

UNILEVER IN THE UK: PURPOSE, PEOPLE, PRODUCTIVITY

A REPORT FOR UNILEVER

DECEMBER 2022





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EXECUTIVE SUMMARY

Unilever commissioned Oxford Economics to quantify the economic contribution of its UK operations to the UK economy in 2020. This report describes Unilever's economic contribution in terms of gross value added (GVA), jobs, and contribution to tax revenues. It also considers the wider economic benefits of its activity, through investment in research & development, the training and development of its workforce, new employment models, and initiatives to improve sustainability.

Fig. 1. A summary of Unilever's economic contribution, UK, 2020



Source: Unilever, Oxford Economics

Unilever makes a positive contribution to boosting UK productivity,

the average GVA produced per job. Productivity is a key determinant of pay and living standards in the long-run. Unilever's direct operations support an average productivity of £104,000 per worker, almost twice the UK average. Unilever's workforce benefits from this high productivity through higher pay: the median salary across the workforce is £43,000 per job, almost 70% higher than the national average. Unilever is a *Living Wage Foundation* employer and is committed to ensure that all workers directly providing goods and services through its procurement earn at least a living wage or income by 2030. £1.49 billion

Unilever's total gross

contribution to UK GDP.

value added (GVA)

Oxford Economics calculates that Unilever contributes £1.49 billion to <u>UK GDP</u>. This total GVA comprises direct, indirect, and induced activity. According to the latest data, Unilever directly generates £643 million of GVA. It spends £1.29 billion procuring goods and services, of which £451 million is spent across UK suppliers, generating a further £361 million of GVA through indirect effects along its UK-based supply chain. A further £486 million is generated through induced effects as a result of Unilever employees, plus those in the supply chain, spending their incomes within the economy.



Fig. 2. Unilever's total GVA contribution to GDP, UK, 2020

Source: Unilever, Oxford Economics. Note: may not sum due to rounding.

Unilever makes a substantial investment in <u>research and development</u> (**R&D**) in the UK. While Unilever's R&D investment benefits the company globally, according to the latest annual data the company invests £256 million in R&D in the UK, employing around 1,300 full-time equivalent (FTE) jobs in R&D activities. Around 40% of Unilever's global patent intellectual property is built on R&D activity in the UK.

Unilever's R&D spending can drive economic growth across the economy, and is responsible for almost half of UK R&D in sectors related to its lines of business—Beauty & Wellbeing, Personal Care, Home Care, Nutrition, and Ice Cream. Our analysis indicates that this research-led innovation enhances the growth potential of the UK economy overall. We find that Unilever's R&D spending in 2020 alone is expected to generate a GDP boost of £126 million by 2030. Of this, 84% of the benefits are realised due to research in sectors in which Unilever operates. The remaining 16% is realised in the rest of the economy as the benefits of innovation are spread more widely.

Unilever supports a <u>workforce</u> of over 6,000 employees across the UK, and is responsible for supporting more than 21,600 jobs nationally. In total, this equates to a further 250 jobs across the wider economy for every 100 jobs employed directly by the company. Moreover, Unilever is committed to building an inclusive culture across its workplace, through policies to support ethnic diversity, gender equality, a culture of inclusion for disabled people, and LGBTQIA+ inclusion.





Fig. 3. Unilever's total contribution to employment, UK, 2020



Source: Unilever, Oxford Economics. Note: may not sum due to rounding.

Unilever's operations benefit all 12 <u>UK regions</u> through direct, indirect, and induced effects. Unilever operates around 20 sites across eight regions of the UK. Around a third of the direct workforce, 2,000 employees, are employed in the North West of England, mostly at its offices, manufacturing facilities, and research and development centre at Port Sunlight. Unilever procures goods and services from firms based in a fifth of the 374 local authority areas in the UK, and across all regions. Once accounting for the regional indirect (supply chain) and induced (wage consumption) effects, London, the North West, the South West of England, the North East of England, and Wales are all among the regions that benefit most from Unilever's operations in the UK.

Fig. 4. Unilever's total contribution to GVA and employment, UK regions, 2020



Source: Unilever, Oxford Economics. Note: may not sum due to rounding.

Through direct operations, procurement spending and wage consumption effects, Unilever makes a positive contribution to the economies of all 12 UK regions.



In total, Unilever's economic footprint in the UK generates an estimated £442 million of <u>tax revenues</u>. This equates to the average salaries of more than 15,600 nurses or 12,200 teachers. Unilever's direct operations generate an estimated £217 million of tax revenues, of which £80 million is paid by Unilever largely through Value Added Tax (VAT), Corporation Tax, and employer National Insurance Contributions (NICs) borne by the company, and a further £150 million is paid by its workforce on earnings, through income tax and employee NICs, minus £12 million on net VAT collected.¹ The supply chain (indirect) and wage consumption (induced) effects support a further £81 million and £143 million, respectively.

Unilever runs a series of dedicated and structured schemes to attract and up-skill younger workers. The skills development of young people will shape the economic performance of the UK economy in the future, when they enter the workforce. Initiatives such as the Amos Bursary Virtual Summer Series, Industrial Placement and Summer Placement schemes enable school-age and university students to develop key employability and workplace skills and gain professional experience. In addition, Unilever hires 100 apprentices each year, providing work experience and training to young people across a three-year period, with the opportunity to apply for permanent roles once the apprenticeship finishes. The company also seeks to attract employees from groups otherwise underrepresented in the industry, for instance through the Inspire-Me Monitoring programme for 17- to 21-year-old girls, and the Movement to Work Placements for young people not in education, employment, or training. In total, over 900 young people participate in Unilever's work experience, internship, apprenticeship, and graduate programmes each year.

Unilever also invests in boosting its workforce through training. According to the most recent data, Unilever invests in 140 different training and education programmes for staff, taken up by 2,870 participants, including 51 programmes that provided professional qualifications. In addition, *Bright Futures* is Unilever R&D Port Sunlight's schools engagement programme. It aims to inspire and engage the scientists of the future, helping young people understand the opportunities and positive impact that science and technology can have in society.

