OXFORD ECONOMICS

HUAWEI

THE ECONOMIC IMPACT OF HUAWEI IN ROMANIA

FEBRUARY 2020

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EXECUTIVE SUMMARY

€219 million

Huawei's total contribution to Romania's GDP in 2018.

Huawei has had a presence in the Romanian market since 2003. Its subsidiary, Huawei Technologies SRL, was established in 2007 to oversee all of the company's production and sales activities in the country. Today, Huawei directly employs more than 2,000 individuals in Romania, in departments including:

- the Global Service Centre, which provides support for Huawei's network- and enterprise-related activities across Europe;
- the Accounting Shared Services Centre, which supports Huawei's wider business development across Europe; and
- the Rep Office, which oversees customer relationships and sales goals in Romania.

Huawei has strategic partnerships with four major network operating companies, thereby supporting the development of Romania's digital infrastructure. It is also committed to improving the IT skills of the nation's workforce, both by training its own local employees, and by extending opportunities to university students and other young people through a range of corporate social responsibility initiatives.

HUAWEI'S TOTAL ECONOMIC IMPACT IN ROMANIA

6,320 jobs

Huawei's total employment impact in Romania in 2018.

In addition to helping shape Romania's digital future, Huawei makes a sizeable and immediate contribution to the nation's economy. This "total economic impact" is measured annually in terms of the company's contribution to Romanian GDP, the jobs it supports across the country, and the tax revenues it generates for the government at national and local levels. These impacts occur both directly and through "knock-on effects" on the demand for goods and services produced by other local businesses.

In total, we calculate that Huawei sustained a €219 million contribution to Romania's GDP in 2018. This total economic impact breaks down as follows:

- €124 million: Huawei's "direct" contribution to the Romanian economy, relating to the value of work, and the profits generated by that work, at its sites across the country.
- €35 million: the "indirect" contribution supported in the Romanian part of Huawei's supply chain, due to its purchases of goods and services from other businesses.
- €60 million: Huawei's "induced" contribution, which captures the wider benefits that arise from the payment of wages by Huawei and its suppliers to their employees, who spend some of these earnings in retail, leisure, and other outlets.

We also find that Huawei supported a total of 6,320 Romanian jobs through these three channels of impact in 2018. This includes 2,120 employees and contract staff working at Huawei's sites, 1,375 jobs in the company's Romanian supply chain, and 2,825 jobs in the consumer-facing sectors that benefited from employees' wage-funded expenditure.

In addition, Huawei generated an estimated €83 million in tax revenues for the Romanian authorities in 2018. Some €53 million of this was paid by Huawei and its workers, with a further €10 million resulting from activities in its supply chain, and €21 million supported by the consumer spending of Romanian workers effectively financed by Huawei. This total annual tax revenue is sufficient to match the wage bill for around 4,800 qualified teachers or 3,600 healthcare professionals, each working on the average full-time Romanian salary for those respective occupations.

€83 million

Total Romanian tax receipts supported by Huawei's activities in 2018.

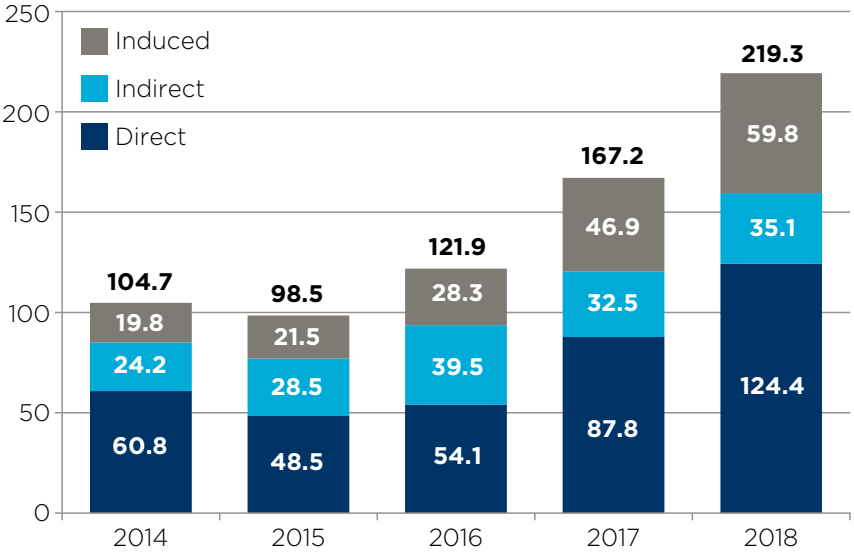
This would cover the average annual cost of employing 4,800 full-time teachers, or 3,600 full-time healthcare professionals.

HUAWEI'S ECONOMIC IMPACT HAS GROWN RAPIDLY

In line with Huawei's increasing commitment to markets right across Europe, the company's total economic impact in Romania has grown significantly in recent years. Its investments in staff and facilities have increased, along with its procurement spend on goods and services produced in Romania.

Fig. 1: Huawei's annual total contribution to Romania's GDP, 2014-2018

€, millions (2018 prices)



Source: Oxford Economics

20%

Annual real-terms rise in Huawei's total contribution to Romanian GDP between 2014 and 2018.

The total employment supported by Huawei grew by 15% per year over the same period.

Overall, we find that Huawei's total contribution to Romanian GDP grew by an average of 20% per year between 2014 and 2018, in real (inflation-adjusted) terms—see Fig. 1. Over the same period, the total employment supported by Huawei rose by an average of 15% per annum, and total tax revenues generated increased by 11% per year, in real terms.

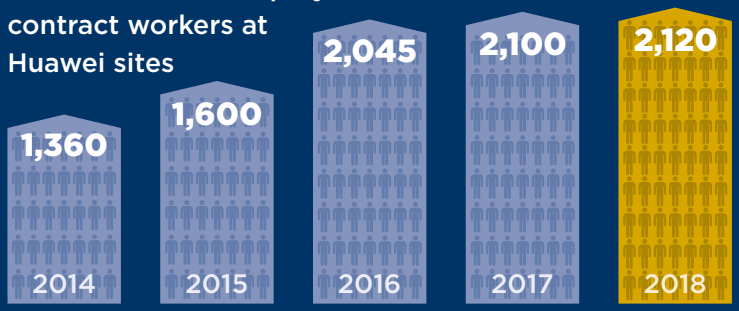
INVESTING IN LOCAL HUMAN RESOURCES

Huawei has a comprehensive training programme in place for its Romanian employees, including the recently introduced "Rising Stars" scheme for relatively new recruits, to help integrate them fully into the global business. Meanwhile, Huawei's flagship international "Seeds For The Future" programme, which provides internships to university students, was extended to include Romanian students in 2014. Further help for local undergraduates—including the Huawei Authorised Information and Network Academy (HAINA)—has also been put in place.

This investment in local IT-related human resources, along with Huawei's involvement in the development of Romania's digital infrastructure, will help to improve the country's long-term economic prospects by enhancing its productive capacity. It is important to note that these potentially substantial long-term impacts were not captured in our calculation of Huawei's immediate contribution to the Romanian economy in 2018.

HUAWEI'S OWN EMPLOYMENT IN ROMANIA

Total number of employees and contract workers at Huawei sites

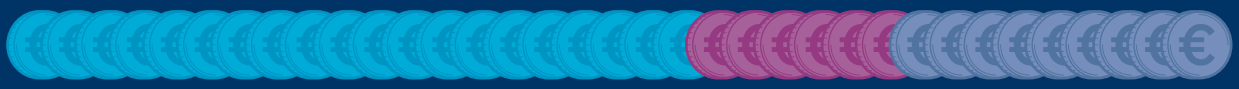


Proportion of these employees who are Romanian nationals

TOTAL ECONOMIC IMPACT

Direct Supply chain Wage spending

In 2018, Huawei stimulated a **€219 million** contribution to Romania's GDP.
This is **more than double** the GDP it supported in 2014, in real terms.



€124 million €35 million €60 million

In the same year, Huawei supported **6,320 jobs** throughout Romania.
This is almost **75% higher** than the total in 2014.

2,120 jobs 1,375 jobs 2,825 jobs

In 2018, Huawei's activities in Romania generated
€83 million in tax receipts.
This is **50% higher** than the 2014 value, in real terms.

€53 mn €10 mn €21 mn

INVESTMENT IN SKILLS

86
students participated in the Seeds For The Future scheme in 2018 and 2019.

€87,500
was spent on the HAINA facility for university students.

CORPORATE SOCIAL RESPONSIBILITY

2,000
teachers will be trained on a Huawei-funded internet safety course.

1. INTRODUCTION

This report examines the activities in Romania of the Chinese-owned multinational international telecommunications equipment manufacturer, Huawei, and the resulting contribution that it makes to that country's economy through a range of channels.

1.1 HUAWEI'S OPERATIONS IN ROMANIA

Huawei undertakes a wide range of activities in Romania. Seven centres located in the country support various aspects of Huawei's international activities, as summarised in Box 1. Two further departments are in charge of local customer relationships and sales goals. The most important centres in terms of employment are the internationally-focused Global Service Centre and Accounting Shared Services Centre, and the locally-focused Rep Office.

