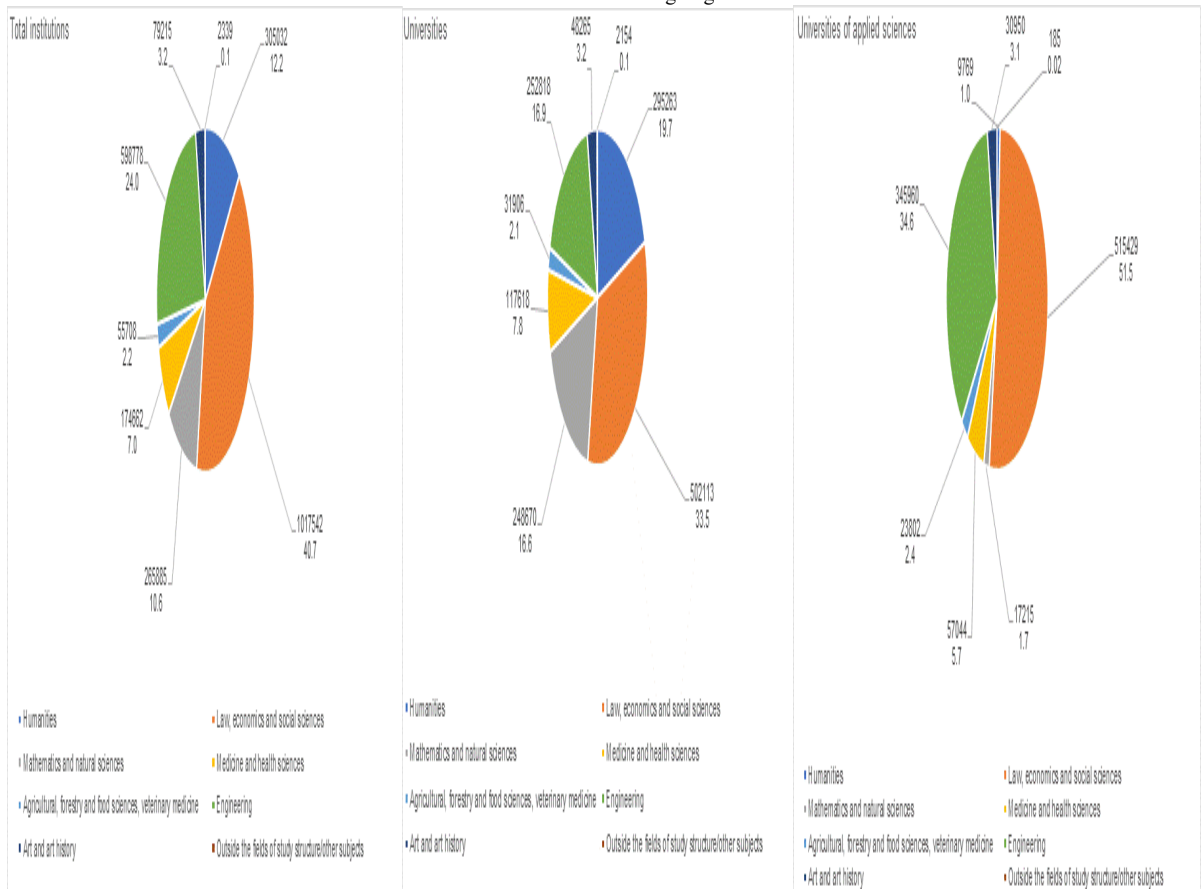


Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 84- International and German students intending to graduate, by type of university and subject group, in the 2021/22 winter semester  
International students intending to graduate



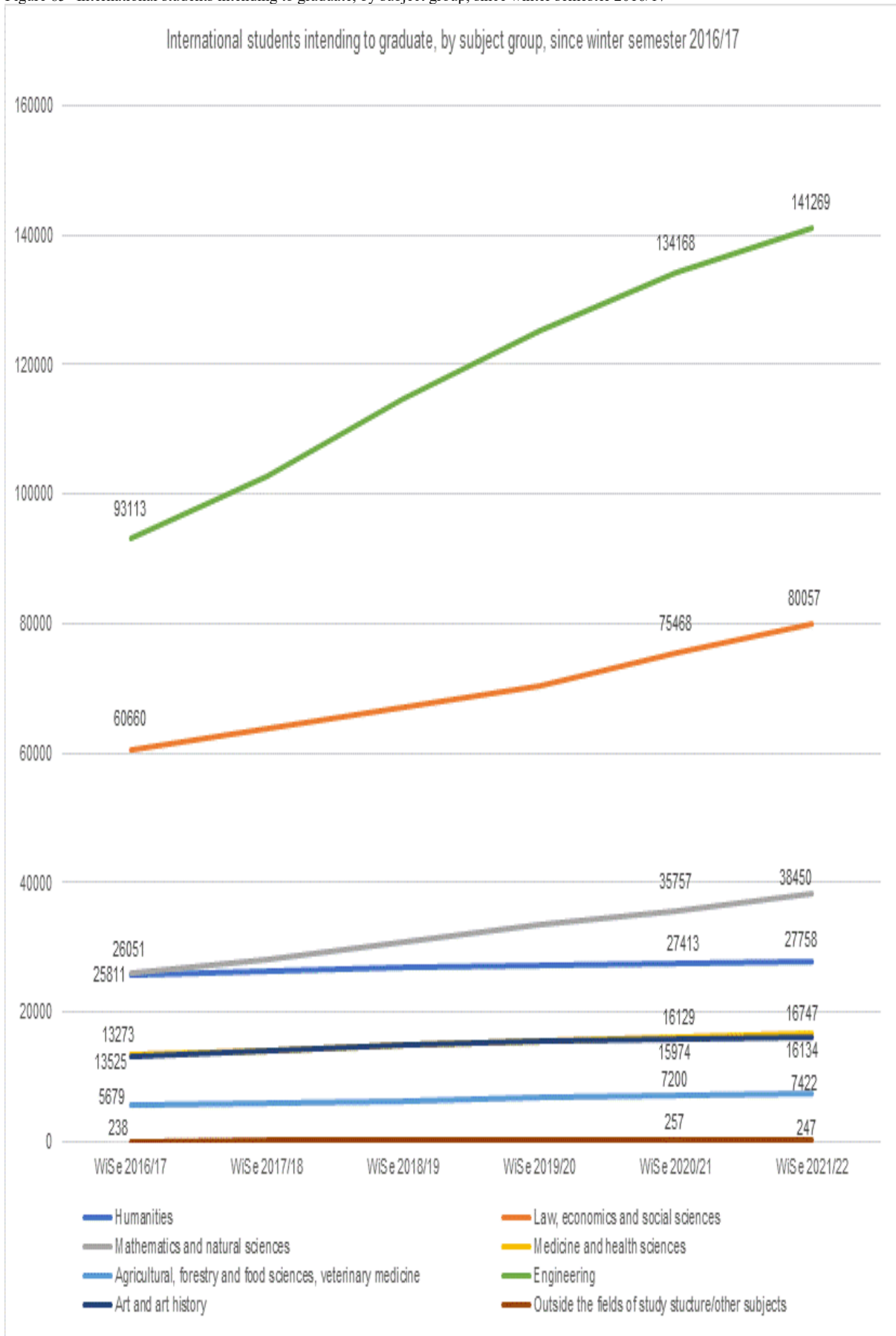
German students intending to graduate



Sources: Federal Statistical Office student statistics; DZHW calculations

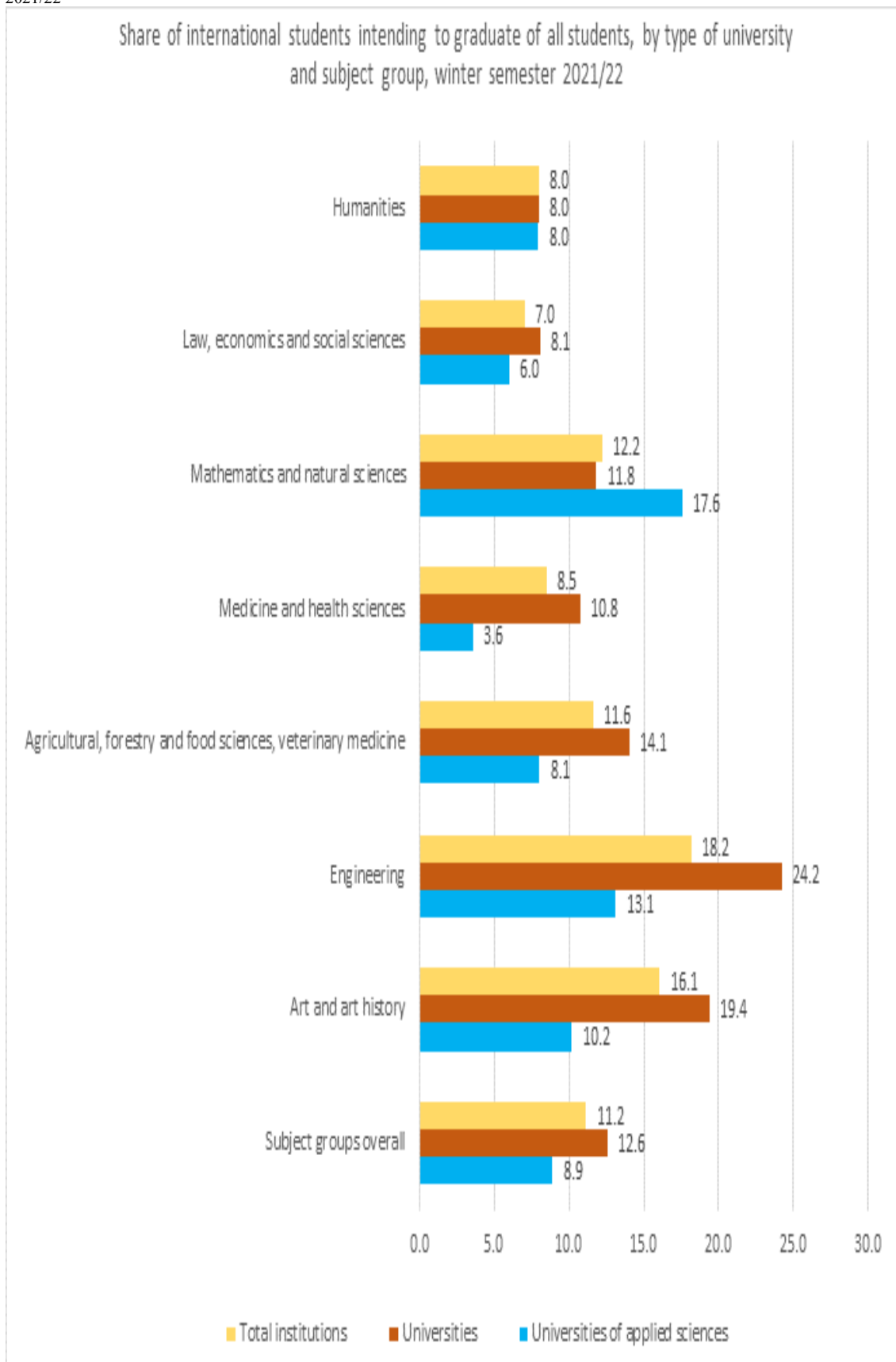


Figure 85- International students intending to graduate, by subject group, since winter semester 2016/17



Sources: Federal Statistical Office student statistics; DZHW calculations

Figure 86- Share of international students intending to graduate of all students, by type of university and subject group, winter semester 2021/22



Sources: Federal Statistical Office student statistics; DZHW calculations

#### *4.1.3.8. Distribution of the international graduates in Germany*

The Federal Statistical Office's examination statistics and DZHW calculations provide a detailed analysis of the distribution and trends among international graduates in 2021. Of the total 53,570 international graduates, the majority came from the Asia and Pacific region, accounting for 18,940 (35.4%), making it the top region of origin. This was followed by graduates from Western Europe (9,785, 18.3%), North Africa and the Middle East (7,642, 14.3%), Central and South-Eastern Europe (5,536, 10.3%), Eastern Europe and Central Asia (4,353, 8.1%), Latin America (3,510, 6.6%), Sub-Saharan Africa (2,515, 4.7%), North America (1,226, 2.3%), and other non-regional classifications (63, 0.1%). (See Figure 87.)

#### *Trends in International Graduates by Degree Type (2016–2021)*

An analysis of the distribution of international graduates by degree type since 2016 reveals significant growth trends: Total Graduates: increased steadily from 38,593 in 2016 to 47,154 in 2020 and 53,570 in 2021. Bachelor's Degree Graduates: Grew from 10,326 in 2016 to 13,554 in 2020 and further to 15,604 in 2021. Master's Degree Graduates: Rose from 20,336 in 2016 to 25,889 in 2020 and 29,839 in 2021, consistently representing the largest share of graduates. Doctorate Degree Graduates: Increased from 4,923 in 2016 to 5,065 in 2020 and 5,480 in 2021/22. Other Degrees Graduates: Decreased from 3,008 in 2016 to 2,646 in 2020 and slightly to 2,637 in 2021. The data highlights that Master's degree graduates consistently represented the largest group, followed by Bachelor's, Doctorate, and other degrees.

#### *Impact of COVID-19 Pandemic (2019–2020)*

The COVID-19 pandemic caused a temporary decline in total international graduates, dropping from 48,236 in 2019 to 47,154 in 2020. However, there were notable variations by degree type: Bachelor's Graduates: Increased slightly from 13,392 in 2019 to 13,554 in 2020. Master's Graduates: Declined from 26,955 in 2019 to 25,889 in 2020. Doctorate Graduates: Declined from 5,222 in 2019 to 5,065 in 2020. Other Degrees Graduates: Declined from 2,667 in 2019 to 2,646 in 2020. This data suggests that the pandemic had varied impacts across different levels of study. (See Figure 88.)

The Federal Statistical Office's examination statistics and DZHW calculations provide valuable insights into the mean study durations of international and German graduates by degree type in 2021. The data reveals that the mean study duration for total graduates is 7.0 years for international students, compared to 7.6 years for German students, indicating that German graduates, on average, take longer to complete their studies. For Bachelor's degree programs, international graduates have a mean study duration of 8.6 years, which is higher than the 8.2 years observed for German graduates. Similarly, in Master's degree programs, international graduates take an average of 5.8 years, slightly longer than the 5.7 years recorded for their German counterparts.

Overall, the mean study duration for Bachelor's degree graduates is higher than for Master's degree graduates in both groups. Notably, international graduates tend to complete their Bachelor's and Master's degrees in slightly more time than German graduates. However, the overall shorter mean study duration for international graduates compared to German graduates may reflect differences in academic pathways, program structures, or demographic factors influencing their education. (See Figure 89 for detailed statistical representation.)

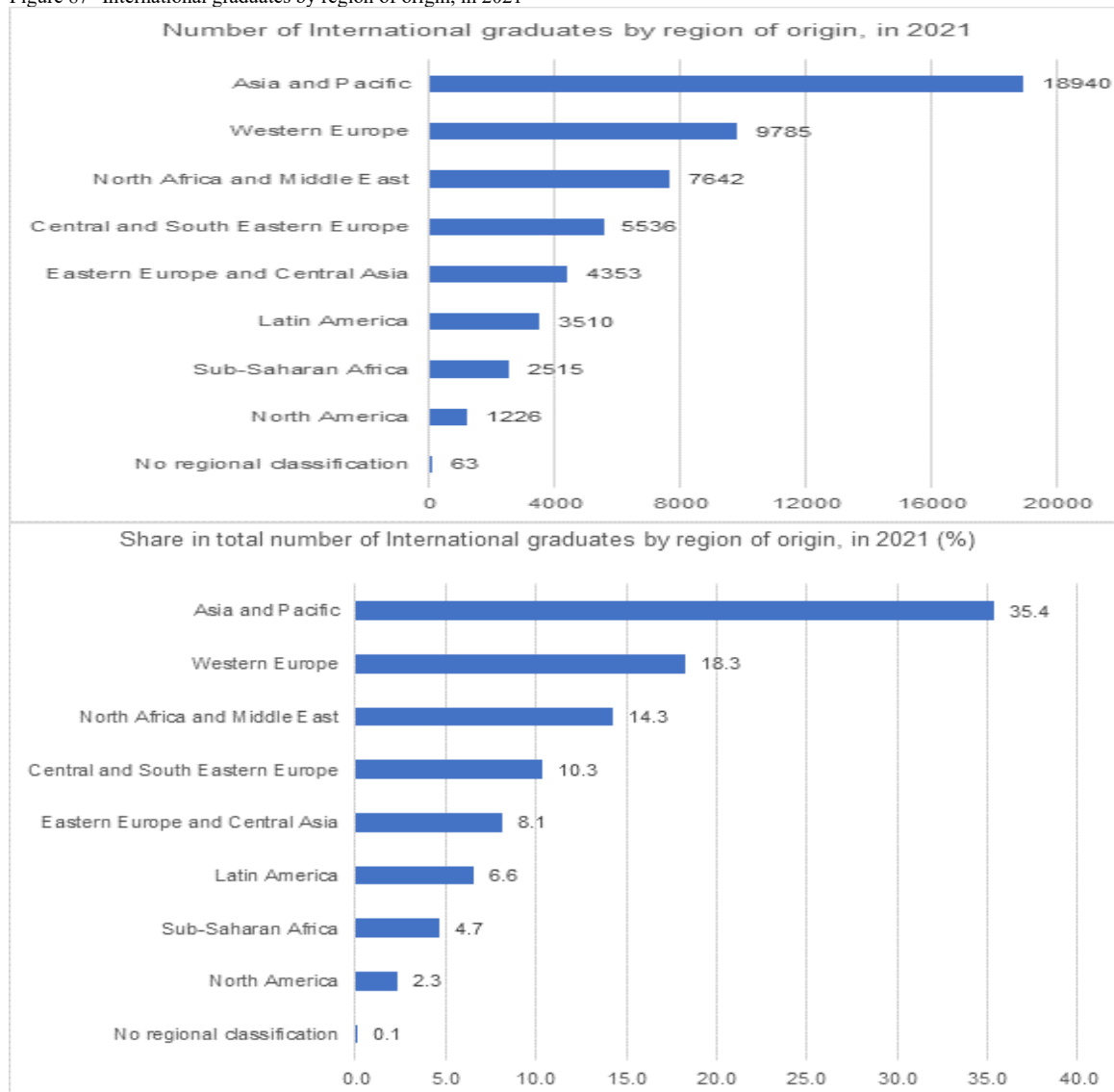
Data from the Federal Statistical Office's student statistics and DZHW calculations provides an overview of the distribution of international graduates by subject group in 2021. For all institutions combined, the overall share of international graduates across subject groups is 10.3%. The most popular subject group for international graduates is Art and Art History, with a significant share of 20.3%, followed by Engineering (16.2%),

Mathematics and Natural Sciences (11.4%), Agricultural, Forestry and Food Sciences, and Veterinary Medicine (10.8%). Other subject groups include Humanities (7.9%), Medicine and Health Sciences (7.3%), and Law, Economics, and Social Sciences (6.8%).