The company is pioneering a range of <u>new employment models</u> to provide its workers with flexible employment opportunities. The Covid-19 pandemic has shifted the focus towards the nature of work, and how it may change into the future. Traditional patterns of work are rapidly evolving, and Unilever recognises its responsibility to generate and sustain employability by preparing individuals for the societal and technological changes that are taking place. Through its *U-Work* initiative, Unilever seeks to enable freedom and flexibility to workers who may want to reduce working hours, allow time to travel or study, or pursue a new direction in their careers.

¹ The net Corporation Tax paid in 2020 was significantly lower than usual because it included a refund of taxes overpaid in earlier years. Further Corporation Tax for 2020 was also paid during 2021. More information on Unilever TTC can be found <u>here</u> for 2020 and <u>here</u> for 2021, noting that the taxes paid in the UK in 2021 were significantly higher than usual due to the closure of issues in 2021 affecting earlier tax years.

Unilever is committed to being a net zero business across its value chain by 2039. This is part of its *Climate Transition Action Plan*, the first time a company of its size has voluntarily committed to putting its climate plans before a shareholder vote and had it pass. Unilever has set science-based goals to have zero emissions operations by 2030, and to halve the greenhouse gas (GHG) impact of its products across the lifecycle by the same year.

Unilever has also committed to halving its virgin plastic use. Specific initiatives aimed at reducing plastic use include using recycled polypropylene plastic in Magnum tubs, increasing the concentration of formulations and reducing the size of Persil bottles, and Unilever continues to maintain its standard to send <u>zero non-hazardous waste</u> to landfill from its factories—an accomplishment that has been have achieved since 2015, and an industry first at its scale. Unilever also facilitated a world first pilot in its Port Sunlight factories to explore the viability of hydrogen as an alternative to natural gas as a source of energy in the manufacturing sector.



1. INTRODUCTION

1.1 INTRODUCTION

Unilever is one of the world's largest consumer goods companies, with its headquarters in London, England. The company's products are sold in over 190 countries worldwide, with an estimated 3.4 billion people using Unilever products every day. Unilever products are present in 98% of homes across the UK, and around 70% of the products manufactured by Unilever in the UK are sold in the UK.

Unilever PLC has a deep, rich connection with the UK dating from the late 19th century, when in February 1884 William Lever launched Sunlight soap. With the purpose to popularise cleanliness and bring it within reach of ordinary people, the first UK soap factory followed, with Port Sunlight opening in 1888. This is the historic home of Unilever in the UK. Now Unilever employs a global workforce of approximately 148,000 people and over 6,000 employees across the UK, operating in eight of the 12 UK regions. The UK is also home to three of Unilever's global R&D hubs: Port Sunlight in the Wirral; Colworth in Bedfordshire; and Leeds.

Unilever's UK business generates annual sales of almost £2 billion each year. Unilever estimate that more than 40 brands of goods sold by Unilever are present in 98% of UK homes, with 43 Unilever products bought in the UK every second.² Its products include Nutrition and Ice Cream brands such as Magnum, Marmite, Knorr and Hellmann's, Beauty & Wellbeing and Personal Care brands such as Dove and Sure, and Home Care brands such as Persil and Domestos.

In order to further understand its economic impact on the UK economy, Unilever commissioned Oxford Economics to quantify the economic contribution of its UK operations to the UK economy.³

1.2 REPORTING STRUCTURE

This report takes the following structure:

- In Section 2 we present Unilever's contribution to the UK economy.
 In doing so we discuss its gross value added (GVA) contribution to UK gross domestic product (GDP), employment, and tax contribution;
- In Section 3 we present Unilever's economic contribution to the 12 UK regions;
- Section 4 discusses the wider economic benefits of R&D spending, exports, and training & development; and
- Appendix 1 provides a summary of our method.

² Source: Unilever.

³ This core channels of economic impact set out in this report consider the activities of two entities: Unilever UK Ltd and Unilever UK Central Resources Ltd.



BOX 1: AN INTRODUCTION TO ECONOMIC IMPACT ANALYSIS

The economic impact of a firm or industry is measured using a standard means of analysis called an economic impact assessment. The report quantifies the three 'core' channels of impact that comprise the organisation's 'economic footprint':

- Direct impact: the economic benefit of Unilever's operations and activities in the UK, including its direct gross value added (GVA) contribution to gross domestic product (GDP), employment, and tax contributions;
- Indirect impact: captures the economic benefit and employment stimulated by Unilever's procurement of goods and services from its UK supply chain, both through purchases made by Unilever from its suppliers, and subsequent spending through further rounds of purchases; and
- **Induced impact**: comprises the wider economic benefits that arise from the payment of wages by Unilever, and the firms in its UK supply chains, to staff who spend a proportion of this income through their household's consumption.



Fig. 5. Economic impact assessment



From these channels, Unilever's total economic footprint in the UK economy is presented, using three key metrics:

- GDP, or more specifically, Unilever's gross value added (GVA) contribution to GDP;⁴
- Employment, measured on a total (jobs) or full-time equivalent (FTE) basis; and
- Tax, representing the tax receipts paid to the Treasury.

In addition to the core economic impacts, this report examines the wider effects of the company's services or products in boosting economic activity elsewhere in the economy. These impacts represent the wider benefits that governments, consumers, society, and other industries derive from the goods and services Unilever provides. For Unilever these are captured in the contribution that the company makes to research & development (R&D), human capital accumulation through investments in training and development, the implementation of new employment models, and contributions towards sustainability and the circular economy.

The modelling on which this report is based computes the economic footprint of Unilever in the UK and its regions in 2020, the latest year for which full economic data are available at the time of publication. The results are presented on a gross basis, and therefore ignore any displacement of activity from Unilever's competitors or other firms. Nor do they consider the opportunity cost of resources either used by Unilever or stimulated by its expenditure.

Further detail about the economic impact methodology is included in the technical appendix.

⁴ Gross domestic product (GDP) is the main indicator of economic activity in the UK, used to measure the rate of growth or decline in the economy, and when it enters a recession.