The Rep Office oversees Huawei's local customer relationships in the Carrier and Enterprise fields, dealing with telecommunications networks and smart technology for businesses respectively. Here, Huawei has developed key strategic partnerships with Orange, Vodafone, Telekom, and RCS-RDS, thus helping to develop Romania's mobile phone network. And it has played a key role in the Romanian Government's ongoing policy strategies, including the "Smart City" initiative and "Digital Agenda 2020".

As part of the "Digital Agenda 2020", Huawei participated in the "RoNet" project, which "bridges the digital divide" by providing wireless connections and devices to communities in remote and mountainous areas. More than 800 localities, 150,000 families and 500,000 people are reported to have benefited from this initiative.[1]

The Device Business Department, meanwhile, is in charge of achieving local sales goals in the Consumer field, relating to hand-held devices. Helped by its activities, Huawei has recently broken into the top two in terms of the share of smartphone sales in the Romanian consumer market.

The history of Huawei in Romania is summarised in Box 2. As shown there, Huawei has had a presence in the Romanian market since 2003, and the Huawei Technologies SRL subsidiary was established in 2007 to oversee all of the company's production and sales activities in the country. Memorandums of Understanding were signed with the Romanian Government in 2013 and 2016, committing the company to the provision of local jobs and investment in local human resources.

[1] "Enabling Sustainable Growth in Romania", presentation by James Li, President, Huawei Europe, 2018.

BOX 1: HUAWEI'S INTERNATIONALLY-FOCUSED CENTRES IN ROMANIA

Huawei has seven centres of activity in Romania supporting international operations.

The **Global Service Centre (GSC)** supports Huawei in its efforts to improve mobile phone networks across Europe and parts of Africa, and provides technical support directly to Carrier and Enterprise customers in the region. It was first established to support the Carrier business in 2012, and its capability has been strengthened and deepened since, with a new 2,000m^2, €10 million facility opening in 2017 to support the Enterprise business. The Centre now provides a unique one-stop multi-service and multi-lingual platform, to help Huawei's customers and partners interact with the business. It is one of Huawei's four Global Service Centres supporting the Carrier business, and the only one in Europe—the others being located in China, Mexico, and India.

The Centre consists of four units: Technical Support; Remote Delivery, enabling customers to connect with Huawei experts via smart devices; Network Operation, helping customers to run their networks efficiently; and Marketing and Channel Support, providing consulting services to customers and potential customers. It has developed significant expertise in the field of cyber security, and has obtained six industry authoritative certifications.

The **Accounting Shared Services Centre** monitors and reports on the financial performance of all Huawei operations, across the whole of Europe and parts of Africa. It supports efficient and cost-effective development of the business, and oversees the company's financial and accounting activities. Its plays a proactive role in detecting and solving business problems, in helping to reduce operational risk, and in co-ordinating Huawei's use of resources.

The **Human Resources Shared Services Centre** is in charge of internal HR issues for all Huawei activities across Europe, the Middle East, and Africa. Its strategic aim is to become a world-leading HR shared service provider, offering high-quality, efficient services to HR personnel, managers, employees, and external contacts. Four specific goals are to:

- free users of its services from transactional work, to focus on value creation instead;
- provide managers and HR personnel with more effective management tools;
- improve efficiency, reduce costs, and enhance data quality and compliance; and
- improve Huawei's employer brand image, to attract and retain talent.

The **Contract Fulfilment & Deal Hub** supports the Carrier business across Europe by overseeing the fulfilment of business contracts, monitoring the complexity and maturity of contracts, and undertaking billing and cash collection activities. The Hub has developed business rules, risk management capabilities, and automated processes, to carry out this role.

The **Consumer Business Group European Contract Fulfilment Centre** carries out similar functions in relation to the Consumer hand-held devices business.

The **Bidding Centre** assists with Huawei's bids for major contracts across Europe.

E-mall is an online consumer device shopping platform, serving customers in Europe.

The "Seeds for the Future", "HAINA" and "1,000 Dreams" schemes cited in Box 2 form part of that programme of investment in local human resources, which is explored further in Chapter 4. The company also invests heavily in training its own staff, and in 2019 Huawei was named Most Attractive Employer of the Year in Romania, by the multinational human resource consultancy company Ramstad.

Looking ahead, Huawei remains committed to Romania and plans to expand its local workforce from 2,200 in 2019 to 2,400 by the end of 2020. Carrier, Enterprise and Consumer operations will continue to expand, helping to develop Romania's digital infrastructure in the process. And the company plans to invest even more in local human resources, through its employee training and CSR schemes, in keeping with the Memorandum of Understanding.

BOX 2: KEY MILESTONES FOR HUAWEI IN ROMANIA

2003	Huawei enters Romanian consumer products market.
2007	Huawei Technologies SRL is established.
2010	Launch of Huawei's Enterprise business in Romania.
2012	Global Service Centre established in Bucharest, for the Carrier business.
2014	Huawei signs first Memorandum of Understanding with Romanian Government.
	"Seeds for the Future" university student programme is extended to Romania.
2015-present	Participation in the Romanian national broadband project, and contribution to the development of Romania's communications infrastructure.
	Contribution to the building of multiple private business data centres, accelerating the digital transformation of enterprises in Romania.
2016	Huawei signs second Memorandum of Understanding with Romanian Government.
2017	Huawei launches new Global Service Centre facility, for the Enterprise business.
2017-present	Collaboration with Iași University and Bucharest University of Technology in the HAINA project, including establishment of joint laboratories.
2019	Huawei's Human Resources Shared Services Centre is founded.
May 2019-present	Multiple discussions held with Bucharest's municipal government about opportunities offered to the city by Huawei technology.
	Huawei participates in numerous workshops on smart city construction and design ideas, for Bucharest and other cities.
	Huawei promotes the construction of smart city labs and exhibition halls, strengthens the cultivation of local ICT talents, and launches the "1,000 Dreams" project to provide more opportunities for young ICT talents in Romania.
	Active participation in social welfare activities such as donating to Save the Children (Salvati Copiii) and its "Safer Internet" ("Ora de Net") programme.
Late 2019	Huawei Romania CEO named the most active CEO of Smart City Romania.

1.2 STRUCTURE OF THIS REPORT

The remainder of this report provides an assessment of Huawei's contribution to the Romanian economy. Using a standard means of analysis called an *economic impact assessment,* we were able to model the company's economic impact in terms of its contribution to national GDP in 2018, the number of jobs it supported in that year, and the tax revenues it generated for the government.

Furthermore, in recognition of the wider role Huawei plays in driving economic development in Romania, this study also highlights the extent of the company's investment in human resources.

The report is structured as follows:

- Chapter 2 sets out our approach for measuring Huawei's total economic impact in Romania.
- Chapter 3 demonstrates the economic contribution Huawei makes to Romania, and how this has changed in recent years.
- Chapter 4 highlights how the company enhances the productive potential of the Romanian economy, through its investment in local human resources.
- Finally, the two appendices set out the key results in tabular form, and give a more detailed description of our methodology.

2. OUR METHODOLOGY

The impact of Huawei's operations in Romania is assessed using a standard means of analysis called an economic impact assessment. This involves quantifying the impact of three types of expenditure undertaken by Huawei (also summarised in Fig. 2):

- The **direct impact** relates to the work undertaken at Huawei's sites across Romania, the profits generated by that work, and the taxes paid by the company and its staff as a direct result of that activity.
- The **indirect impact** is the economic activity and employment stimulated along the Romanian supply chain as a result of Huawei's procurement of inputs of goods and services from other businesses.
- The **induced impact** comprises the wider economic benefits that arise from the payment of wages by Huawei and the firms in its supply chain to their employees, who spend their earnings in retail, leisure and other outlets. This impact also includes the activity stimulated in these outlets' supply chains, and in the businesses supplying their staff.

Huawei's total expenditure impact is the sum of these three effects.

The results are presented on a gross basis. They therefore ignore any displacement of activity from Huawei's competitors or other firms. Nor do they consider what the resources currently used by Huawei or stimulated by its expenditure could produce if they were used in a different way, in the absence of any Huawei-driven activity.

Huawei's economic contribution is measured using three metrics:

- **The firm's contribution to national GDP**—the key measure of the value of goods and services produced in the country in the year.[2]
- **Employment**, measured on a headcount basis.
- **Tax revenue** flowing to the national government and local authorities.

It should be noted that this report only assesses the economic activity supported by the spending of Huawei's Romanian operations.