At universities, the overall share of international graduates across subject groups is slightly higher, at 12.6%. Art and Art History remains the most popular subject group, with an even larger share of 25.6%, followed by Engineering (22.9%), Agricultural, Forestry and Food Sciences, and Veterinary Medicine (13.7%), and Mathematics and Natural Sciences (11.3%). Additional subject groups include Medicine and Health Sciences (9.2%), Law, Economics, and Social Sciences (8.9%), and Humanities (7.9%).

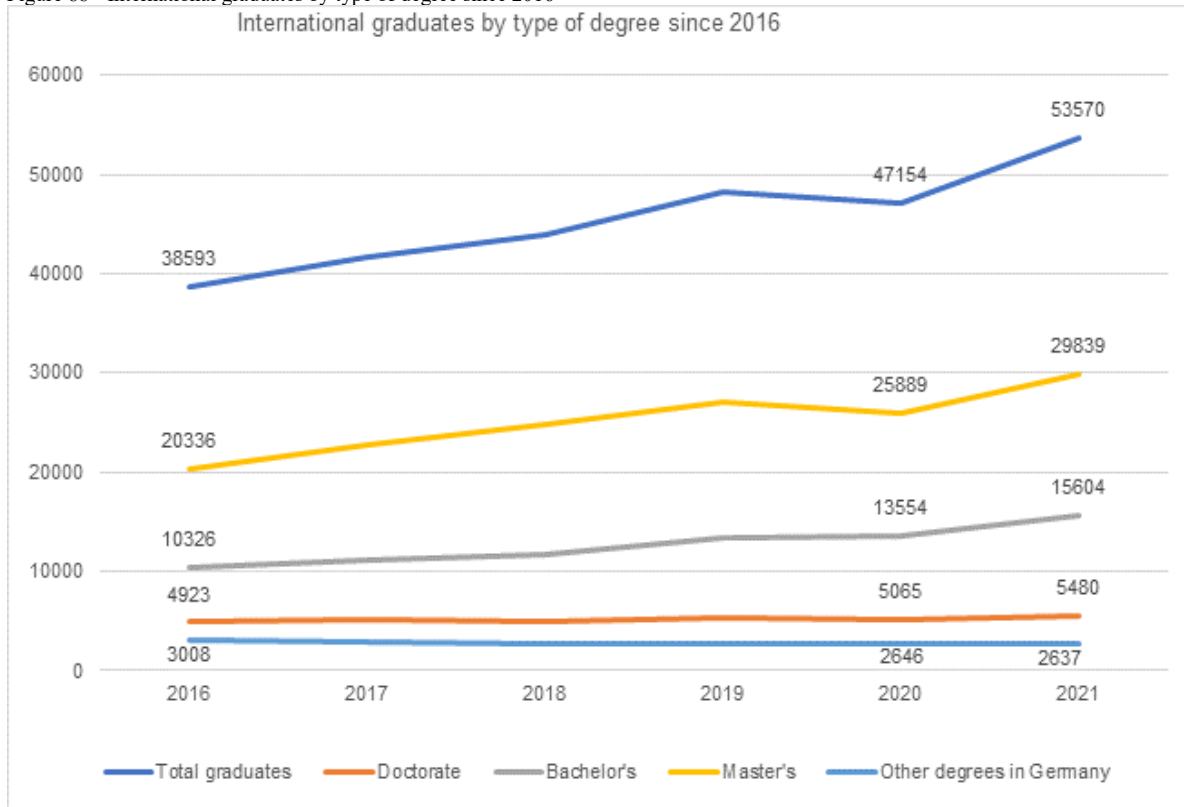
In universities of applied sciences, the overall share of international graduates across subject groups is lower, at 7%. Here, Mathematics and Natural Sciences is the most popular subject group with a share of 12.6%, followed by Engineering (10.5%) and Art and Art History (10.3%). Humanities (8.8%), Agricultural, Forestry and Food Sciences, and Veterinary Medicine (5.9%), Law, Economics, and Social Sciences (4.9%), and Medicine and Health Sciences (2.6%) follow. These variations highlight differences in subject preferences among international graduates depending on the type of institution. (See Figure 90 for detailed statistical representation.)

Figure 87- International graduates by region of origin, in 2021



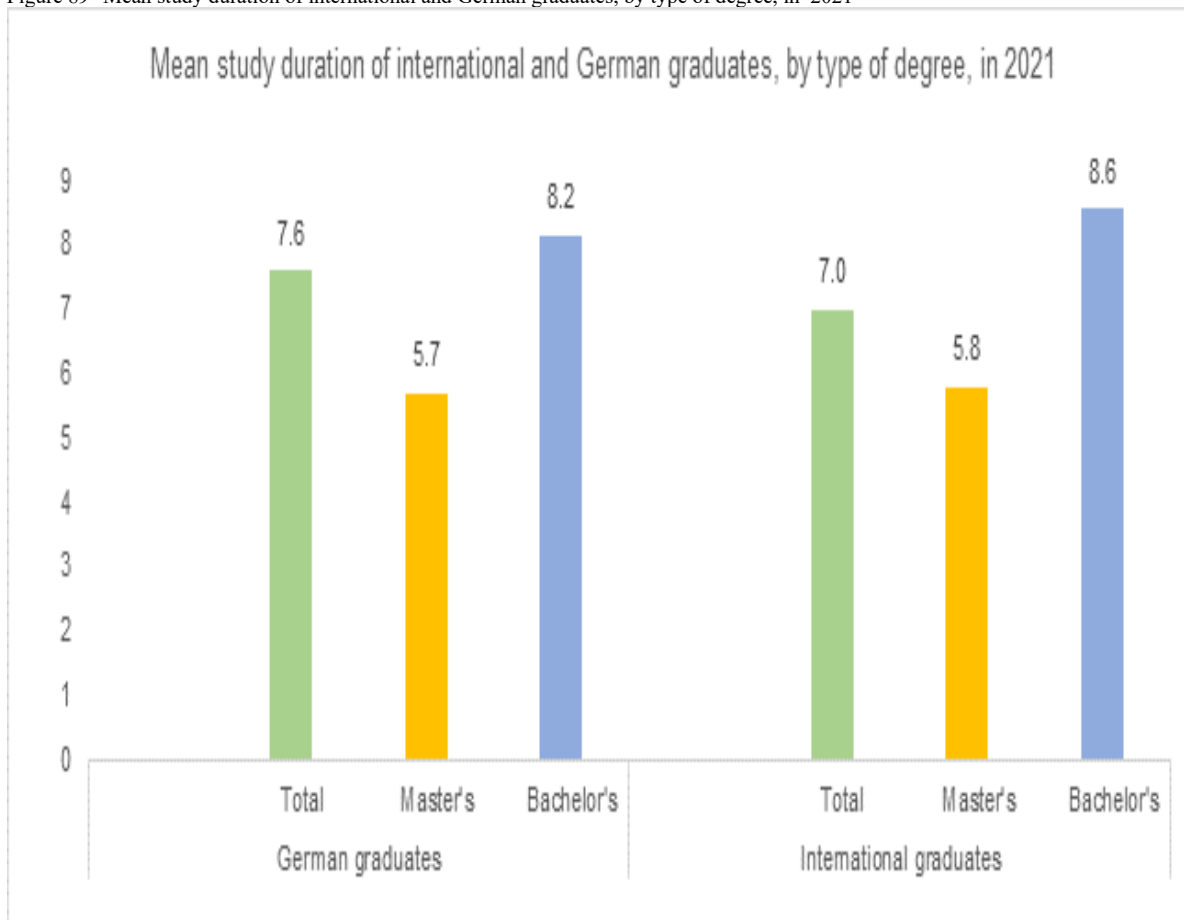
Sources: Federal Statistical Office, examination statistics; DZHW calculations

Figure 88 - International graduates by type of degree since 2016



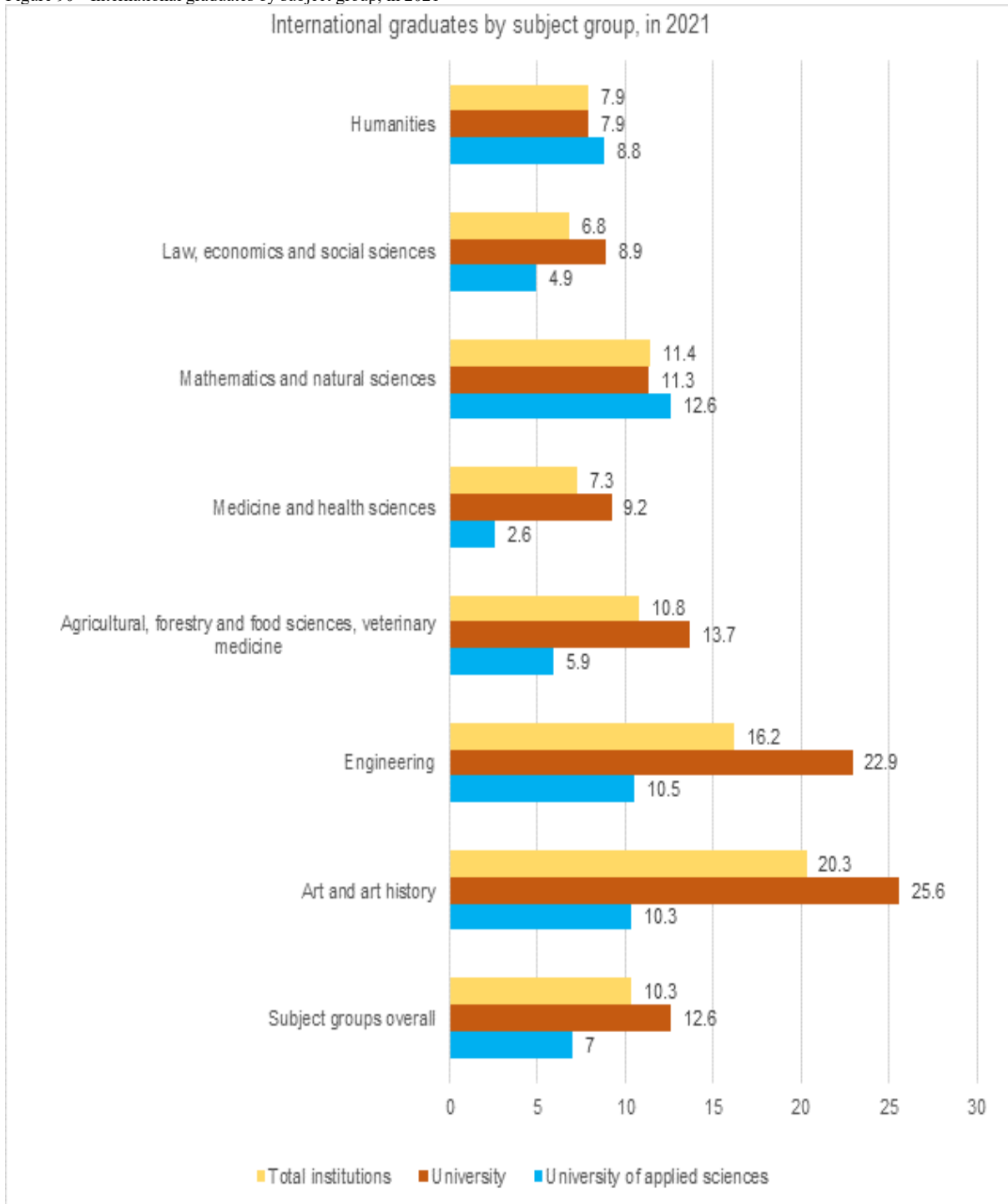
Source: Federal Statistical Office, examination statistics

Figure 89- Mean study duration of international and German graduates, by type of degree, in 2021



Sources: Federal Statistical Office, examination statistics; DZHW calculations

Figure 90 - International graduates by subject group, in 2021



Sources: Federal Statistical Office, examination statistics; DZHW calculations

The findings presented in this section substantiate the first hypothesis, indicating that, from a receiving country perspective, the pattern and size of migration of international higher education students to Germany have increased substantially over the period 2000–2023. However, this growth has been accompanied by considerable variation in the distribution of students across regions, subject groups, and institutional types during the same period. Furthermore, the results align with the second hypothesis, demonstrating that the COVID-19 pandemic significantly impacted the migration of international higher education students to Germany during the years 2020–2022.

#### 4.2 *The determinants and impacts of migration of international higher education students to Germany*

This section examines the push-pull factors—economic, political, cultural, and educational—that drive the migration of higher education students to Germany, along with the causes and consequences of this phenomenon. The analysis aims to explore the applicability of various explanations and interpretations regarding the motivations, determinants, and implications of international student mobility, as discussed in prior studies within the international literature, to the specific case of Germany.

The findings outlined above reveal that Germany has become one of the most popular global destinations for international students. Over the years, the number of international students in Germany has been steadily increasing due to the numerous advantages the country offers, which attract students from diverse regions. These advantages include a combination of high-quality education, relatively low tuition fees, a welcoming environment for international students, and favourable post-graduation opportunities. The results confirm the applicability of many of the explanations and reasons identified in the literature to Germany's status as a leading destination for international higher education.

From an economic perspective, Germany has become one of the most popular destinations for studying abroad due to its low or no tuition fees, affordable living costs, and generous support for international students. One of the key advantages is the absence of tuition fees at public universities for both domestic and international students. Since 2014, Germany has offered free tuition at public institutions for all students, regardless of their origin, making it an attractive option for those seeking quality education at minimal cost. Instead of tuition, students are required to pay a small administrative fee or semester fee, typically covering student contributions, student union fees, and public transport tickets, which together amount to around €250 per semester.<sup>12</sup>

This policy has made Germany the only major study destination where universities charge no tuition fees. Higher education in Germany is predominantly state-funded, with the country boasting around 400 institutions, most of which are public and tuition-free. While private institutions do exist, they account for less than 5% of the student body. The move to abolish tuition fees was a significant political decision that took place after years of debate within the country's decentralized federal system. The consensus reached in October 2014 enabled international students to benefit from this unique feature of German higher education.<sup>13</sup>

In addition to free tuition, Germany offers a relatively affordable cost of living. Compared to other European countries or the USA, the cost of living in many German cities is lower, particularly when it comes to accommodation, transport, food, and other daily expenses. This affordability is especially appealing to international students who often face the challenge of managing their finances while studying abroad. Furthermore, the German government provides flexible payment plans for students to ease the financial burden, contributing to an accessible and high-quality educational experience. Overall, Germany's combination of low tuition fees, reasonable living costs, and high academic standards makes it a highly attractive study destination from an economic standpoint.<sup>14</sup>

Some studies highlight Germany's position as the most attractive study destination in Europe. An annual ranking of European study destinations places Germany at the top of the list as the most appealing option for international students. This ranking evaluates 30 European destinations based on factors such as education quality, cost, career opportunities, and overall quality of life. While several other destinations also rank highly in

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<sup>12</sup> Source: see <https://www.studying-in-germany.org/why-is-germany-the-perfect-place-to-study-abroad/> (Accessed on 18 February 2024)

<sup>13</sup> Source: see <https://www.topuniversities.com/blog/7-perks-studying-germany> (Accessed on 18 February 2024)

<sup>14</sup> Source: see <https://www.schoolfinder.com/Discover/Article/23/6370/5-Reasons-Why-You-Should-Study-in-Germany> (Accessed 18 February 2024)

one or more categories, Germany stands out as the leader. The countries ranking second to tenth in this analysis include the UK, France, Netherlands, Russia, Switzerland, Sweden, Belgium, Italy, and Poland.

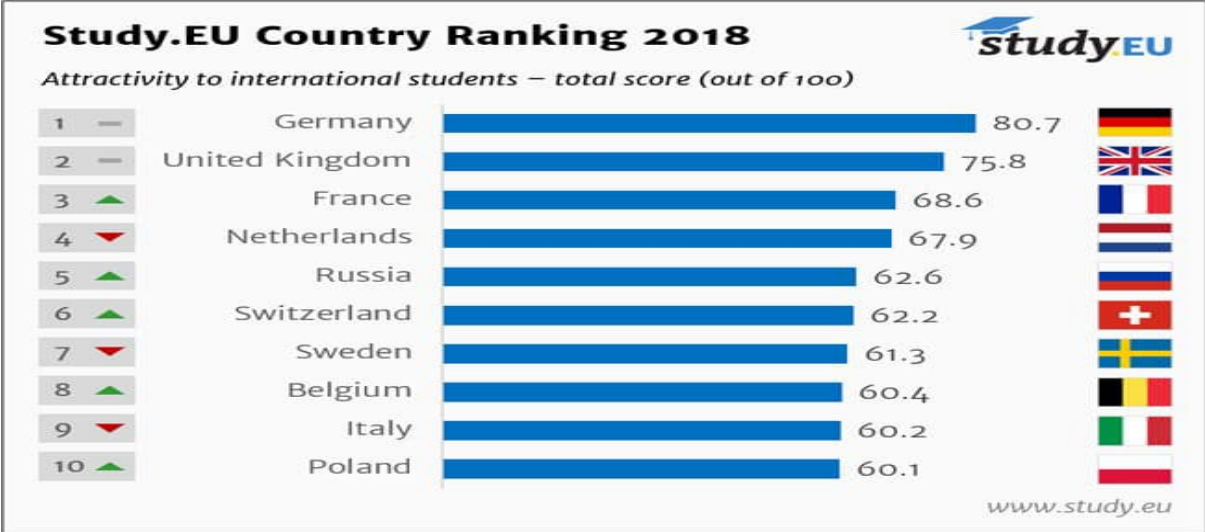
Germany’s top position has been consistently maintained, marking the second consecutive year it has ranked first in the Study.EU Country Ranking. This achievement is largely attributed to Germany’s "remarkable mix of world-class education at no or almost no fees," making it an incredibly attractive choice for international students.