2. THE ECONOMIC IMPACT OF UNILEVER IN THE UK

2.1 INTRODUCTION

This chapter investigates the contribution that Unilever made to the UK economy in 2020. It considers the company itself, the economic activity it stimulates by procurement, and the household consumption stimulated by payment of wages.

2.2 DIRECT IMPACT

Unilever's operations in the UK generate an overall turnover of £1.93 billion. Some of this is spent on the procurement of goods and services from its suppliers, both domestic and abroad. **Unilever makes a £643 million direct contribution to UK GDP.** Almost two-thirds of this comprises the spending on the compensation of employees (wages, associated employer taxes, and pension contributions), alongside gross operating surplus generated through its operations, and taxes on production.



Fig. 6. Unilever's GVA, UK, 2020

Source: Unilever, Oxford Economics. Note: may not sum due to rounding.

Unilever employs over 6,000 people in the UK. Combining the direct contribution of Unilever to UK GDP with its workforce allows for the measurement of labour productivity—the average value added to the UK economy on a per job basis.

Having a highly productive workforce is important as it can enhance the price competitiveness of Unilever's goods and services, and boost its profit margin, both of which potentially add to GDP. In turn, this raises the standard of living of the UK population.



£104,000

Unilever's direct productivity

(GVA per job) is almost twice

as high as the UK average

(£53,500 per worker).

We estimate that Unilever's productivity is £104,000 per job. **Unilever is therefore almost twice as productive as the UK economy** (£53,500 per job). Indeed, only capital-intensive industries such as power (£191,000 per job) and utilities (£119,700 per job), and the financial services sector (£115,600 per job), had higher labour productivity.

Unilever's operations are also around a third more productive than the wider manufacturing sector within which it operates (£70,200 per job). Indeed, further analysis of 14 manufacturing sub-sectors indicates that only the production of pharmaceuticals, oil & gas, and chemicals demonstrate higher labour productivity than Unilever's direct operations.



Fig. 7. Productivity, Unilever and broad sector averages, UK, 2020⁵

Unilever also makes a positive contribution to tax revenues. **Unilever and its employees contribute £217 million in tax revenues from its direct operations.** Approximately £80 million is paid by Unilever, through taxes on production (e.g. Business Rates), products (VAT), and labour (employer National Insurance Contributions, or NICs) borne by the company.⁶ In addition, Unilever's direct contribution includes the taxes paid by its workforce on their earnings. A further £150 million was paid by employees of Unilever, through income tax and employee NICs. However, this is offset by negative net VAT collected, equating to just over £12 million.

⁵ Note that this analysis excludes real estate, as labour productivity estimates for this sector are distorted by the inclusion of rental income and imputed rents within estimates of GVA.

⁶ The net Corporation Tax paid in 2020 was significantly lower than usual because it included a refund of taxes overpaid in earlier years. Further Corporation Tax for 2020 was also paid during 2021. More information on Unilever TTC can be found <u>here</u> for 2020 and <u>here</u> for 2021, noting that the taxes paid in the UK in 2021 were significantly higher than usual due to the closure of issues in 2021 affecting earlier tax years.



WORKFORCE INCLUSIVITY

Unilever is committed to building an inclusive culture across its workplace.

The company recognises the critical role that business has to play in creating an equitable society, and seeks to take decisive action to improve **ethnic diversity** through a range of actions, including: setting targets and commitments to diversity through signing the *Race At Work Charter*, establishing an employee race network, *Empower*, to support internal momentum towards achieving these targets and commitments; and leveraging brands to accelerate change through promoting these values through advertising campaigns.⁷

The company is committed to driving **gender equality** across its workplace. It achieved a 50:50 gender balance across managerial roles in 2017,⁸ and as set out in its *Gender Pay Report 2020*, in 2020 women represented 57% of Unilever's management positions in the UK and 44% of its UK & Ireland Leadership Team.⁹ The company has a range of policies and initiatives to promote gender equality, including working with leading institutions to provide advanced leadership training to all senior female executives, insisting on a gender-balanced list of candidates for all senior appointments, and continuing to boost investment in outreach programmes, encouraging more young female students to consider careers in science, technology, engineering, or mathematics (STEM).

Unilever also seeks to create a culture of inclusion for **disabilities**.⁷ It has established a global target for 5% of its workforce to be represented by people with disabilities, and has joined the UK Government's *Disability Confident Scheme*, which encourages employers to think differently about disability and provides guidelines to improve recruitment, retention, and progression of disabled colleagues. Unilever achieved *Disability Confident Employer* status in 2019.

Unilever has also developed a range of policies and initiatives to support LGBTQIA+ inclusion among staff.¹⁰ It has expanded its internal *proUd* network to over 300 employees across the UK and Ireland, has launched new inclusive policies relating to family, fertility, and transition/change of gender for employees, and is a member of *TeamPride*, a consortium of world-leading brands supporting the *Rainbow Laces* campaign to help make sports more inclusive for the LGBTQ+ community. Unilever was recently awarded Gold Employer by the *Stonewall Workplace Equality Index*, and shortlisted as one of the 'Top 10 inclusive companies' by *The British LGBT Awards*.

⁷ <u>https://www.unilever.com/planet-and-society/equity-diversity-and-inclusion/a-beacon-of-diversity-and-inclusion/</u>

⁸ <u>https://www.unilever.com/planet-and-society/equity-diversity-and-inclusion/gender-equality-and-womens-empowerment/</u>

⁹ <u>https://www.unilever.co.uk/files/4ceb22fd-d9c3-48c4-9767-4ff8b8d085a5/unilever-gender-pay-report-2020-en.pdf</u>

¹⁰ <u>https://www.unilever.co.uk/news/2022/unilever-uk-recognised-for-lgbtgi-inclusion/</u>



2.3 INDIRECT IMPACT

Unilever's positive contribution to the UK economy extends past the contribution it makes directly, through its own operations. The purchases of inputs of goods and services stimulates additional activity along the UK supply chain, as Unilever's suppliers in turn purchase goods and services from other firms. This is the *indirect* impact.