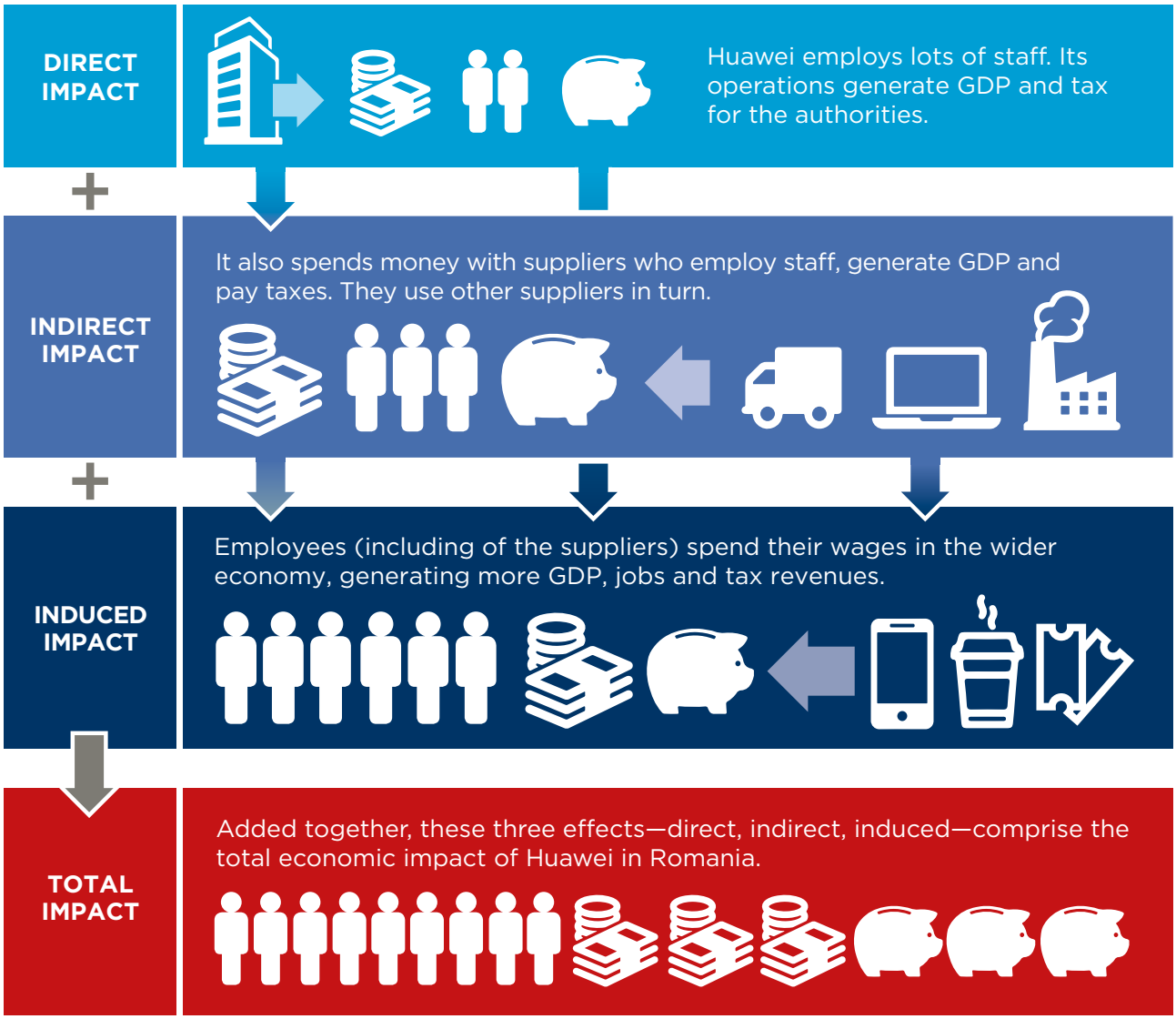
The measured indirect impact is, therefore, mainly driven by the purchases of these Romanian operations from suppliers also based in the country. It also includes some modest "feedback" effects, where imports into Romania by Huawei's local subsidiary include some content produced in the country, further along the international supply chain. However, the full impact of Huawei on Romanian activity will be understated, as the international knock-on impact of spending by Huawei operations based outside of the country is not captured.

Even more importantly, the products and services that Huawei provides to Romanian businesses and customers play a crucial role in building the country's digital infrastructure. This provision will have an important effect by ultimately increasing the overall productive capacity of the national economy, as will Huawei's investment in local IT-related human resources, by training its own staff and offering opportunities to university students.

However, while Chapters 1 and 4 highlight some of the key drivers behind this support for Romania's long-term economic growth potential, we do not attempt to quantify the scale of this impact.

[2] The contribution of a business to national GDP can be measured as the net-of-tax value of sales revenues minus the cost of purchases of goods and services from other firms, or alternatively as the company's total employment costs plus its profits before tax, interest and depreciation. This measure is technically known as gross value added or GVA, and differs slightly from the 'headline' GDP measure which includes taxes on sales.

Fig. 2: Schematic of Huawei's contribution to the Romanian economy



3. ECONOMIC IMPACT OF HUAWEI

This chapter investigates the economic activity in Romania stimulated in different ways by Huawei's operations in the country: the value of the work undertaken at its own sites (the "direct" impact); the impact of these operations' procurement of inputs from other businesses (the "indirect" effect); and the effect of wage payments by the company and its suppliers to workers, who then purchase Romanian products and services (the "induced" contribution).

3.1 HUAWEI'S DIRECT IMPACT IN ROMANIA

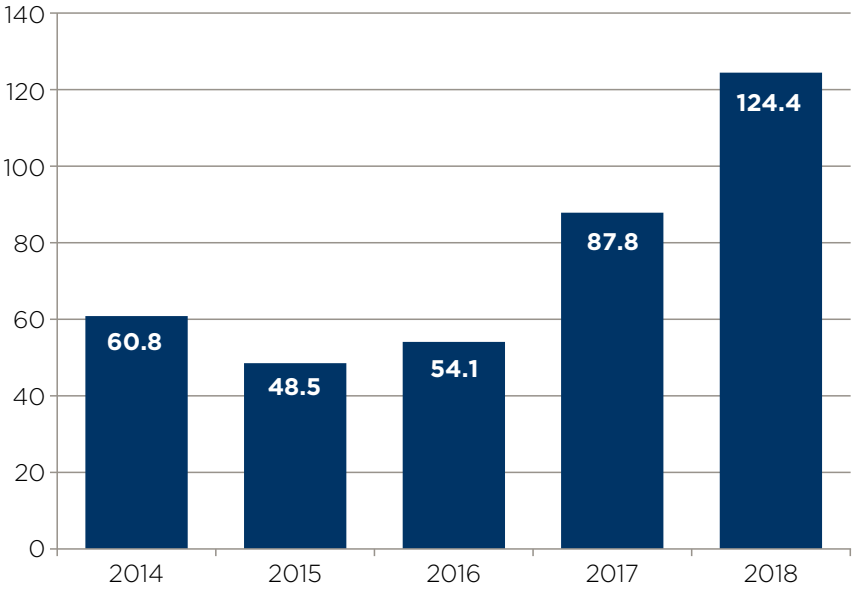
Huawei's direct economic contribution to Romania reflects the value it adds within its own operations in the country. It is estimated by adding together gross profits and total worker compensation (including employee wages, payments to contract workers, and employers' social security and pension contributions).[3]

On this basis, the direct GDP contribution was €124 million in 2018—some 105% higher in real (inflation-adjusted) terms than the impact just four years earlier in 2014 (see Fig. 3).[4]

This cumulative growth figure for Huawei's own Romanian-based GDP equates to an average increase of 20% per year. The company's expansion, therefore, outstripped that of all Romanian telecoms equipment manufacturers taken together (13% per annum), and that of all Romanian manufacturers of "hi-tech" equipment (11% per year).[5] As a result, the company's share of all Romanian telecommunications equipment manufacturing GDP stood at 60% in 2018 (see Fig. 4), and its share of national hi-tech manufacturing GDP at 16%.

Fig. 3: Huawei's annual direct contributions to Romanian GDP, 2014-2018

€, millions (2018 prices)



Source: Huawei; Oxford Economics

[3] Gross profits are measured as earnings before interest, tax, depreciation and amortisation, or EBITDA.
[4] All monetary impacts in this report are in Euros at 2018 prices and exchange rates.
[5] "Hi-tech" equipment includes computers and computer-related equipment, electronic components and boards, consumer electronics, technical testing equipment, clocks and watches, photographic equipment, and optical equipment, as well as telecoms equipment.

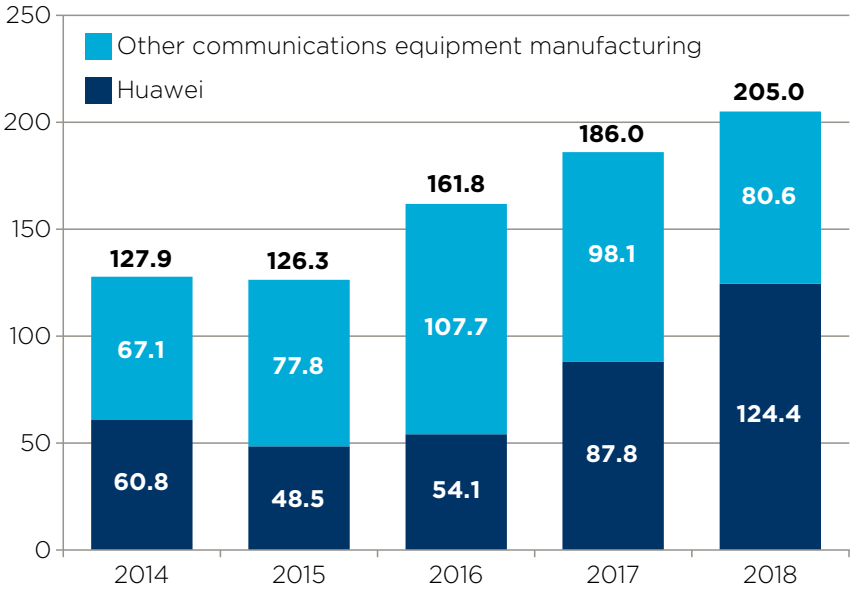
To help support this expansion, the number of people employed by Huawei Romania has also grown. In 2018, the total number of workers at its sites—including permanent employees and contract workers—numbered 2,120, which was up from 1,360 in 2014 (see Fig. 5).