In addition, Study.EU highlights that Germany has significantly improved in offering a wider range of courses in English, which has further enhanced its appeal to international students. The country also boasts the lowest unemployment rate for university graduates in Europe, adding to its attractiveness as a study destination. The Study.EU ranking, which assesses the best European countries for full-time degree students, shows that different countries lead in various ranking factors.

For example, in the Education dimension, the UK ranks first with a score of 86.7%, well ahead of Germany (74%), the Netherlands (61.3%), and France (53.4%). This ranking is based on university performance, teaching quality, and the availability of English-taught bachelor’s and master’s programmes. When it comes to teaching quality, measured by staff-to-student ratios and academic reputation, Switzerland, the Netherlands, and Germany lead the way.

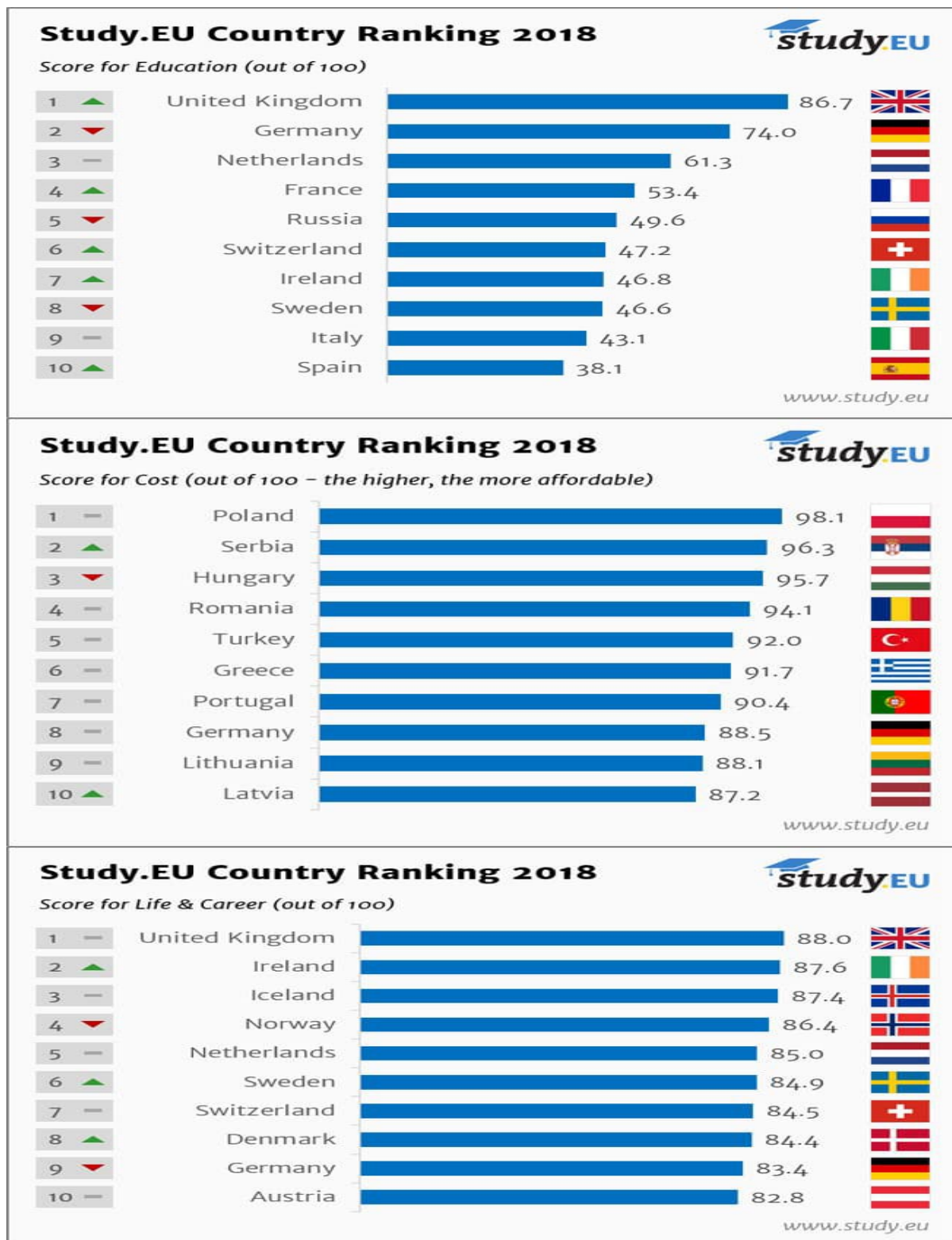
In the Cost dimension, which evaluates affordability in terms of living expenses, housing, and tuition fees, Poland ranks highest (98.1%), followed by Serbia (96.3%), Hungary (95.7%), Romania (94.1%), and Turkey (92%). Germany, however, stands out with a relatively high score of 88.5%, attributed to its tuition-free public university system and moderate cost of living, making it an affordable choice compared to many other countries. Regarding Life & Career factors, Germany ranks 9th with a score of 83.4%, trailing behind the UK (88%), Ireland (87.6%), Iceland (87.4%), and other Scandinavian and European countries that lead in this category, such as Norway (86.4%), the Netherlands(85%), Sweden (84.9%), Switzerland (84.5%), Denmark (84.4%) respectively. <sup>15</sup>(see Figure 91) Despite this, Germany's overall high ranking in affordability, education, and post-graduation prospects reinforces its position as the top destination for international students in Europe.

Figure 91- Annual ranking of European study destinations (2018)



<sup>15</sup> Source: see <https://monitor.icef.com/2018/03/germany-ranked-attractive-study-destination-europe/> (Accessed on 18 February 2024)





Source: <http://www.study.eu>

According to Watkins (2023a), Germany is recognized as the best-value country for international students, based on an analysis conducted by Moneytransfers.co.uk. This analysis evaluated nine key factors to determine which countries offered the best value for money to international students. These factors included tuition fees, food prices, healthcare and insurance costs, pharmacy costs, public transport expenses, accommodation costs, gym membership fees, employment prospects, and the cost of receiving money. Germany emerged as the top

destination in this study, largely due to its policy of offering free tuition for undergraduate students and low-cost tuition for postgraduate students. In addition to affordability, Germany boasts high-quality education, with many of its universities ranking highly on the global stage. For example, 22 German universities are featured in THE's World University Rankings 2023<sup>16</sup>, which further solidifies its position as a top study destination for international students.

Watkins (2023b) presents a study comparing the best-value countries for students to study abroad, highlighting Germany as the top destination. The study finds that the United Kingdom has the most expensive tuition fees in the world, while the United States boasts the highest number of top universities. However, Germany stands out as the best value for students, offering the cheapest tuition fees and the lowest graduate unemployment rate. According to the study, Germany's free tuition for undergraduate degrees and minimal fees for postgraduate degrees (with an average tuition cost of just \$42 a month) make it the most affordable study destination globally. In addition to its low costs, Germany is also praised for its career prospects. The study notes that Germany has the lowest graduate unemployment rate at 2.42%, thanks to its robust education system that equips students with the necessary skills to find work quickly. Fields like Medicine and Dentistry, Law, and Industrial Management are among the easiest for graduates to find employment. The study also highlights Munich as one of the best cities in the world for students, owing to its vibrant economy and numerous headquarters for major companies like Accenture, BMW, Deloitte, and PwC. While the study acknowledges that Germany can have high costs for healthcare and groceries, the overall affordability of education and the low tuition fees make these costs manageable. With its leading universities and nearly free undergraduate tuition, Germany is presented as an exceptional choice for students seeking high-quality education and strong career prospects. The study concludes that Germany, with its combination of low costs, high-quality education, and strong career outcomes, is the best-value country for students. The study indicates that Germany ably demonstrates with its leading universities and zero-cost undergraduate tuition. Costs are undoubtedly an important consideration for many young people.<sup>17</sup>

From an economic perspective, as discussed in Section 2, Germany ranks as the third-largest economy globally by nominal Gross Domestic Product (GDP), following the United States and China. Regionally, it holds the position as the largest economy in Europe, contributing nearly a quarter of the European Union's total GDP. Despite a recent decline in GDP, Germany has maintained its status as Europe's leading economy. This economic strength is characterized by a high GDP, a high Gross National Income (GNI) per capita, low inflation rates, and low unemployment rates compared to other EU countries. The country also boasts high and increasing employment rates, offering ample career opportunities for international students to integrate into the German labour market.

Studying in Germany significantly enhances the career prospects for international students. A degree from a reputable German university not only opens doors to employment within Germany but also offers global career opportunities. Germany's thriving economy and high employment rates make it an attractive destination for students seeking better job prospects. Additionally, Germany offers a range of part-time job opportunities for international students, allowing them to work while studying, fund their education, gain valuable work experience, and boost their employability in the future.

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<sup>16</sup> Source: see <https://www.timeshighereducation.com/student/news/best-value-countries-study-abroad?cmp=1> (Accessed on 18 February 2024)

<sup>17</sup> Source: see <https://moneytransfers.com/news/2023/06/15/best-value-countries-for-students-to-study-abroad> (Accessed on 18 February 2024)

Germany's migration policies also encourage international students to stay after completing their studies, with the possibility of continuing to work in the country in roles aligned with their qualifications. Unlike many other countries, Germany allows international students to work part-time during their studies—up to 20 hours a week or 120 full days per year. This opportunity is particularly appealing for those looking to support themselves financially or gain practical experience in their field. Many universities in Germany have agreements with prominent companies, offering internships that, even if unpaid, could lead to promising career opportunities post-graduation. It is estimated that more than 60% of international students in Germany work part-time while studying, highlighting the strong connection between academic programs and the German job market.<sup>18, 19</sup>

From a political and migration policy perspective, as outlined in Section 2, Germany is the second-most popular immigration destination globally, ranking just behind the United States. It has consistently been the second-largest host of international migrants worldwide, with its ranking improving from third place in 2000 to second place by 2020. Regionally, Germany stands out as the leading destination for immigrants from outside the European Union (EU), contributing nearly one-fifth of all immigrants who have entered the EU from non-EU countries. Additionally, Germany issues a significant number of authorizations for study and research, accounting for nearly one-third of all permits issued by EU countries.

Germany's popularity as a destination for international students can be attributed to its immigration-friendly policies. These policies facilitate the transition of international students from education to employment. One of the key advantages for international students is the opportunity to stay in Germany for work after completing their studies. The country offers a post-study visa, valid for 18 months after graduation, during which students can search for jobs. This extension of stay allows graduates time to secure employment, with the possibility of transitioning from a student visa to a work visa once a job is found.

Once international students finish their degree at a German university, they are well-positioned to enter the labour market. After the initial 18-month residence permit expires, graduates can apply for an extension to continue their job search. Once they secure employment, they can remain in Germany on a work visa, making the country an attractive long-term destination for students seeking career opportunities. This combination of post-study work opportunities and supportive immigration policies makes Germany one of the most appealing countries for international students.

From an educational perspective, Germany is considered one of the most popular destinations for studying abroad due to several factors that make its higher education system attractive to international students.

**Educational Institutions and Infrastructure:** Germany's higher education system consists of three main types of institutions: Universities, Universities of Applied Sciences, and Technical, Art, Film, and Music Colleges. Each institution type offers distinct advantages, catering to diverse academic and professional interests. The country's infrastructure in higher education is robust, with a combination of state-of-the-art facilities, highly qualified staff members, and modern teaching methods.

**Diverse and International Degree Programs:** Germany offers an impressive selection of academic opportunities, with over 21,000-degree programs, including more than 2,000 international programs designed specifically for non-German speakers. This broad range of options makes it an attractive destination for students worldwide.

**Global Reputation and Top-Ranked Universities:** Germany's universities consistently rank among the world's best. Many of its institutions are known for high academic standards, rigorous research programs, and a focus on

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<sup>18</sup> Source: see <https://www.studying-in-germany.org/why-is-germany-the-perfect-place-to-study-abroad/> (Accessed on 18 February 2024)

<sup>19</sup> Source: see <https://www.studying-in-germany.org/why-is-germany-the-perfect-place-to-study-abroad/> (Accessed on 18 February 2024)

innovation and quality. A degree from a top-ranked German university is highly valued worldwide, and the country's reputation for excellence in education attracts students seeking a world-class education.

**Affordable Education with Funding and Scholarships:** One of the most compelling reasons Germany is a leading study destination is its affordability. Public universities in Germany do not charge tuition fees for undergraduate programs, and postgraduate tuition fees are relatively low compared to other countries. Additionally, Germany offers various scholarships and funding opportunities for international students, with organizations such as DAAD (German Academic Exchange Service) providing financial support for living expenses and academic fees, especially for housing.

**English-Taught Programs:** While German is the native language, many universities in Germany offer graduate programs taught entirely in English. This makes it easier for international students to pursue studies without a language barrier. While some undergraduate programs require proficiency in German, the growing number of English-language offerings at the graduate level makes Germany an attractive option for students from around the world.

**Globally Recognized and Valued Degrees:** German universities offer internationally recognized degrees, including Bachelor's, Master's, PhDs, and language courses. The quality of education, combined with the global recognition of German qualifications, ensures that graduates are well-prepared for careers both in Germany and internationally.

**Practice-Oriented Studies:** Germany is known for its focus on applied sciences, particularly in fields like engineering, technology, and business. Many universities, especially Universities of Applied Sciences, emphasize practical learning by integrating internships, industry partnerships, and project-based studies into their curricula. This practice-oriented approach enhances students' employability and prepares them for real-world challenges.

**STEM Programs and Graduate Employment:** As highlighted in Section 2, Germany is a leader in the field of Science, Technology, Engineering, and Mathematics (STEM) education. The country ranks highly in both global and regional metrics for the percentage of graduates in these fields. Furthermore, STEM graduates in Germany benefit from a strong job market, which is another reason why many international students choose to study in Germany.

**Government Investment in Education:** Germany ranks second globally (after the US) and first in Europe in terms of total government expenditure on education. This investment ensures that the country's educational institutions remain well-funded, providing students with the resources, support, and infrastructure needed to succeed in their studies.

In summary, Germany's excellent higher education system, globally recognized degrees, practice-oriented approach, affordability, and numerous opportunities for international students make it one of the most attractive destinations for studying abroad. With its growing reputation, supportive policies, and commitment to high-quality education, Germany offers a compelling case for students looking to pursue higher education in Europe. This result is also consistent with our results presented in Section 2 above that indicates that globally, Germany is ranking eighth in both tertiary education and graduates in science and engineering. This result is consistent with the results presented in section 2 above that implies that on the demand side, Germany is ranking among the top world countries and regionally, Germany rank at the top European and European union countries in terms of enrolment in tertiary education, all programmes. And on the supply side, globally, Germany ranked 2<sup>nd</sup> after

the US, and regionally in Europe ranked 1<sup>st</sup> at the top in Europe in terms of total government expenditure on education.

From a research perspective, Germany is one of the world's most attractive destinations for students, researchers, and innovators, due to its strong research infrastructure, investment in R&D, and commitment to international collaboration.

**Global Research Rankings:** Germany holds a prominent position in global research metrics. It ranks fourth globally in human capital and research, demonstrating its strong capacity to foster skilled researchers and innovators. Germany is also ranked third in global corporate R&D investment, and holds the seventh position for overall research and development (R&D). The country invests heavily in R&D, ranking ninth globally in terms of gross expenditure on R&D as a percentage of GDP, and in business-performed R&D as a percentage of GDP. Additionally, Germany ranks fourteenth for researchers (FTE/million population), indicating the country's robust research workforce.

**Government Support for Research and Innovation:** The Federal Ministry of Education and Research (BMBWF) plays a crucial role in supporting research and innovation in Germany through initiatives like 'Research in Germany,' which was launched in 2006. The goal of this initiative is to enhance Germany's position as a leading destination for research and innovation, both by raising awareness of the opportunities available to international researchers and by promoting global cooperation. Germany's research landscape is broad and diverse, with over 1,000 publicly funded research institutions, around 400 higher education institutions, and extensive industrial research partnerships. This environment is conducive to cutting-edge research, fostering collaboration across disciplines and countries.

**Research Infrastructure and Funding:** Germany provides exceptional access to research infrastructure, with state-of-the-art facilities available at universities, universities of applied sciences, and other research institutes. The government and industry investment in research ensure a stable R&D framework, generous funding opportunities, and support for creative development. Researchers have access to a well-funded, collaborative environment that encourages international partnerships and interdisciplinary work. The German Research Foundation (DFG) and the German Academic Exchange Service (DAAD) are two of the key organizations providing financial support to international students and researchers, further cementing Germany's status as a global leader in research and innovation. There are approximately 750 publicly funded research institutions in Germany, as well as other development centres funded by industrial corporations. Cooperation at European and international levels is an essential dimension of study and research in Germany, contributing to the international recognition of German degrees.<sup>20</sup>

**International Cooperation and Mobility:** Germany's emphasis on international collaboration makes it an especially attractive destination for foreign researchers. The German Academic Exchange Service (DAAD) is the largest funding organization in the world supporting the international exchange of students and scholars. Its programs help facilitate international researchers' access to Germany's research institutions, fostering a vibrant, diverse academic environment. Researchers from abroad are actively encouraged to participate in Germany's R&D landscape, which is essential for maintaining the country's competitive edge in global research.