Unilever spends a total of £1.29 billion on inputs and goods and services, of which £451 million (35%) is spent with UK suppliers, and £839 million (65%) is imported from abroad.¹¹

Unilever's procurement stimulates a £361 million GVA contribution to UK GDP along the domestic supply chain. Over a quarter of GVA, or £99 million, is stimulated in the manufacturing sector, reflecting the propensity for both Unilever and the firms along its supply chain to draw on inputs from manufacturers. A further £77 million of GVA is generated in the retail & wholesale sector, amounting to around a fifth of GVA generated along the supply chain. Unilever's procurement spending also stimulates activity in service sectors such as professional (£35 million) and administrative services (£18 million), alongside agriculture (£30 million) and transport & storage (£27 million).



Fig. 8. GVA stimulated by Unilever's procurement by sector, UK, 2020

Source: Unilever, Oxford Economics. Note: may not sum due to rounding.

Unilever's procurement supports approximately 7,360 jobs across the UK. As with GVA, employment impacts are largest in the manufacturing sector, where Unilever supports 1,770 jobs along its UK supply chain. The company supports the second-most jobs in retail & wholesale (1,490 jobs), with employment also stimulated among the agriculture (1,040 jobs), accommodation & food services (680 jobs), and transport & storage (660 jobs) sectors.

£361 million

GVA contribution to UK GDP generated by Unilever's domestic procurement spending.



¹¹ Unilever has provided Oxford Economics with procurement data for its top-100 suppliers, which amounts to 97% of all domestic purchases.





Fig. 9. Employment stimulated by Unilever's procurement by sector, UK, 2020

Source: Unilever, Oxford Economics. Note: may not sum due to rounding.

We estimate that the economic activity and employment supported by Unilever's procurement spending supports £81 million in tax receipts.

SUPPLIER DIVERSITY

As a key component of Unilever Compass goals on equity, diversity, and inclusion, Unilever has committed to **improve the diversity of its supply chain**. Diverse businesses are defined as those that are 51% or more owned, managed, and controlled by diverse groups, including women, under-represented racial and ethnic groups, people with disabilities, and LGBTQI+ communities. Globally, the company aims to spend €2 billion with diverse businesses across its global operations by 2025.¹²

In the UK, Unilever is co-sponsoring MSDUK, an organisation championing the inclusion of ethnic minority businesses and founders within corporate supply chains, to launch the *MSDUK Accelerator* programme, which aims to help 300 ethnic minority businesses to become supply chain partners.¹³ Ethnic minority start-ups are underrepresented among the supply chains of both public and private sector operators, and face a range of challenges, including lacking early-stage investment, venture capital funding, and access to social capital and mentors.¹³ Participants in the programme are offered a range of support seeking to provide the networks, training and skillsets to help these firms grow and succeed. In addition, Unilever joined nine other companies in funding MSDUK's *European Supplier Diversity Project*, a two-year initiative to improve pan-European supplier diversity.

across the UK by



¹² <u>https://www.unilever.com/planet-and-society/equity-diversity-and-inclusion/promoting-diverse-suppliers/</u>

¹³ <u>https://www.msduk.org.uk/news/msduk-launches-accelerator-programme-to-help-ethnic-minority-owned-businesses-in-the-uk-build-connections-with-global-companies</u>



2.4 INDUCED IMPACT

Unilever's highly productive workforce is relatively well-remunerated.

Unilever pays its staff £367 million in gross wages and salaries, and the median salary of Unilever's workforce is £43,000 per year. Direct earnings are therefore higher than the average across all sectors of the UK economy, and almost 70% higher than the median national average (£25,900 per job).

Unilever is committed to ensuring that people earn a living wage or income, which it sees as a crucial step towards building a more equitable and inclusive society. In 2015, Unilever achieved accreditation as a *Living Wage Foundation* employer, and aims to ensure that everyone who directly provides goods and services to Unilever earns at least a living wage or income by 2030.¹⁴

Fig. 10. Median gross annual salary, Unilever and UK sectors, 2020



£43,000 Median gross salary of the

Unilever workforce, almost 70% higher than the UK average.



Source: ONS, Unilever, Oxford Economics

The households of Unilever's employees, and those supported by its supply chain spending, spend a proportion of their wages at retail, leisure, and other outlets, which in turn stimulates economic activity at these firms, and also along their supply chains. This is the *induced* impact.

We estimate the household wage consumption of Unilever's employees and those of its suppliers stimulates a further £486 million GVA contribution to UK GDP. The largest contribution is in the real estate sector, amounting to £139 million, largely a reflection of rent and other housing costs.¹⁵ A further £68 million is generated in the retail & wholesale sector, with induced

¹⁴ <u>https://www.unilever.co.uk/news/press-releases/2021/unilever-sets-out-plans-to-help-build-a-more-equitable-and-inclusive-society/</u>

¹⁵ This includes rental costs and imputed rents, an estimate of what owner-occupiers would pay if they rented instead of owning their homes.



GVA also concentrated within the manufacturing (£33 million), financial services (£31 million) and accommodation & food services (£30 million).





£486 million

GVA contribution to UK GDP generated by wage consumption (induced) effects.



We estimate that household wage consumption supports 8,080 jobs across the UK. Accommodation & food services sees the largest employment effect due to household wage consumption, supporting 2,160 jobs, or more than a quarter of all employment supported through the induced effect. As with GVA, retail & wholesale (1,640 jobs) supports the second-largest induced employment effect. Although real estate is the largest beneficiary in GVA terms, it supports a modest proportion of employment.

Fig. 12. Employment stimulated by Unilever and its suppliers' payment of wages to staff, 2020





8,080 jobs



Source: Unilever, Oxford Economics. Note: may not sum due to rounding.



We estimate that the additional economic activity and employment supported by wage spending of Unilever's employees and those within its supply chain stimulates a further £143 million in tax receipts within the UK.