This cumulative growth of 45% is equivalent to 10% per year, and is in stark contrast to the trend in total national employment, which fell by an average of 0.4% per annum during that time. Some 80% of Huawei's workers in Romania are Romanian nationals, with Chinese nationals accounting for less than 20%.

Huawei's significant and growing presence in Romania also means that the company makes a substantial contribution to the nation's tax authorities. Over the period 2014 to 2018, the company and its workers paid nearly €215 million in taxes (in 2018 prices). Of this total, some €53 million relates to 2018 alone, up from €42 million in 2014.[6]

Fig. 4: GDP of Romanian telecom equipment manufacturers, 2014-2018

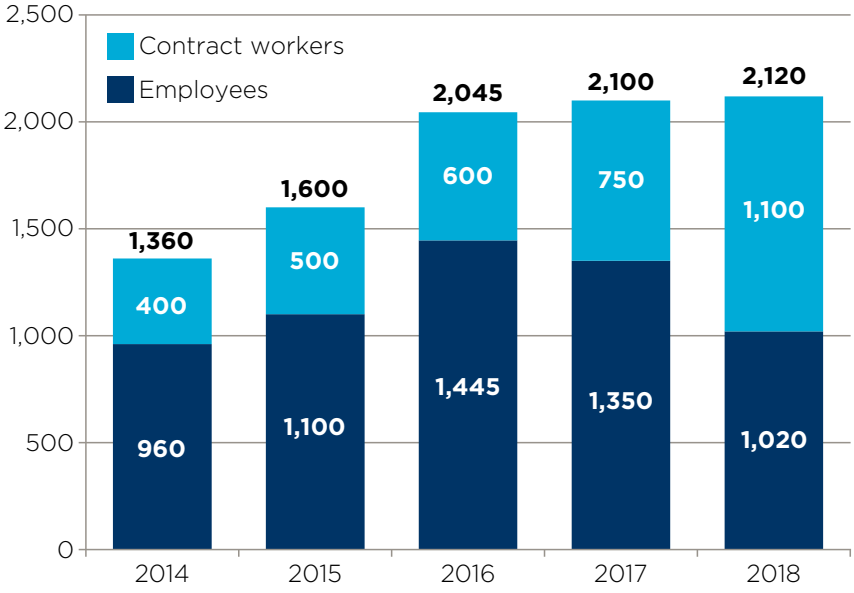
€, millions (2018 prices)



Source: Oxford Economics

Fig. 5: Huawei Romania's workforce, 2014-2018

Headcount



Source: Oxford Economics

[6] Corporation tax, VAT on sales, employers' and employees' social security payments, and employees' income tax, as reported by Huawei, plus taxes on contract workers' income and Huawei's procurement, as modelled by Oxford Economics.

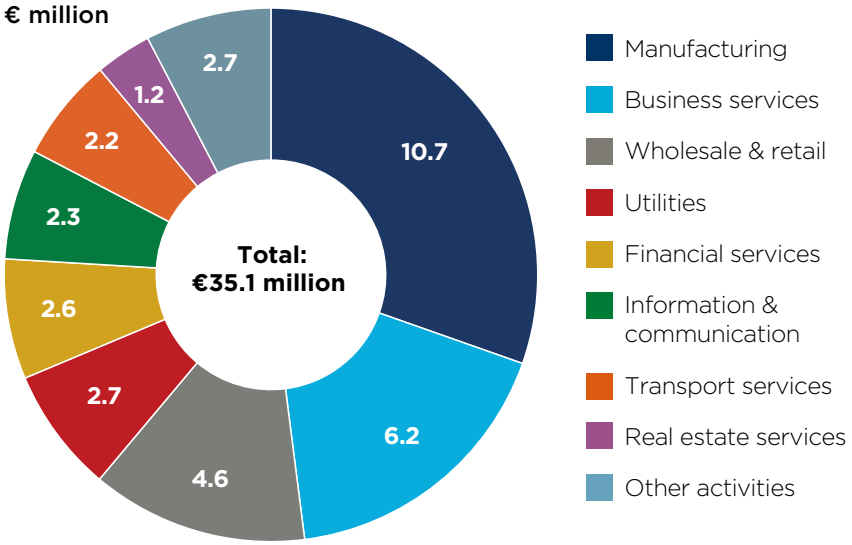
3.2 INDIRECT EFFECTS ARISING FROM HUAWEI'S SUPPLY CHAIN

But the economic impact of Huawei in Romania extends far beyond its direct operations. Huawei also purchases inputs of goods and services from Romanian suppliers, and from suppliers in other countries who in turn source inputs from Romania.

In 2018, procurement by Huawei's Romanian operations (excluding payments to contract workers) totalled €258 million. Of this, €49 million was paid for Romanian-sourced supplies, as opposed to imports, with an estimated €2 million of that accounted for by sales taxes and the remaining €47 million received by Romanian suppliers. This last figure was up from €29 million in 2014, at 2018 prices, and the total cumulative amount received by Romanian suppliers over the five-year period was €216 million on that basis.

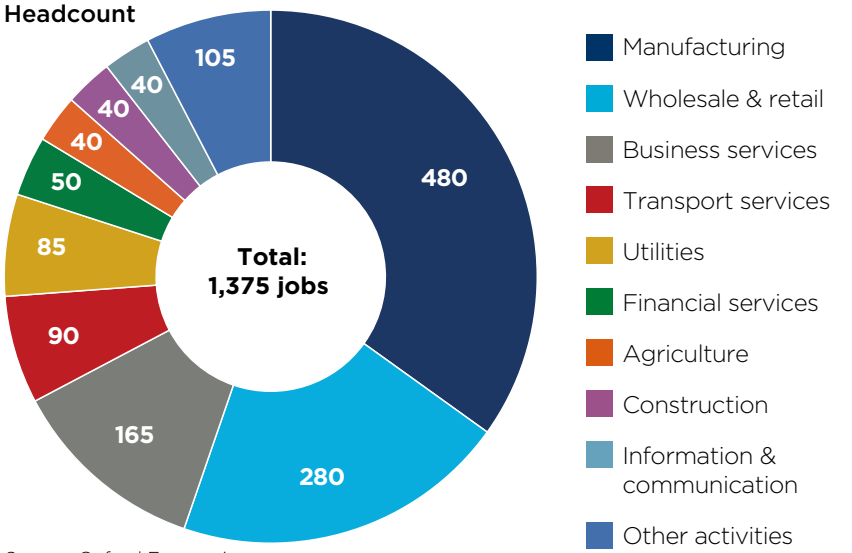
These purchases from Romanian suppliers in turn support economic activity across a wide range of domestic companies, including many in hi-tech sectors such as software and network design (within "information and communication services") and electronic component production (within manufacturing). In 2018, this so-called "indirect" GDP impact amounted to €35 million, which was up from €24 million in real terms in 2014.

Fig. 6: Industrial distribution of Huawei's indirect GDP impact in Romania, 2018



Source: Oxford Economics

Fig. 7: Industrial distribution of Huawei's indirect employment impact in Romania, 2018



Source: Oxford Economics

This indirect GDP impact was associated with an estimated 1,375 Romanian jobs in 2018, and a further €10 million in tax revenues for the Romanian authorities. These figures compare with an estimated 1,095 indirect jobs in 2014, and €7 million in tax revenues in that year.

Based on the pattern of procurement by Romanian-based manufacturers of hi-tech equipment, by country of supplier and type of product supplied, we estimate that in 2018, 30% of the indirect GDP contribution occurred in the manufacturing sector (see Fig. 6).[7] The remaining indirect GDP impact was spread over a wide range of activities, including business services, wholesale and retail services, financial services, utilities, information and communication services, and transport services.

Manufacturing also accounts for broadly a third of the jobs supported in the indirect channel (see Fig. 7). But otherwise, the pattern of indirect jobs by industry differs quite significantly from the pattern of indirect GDP, reflecting differences in productivity (measured in terms of GDP per job) between the various sectors of Romania's economy. In particular, wholesale and retail services account for 20% of indirect jobs, compared with 13% of indirect GDP, while the picture for business services is almost the exact opposite.