**R&D Investment and Opportunities for Students:** Germany's substantial investment in R&D benefits students by providing them with access to cutting-edge research facilities and opportunities for professional training. Many

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<sup>20</sup> Source: see <https://www.schoolfinder.com/Discover/Article/23/6370/5-Reasons-Why-You-Should-Study-in-Germany> (Accessed 18 February 2024)

universities prioritize research and offer excellent research facilities and laboratories for students. This emphasis on research is particularly valuable for graduate students, including PhD students, postdoctoral researchers, and senior scientists, who benefit from the exceptional resources available. Moreover, Germany's strong industrial partnerships offer students unique opportunities for practical training and internships in both academic and business settings.

**Global Recognition of German Research:** Germany's research environment is recognized globally, and its universities and research institutions have a reputation for producing high-quality research. Cooperation with international institutions further enhances the global recognition of German degrees. Germany's leadership in R&D not only benefits students pursuing studies in science and engineering but also contributes to the country's standing as a top destination for international researchers. Its global research reputation is supported by numerous collaborations with European and international institutions, which adds to the value of a degree or research experience in Germany.

In conclusion, Germany's leadership in research and development, coupled with its world-class research infrastructure, international funding opportunities, and strong emphasis on collaboration, makes it one of the most popular destinations for studying abroad, particularly for students and researchers in the STEM fields. The country's strong commitment to innovation and international cooperation ensures that students have access to unparalleled research opportunities that contribute to their academic and professional success

**From an Innovation Perspective** Germany is widely recognized as one of the most innovative countries globally. In the Global Innovation Index (GII) 2023, Germany is ranked 8th worldwide and 6th within the European Union. This ranking reflects Germany's strong performance across various innovation-related indicators. Key highlights include: **Top Innovation Indicators:** Germany ranks 1st globally for Patent families per billion PPP\$ GDP and 5th for Patents by origin per billion PPP\$ GDP, demonstrating its leadership in technological innovation and intellectual property creation. It also ranks 6th in Knowledge creation, 7th in Creative outputs, and 9th in both Knowledge and Technology Outputs and High-tech manufacturing. These positions underscore Germany's dominance in both creating and applying knowledge across industries. **Innovation and Entrepreneurship:** Germany's strong entrepreneurial spirit is further bolstered by a transparent and efficient business environment, making it a prime location for international students interested in entrepreneurship. The country's favourable conditions for startups are complemented by a wealth of opportunities for students to engage in innovation-driven projects. Germany's innovation landscape is enriched by its research institutions, industrial R&D efforts, and dynamic tech sector, making it an ideal place for students to pursue studies in cutting-edge fields and benefit from its vibrant startup ecosystem.

**From a Geographical Perspective:** Geographically, as we explained in Section 2 above geographically, Germany, is a country located in the western region of Central Europe, it is considered as the geographical heart of continental Europe and, it borders many other European countries. Germany is situated in the heart of Central Europe, which makes it a strategic hub for students seeking access to a wide range of opportunities both within and beyond its borders. Some of the geographical advantages include: **Central Location:** Germany shares borders with several European countries, including France, the Netherlands, Poland, Austria, and Switzerland. This proximity to other European countries gives international students the advantage of traveling easily within Europe, enhancing their academic and cultural experience. **Travel Opportunities:** International students studying in Germany can benefit from the country's excellent transport links, such as high-speed trains, buses, and low-

cost flights, which allow them to explore other EU countries during holidays or short breaks. This makes Germany not only an educational hub but also an ideal location for students to experience different cultures across Europe while pursuing their studies.

In conclusion, Germany's innovative environment, combined with its strategic geographical location and access to the broader European market, makes it a highly attractive destination for international students. Its leadership in R&D, patent creation, and high-tech manufacturing, coupled with opportunities for entrepreneurial ventures, positions Germany as a prime country for students interested in innovation, technology, and research. Additionally, its central location in Europe provides students with ample opportunities to travel and expand their international experience

From a Demographic Perspective: Germany is facing a demographic challenge common to many European countries: an aging population. The demographic structure of Germany's population is skewed toward older age groups, with a significant proportion of the population (over 40 years of age) making up more than half of the total population. In contrast, the younger age group (20 to 40 years old) accounts for nearly a quarter of the population. This aging demographic presents challenges to the economy and the labour market, particularly in terms of workforce sustainability and productivity. To address these demographic trends, Germany has implemented policies designed to encourage the migration of young, highly skilled individuals, particularly international students. The government actively supports the influx of international students as part of a broader strategy to increase the proportion of younger individuals in the population, thus reducing the share of the aging population. By attracting students from around the world, Germany aims to bolster its labour market with a skilled workforce that can contribute to economic growth and innovation.

From a Labor Market Perspective: Germany's aging population also has significant implications for its labour market. As the older population continues to grow, there is an increasing need for young workers to fill labour shortages, particularly in high-skilled industries such as technology, engineering, healthcare, and research. The influx of international students helps address these labour market challenges by ensuring that Germany has a steady stream of young, educated professionals who can contribute to various sectors of the economy. The German labour market is highly attractive to international students due to the country's low unemployment rate, high demand for skilled workers, and opportunities for students to work part-time while studying. Upon graduation, students can stay in the country and contribute to the labour market through post-study work visas, further helping to address the gap in skilled labour.

In conclusion, from both a demographic and labour market perspective, Germany's efforts to attract international students are driven by the need to mitigate the challenges posed by its aging population and ensure a sustainable, highly skilled workforce. By fostering migration through education, Germany aims to balance its demographic structure, reduce the risk of labour shortages, and maintain its competitive edge in global markets.

The findings presented in this section provide strong support for the hypotheses outlined, specifically focusing on the migration patterns of international higher education students to Germany. These results highlight key trends and factors contributing to the increase in migration to Germany, as well as the implications for the country's labour market.

Support for the First Hypothesis: Our findings confirm that the migration of international higher education students to Germany has increased substantially over the period from 2000 to 2023, with significant variation in distribution across this period. This aligns with the observation that Germany has become an increasingly

popular destination for higher education, reflecting the country's robust policies, strong education system, and favourable migration conditions.

Support for the Second Hypothesis: The impact of the COVID-19 pandemic (2020-2022) on migration patterns is evident, with disruptions to international travel, changes in educational delivery (shift to online learning), and shifts in global economic conditions. However, the resilience of Germany's higher education system and its adaptability to these challenges also played a role in maintaining its status as a leading destination for international students, despite the setbacks caused by the pandemic.

Support for the Third Hypothesis: The increasing migration of international higher education students to Germany can indeed be attributed to a variety of pull factors. Economic factors such as low or no tuition fees, availability of scholarships, and strong prospects for employment post-graduation have been key drivers. Additionally, Germany's educational environment—high-quality universities, emphasis on research, and skills development—are pivotal in attracting students from across the globe. These factors collectively create a compelling reason for international students to choose Germany as their destination.

Support for the Fourth Hypothesis: Migration of international students to Germany has led to mixed impacts, both positive and negative. On the positive side, there is knowledge transfer, brain gain, and skill acquisition for students who return to their home countries. However, the non-returned migrant students may contribute to a brain drain, particularly in their home countries, which could impact the labour market and development prospects there. These effects underscore the complex nature of international student migration and its multifaceted impact on both sending and receiving countries.

Support for the Fifth Hypothesis: The integration of international higher education students into the German labour market offers significant benefits. International students, upon completing their studies, provide valuable skills and contribute to addressing labour shortages, particularly in sectors such as technology, healthcare, and engineering. Germany's favourable policies for post-study work visas allow students to stay and work, enhancing the diversity and skill set of the workforce, thus benefiting the country's economy and labour market in the long term.

In conclusion, the evidence strongly supports all five hypotheses, demonstrating that the migration of international higher education students to Germany has been influenced by a combination of economic, educational, and policy factors, with both positive and negative consequences for the country. These trends highlight the importance of continued efforts to attract and integrate international students, as well as the need for policies that address the complexities of brain gain and brain drain.

#### 4.3 *The impacts of migration of international students in Germany*

Some studies discuss migration and higher education in Germany (see Wolter, 2020). The migration of international higher education students to Germany has a variety of both positive and negative impacts on the country. These impacts span economic, labour market, cultural, and social dimensions.

##### *Positive Economic Impacts:*

Contribution to the Labor Market and Economy: International students who stay in Germany after graduation make valuable contributions to the labour market. They bring skills that match the demand in Germany's economy, particularly in sectors facing skill shortages. The policies encouraging international students to stay post-graduation help address the high demand for skilled workers, contributing to the maintenance of the labour force and supporting local employment.



**Direct Economic Benefits:** International students contribute to the German economy through their spending. They typically spend money on accommodation, daily living expenses, travel, and goods and services. This spending helps stimulate the local economy, particularly in sectors like housing, transportation, and retail. Moreover, the money international students bring with them (in the form of tuition fees and personal funds) significantly benefits Germany's economy.

**Fiscal Contributions:** Beyond their direct economic impacts, international students also contribute indirectly to Germany's fiscal health. Their taxes, spending on goods and services, and contributions to the social security system enhance the country's public finances, especially as many students transition into the workforce post-graduation.

*Positive Impacts on Labor Market:*

**Reducing Skill Shortages:** The migration of international students helps address Germany's pressing labour shortages in high-skill sectors. Graduates from German universities, particularly those from universities of applied sciences, bring practical knowledge and skills that align with the needs of the labour market. These students fill gaps in critical areas like technology, healthcare, and engineering.

**Integration and Retention:** Policies encouraging the retention of international students in Germany after graduation help increase the share of youth in the working-age population. This alleviates the pressures of Germany's aging population and supports the sustainability of its labour force. As international graduates stay and contribute to the workforce, they reduce the strain caused by demographic shifts and enhance Germany's economic stability.

*Positive Impact on Knowledge Transfer:*

**International Collaboration and Knowledge Transfer:** International students play a vital role in strengthening academic and research collaborations between Germany and their countries of origin. These students, upon returning to their home countries, bring back valuable knowledge, skills, and experiences that can benefit their countries, fostering deeper scientific, technological, and academic ties between Germany and the global community.

**Contribution to Research and Innovation:** Graduates who stay in Germany contribute to the country's research, innovation, and technological progress. They participate in research projects, contribute to scientific developments, and push forward Germany's reputation as a leader in innovation. Their skills in areas such as engineering, technology, and business help further enhance Germany's knowledge economy.

**Impact on Internationalization and Competitiveness:**

**Strengthening Global Collaboration:** The increasing number of international students in Germany helps boost the internationalization of German universities. This, in turn, raises Germany's global profile as a leader in higher education. International students and staff contribute to the diversity and competitiveness of German universities, enhancing their reputation and attracting more international collaborations, both in academia and in industry.

**Cultural Diversity and Academic Excellence:** The integration of international students adds to Germany's cultural diversity and enriches its academic environment. German universities are recognized globally for their high quality and their commitment to fostering a multicultural academic community. This diversity strengthens academic programs, research outcomes, and the global network of collaborations.

### *Demographic and Cultural Impact:*

**Changing Demographics:** International students who stay in Germany after graduation contribute to the country's population structure by increasing the number of young, skilled workers. This is particularly important in light of Germany's aging population. As such, international students help balance demographic trends, making a positive contribution to Germany's long-term social and economic stability.

**Increased Cultural Diversity:** The migration of international students also leads to greater cultural diversity in Germany. This diversity not only enriches the cultural fabric of the country but also enhances its global standing, as Germany becomes a more open and inclusive society. The interactions between international students and local communities foster mutual understanding and contribute to Germany's role as a leading global player.

### **Mixed Impacts:**

**Integration Challenges:** While the migration of international students offers many benefits, there can be challenges related to integration, both in the labour market and in society. International graduates may face difficulties in finding jobs that match their qualifications or in overcoming language barriers, leading to underemployment in some cases. In addition, social integration into German communities can sometimes be challenging for international students, affecting their overall experience and long-term contributions.

**Brain Drain:** Although the migration of international students to Germany brings many benefits, there can be negative impacts for the sending countries. When international students choose to stay in Germany after graduation, their countries of origin lose the opportunity to benefit from the skills and knowledge that these students acquired abroad. This can contribute to a "brain drain," particularly from developing countries, as these students may not return home to contribute to their local economies and development.

In conclusion, the migration of international higher education students to Germany brings a range of positive impacts, including economic growth, skill development, increased labour force participation, and enhanced global collaboration. However, challenges related to integration and brain drain should be addressed to ensure that the benefits of international student migration are maximized. The positive impacts of student migration to Germany support the country's position as a global leader in education, research, and innovation while also contributing to demographic balance and economic sustainability.

## **5. Conclusions and policy recommendations**

This paper offers a comprehensive analysis of the migration of international higher education students to Germany using both descriptive and comparative approaches. By incorporating UNESCO secondary data on international students' mobility in tertiary education, along with statistics from relevant German institutions, we provide a more up-to-date and detailed perspective on this phenomenon. Our work expands the existing body of research in the international literature by offering a nuanced examination of international student migration to Germany, with a particular focus on the receiving country perspective.

A unique aspect of this paper is our exploration of the migration of international higher education students to Germany from a global viewpoint. We consider data from various world regions and countries, providing a broader understanding of the patterns and trends in student migration. This contributes significantly to the ongoing discussion about the relationship between migration and the increasing internationalization of higher education, especially as Germany continues to be one of the most popular destinations for international students.

One of the paper's key contributions is the investigation of the impact of the COVID-19 pandemic on the migration of international higher education students to Germany. This is a timely and critical area of research, as the pandemic has had profound effects on international student mobility, and understanding these changes is essential for policymakers and academic institutions.

Overall, this paper offers a fresh and valuable contribution to the literature on international student migration, particularly in the context of Germany, and provides important insights for future research and policy development in this field

This research is structured into five main sections: Section 1: Introduction: This section introduces the research problem and provides a general overview of the study, highlighting its importance, relevance, and objectives. It outlines the key research questions and hypotheses and presents the overall structure of the paper. Section 2: Germany's Economic Importance: This section presents an overview of Germany's global economic significance, focusing on its role in the international and regional European economy. It contextualizes Germany's position as a key player in global trade, labour markets, and as a destination for international higher education students. Section 3: Literature Review: In this section, a comprehensive review of existing studies on the migration of international higher education students to Germany is provided. It synthesizes relevant theories, frameworks, and findings from previous research, offering insights into the factors influencing international student mobility and the implications of such trends. This section also critically examines key concepts and findings in the international literature. Section 4: Migration Patterns, Trends, and Impacts: This section delves into the patterns, size, trends, and distribution of migration of international higher education students to Germany. It explores the various causes and consequences of this migration, focusing on both the push and pull factors that influence student mobility. The section discusses how migration has evolved over time, including the impact of events like the COVID-19 pandemic. Additionally, it assesses the positive and negative implications for both Germany and the countries of origin of the students. This section also considers the theoretical frameworks and interpretations of migration patterns, incorporating the findings from Section 3. Section 5: Conclusion: The final section synthesizes the findings from the previous sections, providing conclusions and recommendations based on the analysis. It reflects on the research questions and hypotheses and suggests directions for future research or policy considerations related to the migration of international higher education students. This structure provides a clear, logical progression of ideas, beginning with an introduction to the topic and concluding with a comprehensive analysis of migration trends and their implications for Germany and the international community.

Section 4 of this research explores the migration patterns, size, trends, and distribution of international higher education students to Germany as a receiving country. The findings from this section are organized around several key hypotheses, and the results provide strong support for these hypotheses.

First Hypothesis: The data confirms that the migration of international higher education students to Germany has increased substantially between 2000 and 2023. However, the distribution of these students has shown considerable variation over this period. This suggests that while the overall trend is upward, the flow of international students has been influenced by various factors, such as political, economic, and social conditions, leading to fluctuations in the distribution from different world regions.

Second Hypothesis: The analysis also supports the notion that the COVID-19 pandemic significantly impacted the migration of international higher education students to Germany, particularly during the period between 2019 and 2020. The pandemic led to disruptions in global mobility, affecting students' decisions to study abroad and

causing a decrease in international student migration to Germany from certain regions, primarily due to travel restrictions, health concerns, and changes in educational delivery formats.

Third Hypothesis: The increasing trend of international student migration to Germany is largely attributed to several key pull factors. Economic factors such as low or no tuition fees, scholarships, and funding opportunities, along with promising prospects for employment after graduation, have made Germany an attractive destination. Additionally, the high quality of education, focus on research and skill-building, and the overall reputation of German higher education institutions also contribute to the rise in international student numbers.

Fourth Hypothesis: The migration of international higher education students to Germany has resulted in both positive and negative impacts. Positive outcomes include the transfer of knowledge, brain gain, and skill acquisition for those students who return to their home countries after graduation. However, for those who do not return, there is the risk of brain drain, with the loss of skilled individuals to Germany's labour market. These mixed impacts highlight the complex nature of international student migration and its effects on both the sending and receiving countries.

Fifth Hypothesis: The integration of migrant higher education students into the German labour market is expected to have a beneficial impact. As international graduates contribute their skills, knowledge, and expertise, they help alleviate the labour shortages in certain sectors and contribute to the overall strengthening of the German economy. The integration of these students into the workforce supports Germany's long-term goals of maintaining a competitive and skilled labour force.

In conclusion, Section 4 provides substantial evidence supporting the hypotheses outlined above, demonstrating that international student migration to Germany is influenced by a range of factors, and that the integration of these students presents both challenges and opportunities for the country. The findings also underscore the importance of migration policies in shaping these trends and outcomes.

The data presented in this section highlights Germany's position as a leading host country for international students, reflecting its prominent role in global higher education. In 2020, the distribution of international students by key host countries showed that the United States was the top destination with 15.0% of the global share, followed by the United Kingdom (8.7%), Australia (7.2%), and Germany (5.8%). This places Germany as the fourth most popular destination for international students globally.

Further analysis of the period 2017-2021 reveals that Germany consistently hosted a significant portion of internationally mobile students: In 2017, Germany hosted 4.92% of the total inbound international students globally. By 2021, this figure increased slightly to 6.01% of the total international students worldwide.