2.5 TOTAL IMPACT

Combining the three channels—direct, indirect, and induced—we find that **Unilever contributes £1.49 billion to the UK's gross domestic product**, equivalent to 0.08% of UK GDP.¹⁶ This represents a GVA multiplier of 2.32: for every £1 in GDP created directly by Unilever, a further £1.32 is created elsewhere across the wider UK economy.

Alongside the £643 million directly generated by the company itself, Unilever's procurement spending supports another £361 million along its domestic supply chain, which represents just under a quarter of the total. Wage consumption effects arising from the payment of wages by Unilever and firms along its supply chain supports a further £486 million contribution to UK GDP, or around a third of the total.

Fig. 13. Unilever's total GVA contribution to GDP, UK, 2020



Source: Unilever, Oxford Economics. Note: may not sum due to rounding.

The company's activities also have a substantial impact on UK employment. **Unilever supports a total of 21,620 jobs across the UK.** This consists of over 6,000 direct employees, 7,360 jobs supported across the domestic supply chain, and 8,080 jobs across the UK through household wage consumption effects.

This equates to an employment multiplier of 3.50: for every 100 direct jobs employed by Unilever, a further 250 jobs are supported across the wider economy.



Unilever's total gross value added contribution to UK GDP.

¹⁶ The combined GVA from direct and indirect activity (£1.00 billion) is less than total turnover (£1.93 billion), as both Unilever and firms along its supply chain purchase imports, the GVA associated with which is realised by firms abroad.





Fig. 14. Unilever's total contribution to employment, UK, 2020



Source: Unilever, Oxford Economics. Note: may not sum due to rounding.

The economic activity supported by Unilever's operations in the UK also stimulates contributions to the UK's public finances through income, production, and product taxes levied on UK businesses, employees, and consumers.

Unilever's economic footprint across the UK generates an estimated £442 million total contribution to UK tax receipts. Some £217 million, or just under half of the total, is paid by the direct activities of Unilever and its employees.⁶ Another £81 million or 18% is stimulated along the UK supply chain by Unilever's procurement spending, while a further £143 million or a third of the total comes from household wage consumption arising through the payment of wages of Unilever and firms in its supply chain.

To put Unilever's total tax contribution into perspective, we can present it in terms of what the spending of tax receipts could support. The £442 million of tax receipts equates to the average salaries of more than 15,600 nurses or 12,200 teachers,¹⁷ and is equivalent to almost a tenth of the £4.8 billion Levelling Up Fund, which seeks to invest in infrastructure that improves everyday life across the UK, including town centre and high street regeneration, local transport projects, and cultural and heritage assets.¹⁸

¹⁷ ONS, *Annual Survey of Hours and Earnings (ASHE)*, Newport, 2021. In 2020, the mean salary of nurses and teachers across the UK was approximately £28,200 and £36,200, respectively.

https://www.ons.gov.uk/surveys/informationforbusinesses/businesssurveys/annualsurveyofhoursandearningsash

¹⁸ <u>https://www.gov.uk/government/publications/levelling-up-fund-round-2-prospectus</u>







Fig. 15. Unilever's total contribution to tax receipts, UK, 2020



Source: Unilever, Oxford Economics. Note: may not sum due to rounding.



3. THE ECONOMIC IMPACT OF UNILEVER ACROSS UK REGIONS

3.1 INTRODUCTION

As well as quantifying the impact of Unilever on the UK economy as a whole, we also explore the contribution that Unilever makes to GVA and employment across the 12 UK regions, through the company's direct operations, its procurement spending with suppliers, and household consumption stimulated by the payment of wages.

3.2 DIRECT OPERATIONS

Unilever has a wide presence across the UK. It directly undertakes manufacturing, R&D, distribution, or office-related activity at around 20 sites in eight of the 12 UK regions.

In GVA terms, Unilever's greatest contribution is in London, which is home to both Unilever's Global Head Office at Unilever House in the **City of London**, an office in **Kingston upon Thames**, and Unilever's UK & Ireland Head Office at Unilever House in **Leatherhead**, Surrey. Alongside its Graze plant in **Hayes**, West London, Unilever directly supports £334 million of GVA and 2,260 jobs across London and the South East of England.¹⁹ Unilever is in the process of developing a new global headquarters as part of the Eden Campus mixed-use development in Kingston upon Thames.²⁰

Unilever's workforce is concentrated in the North West of England, where it supports 2,000 jobs, nearly a third of its entire UK workforce. A third of Unilever's global R&D workforce is based in the UK. Activity in the North West is mainly at **Port Sunlight** in the Wirral, which is Unilever's largest site for employment, supporting almost 1,700 jobs. Port Sunlight is home to factories producing Unilever's Beauty & Wellbeing, Home Care, and Personal Care products, and leads global R&D for Home Care and Personal Care products. (See p.26 for further detail on Unilever's investment in the North West.)

Unilever's R&D activity is also focussed in two other locations. The **Colworth Science Park** in Bedfordshire is home to 560 jobs and a growing ecosystem of companies with Unilever playing a key role in attracting more businesses and investment to Colworth. It has been a leading R&D location for more than 75 years, and is consistently at the forefront of food and agricultural research developing and creating Ice Cream products, including Magnum, Viennetta, and Twister.²¹ Colworth's unique location allows it to be part of the Midlands food & drink ecosystem and the Oxford-Cambridge 'Arc', a globally significant centre for research and innovation.²² Colworth is home to Unilever's

¹⁹ Unilever's direct contribution to regional GVA is estimated on the basis of the compensation of employees by site, which form the majority of Unilever's direct GVA contribution to UK GDP.

²⁰ https://edencampus.co.uk/

²¹ <u>https://www.ukspa.org.uk/colworth-park/</u>

²² <u>https://www.gov.uk/government/publications/oxford-cambridge-arc/oxford-cambridge-arc</u>



global ice cream innovation centre and Pepsi-Lipton joint-venture. It is also a global centre of expertise in safety and environmental sciences (Safety & Environmental Assurance Centre, or SEAC) with its world class capabilities in advanced non-animal safety science and its industry-leading approaches to ensure that the ingredients used in Unilever's products are safe and sustainable by design.