3.3 INDUCED EFFECTS ARISING FROM WAGES BEING SPENT

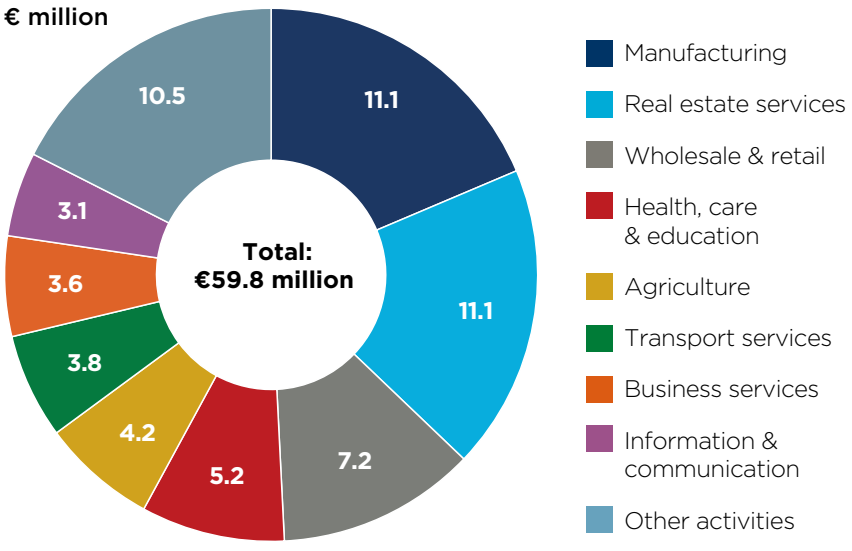
In 2018, the after-tax pay of Huawei's employees and contract workers is estimated to have totalled €64 million, with the equivalent after-tax earnings of workers in the supply chain amounting to some €11 million. The payment of wages to people working either for Huawei or in its supply chain funds consumer spending, which in turn supports economic activity at leisure, retail, and other outlets, and in those businesses' Romanian supply chains.

Taking further rounds of spending, by workers in the consumer-facing industries, into account, we find that in 2018 alone, the payment of these wages supported an "induced" contribution to Romanian GDP of €60 million.

This was associated with 2,825 induced jobs in the country, and an induced tax contribution of €21 million. In 2014, the induced contribution had been €20 million in GDP, 1,170 jobs, and €7 million in tax revenues.

The GDP supported by this wage-financed consumer spending benefits a wide range of industries, with the pattern of activity by sector different to that seen in the indirect channel (see Fig. 8). While the sectors benefiting significantly once again include manufacturing (19% of total indirect GDP) and wholesale and retail services (12%), in this case real estate services (mainly property rental) (19%), health, care and education (9%), and agriculture (7%), also feature strongly.[8]

Fig. 8: Industrial distribution of Huawei's induced GDP contribution in Romania, 2018

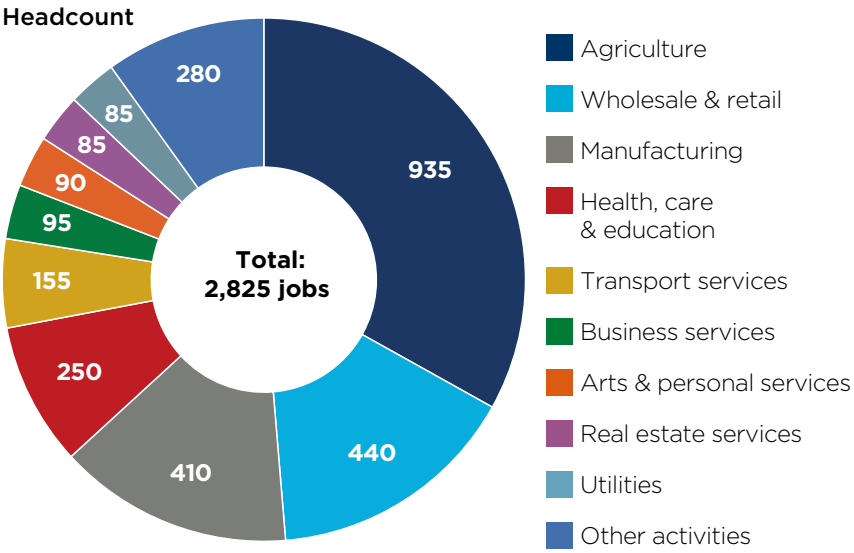


Source: Oxford Economics

[7] The pattern of procurement for the wider industry is based on data sourced from the OECD.
[8] As tax-funded activity is excluded from the induced channel, the figure for health, care and education relates to private provision only.

The pattern of induced jobs, in turn, is different again, with agriculture accounting for 935 workers, or 33% of the total (see Fig. 9). By contrast, real estate services account for only 3% of induced jobs, compared with that sector's 19% share of induced GDP.

Fig. 9: Industrial distribution of Huawei's induced employment contribution in Romania, 2018

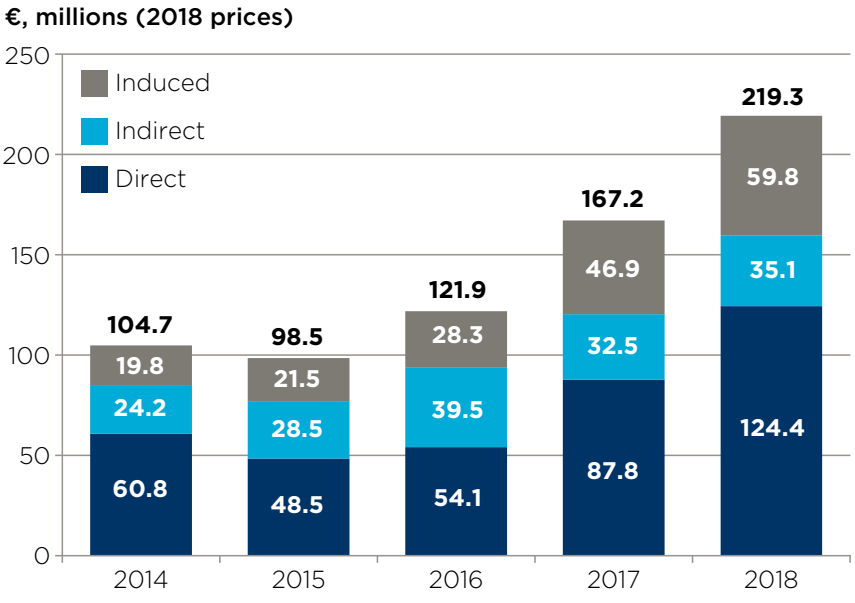


Source: Oxford Economics

3.4 HUAWEI'S TOTAL IMPACT ON THE ROMANIAN ECONOMY

Aggregating across the direct, indirect and induced channels of impact, we calculate that Huawei's total contribution to Romanian GDP has increased from €105 million in 2014 to €219 million in 2018, in real terms (see Fig. 10). This is an overall real increase of 105%, or 20% per annum. The rate of increase in the total GDP impact has, therefore, matched the rate of increase in the direct impact. But the induced impact grew more quickly, helped by the 34% per annum increase in Huawei's spending on its workforce, while the indirect impact increased at a more modest pace.

Fig. 10: Huawei's total contribution to Romanian GDP in real terms, 2014-2018



Source: Oxford Economics

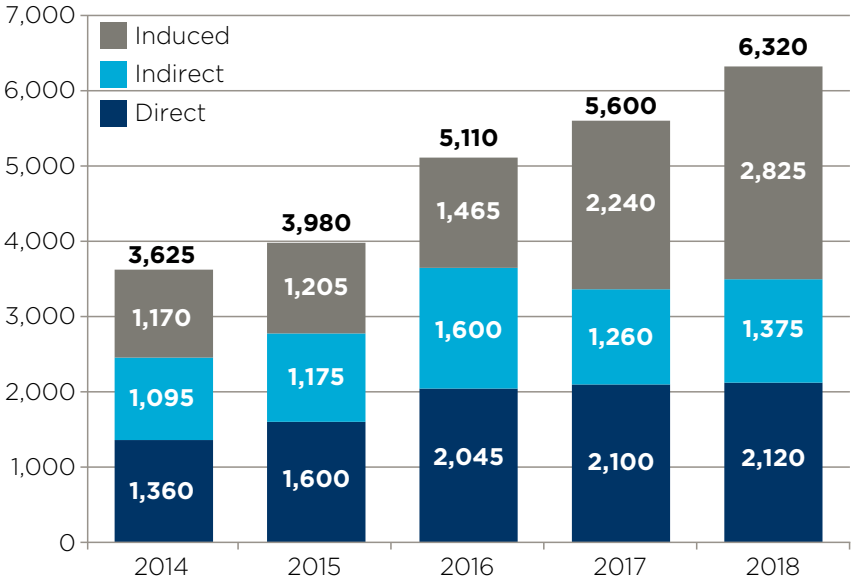
Huawei's contribution to Romanian employment has also increased significantly. Summing the three channels of impact, we find that the total number of jobs supported rose from 3,625 in 2014 to 6,320 in 2018 (see Fig. 11). This is a 74% rise over four years, equivalent to 15% per year. While Huawei's own direct employment (including contract workers) increased by a cumulative 56%, indirect jobs increased by 26%, and induced jobs by 141%.

We also find that the total value of tax receipts supported across the three impact channels increased by 50% in real terms between 2014 and 2018, or 11% per annum. Overall, the tax revenues Huawei supported in 2018, through the three channels of impact, would support the employment of some 4,800 qualified teachers, or 3,600 professional healthcare workers, on the average full-time Romanian wage for each of those occupations.[9]

In 2018, some 57% of the total GDP impact reflected activity at Huawei's own facilities, i.e. the direct impact (see Fig. 12). This means that, for every €100 of value-added work undertaken at those locations, a further €76 worth of work was supported elsewhere in the Romanian economy, as a result of the "knock-on" expenditure effects included in this analysis.