In terms of regional impact: Within Europe, Germany hosted 13.17% of the total internationally mobile students in 2017, and 15.63% in 2021, showing an increasing trend in its regional share. Among European Union (EU) countries, Germany's share was even more pronounced, hosting 20.16% of the total mobile students from all regions in 2017, and 27.22% in 2021. This growth indicates Germany's growing importance within the EU as a destination for international students.

Additionally, Germany's role as a sending country is also significant, ranking fifth in terms of sending international students abroad, demonstrating its dual role as both a host and a source of students within the global educational migration landscape. These figures highlight Germany's growing attractiveness as a destination for international students and its central role in both regional and global student mobility trends.

The data provided by the Federal Statistical Office and DZHW offers valuable insights into the regional distribution and the diversity of international students studying in Germany in the 2022/23 winter semester. The breakdown of international students by region of origin reveals the following trends: Asia and the Pacific: The largest group of international students in Germany came from this region, accounting for 32.3% of the total international student population. North Africa and the Middle East: This region represented 19.3% of international students in Germany. Western Europe: Students from Western Europe made up 16.5%. Central and Southeastern Europe: This region accounted for 11.1%. Eastern Europe and Central Asia: These countries contributed 8.0% of the international student body. Sub-Saharan Africa: Students from Sub-Saharan Africa represented 5.5%. Latin America: The Latin American region made up 5.3%. North America: Students from North America represented 1.8%. Other/no regional classification: A small percentage (0.2%) came from regions with no specific classification.

These regional patterns are consistent with the global distribution of international students in 2020. Specifically: Asia and the Pacific was the leading region of origin, accounting for 43% of global tertiary-level international students. North Africa and the Middle East (13%), Western Europe (12%), Eastern Europe and Central Asia (9%), Sub-Saharan Africa (8%), Latin America (7%), and Central and Southeastern Europe (5%) followed in terms of share.

As of 2020/2021, according to UNESCO-UIS, more than 376,000 international students were studying in Germany. In the 2021/2022 academic year, 368,666 international students, both from EU and non-EU countries, were enrolled in German higher education institutions.

The majority of international students in Germany come from outside the EU, with 60% of new enrolments in 2020 originating from non-EU countries. Notably, China and India are significant contributors: China accounted for 10.2% of international students in Germany. India made up 7.65%.

This aligns with global trends, where China (16.8%) and India (8.3%) are the top two countries of origin for international students. For example, in 2018/19, China comprised 32% of all international students in the UK. (cf. Walsh, 2020).<sup>21</sup>

Additionally, data from the Federal Statistical Office and DZHW for the 2022/23 winter semester confirms that India (11.6%) and China (10.6%) remain the largest contributors to Germany's international student population, representing more than a quarter of the total number of international students in the country.

Despite the prominence of India and China, Germany remains a highly diverse destination, with students coming from 170 different countries globally in 2020/2021, as per UNESCO-UIS data. In turn, German students also exhibit significant mobility, studying in 71 countries globally. This underscores Germany's role as both a major destination for international students and an active player in international academic exchanges.

The analysis of international student statistics in Germany during the COVID-19 pandemic period, based on data from the Federal Statistical Office and DZHW, provides valuable insights into the trends in student migration despite the challenges posed by the pandemic. Key findings from the data for the winter semesters of 2019/20 and 2020/21 include:

1. Overall Growth in International Students: Despite the global disruptions caused by the pandemic, the total number of international students in Germany increased slightly from 319,902 in the 2019/20 winter semester to

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<sup>21</sup> Walsh, P.W. (2020) 'International Student Migration to the UK,' The Migration Observatory (2020), Centre on Migration, Policy and Society (COMPAS) University of Oxford, 21 Mar 2020: <https://migrationobservatory.ox.ac.uk/resources/briefings/international-student-migration-to-the-uk/> Accessed March 30, 2020. See also International Student Statistics in UK 2020: <https://www.studying-in-uk.org/international-student-statistics-in-uk/>, Accessed on February 02, 2020.

324,729 in the 2020/21 winter semester. This suggests that Germany remained an attractive destination for international students even in the face of the COVID-19 crisis.

2. Regional Trends: The data highlights significant regional variations in international student migration during the pandemic: Regions with Increased Numbers of Students: Eastern Europe and Central Asia: There was an increase in the number of students from these regions, indicating sustained interest in studying in Germany despite the pandemic. North Africa and the Middle East: This region also saw an uptick in the number of students coming to Germany. Sub-Saharan Africa: The number of students from Sub-Saharan Africa grew during the pandemic. Asia and the Pacific: There was an increase in international students from this region, reflecting the continued popularity of Germany as a destination for students from Asia.

Regions with Decreased Numbers of Students: Western Europe: A decrease was observed in the number of international students from Western Europe, likely due to mobility restrictions and health concerns during the pandemic. Central and South Eastern Europe: Students from these regions also saw a reduction in migration to Germany. North America: There was a decline in students from North America, potentially influenced by the pandemic's impact on travel and the shift to online learning. Latin America: The number of students from Latin America decreased, reflecting the broader trend in the region during the pandemic.

3. Degree Level Trends: The analysis of international students by degree level during the pandemic also reveals some interesting trends: Bachelor's Degree Students: An increasing trend was observed for Bachelor's degree students during the COVID-19 pandemic, suggesting that prospective students continued to seek opportunities to study abroad at the undergraduate level. Master's Degree, Doctoral, and Other Degree Students: In contrast, the numbers of students enrolled in Master's and Doctoral programs, as well as those pursuing other degrees, showed a decreasing trend. This may reflect uncertainties related to long-term academic plans during the pandemic or shifts in focus towards shorter-term educational opportunities.

These findings provide insights into the resilience of Germany's higher education system during the pandemic and highlight how different regions and levels of education were impacted differently. Despite the challenges posed by COVID-19, Germany continued to attract a significant number of international students, with certain regions and degree programs experiencing growth.

The analysis of the distribution of international and German students intending to graduate by type of university and degree in the 2021/22 winter semester reveals several important insights into the academic structure of international student populations in Germany. The findings show variations across different types of institutions (universities vs. universities of applied sciences) and degree levels.

Key Findings: Overall Distribution of International Students by Degree: Master's Degree Students: The majority of international students intending to graduate in 2021/22 are pursuing Master's degrees (45.4%), indicating the strong interest in advanced studies among international students in Germany. Bachelor's Degree Students: The second largest group is made up of Bachelor's degree students (39.8%), reflecting that a significant proportion of international students are still at the undergraduate level. Doctorate Degree Students: Doctoral students make up 8.8%, showing a smaller but notable proportion of international students pursuing research-focused degrees. Other Degrees: Other degrees students (e.g., short-term programs or professional certifications) account for 6.1%.

Distribution by Type of University: Universities: The majority of international students intending to graduate at universities are Master's degree students (49.7%), followed by Bachelor's degree students (29.3%). A smaller

proportion of students at universities are pursuing Doctorate degrees (12.7%), and even fewer are enrolled in other degree types (8.2%). Universities of Applied Sciences: In contrast, universities of applied sciences show a different distribution, with Bachelor's degree students making up the majority (62.7%), reflecting the strong focus on undergraduate education at these institutions. Master's degree students follow at 35.8%, with a very small proportion of Doctorate students (0.1%) and other degree students (1.4%).

Trends in International Graduates by Degree (2016, 2020, 2021): The distribution of international graduates by degree level shows that Master's degree graduates consistently make up the majority, followed by Bachelor's degree graduates, Doctoral graduates, and other degrees graduates. In 2016, 2020, and 2021, Master's degree students represented the largest group of international graduates, reflecting the continued trend of international students pursuing advanced degrees in Germany.

The data demonstrates the strong preference for Master's programs among international students in Germany, particularly at universities. However, Bachelor's degree students also form a significant portion, especially at universities of applied sciences, where undergraduate education is more prevalent. The trend of international students increasingly opting for Master's degrees aligns with Germany's role as a destination for higher education, particularly in advanced studies, while universities of applied sciences continue to attract a large number of undergraduate students.

In the 2021/22 winter semester, the distribution of international and German students intending to graduate reveals key trends in academic preferences across different types of institutions and subject areas. Among all institutions, Engineering is the most popular field of study, with 43.1% of international students intending to graduate in this subject. Law, economics, and social sciences follow, with 24.4% of students pursuing these fields. Other significant areas of study include Mathematics and natural sciences (11.7%), Humanities (8.5%), Medicine and health sciences (5.1%), and Art and art history (4.9%). When breaking down the distribution by type of university, at universities, international students primarily choose Engineering (38.0%), followed by Law, economics, and social sciences (20.3%), Mathematics and natural sciences (15.3%), Humanities (11.9%), and Medicine and health sciences (6.4%). In contrast, at universities of applied sciences, Engineering dominates with 54.2% of international students, followed by Law, economics, and social sciences (33.3%), and smaller proportions in other fields like Mathematics and natural sciences (3.8%) and Art and art history (3.6%).

Looking at the distribution of international graduates by subject group in 2021, Art and art history emerges as the leading subject, with 20.3% of international graduates, followed by Engineering (16.2%) and Mathematics and natural sciences (11.4%). Other subjects include Agricultural, forestry, and food sciences (10.8%), Humanities (7.9%), Medicine and health sciences (7.3%), and Law, economics, and social sciences (6.8%). For graduates from universities, Art and art history is the most popular subject (25.6%), followed by Engineering (22.9%) and Agricultural, forestry, and food sciences (13.7%). Other subjects at universities include Mathematics and natural sciences (11.3%), Medicine and health sciences (9.2%), and Law, economics, and social sciences (8.9%). At universities of applied sciences, the top subjects for international graduates are Mathematics and natural sciences (12.6%), followed by Engineering (10.5%) and Art and art history (10.3%). Other notable subjects in this category include Humanities (8.8%), Agricultural, forestry, and food sciences (5.9%), and Law, economics, and social sciences (4.9%).

These findings highlight Engineering as the dominant field of study for international students intending to graduate in Germany, particularly at universities of applied sciences, which emphasize applied and technical

studies. However, the shift in subject preferences between students intending to graduate and actual graduates suggests differing academic trajectories, with Art and art history becoming the most common field among graduates at universities. This indicates that universities offer a broader range of programs, contributing to the diverse academic landscape of international higher education in Germany.

In conclusion, the migration of international higher education students to Germany emphasises the success of Germany's higher education system on a global scale. German universities are renowned worldwide for their academic excellence, diversity, and impact, with internationalisation playing a key role in this success. International students and staff contribute significantly to the German academic community, fostering global collaboration in scientific research and enhancing Germany's global influence. As such, we recommend policies that further encourage the migration of higher education students and skilled workers to Germany, coupled with better integration programs to facilitate their entry into the labour market. This approach would maximise the benefits to the labour market, economy, and broader community in Germany.

## References

- Agarwal, V. B., & Winkler, D. R. (1985). Foreign demand for United States higher education: A study of developing countries in the eastern hemisphere. *Economic Development and Cultural Change*, 33(3), 623–644.
- Aslangbengui, N., & Montecinos, V. (1998). Foreign students in US doctoral programs. *The Journal of Economic Perspectives*, 12(3), 171–182.
- Altbach, P.G. (1989) 'The new internationalism: Foreign students and scholars', *Studies in Higher Education* 14 (2): 125–136.
- Beine, M., Bertoli, S., and Fernández-Huerta Moraga, J. (2015). A practitioners' guide to gravity models of international migration. *The World Economy*. <http://onlinelibrary.wiley.com/doi/10.1111/twec.12265/abstract>. Last accessed 28 Nov 2014.
- Beine, M., Bourgeon, P., Bricongne, J.-C. (2013b). *Aggregate fluctuations and international migration*. CEPII WP, n. 4379.
- Beine, M., Noël, R., Ragot, L. (2013a). *The determinants of international mobility of students*. CEPII WP, n. 30.
- Beine, M., Noël, R., & Ragot, L. (2014). The determinants of international mobility of students. *Economics of Education Review*, 41, 40–54.
- Bessey, D. (2012). International students migration to Germany. *Empirical Economics*, 42, 345–361.
- Brooks, R., & Waters, J. (2011). *Student mobilities, migration and the internationalisation of higher education*. Basingstoke: Palgrave Macmillan.
- Brooks, R., and Waters, J (2011) "Student Mobilities, Migration and the Internationalization of Higher Education," Palgrave Macmillan UK.
- Brown, R. (2009). *Global horizons: How international graduates can help businesses*. London: The Council for Industry and Higher Education
- Chiswick, B., and Miller P. (eds.) (2014) "Handbook of the Economics of International Migration," Volume 1A, 1st Edition, North Holland, December 2014, Elsevier,
- European Commission, Education and Training Monitor 2022
- Eurostat (2024)
- Eurostat (2024) Demographic Yearbook – Table 3: Population by sex, rate of population increase, surface area and density (Report). United Nations Statistics Division. 2021. Retrieved 21 May 2023
- Eurostat, & IMF. (June 14, 2023). Gross domestic product at current market prices of selected European countries in 2022 (in million euros) [Graph]. In Statista. Retrieved February 15, 2024, from <https://www.statista.com/statistics/685925/gdp-of-european-countries>.
- Federal Statistical Office student statistics; DZHW calculations
- Federal Statistical Office, examination statistics
- Federal Statistical Office student statistics
- Federal Statistical Office student statistics; DZHW calculations
- Findlay, A. (2010). An assessment of supply and demand-side theorizations of international student mobility. *International Migration*, 49(2), 162–190.
- Gordon, J., and Jallade, J. (1996). 'Spontaneous' student mobility in the European Union: A statistical survey. *European Journal of Education*, 31(2), 133–151.
- Hatton, T. J., and Williamson, J. G. (2001). *Demographic and economic pressure on emigration out of Africa*. NBER WP n. 8124. National Bureau of Economic Research.
- Holden, J., and Tryhorn, C. (2013). *Influence and attraction: Culture and the race for soft power in the 21st century*. London, UK: British Council
- International Student Statistics in UK 2020: <https://www.studying-in-uk.org/international-student-statistics-in-uk/>, Accessed on February 02, 2020.
- Jöns, H., Heffernan, M. and Meusburger, P., (2017) "Mobilities of Knowledge: An Introduction," Chapter, [Mobilities of Knowledge](#). Volume 10 of the series [Knowledge and Space](#), pp. 1-19, Open Access, Date: 17 January 2017.
- Lee, K. H., & Tan, J. P. (1984). The international flow of third level lesser developed country students to developed countries: Determinants and implications. *Higher Education*, 13(6), 687–707.
- Kelly, U., McNicoll, I., and White, J. (2014). *The impact of universities on the UK economy*. London, UK: Universities UK
- KPMG Global Economic Outlook (2024)
- Levatino, A., (2016) "Transnational higher education and international student mobility: determinants and linkage: A panel data analysis of enrolment in Australian higher education," *Higher Education*, (1-17), (2016), Springer International Publishing AG.
- MacReady, C., Tucker, C. (2011). *Who goes where and why: An overview and analysis of global educational mobility*. Global Education Research Reports, no 5, Institute of International Education & the American Institute for Foreign Study Foundation.
- Mayda, A. M. (2005). *International migration: A panel data analysis of economic and non-economic determinants*, IZA DP n. 1590, Institute for the Study of Labour (IZA).



Mazzarol, T., & Soutar, G. N. (2002). 'Push-pull' factors influencing international student destination choice. *International Journal of Educational Management*, 16(2), 82–90.

McMahon, M. E. (1992). Higher education in a world market: A historical look at the global context of international study. *Higher Education*, 24(4), 465–482.

Migration and asylum in Europe (2023) Edition Interactive Publications: see <https://ec.europa.eu/eurostat/web/interactive-publications/migration-2023#irregular-migration-and-return> (Accessed on 20 February 2024)

Mok, K. (2012) "The Rise of Transnational Higher Education in Asia: Student Mobility and Studying Experiences in Singapore and Malaysia," *Higher Education Policy* (2012) 25: 225. June 2012,

Moskal, M. (2016) "International Students Pathways Between Open and Closed Borders: Towards a Multi-scalar Approach to Educational Mobility and Labour Market Outcomes," *International Migration*, International Organization for Mok, K.H. and Ong, K.C. (2011) 'Asserting Brain Power and Expanding Education Services: Searching for New Governance and Regulatory Regimes in Singapore, Hong Kong and Malaysia', in D. Neubauer (ed.) *The Emerging Knowledge Economy and the Future of Higher Education: Asian Perspectives*, London: Routledge.

Nour, S., 2020, Migration of higher education students from the North Africa Region to the United Kingdom, UNU-MERIT Working Paper

Nour, S., 2019, Migration of higher education students from the North Africa region, UNU-MERIT Working Paper

Nour, S. (2014), "Migration of international students and mobilizing skills in the Arab Region," as UNU-MERIT Working Paper 2014-31, April 2014, Maastricht, the Netherlands. <http://www.merit.unu.edu/publications/working-papers/abstract/?id=5414>.

Rivza, B. and Teichler, U. (2007) 'The changing role of student mobility', *Higher Education Policy* 20 (4): 457–475.

Rosenzweig, M. (2006). *Global wage differences and international student flows*. *Brookings Trade Forum*. Washington: Brookings Institution Press.

Statistisches Bundesamt (Destatis) (2024) - Results based on the 2011 Census (As at 20 June 2023)

Shields, R. and Edwards, R.M. (2010) 'Student Mobility and Emerging Hubs in Global Higher Education', in L.M. Portnoi, V.D. Rust and S.S. Bagley (eds.) *Higher Education, Policy, and the Global Competition Phenomenon*, New York: Palgrave Macmillan, pp. 235–248.

Skeldon R. (2005). *Globalization, skilled migration and poverty alleviation: Brain drains in context*. Developmental Research Centre on Migration, WP T15. Globalisation and Poverty.