The second location is **Leeds**, home to Unilever's deodorants factory and global centre for Personal Care products R&D, manufacturing 640 million units across 13 production lines. While the UK is the largest market for the company's deodorant and aerosol products, Unilever estimate that 70% of these products are exported across the globe.

Unilever's site in **Burton-on-Trent**, in Staffordshire, is home to several iconic British food brands including Marmite and Bovril. Its central UK location makes it a strategic site for Unilever's supply chain network. The company has recently significantly invested in the site, opening a second factory with six production lines and six processing plants, moving production of Hellmann's and Colman's products to the site too. As a result, volume at Burton has increased more than five-fold in recent years, with approximately 80% of goods produced at the factory are distributed for sale in the UK.

Following the relocation of the production of Colman's from its original site in Norwich, Unilever has retained a presence in **Norfolk** through its long-term partnership with Condimentum, a consortium of mint and mustard growers in Norfolk. Unilever's 10-year supply agreement and significant capital investment supported the building of Condimentum's new state-of-the-art mustard and mint milling facility. The facility supplies milled mustard flour and blended mint for Colman's condiments and packs its mustard powder products. Unilever continues to source mustard and mint from growers in the Norfolk, as it has done for more than five generations.

Gloucester is home to one of Unilever's largest ice cream factories in Europe. Wall's has recently celebrated its 100th birthday, having moved from Acton in West London where it was founded. Coupled with innovation in Colworth, Unilever's Gloucester factory has been pioneering ice cream products, producing 145 million litres of ice cream each year. Unilever also supports a further 140 jobs at its Pot Noodle factory in **Crumlin** in Newport, South Wales.²³

²³ <u>https://www.unilever.co.uk/brands/foods-refreshment/pot-noodle/</u>



Unilever directly

supports activity across eight

of the UK's 12 regions.



Fig. 16. Unilever's direct GVA and employment, UK regions, 2020

Source: Unilever, Oxford Economics. Note: may not sum due to rounding.

3.3 PROCUREMENT SPENDING

Unilever also makes purchases from suppliers across the UK. According to the latest available annual data, the company spends £451 million on inputs of goods and services across UK suppliers. The top-100 suppliers account for 97% of all spending (£435 million), and include firms operating in 78 local authority areas—a fifth of all local authority areas in the UK.

Unilever purchases goods and services from suppliers across all 12 UK regions. Wales is the largest beneficiary of Unilever's procurement spending, with an estimated £68 million of purchases from Welsh suppliers, equivalent to around 15% of purchases across the UK. The North West of England (£59 million) and East of England (£58 million) are the next-largest beneficiaries of the company's procurement spending, alongside the South West of England (£53 million) and East Midlands (£52 million).



£451 million

Unilever purchases goods

operating in 78 (20%) of the

and services from firms

374 local authority areas

in the UK.



Fig. 17. Unilever's facilities and procurement spending, UK regions, 2020²⁴

Source: Unilever, Oxford Economics

²⁴ Note that Fig. 17 presents Unilever's current UK sites at the time of writing, rather than those operating in 2020.



3.4 TOTAL ECONOMIC IMPACT

Through direct operations, procurement spending, and wage consumption effects, Unilever makes a positive contribution to the economies of each UK region.

London is the largest beneficiary in GVA terms. According to the latest data, Unilever's economic footprint contributes an estimated £316 million of GVA to the London economy, largely through the direct activity of its offices and manufacturing facility in the capital (£237 million). The company also supports approximately 2,280 jobs across London.

However, the North West of England is the largest beneficiary in employment terms. Unilever supports 4,000 jobs in the North West—almost a fifth of the jobs across its economic footprint in the UK, and more than any other region in the UK. More than half of the jobs the company supports across the North West are through supply chain (indirect) or household wage consumption (induced) effects.



Fig. 18. Unilever's total GVA and employment, UK regions, 2020

Source: Unilever, Oxford Economics. Note: may not sum due to rounding.

The South East of England (£153 million) and East of England (£136 million) are among the larger beneficiaries of Unilever's economic activity in the UK in GVA terms. However, the South West of England (2,350 jobs) and Wales (2,250 jobs) are the second- and fourth-largest beneficiaries in employment terms, after the North West and London. In both the South West and Wales, Unilever's economic contribution is largely a consequence of the goods and services purchased from suppliers based in these regions.

When considering the relative size of the economies of each UK region, Unilever's contribution to each regional economy is proportionately highest in the North West, where it supports an estimated 0.15% of the region's total GVA. Unilever's contribution to overall employment is proportionately highest in Wales, where it supported an estimated 0.15% of the region's total employment.

Through direct operations, procurement spending and wage consumption effects, Unilever makes a positive contribution to the economies of all 12 UK regions.



Fig. 19. Unilever's direct, indirect, and induced contribution to total GVA and employment, UK regions, 2020



Percentage share of the regional economy

Source: ONS, Unilever, Oxford Economics



4. WIDER ECONOMIC AND SOCIAL BENEFITS

4.1 INTRODUCTION

In addition to the core economic impacts of Unilever, the company also generates a range of wider economic benefits which contribute to the UK's longer-term economic competitiveness and productivity. These benefits are typically much harder to measure than the core economic impacts, as they accrue gradually and may be dispersed across different sectors of the economy. Nonetheless, they form an important component of Unilever's overall economic and social contribution to the UK.

4.2 RESEARCH & DEVELOPMENT

Unilever makes a significant investment in research and development (R&D) through its operations in the UK. According to the latest available annual data, Unilever invests £256 million in R&D in the UK, forming a significant share of the company's €800 million investment in R&D globally.²⁵

In the UK, Unilever employs around 1,300 full-time equivalent (FTE) jobs in R&D activities, equivalent to over a quarter of the entire workforce. Indeed, almost two-fifths of patents across the globe originate at least partly from R&D activity in the UK. Unilever has over 1,200 patents across the globe which originate at least partly from R&D activity in the UK. Unilever has a range of research partnerships with other institutions. In total, the company has 65 partnerships, of which 26 are with universities and other academic institutions, and 39 with private sector entities, including with 15 start-ups and SMEs.