Fig. 11: Huawei's total contribution to Romanian employment, 2014-2018

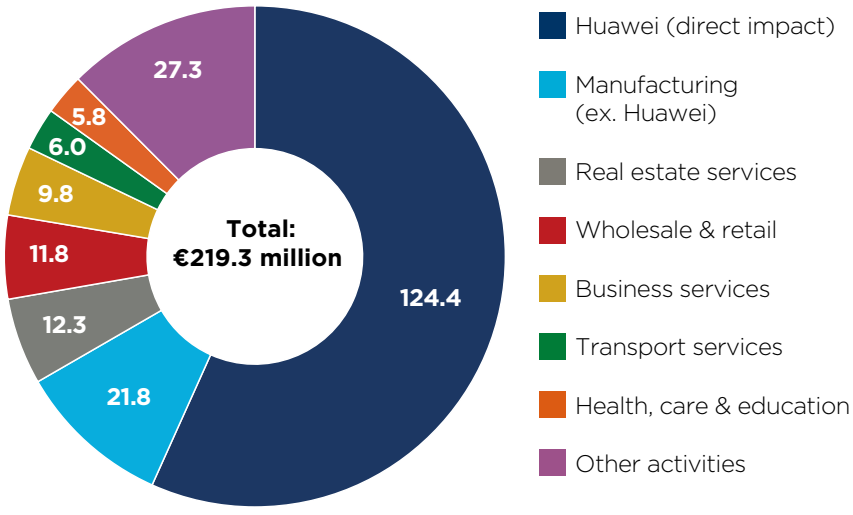
Headcount



Source: Oxford Economics

Fig. 12: Industrial distribution of Huawei's total GDP contribution in Romania, 2018

€ million (2018 prices)



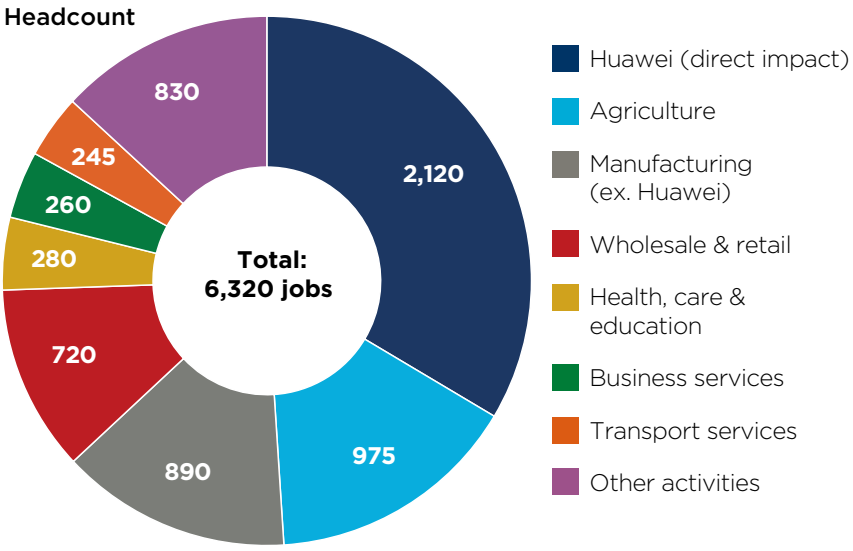
Source: Oxford Economics

[9] Based on an average full-time salary of just over €17,000 for qualified teachers (education professionals) and just under €23,000 for healthcare professionals (which would include qualified nurses and doctors). This is based on average salary levels for Romanian workers by industry and occupation in 2014, from a Eurostat survey, adjusted to full-time earnings using other ratios from that survey, and grown forward to 2018 in line with average earnings for the education and healthcare sectors respectively (source: National Institute of Statistics (NIS) via Haver Analytics).

Of the GDP impact felt elsewhere in the economy, in the indirect and induced channels, other manufacturing firms benefited the most (at 10% of the total GDP impact), followed by real estate services (6%), wholesale and retail services (5%), business services (4%), transport services (3%), and health, care and education (3%).

The pattern of the total employment impact is, however, very different to that of the total GDP impact (see Fig. 13). Here, the direct contribution to jobs accounts for a third of the total employment contribution, so that for every employee or contract worker at Huawei's sites, a further two Romanian jobs are supported in other firms. Or put another way, the "jobs multiplier"—the ratio of total jobs supported to direct jobs alone—is three.

Fig. 13: Industrial distribution of Huawei's total employment contribution in Romania, 2018



Source: Oxford Economics

Of the indirect and induced jobs supported, 975 (15% of the total jobs impact) are in the agricultural sector, 890 (14%) in other manufacturing businesses, and 720 (11%) in wholesale and retail services.


Infosys

4. HUAWEI'S INVESTMENT IN LOCAL HUMAN RESOURCES

The previous chapter explored the immediate contribution Huawei makes to Romania's economy through its operations and expenditure with other firms. **But the firm also plays an important role in stimulating the country's long-term growth.** As well as helping to develop the country's digital infrastructure through its local partnerships with major network operators, the company also invests in human resources—an activity that improves Romania's future productive potential.

It does this both by training its own staff, and by giving opportunities to Romanian university students, and other young Romanian people, through its corporate social responsibility schemes. This chapter examines those two strands of Huawei's HR investment in turn.

4.1 TRAINING PROGRAMMES FOR EMPLOYEES

As is the case for Huawei employees around the globe, Huawei's Romanian staff have many opportunities to develop their skills and potential career paths, as a result of the training schemes run by the company.

Shortly after being recruited, employees are encouraged to take part in the online, locally-focused **New Employee Orientation Programme**. This aims to provide basic knowledge about Huawei, help participants to integrate into the company quickly and become high-performing staff members, and learn about the different workplace scenarios that they could encounter in their role.

However, following the company's recent growth around the world, this was no longer seen as sufficient to fully integrate local employees into the global Huawei team. So a new, additional course has been developed—the **Rising Stars Programme**—aimed at employees with between one and two years' experience at the business. This aims to give participants a much greater understanding of the company's global values and strategy, and the career development paths open to them, while at the same time allowing them to learn more about Chinese culture. Box 3 describes the programme, and the reasons for developing the course, in more detail.

Local employees also have **further opportunities** to take part in courses at Huawei's global headquarters in China, as their careers progress. These include:

- Courses teaching basic company knowledge and values, and compulsory knowledge such as compliance, to first line employees aged 18 and over.
- Courses to equip first line employees with the knowledge and skills to transfer into supervisory roles.
- Courses to support local managers, enabling them to learn about corporate governance structure and human resources management, and to improve their overall business awareness.

BOX 3: THE RISING STARS EMPLOYEE TRAINING PROGRAMME

The Rising Stars programme is a four-day training programme based at Shenzhen in China, for Huawei employees based around the world who have been with the company for between one and two years. It follows on from the locally-provided New Employees Orientation programme, and has three key aims:

- To improve understanding of Huawei's corporate culture and values.
- To enhance trainees' knowledge about the company and industry.
- To promote the personal development of employees.

On the course, participants have the opportunity to learn about Huawei's corporate strategy and core values, career development opportunities within the business, and cross-cultural collaboration. They also have a tour of Huawei headquarters in Shenzhen, learn about Chinese language and culture, and spend a full day at the Songshan Lake campus—the business's European-styled "model village"—in Dongguan.

The programme was designed and launched in response to three challenges identified by Huawei as a result of its expansion across the globe:

An identified training gap: While the company already had personnel development strategies for local talent, provided locally, many junior employees with one or two years' experience had not received training related to global corporate strategy, the company's core values, and personal capability development.

Increasing demand: Local employees were found to be keen to know more about the company and its plans for the future development, hoping to develop their own career paths in tandem with the company's evolution.

Cultural challenges: Local employees were found to face cultural challenges, affecting their integration into the worldwide team and preventing them from maximising their value.

4.2 PROGRAMMES FOR STUDENTS AND THE WIDER COMMUNITY

As well as providing training for its own employees, Huawei also provides learning opportunities for individuals from the wider community to develop IT skills, and to learn about the industry and Huawei's role in it. Four such schemes, provided as part of Huawei's Corporate Social Responsibility programme and of special relevance to Romania, are highlighted here.

The Huawei Authorised Information and Network Academy (HAINA): In 2018, Huawei set up a training centre hosted by the Faculty of Automatic Control and Computer Engineering at the Gheorghe Asachi Technical University in Iași—the only centre of its kind in Romania. The centre provides free extracurricular study courses in computer networking for students attending the University, with Huawei investing US $100,000 (€87,500) in the scheme. The facility can host up to 40 students at a time and, so far, more than 500 students have benefited. Participation also enabled a team of eight Romanian teachers and students to win the Outstanding Award in a global ICT competition run by Huawei, the final of which took place in Shenzhen.

The Seeds for the Future programme: At the global level, this internship programme for university students has been run by Huawei for many years. It was first extended to Romania in 2014, and has operated in the country every year since, expanding over time, with the backing of the Romanian Government's Ministry of National Education and Ministry of Communications and Information Society. At the end of the programme, students have a chance to visit Huawei's headquarters in China. Further details are set out in Box 4.