Sika, N. (2015) "Highly skilled migration and development in Egypt," Chapter 9 in Fargues, P. and Venturini, E. (2015) "Migration from North Africa and the Middle East – skilled Migrants, Development and Globalization," I. B. Tauris & Co. Ltd, London, pp.151-165.

The World Bank World Development Indicators Data (2024), accessed 22 February 2024.

The World Bank Data (2022)

The World Migration Report (2022)

UNESCO – UIS (2024), based on data accessed on February 14, 2024

UNESCO, student statistics; Federal Statistical Office, "Deutsche Studierende im Ausland" survey; MOE, statistical report on international students in China for 2018.

UNESCO, student statistics; DAAD calculations

Vögtle, E.M. & Windzio, M. (2016) "Networks of international student mobility: enlargement and consolidation of the European transnational education space?" *Higher Education*, December 2016, Volume 72, Issue 6, pp. 723–741.

Walsh, P.W. (2020) 'International Student Migration to the UK,' *The Migration Observatory* (2020), Centre on Migration, Policy and Society (COMPAS) University of Oxford, 21 Mar 2020: <https://migrationobservatory.ox.ac.uk/resources/briefings/international-student-migration-to-the-uk/> Accessed March 30, 2020.

Wilkins, S., Balakrishnan, M. S., & Huisman, J. (2012). Student choice in higher education: Motivations for choosing to study at an international branch campus. *Journal of Studies in International Education*, 16(5), 413–433.

World Intellectual Property Organization (WIPO) (2023). *Global Innovation Index 2023: Innovation in the face of uncertainty*. Geneva: WIPO. DOI:10.34667/tind.48220. Germany Country Profile, p. 123.

Wolter, A. (2020) 'Migration and Higher Education in Germany,' (2020) Chapter 3 in M. Slowey et al. (eds.), 'Inequality, Innovation and Reform in Higher Education, Lifelong Learning,' Book Series 25, Springer Nature Switzerland AG, 2020.

Watkins, 2023a cited in: <https://www.timeshighereducation.com/student/news/best-value-countries-study-abroad?cmp=1> (Accessed on 18 February 2024).

Watkins, 2023b cited in: <https://moneytransfers.com/news/2023/06/15/best-value-countries-for-students-to-study-abroad> (Accessed on 18 February 2024)

<https://en.wikipedia.org/wiki/Germany> (Accessed on 18 February 2024).

<http://www.study.eu>

<https://taiwan.ahk.de/information-hub/country-info/germany-the-powerhouse-of-europe> accessed on 14 February 2024).

<https://www.statista.com/statistics/685925/gdp-of-european-countries/> (Accessed on 14 February 2024).

<https://www.bmbf.de/bmbf/en/academia/research-in-germany/research-in-germany-land-of-ideas.html> (Accessed on 18 February 2024)

<https://www.research-in-germany.org/en/research-landscape/why-germany.html> (Accessed on 18 February 2024)

<https://www.topuniversities.com/blog/7-perks-studying-germany> (Accessed on 18 February 2024)

<https://www.studying-in-germany.org/why-is-germany-the-perfect-place-to-study-abroad/> (Accessed on 18 February 2024)

<https://www.schoolfinder.com/Discover/Article/23/6370/5-Reasons-Why-You-Should-Study-in-Germany> (Accessed 18 February 2024)

<https://monitor.icef.com/2018/03/germany-ranked-attractive-study-destination-europe/> (Accessed on 18 February 2024)

<https://www.timeshighereducation.com/student/news/best-value-countries-study-abroad?cmp=1> (Accessed on 18 February 2024)

<https://moneytransfers.com/news/2023/06/15/best-value-countries-for-students-to-study-abroad> (Accessed on 18 February 2024)

<https://www.research-in-germany.org/en/research-landscape/why-germany.html> (Accessed on 18 February 2024)

## Appendix- List of Tables:

Table 1 – Government expenditure on education, US\$ (millions), Current expenditure as a percentage of total expenditure in public institutions (%) and Government expenditure on tertiary education as a percentage of GDP (%) (2017-2021)

Indicator	Government expenditure on education, US\$ (millions)				Current expenditure as a percentage of total expenditure in public institutions (%)				Government expenditure on tertiary education as a percentage of GDP (%)			
	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
Austria	22413.541	23780.335	23198.089	24237.752	93.31	92.89	93.14	93.15	1.71	1.70	1.73	1.86
Belgium	32304.336	34668.295	33941.555	35779.267	94.87	94.55	94.65	94.86	1.45	1.49	1.53	1.62
Bulgaria	2418.3879	2686.0576	2892.3376	3170.2138	95.51	95.20	94.05	95.49	0.81	0.76	0.80	0.83
Croatia	2175.5331	2419.9675	2425.1879	2555.3326	95.81	95.41	93.07	91.89	0.86	0.86	0.87	0.97
Cyprus	1307.8683	..	1352.5142	1422.0421	92.29	..	96.61	96.95	1.15	..	0.88	0.91
Czechia	8321.3606	10622.503	11471.937	11613.909	91.24	87.39	89.00	90.79	0.70	0.92	0.93	0.86
Denmark	23633.282	26038.373	25138.667	26247.784	93.43	93.33	93.23	92.13	2.39	2.38	2.41	2.43
Estonia	1335.8057	1604.7271	1646.0082	1731.6241	90.95	87.86	88.10	88.01	1.13	1.18	1.09	1.13
Finland	16267.153	17302.283	17230.473	18039.486	90.98	91.47	89.55	88.64	1.65	1.54	1.51	1.59
France	141477.14	150911.81	146115.54	149838.81	92.37	92.15	91.54	91.98	1.23	1.23	1.21	1.28
Germany	179812.03	197900.7	198951.64	217338.67	93.06	92.48	91.58	90.52	1.24	1.27	1.28	1.39
Greece	6948.7671	7628.1425	7360.6345	..	88.11	88.18	86.47	..	0.63	0.67	0.70	..
Hungary	6651.2391	7423.6513	6929.6721	6533.1124	89.90	86.49	89.32	89.42	0.82	0.81	0.74	0.76
Ireland	11771.251	13063.981	13149.499	13933.276	94.73	94.79	93.83	92.87	0.97	0.91	0.86	0.84
Italy	79353.551	89035.585	82368.302	84273.104	97.97	97.22	94.86	94.73	0.75	0.77	0.78	0.88
Latvia	1331.1402	1461.0188	1518.191	1668.1627	88.60	84.54	84.89	85.20	0.69	0.74	0.82	0.84
Lithuania	1820.6597	2092.4872	2172.6638	2568.317	94.54	93.60	94.34	88.46	0.75	0.79	0.80	0.93
Luxembourg	2291.0301	2600.1112	2611.1558	2840.0045	91.12	90.63	88.77	90.36	0.45	0.40	0.45	0.46
Malta	615.00169	..	784.11941	..	90.01	..	87.16	..	1.19	..	1.32	..
Netherlands	43153.595	48971.231	46964.754	49345.499	89.08	89.38	89.23	88.92	1.59	1.71	1.61	1.68
Poland	24000.487	27113.644	27888.437	29088.872	93.49	91.42	92.99	93.43	1.08	1.06	1.10	1.14
Portugal	11102.441	11328.516	11111.431	11168.867	96.29	95.92	96.51	96.64	0.80	0.78	0.79	0.87
Romania	6552.8034	8076.103	8953.6905	9022.0466	95.15	94.79	93.67	93.62	0.72	0.75	0.81	0.81
Slovakia	3761.1554	4195.5394	4517.1871	5085.2956	94.51	94.02	93.85	94.18	0.78	0.75	0.78	0.90
Slovenia	2322.8198	2673.4423	2660.3389	2892.9249	93.13	91.67	92.95	92.14	0.95	1.01	1.02	1.16
Spain	55228.795	59419.868	58982.768	62569.529	94.88	94.90	94.70	94.57	0.93	0.92	0.94	1.08
Sweden	40948.763	42441.429	40780.464	43357.381	95.81	94.82	95.40	95.37	1.79	1.79	1.78	1.88
Norway	31520.866	33404.734	32145.826	30781.29	87.02	87.22	87.59	87.22	2.09	2.06	2.13	2.31
Switzerland	34882.735	35770.855	36172.261	39153.56	..	..	..	..	1.33	1.31	1.33	1.41
United Kingdom and Northern Ireland	146625.35	139489.51	151065.92	157072.4	97.49	97.69	97.82	97.73	1.45	1.44	1.44	1.51
United States of America	957727.92	960016.44	1024040.3	1162150	90.77	90.62	90.42	90.00	1.46	1.28	1.36	1.81

Source: Adapted from UNESCO-UIS Data

Table 2- Enrolment in tertiary education, all programmes, (number) and gross enrolment ratio, primary to tertiary (%) (2017-2021)

Indicator	Enrolment in tertiary education, all programmes, both sexes (number)					Gross enrolment ratio, primary to tertiary, both sexes (%)					
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021	2022
Austria	430370.4	430195.275	423048.6905	422031.6119	438382.6083	96.23	97.10	97.68	98.46	100.36	..
Belgium	526760	515530	519212	521201	539777	118.22	116.83	116.87	115.14	113.18	..
Bulgaria	249937	236335	229464	226608	226361	89.92	89.63	87.97	86.09	84.86	..
Croatia	165197	164826	163867	161627	161077	89.50	89.80	89.96	90.32	91.61	..
Cyprus	45263	47169	50211	53192	53508	91.64	93.65	96.59	98.35	99.37	..
Czechia	352873	329036	319343	318679	328830	93.82	92.16	92.28	92.41	93.23	..
Denmark	312379	310903	308567	307632	308152	104.45	104.24	104.26	104.87	105.94	105.73
Estonia	47389.665	45773.416	45484.167	44872.832	44939.1	97.65	97.46	97.61	97.79	98.85	98.56
Finland	295528	294516	295451	295924	305370	117.47	118.28	115.92	116.20	117.54	119.42
France	2532831	2618729	2685408	2748317	2809289	93.09	93.53	93.52	93.79	93.86	94.32
Germany	3091694	3127927	3296249	3280032.522	3351573.428	96.30	96.58	97.61	97.48	98.35	..
Greece	735027	766874	794107	802365	843832	114.40	116.17	118.80	118.53	120.52	..
Hungary	287018	283350	281461	285110	287493	89.64	89.53	89.16	89.88	90.30	..
Ireland	225031	231201	232512	236697	249569	106.18	111.63	106.58	105.68	107.32	..
Italy	1837051	1895990	1937761	2030768	2096778	90.61	91.31	91.71	92.49	93.14	..
Latvia	82914	81602	80355	79408	78548	101.36	102.47	102.35	101.61	101.36	100.18
Lithuania	125863	118287	111768	106455	104897	99.43	99.77	97.95	97.43	97.91	..
Luxembourg	7058	7043	7102	7444	7665	77.86	78.16	78.35	78.52	78.83	..
Malta	14425	15220	16068.37	17053.02401	18336	85.61	87.33	87.61	88.25	91.56	92.82
Netherlands	875455	889506	..	937421	987564	102.72	102.33	..	102.77	103.75	..
Norway	284042	288739	290014	294043	311592	101.25	101.85	102.46	103.09	105.35	..
Poland	1550203	1492899	1430981	1390019	1347799	96.39	95.83	95.73	95.53	96.22	97.97
Portugal	346963	356390	368181	380235	403746	97.49	97.88	98.25	98.41	99.33	..
Romania	531586	538871	533749	543299	560490	80.08	80.80	81.19	81.35	81.33	..
Slovakia	156048	144447	140809	138407	140992	81.20	81.32	81.73	82.14	83.21	84.70
Slovenia	79547	76534	75991	76728	82694	98.80	98.43	97.63	97.21	98.18	98.58
Spain	2010183	2051826	2083979	2145333	2261063	106.18	105.96	105.51	105.03	106.95	..
Sweden	426354	431065	432233.4046	453448.1217	490470.2417	114.36	115.71	114.05	115.12	117.47	116.89
Switzerland	300618	306743	312933	319534	332380	91.34	92.12	92.79	93.49	94.60	95.33
United Kingdom of Great Britain and Northern Ireland	2431886.4	2467086.412	2618286.919	2734157.749	2993903.432	97.58	96.20	96.48	96.62	99.47	99.59
United States of America	19014530	18941967.42	18825910.12	18757011.39	18159426.93	98.38	98.33	98.37	98.29	96.96	93.31
World	223105905	225511226.3	231560355.3	238614753.2	247542341.2	74.19	73.73	74.22	74.94	75.52	76.30
Europe and Northern America	49635327	49537112.03	49822147.51	50039598.83	50245140.36	96.76	96.99	97.13	97.14	97.17	97.21
Europe	28994544	28971739.6	29274461.63	29507092.54	30285291.92	95.79	96.21	96.39	96.44	97.17	97.20
High income countries	54739037	54748927.35	55324013.35	55535442.08	55651471.98	96.65	96.44	96.81	96.73	97.14	97.37

Source: Adapted from UNESCO-UIS Data

Table 3- Gross graduation ratio from first degree programmes (ISCED 6 and 7) in tertiary education (%) and percentage of graduates from Science, Technology, Engineering and Mathematics programmes in tertiary education (%) (2017-2021)

Time	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Country	Gross graduation ratio from first degree programmes (ISCED 6 and 7) in tertiary education, both sexes (%)					Percentage of graduates from Science, Technology, Engineering and Mathematics programmes in tertiary education, both sexes (%)				
Austria	..	32.87	35.10	37.32	41.14	..	31.03	31.40	30.57	30.60
Belgium	30.62	50.50	48.89	54.53	51.35	16.70	16.99	17.55	17.58	18.60
Bulgaria	47.89	48.69	51.59	47.34	..	20.51	19.28	19.82	19.51	..
Croatia	43.59	44.21	41.68	43.18	..	27.01	26.33	27.27	28.49	..
Cyprus	27.47	24.85	27.20	27.65	33.33	14.97	15.15	13.59	13.11	11.17
Czechia	42.38	44.29	43.05	42.47	42.56	23.86	26.12	25.86	25.88	25.47
Denmark	55.60	54.32	55.05	57.97	59.73	20.98	22.20	22.54	23.01	23.99
Estonia	..	45.08	..	3.60	3.62	28.84	27.73	27.91	27.48	28.12
Finland	54.88	58.18	60.32	64.45	64.46	27.25	28.12	28.38	27.94	28.21
France	..	46.43	48.06	50.47	53.56	..	25.39	25.77	25.89	25.55
Germany	42.06	41.01	47.52	43.18	47.99	35.55	35.31	36.78	35.82	35.14
Greece	43.01	42.59	42.00	42.36	51.63	29.40	28.27	27.34	27.42	27.50
Hungary	29.74	31.04	31.09	132.30	42.51	23.26	22.52	23.35	15.50	21.57
Ireland	..	..	..	..	..	..	24.10	25.31	26.41	24.91
Italy	..	40.73	41.57	41.96	44.25	..	24.20	24.48	22.68	23.89
Latvia	39.72	45.02	46.74	45.69	48.99	20.87	20.17	19.93	19.33	19.36
Lithuania	54.70	60.64	58.46	57.70	55.95	25.67	26.82	27.27	26.03	25.77
Luxembourg	..	8.54	8.36	8.54	8.73	..	18.82	18.96	19.24	19.78
Malta	41.96	..	44.28	41.56	53.44	20.31	..	17.13	17.23	15.15
Netherlands	49.41	50.00	48.86	47.50	51.12	16.62	17.45	18.58	18.83	19.34
Poland	48.43	45.43	44.66	44.62	47.66	22.94	21.65	20.81	19.45	19.64
Portugal	52.23	..	52.38	54.84	55.52	29.09	..	27.99	27.82	27.72
Romania	..	..	42.03	42.45	42.40	..	..	30.01	29.09	29.27
Slovakia	36.44	36.33	32.48	32.45	35.11	21.17	22.07	21.82	22.18	21.31
Slovenia	46.97	47.04	43.89	43.20	46.77	26.61	27.23	27.97	28.64	28.14
Spain	44.72	43.88	..	45.27	45.15	23.45	22.27	..	20.81	21.46
Sweden	36.01	38.98	41.51	46.66	47.73	27.50	26.64	27.32	27.01	28.17
World	23.87	24.02	24.21	25.28	24.73					
Europe and Northern America	42.89	41.65	42.01	42.75	43.31					
Europe	48.46	46.53	47.09	48.27	49.17					
High income countries	39.59	39.76	40.32	41.17	42.48					

Source: Adapted from UNESCO-UIS Data

Table 4 – Germany Country Profile in the Global Innovation Index 2023, p. 123

GII 2023 rank	Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$:
8	6	13	High	EUR	83.4	5,316.9	63,835