According to estimates by the Office for National Statistics (ONS), all firms operating in sectors linked to Unilever's lines of business—Beauty & Wellbeing, Personal Care, Home Care, Nutrition, and Ice Cream—collectively invest £566 million in R&D in 2020, implying that Unilever's investment equates to almost half of business R&D across these sectors in the UK.²⁶

R&D makes a difference to economic productivity in a number of ways: by improving the quality of goods, reducing the costs of producing existing goods, and increasing the range of goods or intermediate inputs available. Furthermore, R&D carried out in one company can have positive spillover effects on other firms or industries as the benefits accrue to competitors, other firms, suppliers, and customers. In this way, R&D advances a nation's technological frontier, helping it to deliver greater economic output.

²⁵ <u>https://www.unilever.com/brands/innovation/</u>

²⁶ ONS, Business enterprise research and development, UK: 2020, Newport, 2021. https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/researchanddevelopmentexpenditure/bulletin s/businessenterpriseresearchanddevelopment/2020 Sectors linked to Unilever's lines of business are taken to be the manufacturing of food products & beverages and manufacturing of chemicals & chemical products.



UNILEVER'S £200 MILLION INVESTMENT IN THE NORTH WEST

Advanced Manufacturing Centre (AMC)

In 2018, Unilever opened its **Advanced Manufacturing Centre (AMC)** at its Port Sunlight site in the North West, where Unilever invested £24 million in building the AMC. Unilever worked with key partners, institutes, and the UK government to help underpin its sustainable growth ambitions.²⁷ This world-class facility serves to boost Unilever's R&D presence in the UK, and features a state-of-the-art digitally enabled pilot plant and packaging lines which allows scientists and engineers at Unilever to test new ideas on a factory scale.²⁷ The Centre is configured to allow close working with industrial and academic partners. It allows new and transformational technologies to be tested, housing replica equipment and conditions found in Unilever sites around the globe, which allows the team of scientists and engineers to create consumer focused innovations and quickly scale them for Unilever's manufacturing sites around the world.²⁷

Materials Innovation Factory (MIF)

In collaboration with the University of Liverpool, Unilever has also invested in the **Materials Innovation Factory (MIF)**, an £81 million facility opened in 2017 dedicated to the research and development of advanced materials. This investment further signifies Unilever's commitment to grow its UK operations and reinforces the cluster existing around its Port Sunlight premises.²⁸ The MIF seeks to accelerate product development and gain competitive advantage through smarter, faster and more precise ways of working, using world-class automated lab equipment,²⁹ and has the highest concentration of robots undertaking material chemistry work in the world.³⁰ The combination of these facilities is accelerating Unilever's ability to roll out sustainable products, more quickly, across the world.

Personal Care Factory

Unilever also invested in a new Personal Care factory at Port Sunlight, which is making wellknown brands such as TRESemmé and Radox.

Economic theory identifies various channels through which R&D spending contributes to economic growth in the long run. These include, but are not limited to:

- Stimulating private research;
- Creating a body of accessible knowledge;
- Training skilled graduates;
- Improving human capital and the ability to solve complex problems and develop ideas;
- Creating new scientific methodologies;

²⁷ <u>https://www.unilever.co.uk/news/press-releases/2018/unilever-officially-opens-new-north-west-innovation-centre/</u>

²⁸ <u>https://news.liverpool.ac.uk/2018/10/05/materials-innovation-factory-to-be-officially-opened-by-the-president-of-the-royal-society/</u>

²⁹ <u>https://www.liverpool.ac.uk/materials-innovation-factory/</u>

³⁰ https://www.unilever.com/brands/innovation/



£126 million

Unilever's R&D expenditure

Productivity benefits of

in the UK by 2030.

- Developing new instrumentation and equipment for the wider sector/industry;
- Forming informal networks through agglomeration;
- Improving economic interaction;
- Attracting greater investment and creating new firms; and
- Increasing domestic competition leading to lower prices and a more diverse set of products.

The benefits to the economy from R&D spending arise initially from the general increase in spending—aggregate demand increases as research facilities are developed and researchers are deployed. The fruits of R&D-driven innovation are realised over time as new products and processes gradually enter the economy.

To estimate the quantitative relationship between Unilever's R&D spending and GDP gains, Oxford Economics' approach built upon the best practice in the literature and the latest available datasets.³¹ We find that Unilever's 2020 R&D spending will generate a GDP boost of £126 million by 2030.

The gains from R&D spending are therefore not limited to the sectors or products to which R&D spending is allocated. A large number of sectors benefit, both in the short term and the long term—these effects are called 'spillover' effects. We find that 84% of the GDP benefits are realised due to research in sectors related to its lines of business—Beauty & Wellbeing, Personal Care, Home Care, Nutrition, and Ice Cream.³² The remaining 16% spillover to the rest of the economy as the benefits of innovation are spread widely.



Fig. 20. Productivity benefits of R&D expenditure, UK, 2030

Source: Unilever, Oxford Economics. Note: may not sum due to rounding.

³¹ For the purpose of this calculation, we assume that R&D investment is evenly split between the manufacture of food products and manufacture of chemicals and chemical products sectors. See Appendix 1 for further detail.
³² Note that this analysis considers the sector of 'output' of R&D spending, rather than the input (scientific research & development).



4.3 TRAINING AND SKILLS

4.3.1 Building skills in young people

The skills and knowledge held by the population, referred to in economic literature as human capital, is a vital determinant of a nation's productivity. Skill levels influence the population's living standards and the competitiveness of the economy. The skills development of young people will shape the economic performance of the UK economy in the future, when they enter the workforce. Unilever contributes to boosting the skills of the UK's workforce by training and employing students. In total, over 900 young people participate in Unilever's work experience, internship, apprenticeship, and graduate programmes each year.

To help improve the diversity of its workforce, Unilever runs a series of dedicated and structured schemes to attract and up-skill younger workers. Starting with those of school-age, the **Amos Bursary Virtual Summer Series** provides a series of sessions for students to learn about Unilever, and develop key employability and workplace skills. According to the latest available data, Unilever supports 44 student participants in this scheme.