The 1,000 Dreams programme: Under this scheme, the launch of which was announced in 2019, Huawei will train 1,000 ICT talents in total across 16 Central and East European countries over the next five years. During that time, it will also donate 1,000 books to university libraries, and 1,000 toys to children's hospitals, in Romania, as well as in each of the other 15 nations. As Huawei's flagship social contribution programme in the region, 1,000 Dreams aims to provide a long-term and sustainable platform for young residents. By encouraging them to work in the ICT sector, it also aims to help their countries build a "smart" digital future.

Contribution to the Ora de Net programme: In December 2019, Huawei Romania announced that it had donated US $100,000 (€87,500) to Salvați Copiii Romania, to support that organisation's Ora de Net programme promoting internet safety for children and adolescents. This programme:

- Advises children, adolescents and parents through a dedicated internet platform.
- Prepares training activities and workshops on topics related to online safety, aimed at children, parents, teachers and specialists.
- Offers a contact point for the public to report illegal content encountered on the internet.
- Co-ordinates a wide network of volunteers at the national level—including teachers and specialists working with children.

Between 2008 and 2018, Ora de Net was able to directly involve over 500,000 children, parents and teachers in these activities. Going forward, Huawei's donation will help Salvati Copiii to:

- Fund the training of 2,000 teachers across Romania, through a 60-hour course which was the first to be accredited by the Ministry of National Education for promoting "useful, creative and secure use of the internet".
- Fund research on how Romanian children use the internet, and disseminate the findings to a target of 20,000 children through a network of 1,000 teachers and educators.
- Organise public events addressed to a target of 1,000 parents, aimed at teaching them about children's use of internet technology, and what they can do to help keep their children safe online.

BOX 4: THE SEEDS FOR THE FUTURE STUDENT INTERNSHIP PROGRAMME

Internships within Huawei's Seeds for the Future programme are currently available in Romania to young university students studying ICT-related subjects at the Polytechnic University of Bucharest, University of Craiova, or Gheorghe Asachi Technical University in Iași. They are given paid employment in various technical and non-technical roles at either the Rep Office or Global Service Centre, with each student working and training for 360 hours in total. There, they can participate in the internal Huawei employee training and testing system, and enhance their skills through hands-on practice at their preferred work station.

At the end of the programme, the interns can compete for several available places on a two-week trip to Shenzhen. This allows them to work and train within Huawei's headquarters, to enjoy a unique living experience in China, and to learn more about Chinese culture and the Chinese way of life.

The table below sets out some data on student participation in the last two years.

Fig. 14: Romanian participation in Huawei's Seeds for the Future scheme, 2018 and 2019

Participation in 2018	Rep Office	Global Service Centre	Total
Total participants	**17**	**23**	**40**
Of which:			
Won two-week trip to Huawei HQ	3	5	8
Subsequently hired by Huawei	5	5	10
Participation in 2019	**Rep Office**	**Global Service Centre**	**Total**
Total participants	**22**	**24**	**46**
Of which:			
Won two-week trip to Huawei HQ	5	3	8
Subsequently hired by Huawei	5	6	11

Source: Huawei

APPENDIX 1: RESULTS TABLES

Fig. 15: Total GDP contribution by channel of impact

€ million at 2019 prices	2014	2015	2016	2017	2018
Direct GDP	60.8	48.5	54.1	87.8	124.4
Indirect GDP	24.2	28.5	39.5	32.5	35.1
Induced GDP	19.8	21.5	28.3	46.9	59.8
Total GDP impact	**104.7**	**98.5**	**121.9**	**167.2**	**219.3**

Fig. 16: Total employment contribution by channel of impact

Headcount	2014	2015	2016	2017	2018
Direct jobs	1,360	1,600	2,045	2,100	2,120
Indirect jobs	1,095	1,175	1,600	1,260	1,375
Induced jobs	1,170	1,205	1,465	2,240	2,825
Total jobs impact	3,625	3,980	5,110	5,600	6,320

Fig. 17: Total tax contribution by channel of impact

€ million at 2019 prices	2014	2015	2016	2017	2018
Direct tax	41.7	44.3	38.5	38.2	52.6
Indirect tax	6.6	7.8	10.8	8.9	9.6
Induced tax	6.8	7.4	9.8	16.2	20.6
Total tax impact	**55.1**	**59.5**	**59.1**	**63.2**	**82.9**
Of which:					
VAT on sales in direct impact	20.4	21.4	19.3	13.4	6.9
Taxes on workers' spending in induced impact	2.0	2.2	2.9	4.9	6.2
Business and employment taxes	32.6	35.9	36.9	44.9	69.8

Fig. 18: Total GDP contribution by industry

€ million at 2018 prices	2014	2015	2016	2017	2018
Total GDP impact	**104.7**	**98.5**	**121.9**	**167.2**	**219.3**
Of which:					
Huawei (direct impact)	60.8	48.5	54.1	87.8	124.4
Agriculture	1.5	1.6	2.2	3.4	4.4
Mining	0.5	0.6	0.8	0.9	1.0
Manufacturing (ex. Huawei)	11.0	12.7	17.3	18.6	21.8
Utilities	2.7	3.1	4.2	4.5	5.3
Construction	0.7	0.8	1.1	1.3	1.5
Wholesale & retail	5.6	6.3	8.6	9.9	11.8
Transport services	2.8	3.2	4.3	5.0	6.0
Hotels & catering	0.8	0.9	1.2	1.6	1.9
Information & communication	2.6	3.0	4.1	4.6	5.4
Financial services	2.6	3.0	4.1	4.4	5.2
Real estate services	4.5	4.9	6.6	9.8	12.3
Business services	5.5	6.3	8.7	8.6	9.8
Health, care & education	2.2	2.4	3.2	4.7	5.8
Arts & personal services	1.0	1.1	1.5	2.1	2.6

Fig. 19: Total employment contribution by industry

Headcount	2014	2015	2016	2017	2018
Total employment impact	**3,625**	**3,980**	**5,110**	**5,600**	**6,320**
Of which:					
Huawei (direct impact)	1,360	1,600	2,045	2,100	2,120
Agriculture	475	490	580	810	975
Mining	25	30	50	45	55
Manufacturing (ex. Huawei)	495	520	725	735	890
Utilities	80	85	135	140	170
Construction	45	50	65	90	95
Wholesale & retail	475	450	560	580	720
Transport services	120	130	180	205	245
Hotels & catering	65	55	70	85	105
Information & communication	50	60	75	85	105
Financial services	45	50	70	105	100
Real estate services	55	55	65	70	95
Business services	185	185	255	220	260
Health, care & education	105	175	165	245	280
Arts & personal services	45	45	70	85	105

Fig. 20: Indirect GDP contribution by industry

€ million at 2018 prices	2014	2015	2016	2017	2018
Indirect GDP impact	**24.2**	**28.5**	**39.5**	**32.5**	**35.1**
Of which:					
Agriculture	0.1	0.2	0.2	0.2	0.2
Mining	0.3	0.4	0.5	0.4	0.4
Manufacturing	7.3	8.6	12.0	9.9	10.7
Utilities	1.8	2.2	3.0	2.5	2.7
Construction	0.4	0.5	0.7	0.6	0.6
Wholesale & retail	3.2	3.7	5.2	4.3	4.6
Transport services	1.5	1.8	2.5	2.0	2.2
Hotels & catering	0.3	0.4	0.5	0.4	0.5
Information & communication	1.6	1.9	2.6	2.2	2.3
Financial services	1.8	2.1	2.9	2.4	2.6
Real estate services	0.8	1.0	1.4	1.1	1.2
Business services	4.3	5.0	7.0	5.7	6.2
Health, care & education	0.4	0.5	0.7	0.6	0.6
Arts & personal services	0.2	0.3	0.4	0.3	0.3

Fig. 21: Indirect employment contribution by industry

Headcount	2014	2015	2016	2017	2018
Indirect employment impact	**1,095**	**1,175**	**1,600**	**1,260**	**1,375**
Of which:					
Agriculture	40	45	55	40	40
Mining	15	20	30	20	25
Manufacturing	355	380	535	435	480
Utilities	55	60	95	75	85
Construction	25	30	40	40	40
Wholesale & retail	270	265	340	250	280
Transport services	65	75	105	85	90
Hotels & catering	25	25	30	25	25
Information & communication	30	35	45	35	40
Financial services	30	35	50	55	50
Real estate services	10	10	15	10	10
Business services	145	145	205	145	165
Health, care & education	20	40	35	30	30
Arts & personal services	10	10	20	15	15

Fig. 22: Induced GDP contribution by industry

€ million at 2018 prices	2014	2015	2016	2017	2018
Induced GDP impact	**19.8**	**21.5**	**28.3**	**46.9**	**59.8**
Of which:					
Agriculture	1.4	1.5	2.0	3.3	4.2
Mining	0.2	0.2	0.3	0.5	0.6
Manufacturing	3.7	4.0	5.3	8.7	11.1
Utilities	0.9	0.9	1.3	2.1	2.6
Construction	0.3	0.3	0.4	0.7	0.9
Wholesale & retail	2.4	2.6	3.4	5.7	7.2
Transport services	1.3	1.4	1.8	3.0	3.8
Hotels & catering	0.5	0.5	0.7	1.1	1.5
Information & communication	1.0	1.1	1.5	2.4	3.1
Financial services	0.9	0.9	1.2	2.1	2.6
Real estate services	3.7	4.0	5.2	8.7	11.1
Business services	1.2	1.3	1.7	2.8	3.6
Health, care & education	1.7	1.9	2.5	4.1	5.2
Arts & personal services	0.7	0.8	1.1	1.8	2.3

Fig. 23: Induced employment contribution by industry

Headcount	2014	2015	2016	2017	2018
Induced employment impact	**1,170**	**1,205**	**1,465**	**2,240**	**2,825**
Of which:					
Agriculture	435	445	525	770	935
Mining	10	10	20	25	30
Manufacturing	140	140	190	300	410
Utilities	25	25	40	65	85
Construction	20	20	25	50	55
Wholesale & retail	205	185	220	330	440
Transport services	55	55	75	120	155
Hotels & catering	40	30	40	60	80
Information & communication	20	25	30	50	65
Financial services	15	15	20	50	50
Real estate services	45	45	50	60	85
Business services	40	40	50	75	95
Health, care & education	85	135	130	215	250
Arts & personal services	35	35	50	70	90

APPENDIX 2: METHODOLOGY

METHODOLOGY FOR CAPTURING DIRECT IMPACTS

Estimates of the direct impact of Huawei—including its contribution to GDP, jobs created, and taxes paid by the business and its employees—were largely based on information provided directly by the company.