		Score/Value	Rank			Score/Value	Rank
	Institutions	71.9	22		Business sophistication	56.9	16
1.1	Institutional environment	71.8	20	5.1	Knowledge workers	59.0	21
1.1.1	Operational stability for businesses*	70.1	28	5.1.1	Knowledge-intensive employment, %	46.1	20
1.1.2	Government effectiveness*	73.5	22	5.1.2	Firms offering formal training, %	44.1	25
1.2	Regulatory environment	79.4	29	5.1.3	GERD performed by business, % GDP	2.1	9
1.2.1	Regulatory quality*	84.4	11	5.1.4	GERD financed by business, %	62.6	11
1.2.2	Rule of law*	86.8	14	5.1.5	Females employed w/advanced degrees, %	15.6	48 ○ ◇
1.2.3	Cost of redundancy dismissal	21.6	93 ○ ◇	5.2	Innovation linkages	63.1	10
1.3	Business environment	64.6	29	5.2.1	University–industry R&D collaboration†	76.2	17
1.3.1	Policies for doing business†	75.8	15	5.2.2	State of cluster development†	82.6	9 ●
1.3.2	Entrepreneurship policies and culture†	53.5	29	5.2.3	GERD financed by abroad, % GDP	0.2	16
	Human capital and research	61.1	4 ●	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	26 ◇
2.1	Education	62.2	23	5.2.5	Patent families/bn PPP\$ GDP	5.0	1 ● ◆
2.1.1	Expenditure on education, % GDP	5.1	36 □	5.3	Knowledge absorption	48.6	26
2.1.2	Government funding/pupil, secondary, % GDP/cap	24.3	23	5.3.1	Intellectual property payments, % total trade	1.0	37
2.1.3	School life expectancy, years	16.9	20	5.3.2	High-tech imports, % total trade	10.3	33
2.1.4	PISA scales in reading, maths and science	500.4	18	5.3.3	ICT services imports, % total trade	2.6	27
2.1.5	Pupil–teacher ratio, secondary	11.5	47 ○	5.3.4	FDI net inflows, % GDP	2.4	63 ○
2.2	Tertiary education	51.4	8 ●	5.3.5	Research talent, % in businesses	60.1	15
2.2.1	Tertiary enrolment, % gross	73.0	29		Knowledge and technology outputs	55.4	9 ●
2.2.2	Graduates in science and engineering, %	35.8	8 ◆	6.1	Knowledge creation	61.5	6 ●
2.2.3	Tertiary inbound mobility, %	11.2	23	6.1.1	Patents by origin/bn PPP\$ GDP	13.5	5 ●
2.3	Research and development (R&D)	69.6	7 ●	6.1.2	PCT patents by origin/bn PPP\$ GDP	3.3	10
2.3.1	Researchers, FTE/mn pop.	5,538.0	14	6.1.3	Utility models by origin/bn PPP\$ GDP	1.4	15
2.3.2	Gross expenditure on R&D, % GDP	3.1	9	6.1.4	Scientific and technical articles/bn PPP\$ GDP	20.5	35
2.3.3	Global corporate R&D investors, top 3, mn USD	92.0	3 ● ◆	6.1.5	Citable documents H-index	86.8	3 ● ◆
2.3.4	QS university ranking, top 3*	72.9	11	6.2	Knowledge impact	50.7	15
	Infrastructure	57.1	23	6.2.1	Labor productivity growth, %	–0.0	98 ○
3.1	Information and communication technologies (ICTs)	82.0	32	6.2.2	Unicorn valuation, % GDP	2.0	21
3.1.1	ICT access*	88.0	34	6.2.3	Software spending, % GDP	0.6	15
3.1.2	ICT use*	91.2	19	6.2.4	High-tech manufacturing, %	52.9	9
3.1.3	Government's online service*	76.8	44 ◇	6.3	Knowledge diffusion	54.1	10
3.1.4	E-participation*	72.1	32	6.3.1	Intellectual property receipts, % total trade	2.5	11
3.2	General infrastructure	48.3	21	6.3.2	Production and export complexity	93.6	3 ● ◆
3.2.1	Electricity output, GWh/mn pop.	7,102.1	27	6.3.3	High-tech exports, % total trade	11.3	15 ○
3.2.2	Logistics performance*	90.9	3 ● ◆	6.3.4	ICT services exports, % total trade	2.1	56
3.2.3	Gross capital formation, % GDP	22.7	76 ○	6.3.5	ISO 9001 quality/bn PPP\$ GDP	10.1	28
3.3	Ecological sustainability	41.2	30	7.1	Creative outputs	58.2	7 ●
3.3.1	GDP/unit of energy use	14.2	30		Intangible assets	65.5	7 ●
3.3.2	Environmental performance*	73.7	13	7.1.2	7.1.1 Intangible asset intensity, top 15, %	73.6	13
3.3.3	ISO 14001 environment/bn PPP\$ GDP	1.9	50 ○	7.1.3	Trademarks by origin/bn PPP\$ GDP	69.1	24
	Market sophistication	56.5	14	7.1.4	Global brand value, top 5,000, % GDP	15.6	8 ●
4.1	Credit	49.3	30	7.2	Industrial designs by origin/bn PPP\$ GDP	10.5	9 ◆
4.1.1	Finance for startups and scaleups†	67.3	21	7.2.1	Creative goods and services	32.2	24
4.1.2	Domestic credit to private sector, % GDP	84.8	37	7.2.2	Cultural and creative services exports, % total trade	0.9	37
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.3	National feature films/mn pop. 15–69	4.4	27
4.2	Investment	24.9	28	7.2.4	Entertainment and media market/th pop. 15–69	56.4	11
4.2.1	Market capitalization, % GDP	52.3	33 ○	7.3	Creative goods exports, % total trade	2.2	24
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	0.2	25	7.3.1	Online creativity	69.4	8 ●
4.2.3	VC recipients, deals/bn PPP\$ GDP	0.1	22	7.3.2	Generic top-level domains (TLDs)/th pop. 15–69	60.9	12
4.2.4	VC received, value, % GDP	0.0	25	7.3.3	Country-code TLDs/th pop. 15–69	88.6	6 ● ◆
4.3	Trade, diversification and market scale	95.2	2 ● ◆	7.3.4	GitHub commits/mn pop. 15–69	57.0	16
4.3.1	Applied tariff rate, weighted avg., %	1.5	20		Mobile app creation/bn PPP\$ GDP	71.1	47 ○
4.3.2	Domestic industry diversification	95.1	29				
4.3.3	Domestic market scale, bn PPP\$	5,316.9	1 ● ◆				

Source: World Intellectual Property Organization (WIPO) (2023). Global Innovation Index 2023: Innovation in the face of uncertainty. Geneva: WIPO. DOI:10.34667/tind.48220. Germany Country Profile, p. 123.

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; \* an index; † a survey question. □ is used when the available economy data are older than the base year; see appendices for details, including the year of the data, at wipo.int/gii-ranking. Square brackets [ ] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

Table 5– GERD as a percentage of GDP (%), and Researchers per million inhabitants (FTE) (2017-2022)

Indicator	GERD as a percentage of GDP					Researchers per million inhabitants (FTE)				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Austria	3.06	3.09	3.13	3.2	3.26	5416.8937	5683.2428	5959.5499	5829.8373	6341.7387
Belgium	2.67	2.86	3.16	3.4	3.43	4757.9255	5032.3678	5280.4219	5410.8321	6581.8923
Bulgaria	0.74	0.75	0.83	0.85	0.77	2092.0812	2310.619	2391.0245	2377.5557	2339.2524
Croatia	0.85	0.95	1.08	1.24	1.24	1856.8119	1912.0683	2127.9347	2214.7751	2330.9063
Cyprus	0.54	0.61	0.71	0.84	0.83	1209.6369	1408.1802	1657.7254	1739.8551	1743.29
Czechia	1.77	1.9	1.93	1.99	2	3721.1222	3911.2071	4033.8859	4194.9453	4568.6069
Denmark	2.93	2.97	2.9	2.97	2.81	7683.4421	7635.7774	7727.2392	7667.3038	7707.7252
Estonia	1.28	1.41	1.63	1.75	1.75	3552.2305	3765.6219	3769.8369	3835.7187	4038.1952
Finland	2.73	2.76	2.8	2.91	2.99	6731.7922	6872.9839	7246.272	7548.5026	7870.6534
France	2.2	2.2	2.19	2.28	2.22	4624.6968	4756.5841	4870.4561	4986.1801	5175.0056
Germany	3.05	3.11	3.17	3.13	3.14	5087.2543	5239.9719	5428.2154	5413.8242	5535.9543
Greece	1.15	1.21	1.27	1.51	1.46	3264.1459	3441.0649	3684.8692	4073.5474	4326.3066
Hungary	1.32	1.51	1.47	1.59	1.64	2901.0154	3845.4915	4020.5778	4308.9542	4452.1518
Ireland	1.25	1.17	1.23	1.23	1.13	5155.3708	4749.6171	4836.0744	4858.6072	5250.6823
Italy	1.37	1.42	1.46	1.51	1.45	2336.9389	2541.0383	2688.6467	2632.2798	2677.8408
Latvia	0.51	0.64	0.64	0.73	0.74	1772.6137	1776.5039	1885.9039	2135.0179	2404.5239
Lithuania	0.9	0.94	0.99	1.13	1.11	2994.61	3092.7453	3364.4672	3590.7472	3935.0853
Luxembourg	1.24	1.17	1.18	1.09	1.04	4971.1652	4756.4701	5092.3083	4690.3027	4940.6037
Malta	0.55	0.58	0.56	0.65	0.67	1970.4496	1866.1251	1886.7773	1983.9284	2160.7266
Netherlands	2.18	2.14	2.18	2.32	2.31	5302.3446	5535.4761	5640.2455	5865.7267	6074.3107
Poland	1.04	1.21	1.32	1.39	1.44	2973.7662	3056.7677	3136.3905	3238.2091	3534.4987
Portugal	1.32	1.35	1.4	1.61	1.68	4355.7475	4627.1724	4879.3187	5163.3534	5473.447
Romania	0.51	0.5	0.48	0.47	0.47	887.30938	875.76242	887.07363	940.54664	985.49335
Slovakia	0.88	0.84	0.82	0.9	0.92	2801.0732	3001.4043	3114.8628	3165.5949	3211.044
Slovenia	1.87	1.95	2.04	2.14	2.13	4440.8449	4788.8467	4980.4205	5124.626	5223.0002
Spain	1.21	1.24	1.25	1.41	1.43	2863.7501	3003.5629	3067.6612	3071.4482	3251.7428
Sweden	3.36	3.32	3.39	3.49	3.42	7308.6591	7433.2106	7697.8361	7759.4988	8130.7911
Norway	2.08	2.03	2.14	2.24	1.94	6395.4398	6483.526	6736.8514	6765.3324	7227.9307
Switzerland	3.08	..	3.2	..	3.36	5258.5432	..	5562.9506	..	6022.7465
Türkiye	1.18	1.27	1.32	1.37	1.4	1369.346	1530.9047	1629.7324	1786.5171	1999.5341
United Kingdom and Northern Ireland	2.32	2.7	2.67	2.93	2.91	4491.317	..	..	..	..
United States of America	2.9	3.01	3.17	3.47	3.46	3958.564	4261.9895	4308.874	4451.781	..
Russian Federation	1.11	0.99	1.04	1.09	0.96	2825.5395	2787.2464	2749.4853	2724.9072	2675.5547
World	1.75	1.78	1.83	1.95	1.93	1195.1174	1244.703	1294.482	1326.8557	1352.4996
Europe and Northern America	2.32	2.36	2.44	2.62	2.59	3643.6059	3816.5247	3896.4714	3971.2256	4049.7192
Europe	1.95	1.95	1.98	2.06	2.02	3464.7964	3572.602	3662.845	3700.0155	3816.5673

Source: Adapted from UNESCO-UIS Data

Table 6- Key host countries and countries of origin of international, and mobility balances in major host countries and countries of origin, 2020 students (number and in % of all international students worldwide, and (number and % of all incoming and outgoing students of the respective country) in 2020

Host country	Number	Proportion in %		
US	957,475	15.0		
United Kingdom	550,877	8.7		
Australia	458,279	7.2		
Germany	368,717	5.8		
Canada	323,157	5.1		
Russia <sup>2</sup>	282,922	4.4		
France	252,444	4.0		
China <sup>3</sup>	233,127	3.7		
United Arab Emirates	215,975	3.4		
Japan <sup>2</sup>	202,907	3.2		
Other countries	2,516,083	39.5		
Country of origin	Number	Proportion in %		
China <sup>3</sup>	1,067,165	16.8		
India	528,301	8.3		
Vietnam	138,434	2.2		
South Korea	126,922	2.0		
Germany <sup>4</sup>	126,912	2.0		
US	120,745	1.9		
France	114,215	1.8		
Kazakhstan	96,461	1.5		
Nepal <sup>5</sup>	95,268	1.5		
Brazil <sup>5</sup>	89,151	1.4		
Other countries	3,858,389	60.6		
Internationally mobile students				
Country	Outgoing Number	Incoming Number	Outgoing In (%)	Incoming In (%)
Vietnam	138434	8646	94	6
India	528301	49348	91	9
China <sup>2</sup>	1067165	233127	82	18
Brazil <sup>4</sup>	89151	22364	80	20
Kazakhstan	96461	40742	70	30
South Korea	126922	111568	53	47
France	114215	252444	31	69
Germany <sup>3</sup>	126912	368717	26	74
Russia <sup>5</sup>	57591	282922	17	83
Japan <sup>5</sup>	32913	202907	14	86

Sources: UNESCO, student statistics; Federal statistical office, student statistics, 'Deutsche Studierende im Ausland'; MoE, statistical report on international students in China for 2018; country-specific reporting periods; DAAD calculations

Figure - Mobility balances in major host countries and countries of origin, 2020 (Number and in % of all incoming and outgoing students of the respective country)

Table 7.a- Key countries of origin of international students in the key host countries, 2020 (in absolute numbers and percentages)

Host country: US			Host country: Germany		
Country of origin	Number	In %	Country of origin	Number	In %
China <sup>5</sup>	350,795	36.6	China <sup>5</sup>	39,621	10.7
India	128,578	13.4	India	25,130	6.8
South Korea	46,996	4.9	Syria	15,769	4.3
Saudi Arabia	30,860	3.2	Austria	14,514	3.9
Canada	26,524	2.8	Russia	11,055	3.0
Other countries		39.0	Other countries		71.2
Host country: United Kingdom			Host country: Canada		
Country of origin	Number	In %	Country of origin	Number	In %
China <sup>5</sup>	160,964	29.2	India	95,031	29.4
India	55,232	10.0	China <sup>5</sup>	83,058	25.7
US	19,762	3.6	France	18,198	5.6
Italy	14,479	2.6	US	9,303	2.9
France	13,912	2.5	Vietnam	9,243	2.9
Other countries		52.0	Other countries		33.5
Host country: Australia			Host country: France		
Country of origin	Number	In %	Country of origin	Number	In %
China <sup>5</sup>	137,684	30.0	Morocco	32,707	13.0
India	84,484	18.4	China <sup>7</sup>	24,780	9.8
Nepal	40,752	8.9	Algeria	22,895	9.1
Vietnam	15,959	3.5	Senegal	10,897	4.3
Malaysia	14,125	3.1	Tunisia	9,796	3.9
Other countries		36.1	Other countries		60.0

Source: UNESCO, student statistics; country-specific reporting periods; DAAD calculations

Notes: <sup>5</sup> Including Hong Kong and Macao

<sup>6</sup> As current data were not yet available for 2020, Russia was excluded from this representation and France included instead.

<sup>7</sup> Unclear whether students from Hong Kong and Macao are included

Table 7.b- Preferred host countries of internationally mobile students from the key countries of origin in 2020 (in absolute numbers and percentages)

Country of origin: China <sup>3</sup>			Country of origin: Germany		
Host country	Number	In %	Host country	Number	In %
US	350,795	32.9	Austria	30,503	24.0
United Kingdom	160,964	15.1	Netherlands	21,314	16.8
Australia	137,684	12.9	United Kingdom	12,445	9.8
Japan <sup>4</sup>	91,528	8.6	Switzerland	11,185	8.8
Canada	83,058	7.8	US	6,823	5.4
Other countries		22.8	Other countries		35.2
Country of origin: India			Country of origin: South Korea		
Host country	Number	In %	Host country	Number	In %
US	128,578	24.3	US	46,996	37.0
Canada	95,031	18.0	China <sup>8</sup>	28,190	22.2
Australia	84,484	16.0	Japan <sup>4</sup>	14,328	11.3
United Kingdom	55,232	10.5	Australia	8,213	6.5
Germany	25,130	4.8	Canada	7,143	5.6
Other countries		26.5	Other countries		17.4
Country of origin: Vietnam			Country of origin: US		
Host country	Number	In %	Host country	Number	In %
Japan	44,128	31.9	Mexico	20,245	16.8
US	25,183	18.2	United Kingdom	19,762	16.4
South Korea	19,098	13.8	China <sup>8</sup>	11,161	9.2
Australia	15,959	11.5	Canada	9,303	7.7
Canada	9,243	6.7	Germany	8,246	6.8
Other countries		17.9	Other countries		45.0

Sources: UNESCO, student statistics; MOE, statistical report on international students in China for 2018; country-specific reporting periods; DAAD calculations



Table 8 - Total Inbound internationally mobile students from all regions, both sexes (number)