Direct GDP is taken to be the sum of total employee compensation, payments to contract workers, and earnings (i.e. corporate profits) before tax, interest, depreciation and amortisation ("EBITDA"). Direct employment relates to the average number of employees and contract staff working at Huawei's sites in Romania in 2018. All of these data points were supplied by Huawei.

Two small elements of the direct tax impact—taxes on contract workers' income and taxes on Huawei's procurement (including Romanian taxes on imported supplies) were modelled by Oxford Economics. These were added to information provided by Huawei on employers' and employees' social security contributions, employees' income tax, corporate income tax, and VAT on sales, to arrive at the total direct tax impact.

METHODOLOGY FOR CAPTURING THE INDIRECT AND INDUCED IMPACTS

To estimate Huawei's indirect and induced GDP impacts, Oxford Economics utilised an input-output model of the global economy, using the latest OECD Inter-Country Input-Output Table as its starting point.[10]

A basic national input-output table gives a snapshot of an economy at a given point in time. The model shows the major spending flows from "final demand" (i.e. consumer spending, government spending, investment, and exports to the rest of the world); intermediate spending patterns (i.e. what each sector buys from every other sector – the supply chain in other words); how much of that spending stays within the economy; and the distribution of income between employment income and other income (mainly profits). In essence, an input-output table shows who buys what from whom in the economy.

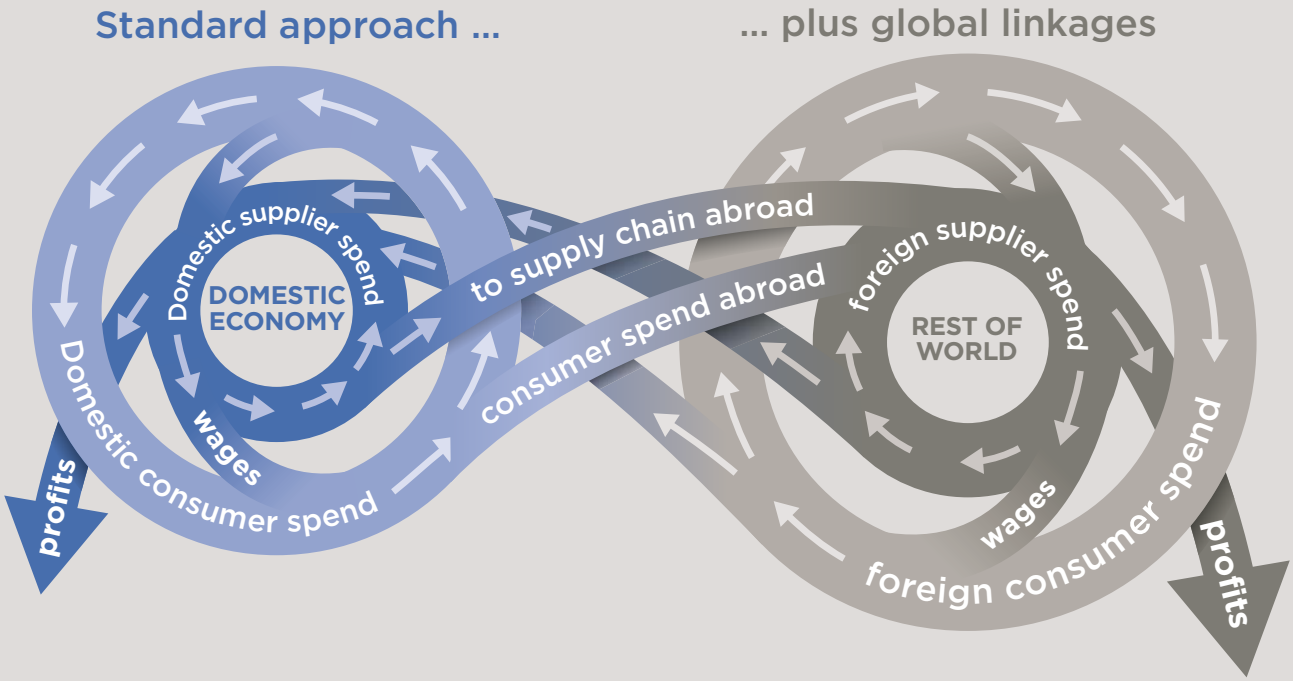
The OECD Inter-Country Input-Output Table extends this concept to include purchases by each industry from industries in other countries, as well as from other industries in their own country.

The Oxford Economics Global Impact Model, as developed for this project, was built around a simplified version of that OECD Table and comprised industries in Romania, 14 major trading partners, and a residual "rest of the world" grouping.[11] The use of a global model along these lines allowed "feedback effects" to be captured, in cases where Huawei Romania's imports into the country include some content originally created in that country further along the international supply chain. This is illustrated in Fig. 24. However, the impact of Huawei's global operations on Romania's economy is still not captured in full, as the effect of purchases by Huawei's global headquarters, and by other Huawei operations outside of Romania, could not be captured in this case.[12]

The value of purchases of supplies by Huawei's Romanian operations was provided by Huawei, separately for Romanian suppliers and imports. Payments to contract workers were excluded from the procurement total modelled, as these payments were counted in the direct rather than indirect channel. The procurement spending included was split into a pattern of purchases, by type of product and location of supplier, taking into account information in the input-output table for the Romanian "hi-tech goods manufacturing" sector, of which Huawei Romania is a part.

[10] http://www.oecd.org/sti/ind/inter-country-input-output-tables.htm.
[11] The 14 major trading partners comprise Austria, Belgium, Bulgaria, China, Czech Republic, France, Germany, Hungary, Italy, Netherlands, Poland, Russia, Slovakia, Spain, Turkey, and the UK.
[12] The major missing element here relates to purchases by Huawei's non-Romanian operations directly from businesses in Romania. But in addition, purchases by those operations from suppliers in, say, Germany or Italy, are likely to include some content originating in Romania.

Fig. 24: The Oxford Economics Global Impact Model



Each year's data was fed into the model to arrive at total sales throughout the Romanian part of Huawei Romania's global supply chain, by industry of supplier, for the year concerned. The indirect contribution to GDP was worked out from there, using GDP-to-sales ratios for each industry, taken from the OECD I-O table. The indirect employment impact was calculated in turn from there, using GDP-to-jobs ratios for each industry for each year.[13]

The induced sales figures for each year were worked out in two stages. Induced sales relating to spending by employees in Huawei's supply chain were calculated alongside the indirect impact, taking Huawei's procurement as the starting point. This calculation used an extended part of the input-output model, with workers' after-tax income derived from indirect GDP by industry, and workers' spending assumed to follow the overall pattern of household consumption for their country of residence, by product type and country of supplier.

The induced sales impact relating to spending by Huawei's own employees and contract workers was modelled separately, using estimates of their spending power—earnings net of tax—as the starting point. The separate estimates of induced sales by product type, relating to supply chain workers and Huawei workers respectively, were then added together. The induced GDP and jobs impacts were estimated from there, using the relevant ratios for the Romanian industries concerned.

Finally, indirect and induced tax contributions were estimated taking into account indirect and induced sales, GDP and employment by industrial sector, and applying various appropriate tax-to-expenditure and tax-to-income ratios, sourced from the OECD and Eurostat.

[13] Based on detailed GDP and employment data sourced from the Eurostat database.

OXFORD ECONOMICS

Oxford Economics was founded in 1981 as a commercial venture with Oxford University's business college to provide economic forecasting and modelling to UK companies and financial institutions expanding abroad. Since then, we have become one of the world's foremost independent global advisory firms, providing reports, forecasts and analytical tools on more than 200 countries, 250 industrial sectors, and 7,000 cities and regions. Our best-in-class global economic and industry models and analytical tools give us an unparalleled ability to forecast external market trends and assess their economic, social and business impact.

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February 2020

The modelling and results presented here are based on information provided by third parties, upon which Oxford Economics has relied in producing its report and forecasts in good faith. Any subsequent revision or update of those data will affect the assessments and projections shown.

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