	Indicator/Year	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
From Central and Eastern Europe	Germany	46685	51136	51032	58460	58677	18.44%	16.74%	15.61%	16.18%	15.92%
	World	458855.54	465919.91		453741.78		8.92%	8.59%		7.54%	
	Europe	395286.53	400486.33	365883.74	388767.35	410358.4	20.56%	19.99%	17.60%	17.37%	17.40%
	European Union	283346.67	279289.66	247728.4	253451.69	269281.06	22.55%	22.28%	18.41%	19.34%	19.88%
	Germany/World (%)	10.17%	10.98%		12.88%						
	Germany/Europe (%)	11.81%	12.77%	13.95%	15.04%	14.30%					
	Germany/European Union (%)	16.48%	18.31%	20.60%	23.07%	21.79%					
from North America and Western Europe	Germany	58311	73731	75392	85087	83323	23.03%	24.14%	23.06%	23.54%	22.60%
	World	741373.52	766036.31		815802.44		14.42%	14.12%		13.57%	
	Europe	538937.44	558050.84	592015.84	604309.1	617563.68	28.03%	27.86%	28.48%	27.00%	26.18%
	European Union	365096.58	330140.18	399226.5	359786.1	370062.7	29.06%	26.34%	29.66%	27.45%	27.32%
	Germany/World (%)	7.87%	9.63%		10.43%						
	Germany/Europe (%)	10.82%	13.21%	12.73%	14.08%	13.49%					
	Germany/European Union (%)	15.97%	22.33%	18.88%	23.65%	22.52%					
From unknown regions	Germany	35834	48471	51309	31726	32109	14.15%	15.87%	15.70%	8.78%	8.71%
	World	740804.76	806030.2		952180.14		14.41%	14.86%		15.83%	
	Europe	148347	140180.33	146259.76	131439.12	139886.35	7.72%	7.00%	7.04%	5.87%	5.93%
	European Union	103157	100385.33	128199	72743.784	69807.7	8.21%	8.01%	9.53%	5.55%	5.15%
	Germany/World (%)	4.84%	6.01%		3.33%						
	Germany/Europe (%)	24.16%	34.58%	35.08%	24.14%	22.95%					
	Germany/European Union (%)	34.74%	48.28%	40.02%	43.61%	46.00%					
From the Arab States	Germany	19410	27385	33991	41636	44229	7.67%	8.97%	10.40%	11.52%	12.00%
	World	489400.56	517241.17		563253.33		9.52%	9.54%		9.37%	
	Europe	172740.49	190645.45	206093.13	220374.61	238230.98	8.99%	9.52%	9.91%	9.85%	10.10%
	European Union	120222.49	133288	141959.47	150445	163624.98	9.57%	10.63%	10.55%	11.48%	12.08%
	Germany/World (%)	3.97%	5.29%		7.39%						
	Germany/Europe (%)	11.24%	14.36%	16.49%	18.89%	18.57%					
	Germany/European Union (%)	16.15%	20.55%	23.94%	27.68%	27.03%					
From East Asia and the Pacific	Germany	42722	46710	49940	59932	57179	16.87%	15.29%	15.28%	16.58%	15.51%
	World	1364233.4	1434429.5		1544520		26.53%	26.44%		25.68%	
	Europe	322965.25	338783.02	357587.68	398465	385892.54	16.80%	16.91%	17.20%	17.80%	16.36%
	European Union	135025.3	138583.69	139876.01	146871	135680	10.75%	11.06%	10.39%	11.20%	10.02%
	Germany/World (%)	3.13%	3.26%		3.88%						
	Germany/Europe (%)	13.23%	13.79%	13.97%	15.04%	14.82%					
	Germany/European Union (%)	31.64%	33.71%	35.70%	40.81%	42.14%					
From Latin America and the Caribbean	Germany	12631	14832	15778	19607	19462	4.99%	4.86%	4.83%	5.43%	5.28%
	World	337045.49	365225.72		411311.67		6.56%	6.73%		6.84%	
	Europe	99389.817	107062.38	111220.77	122705.42	120646.75	5.17%	5.34%	5.35%	5.48%	5.11%
	European Union	84801.8	91592.71	95386	104548.42	103511.8	6.75%	7.31%	7.09%	7.98%	7.64%
	Germany/World (%)	3.75%	4.06%		4.77%						
	Germany/Europe (%)	12.71%	13.85%	14.19%	15.98%	16.13%					
	Germany/European Union (%)	14.89%	16.19%	16.54%	18.75%	18.80%					
from South and West Asia	Germany	25595	29337	34651	46580	53369	10.11%	9.60%	10.60%	12.89%	14.48%
	World	629114.61	687550.22		867242.96		12.24%	12.68%		14.42%	
	Europe	114670.74	135430.1	161363.33	215364.13	263971.1	5.96%	6.76%	7.76%	9.62%	11.19%
	European Union	74008.736	85333.1	94484.334	110227	114367.1	5.89%	6.81%	7.02%	8.41%	8.44%
	Germany/World (%)	4.07%	4.27%		5.37%						
	Germany/Europe (%)	22.32%	21.66%	21.47%	21.63%	20.22%					
	Germany/European Union (%)	34.58%	34.38%	36.67%	42.26%	46.66%					
From sub-Saharan Africa	Germany	12027	13846	14785	18359	20318	4.75%	4.53%	4.52%	5.08%	5.51%
	World	380899.01	381840.02		405765.3		7.41%	7.04%		6.75%	
	Europe	130139.42	132743.02	138424.14	156879.86	182214.51	6.77%	6.63%	6.66%	7.01%	7.72%
	European Union	90591	94735.683	99032	112750.86	128145.51	7.21%	7.56%	7.36%	8.60%	9.46%
	Germany/World (%)	3.16%	3.63%		4.52%						
	Germany/Europe (%)	9.24%	10.43%	10.68%	11.70%	11.15%					
	Germany/European Union (%)	13.28%	14.62%	14.93%	16.28%	15.86%					
From all regions	Germany	253215	305448	326878	361387	368666					
	World	5141726.8	5424273.1	0	6013817.7	0					
	Europe	1922476.7	2003381.5	2078848.4	2238304.6	2358764.3					
	European Union	1256249.6	1253348.4	1345891.7	1310823.9	1354480.8					
	Germany/World (%)	4.92%	5.63%		6.01%						
	Germany/Europe (%)	13.17%	15.25%	15.72%	16.15%	15.63%					
	Germany/European Union (%)	20.16%	24.37%	24.29%	27.57%	27.22%					

Source: Author own calculation based on data obtained from UNESCO-UIS Data

Table 9- Total Outbound and total inbound internationally mobile students from all regions, both sexes (number) (2017-2021)

Time	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Country	Total outbound internationally mobile tertiary students studying abroad					Total Inbound internationally mobile students from all regions				
Austria	19207	21509	22106	23993	25376	73094.845	74277.466	73670.03	74941.285	81015.4
Belgium	15029	15874	16578	17195	17165	44810	53765	51937	54612	52771
Bulgaria	25089	25079	24798	25185	25293	13478	14894	16254	17363	17885
Croatia	9692	9754	10169	10011	10440	4774	4999	5711	4759	4281
Cyprus	24456	26501	26161	25976	26718	10426	11239	13055	14433	11652
Czechia	13200	12333	11890	12200	12316	41771	42161	43062	44603	47540
Denmark	5319	5946	5844	6045	5827	33554	33249	32329	31427	30746
Estonia	3892	3705	3617	3523	3477	3673.5	4125	4703	5130	4843
Finland	10970	11329	11341	10978	10279	24005	23544	23617	23403	24475
France	94760	99572	103006	108757	105790	255906	227995	244582	250537	250971
Germany	122975	122543	122667	123534	126359	253215	305448	326878	361387	368666
Greece	37966	39109	39592	40406	40595	24698	25952	27439	22097	23475
Hungary	12399	12871	12974	13717	13764	27609	30923	33670	36176	35535
Ireland	15073	14980	15545	15179	15846	19949	22245	24864	24092	23137
Italy	74843	76180	80130	84561	85030	96307	104707	53546	56841	70145
Latvia	5316	5210	4979	5023	5107	4554	5889	6674	8013	7920
Lithuania	10432	10408	10469	10279	9833	5476	5929	6217	6026	7074
Luxembourg	11021	11585	12106	12712	13095	3266	3331	3421	3564	3737
Malta	1067	1142	1193	1212	1162	1168	1494	1972.86	2376.8323	2992.2
Netherlands	18484	17540	19949	19448	18459	95928	31309	107948		
Poland	25160	26374	25557	26518	27350	62081	52596	53364	59062	69402
Portugal	14119	15085	21326	22817	23808	22156	28079	35699	43933	47011
Romania	36036	37546	31249	31503	34329	27279	28875	30053	32247	33462
Slovakia	32454	31448	22118	30901	31107	10689	11510	12632	14108	15209
Slovenia	3323	3197	4548	3284	3082	3065	3402	5042	5942	7579
Spain	41607	42309	43035	47258	46787	64722	70651	76794	81981	80551
Sweden	16546	15975	16280	15125	14113	28596	30760	30758.49	31769.484	32405.8
Total European Union	700435	715104	719227	747340	752507	1256250.35	1253348.5	1345892	1310823.6	1354480
World	5409624.41	5715279.534	6099343.4	6376355	6387487.8	5141726.8	5424273.1		6013817.7	
Europe and Northern America	1126069	1146406	1156971	1195826	1204771	3111263.1	3208671.8	3327914	3511583.4	3497633
Europe	988155	1010386	1004568	1035042	1052583	1922476.7	2003381.5	2078848	2238304.6	2358764
High income countries	1311803	1326264	1346243	1370909	1336854	3952547.6	4201585.3	4462165	4608531.6	4502767
Germany/European Union (%)	17.56%	17.14%	17.06%	16.53%	16.79%	20.16%	24.37%	24.29%	27.57%	27.22%
Germany/Europe (%)	12.44%	12.13%	12.21%	11.94%	12.00%	13.17%	15.25%	15.72%	16.15%	15.63%
Germany/Europe and North America (%)	10.92%	10.69%	10.60%	10.33%	10.49%	8.14%	9.52%	9.82%	10.29%	10.54%
Germany/World (%)	2.27%	2.14%	2.01%	1.94%	1.98%	4.92%	5.63%		6.01%	
Time	2017	2018	2019	2020	2021					
Country	Net flow of internationally mobile students (inbound - outbound), both sexes (number)									
Austria	367639	431171	495847	444558	365774					
Belgium	54757.3448	53749.93305	52524.976	51876.9	56707.385					
Bulgaria	29949	38022	35565	37660	35899					
Croatia	-11343	-9924	-8299	-7610	-7168					
Cyprus	-4911	-4740	-4447	-5243	-6150					
Czechia	-14005	-15228	-13076	-11513	-15037					
Denmark	31061	32434	33981	35568	38887					
Estonia	28283	27342	26527	25433	24960					
Finland										
France	13198	12385	12453	12613	14387					
Germany	-3339	-438	2481	3888	5377					
Greece	135898	189195	210566	245183	250000					
Hungary	-12899	-12784	-11803	-17977	-16803					
Ireland	-1411	-1873	-1160	-1113	-1036					
Italy	4910	7303	9368	8962	7350					
Latvia										
Lithuania	814	2354	3401	5125	4918					
Luxembourg	-4626	-4108	-3772	-3720	-2145					
Malta	-7723	-8223	-8651	-9110	-9316					
Netherlands	128	373	805.86	1201.83	1857.2					
Poland	-8761	-5006	-4894	-3092	-1990					
Portugal	38765	27980	29634	35573	46608					
Romania	-8526	-8434	-955	1057	-554					
Slovakia	193544	204845	229948							
Slovenia	-21690	-19851	-9388	-16647	-15637					
Spain	-233	223	523	2690	4525					
Sweden	23320	28603	34027	35011	34075					
Total European Union	822799.345	965370.9331	1111206.8	870375	815488.58					

Source: Adapted from UNESCO-UIS Data

Table 10- Outbound mobility rate and inbound mobility rate of students from all regions, both sexes (number) (2017-2021)

Time	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021	2022
Country	Outbound mobility ratio, all regions, both sexes (%)					Inbound mobility rate, both sexes (%)					
Austria	4.46	5.00	5.23	5.69	5.79	17.19	17.49	17.64	17.98	18.72	
Belgium	2.85	3.08	3.19	3.30	3.18	8.54	10.45	10.04	10.52	9.83	
Bulgaria	10.04	10.60	10.81	11.10	11.17	5.50	6.41	7.19	7.76	8.01	
Croatia	5.87	5.92	6.21	6.19	6.48	2.89	3.04	3.49	2.95	2.66	
Cyprus	54.03	56.20	52.10	48.80	49.93	23.09	23.90	26.06	27.19	21.83	
Czechia	3.74	3.75	3.72	3.83	3.75	12.54	13.61	14.36	14.99	15.57	
Denmark	1.70	1.91	1.89	1.96	1.89	10.76	10.71	10.49	10.23	9.99	10.13
Estonia	8.21	8.10	7.95	7.85	7.74	8.26	9.59	11.09	12.30	11.62	11.42
Finland	3.71	3.85	3.84	3.71	3.37	8.18	8.05	8.05	7.97	8.08	8.48
France	3.74	3.80	3.84	3.96	3.77	10.20	8.77	9.17	9.19	9.00	9.14
Germany	3.98	3.92	3.72	3.77	3.77	8.37	9.97	10.11	11.24	11.23	
Greece	5.17	5.10	4.99	5.04	4.81	3.41	3.43	3.50	2.80	2.82	
Hungary	4.32	4.54	4.61	4.81	4.79	9.97	11.41	12.61	13.48	13.19	
Ireland	6.70	6.48	6.69	6.41	6.35	8.88	9.64	10.71	10.20	9.29	
Italy	4.07	4.02	4.14	4.16	4.06	5.31	5.62	2.83	2.88	3.45	
Latvia	6.41	6.38	6.20	6.33	6.50	7.39	9.27	10.43	12.78	12.76	12.68
Lithuania	8.29	8.80	9.37	9.66	9.37	4.61	5.33	5.99	6.16	7.33	
Luxembourg	156.16	164.00	170.46	171.00	170.84	46.73	47.74	48.65	48.39	49.30	
Malta	7.40	7.51	7.42	7.11	6.34	8.28	9.95	12.44	14.15	16.47	23.80
Netherlands	2.11	1.97	2.07	2.07	1.87	11.00	11.69	13.32	13.72	13.72	
Poland	1.62	1.77	1.79	1.91	2.03	4.12	3.64	3.86	4.47	5.49	6.72
Portugal	4.07	4.23	5.79	6.00	5.90	6.40	7.89	9.71	11.57	11.66	
Romania	6.78	6.97	5.85	5.80	6.12	5.18	5.40	5.68	5.99	6.03	
Slovakia	20.80	21.80	15.71	22.30	22.06	6.90	8.03	9.04	10.30	10.97	11.91
Slovenia	4.18	4.18	5.99	4.28	3.73	3.88	4.47	6.67	7.79	9.20	9.46
Spain	2.07	2.06	2.07	2.20	2.07	3.23	3.46	3.70	3.83	3.58	
Sweden	3.88	3.71	3.77	3.34	2.88	6.74	7.17	7.15	7.04	6.64	7.00
Average European Union	12.83	13.30	13.74	13.40	13.35	9.54	10.23	10.80	11.39	11.42	11.07
World	2.42	2.53	2.63	2.67	2.58	2.42	2.53	2.63	2.67	2.58	
Europe and Northern America	2.27	2.31	2.32	2.39	2.40	6.67	6.92	7.14	7.48	7.43	
Europe	3.41	3.49	3.43	3.51	3.48	7.30	7.64	7.85	8.35	8.55	
High income countries	2.40	2.42	2.43	2.47	2.40	7.29	7.76	8.15	8.40	8.20	

Source: Adapted from UNESCO-UIS Data

Table 11– International students by federal state in the winter semester 2021/22, and the development from the 2016/17 to the 2021/22 winter semester

Federal states	WiSe 2021/22		Development WiSe 2016/17 – WiSe 2021/22
	Number	Share in %	Share in %
Baden-Wuerttemberg	34375	9.6	-9
Bavaria	55291	13.7	61
Berlin	39595	19.4	45
Brandenburg	8245	16.3	28
Bremen	5485	14.7	33
Hamburg	12208	10.2	41
Hesse	28280	10.8	26
Mecklenburg-Western Pomerania	3667	9.4	37
Lower Saxony	20996	10.6	31
North Rhine-Westphalia	77199	10.1	33
Rhineland-Palatinate	13642	11.3	47
Saarland	4195	13.2	16
Saxony	16878	15.9	11
Saxony-Anhalt	8532	15.6	40
Schleswig-Holstein	4513	6.7	19
Thuringia <sup>1</sup>	16337	13.1	178
States total (D)	349438	11.9	32

Sources: Federal Statistical Office student statistics; DZHW calculations

Note: (1) The strong growth in the number of international students at Thuringian universities is due to the registered office of the private International University of Applied Sciences moving to Erfurt in 2019.

Table 12 - The best-value countries to study abroad.

Weighted Ranking	Country	Monthly Tuition	Basic basket price	Monthly health insurance	Cost of basic medicines	Price on monthly public transport pass	Monthly rent price (one bedroom Apartment)	Monthly gym membership	Average remittance fee	Unemployment with advanced education	Total monthly cost
1	Germany	\$42	\$84	\$120	\$25	\$76	\$800	\$36	\$3	2.42%	\$1,186
2	Mexico	\$63	\$46	\$25	\$24	\$20	\$440	\$33	\$3	4.72%	\$653
3	Thailand	\$154	\$77	\$167	\$9	\$35	\$307	\$46	\$4	2.53%	\$798
4	France	\$281	\$68	\$25	\$17	\$70	\$717	\$36	\$3	5.30%	\$1,216
5	Netherlands	\$193	\$76	\$142	\$29	\$92	\$1,173	\$32	\$5	2.93%	\$1,742
6	Japan	\$500	\$77	\$15	\$24	\$66	\$557	\$60	\$9	2.47%	\$1,308
7	Italy	\$204	\$67	\$14	\$25	\$38	\$629	\$51	\$6	5.05%	\$1,034
8	Ireland	\$1,083	\$54	\$38	\$29	\$119	\$1,444	\$49	\$3	4.24%	\$2,818
9	Brazil	\$83	\$47	\$50	\$15	\$45	\$264	\$23	\$10	7.52%	\$537
10	Spain	\$163	\$56	\$54	\$15	\$42	\$725	\$41	\$3	9.21%	\$1,099
11	Turkey	\$42	\$43	\$18	\$3	\$30	\$346	\$26	\$6	12.45%	\$515
12	Greece	\$125	\$53	\$25	\$24	\$32	\$413	\$41	\$6	10.94%	\$720
13	New Zealand	\$1,558	\$64	\$108	\$26	\$110	\$1,056	\$42	\$6	2.93%	\$2,970
14	Australia	\$1,867	\$66	\$67	\$18	\$108	\$1,348	\$50	\$3	3.53%	\$3,526
15	Egypt	\$208	\$33	\$17	\$2	\$11	\$109	\$17	\$6	15.28%	\$403
16	United Kingdom	\$2,317	\$52	\$49	\$21	\$83	\$1,001	\$39	\$3	2.48%	\$3,566
17	Switzerland	\$117	\$122	\$350	\$46	\$93	\$1,642	\$88	\$6	3.46%	\$2,464
18	USA	\$2,191	\$70	\$83	\$21	\$70	\$1,535	\$42	\$2	3.58%	\$4,014
19	Canada	\$2,225	\$65	\$47	\$24	\$74	\$1,122	\$41	\$3	5.92%	\$3,601
20	Singapore	\$1,733	\$67	\$125	\$23	\$95	\$3,035	\$117	\$7	3.38%	\$5,203

Source: see <https://www.timeshighereducation.com/student/news/best-value-countries-study-abroad?cmp=1> (Accessed on 18 February 2024)