The company also supports placement schemes for university students to gain professional experience. The **Industrial Placement** scheme offers a year of work experience for students in their penultimate year of university. Reflecting the school year, placements commence in June of each year. In 2019/20, 86 students participated in the scheme, and a further 58 students participated in 2020/21. In addition, the company runs a 12-week **Summer Placement** programme, open to students in their first or second year of university. Unilever supported 26 summer placement students through this scheme.

In addition, since 2010 Unilever has hired over 100 **apprentices** each year. These three-year apprenticeships give young people on-the-job experience and training across the business, with the opportunity to apply for permanent roles once the apprenticeship finishes.

Unilever also runs the **Unilever Future Leaders Programme** designed to prepare graduates for business leadership roles in the business. This three-year initiative offers graduates experience across a range of business functions, including formal training, business mentorship, and field sales.³³ In 2020, 30 graduates were hired to participate in this scheme, joining a further 70 graduates participating in the programme that were hired in the preceding years, while a further 51 participants were hired in 2021.

The company also seeks to provide work experience opportunities to those who risk being excluded from the labour market. The **Movement to Work Placements** are a four- to six-week programme that provides work experience for young people aged between 16 to 30 who are not in education, employment, or training (NEETs). Unilever supports the participation of 114 young people in this programme.

³³ https://careers.unilever.com/uk-graduates



2,87

equivalent to half of the workforce.

Participants in training and educational programmes,

Unilever also run specific schemes to attract employees from groups that are underrepresented in the industry. According to ONS data, 74% of workers for firms classified in the manufacturing sector were male, and 91% were white, compared to 52% and 87% across the economy as a whole, respectively.³⁴ Through partnership with social enterprise ThinkHer Ambition, the **Inspire Me Monitoring** is a 10-month scheme that connects 17- to 21-year-old girls with a mentor in the Unilever Women in Tech network, seeking to provide an insight into careers in technology.

4.3.2 Boosting the productivity of the workforce through training

Training boosts the skills a worker possesses to undertake their job. This enhances the individual's productivity, as they are able to perform their role more rapidly producing more output, raising the quality of their output, or achieving both outcomes. Training not only benefits the recipient, but also others in their workplace, and in society more widely.

Unilever run a series of training and education programmes for its workforce, investing in 140 different training and education programmes for staff, taken up by 2,870 participants—equivalent to almost one participant for every two members of staff.

Unilever's on-work training and education programmes cover a variety of themes, durations, and qualification levels. Across the workforce, 940 employees participate in 51 programmes that provided professional qualifications, of which 15 are to National Vocational Qualification (NVQ) Level 4 or above—equivalent to a degree-level qualification or higher. In total, 289 employees participate in programmes to this qualification level.



Fig. 21. Participants by National Vocational Qualification (NVQ) level, 2020

Source: Unilever, Oxford Economics. Note: may not sum due to rounding.

³⁴ ONS, Annual Population Survey 2020, Newport, 2021. https://www.nomisweb.co.uk/datasets/apsnew



4.4 NEW EMPLOYMENT MODELS

The Covid-19 pandemic brought increasing focus on the nature of work and how it may change into the future. Traditional patterns of work are rapidly evolving, and Unilever recognises its responsibility to generate and sustain employability by preparing individuals for the societal and technological changes that are taking place.³⁵

Unilever is pioneering a range of new employment models to provide its workers with flexible employment opportunities.³⁶ **U-Work** is a programme that gives employees the freedom and flexibility associated with contract roles with the security and benefits typically linked to permanent roles. U-Work employees don't have a fixed role, but are able to work on varying assignments while remaining free to do other things that are important to them, enabling Unilever to retain access to skilled people as needed. This programme is beneficial to those who want to reduce their working hours as they get older, or helping working parents to manage their time more effectively, travel, study, or even work for other employers. U-Work was launched as a pilot in 2019, and rolled out wider in 2020—as of 2022, Unilever now has over 100 participants in U-Work.

4.5 SUSTAINABILITY INITIATIVES

Unilever has a vision to be the global leader in sustainable business. In 2020, Unilever published its new, fully integrated corporate strategy: The Unilever Compass. Unilever's ambition is to demonstrate how a purpose-led, future-fit business model can drive superior performance, and consistently deliver financial results in the top third of the consumer goods industry.

In May 2021, Unilever put its *Climate Transition Action Plan* before shareholders for a non-binding advisory vote on its emissions reduction targets.³⁷ More than 99% voted in favour of the plan. As set out in the *Climate Transition Action Plan*, Unilever aims to have zero emissions operations by 2030, and halve the greenhouse gas impact of its products across the life cycle by the same year.³⁵ This forms a step towards the company's wider goal of reaching net zero emissions across its value chain by 2039.

³⁵ <u>https://www.unilever.co.uk/news/press-releases/2021/unilever-sets-out-plans-to-help-build-a-more-equitable-and-inclusive-society/</u>

³⁶ <u>https://www.unilever.com/planet-and-society/future-of-work/future-workplace/</u>

³⁷ <u>https://assets.unilever.com/files/92ui5egz/production/bbe89d14aa9e0121dd3a2b9721bbfd3bef57b8d3.pdf/</u> unilever-climate-transition-action-plan-19032021.pdf



Unilever has facilitated a world-first project to explore the viability of **hydrogen** as an alternative to natural gas as a source of energy in the manufacturing sector,³⁸ a technology identified in HM Government's *Ten Point Plan for a Green Industrial Revolution* that can contribute to protecting future generations from climate change.³⁹ The project tested both 100% hydrogen and a blend of natural gas and hydrogen to provide steam for the production process.⁴⁰

Unilever is also developing solutions to enable a **circular economy** for plastic packaging. It is a founding member of the *UK Plastics Pact*, a collaboration which brings together businesses from across the entire plastics value chain to tackle plastic waste. Unilever is rethinking its approach to plastic packaging and has ambitious goals in place, including halving its use of new plastic, and ensuring 100% of its plastic packaging is fully usable, recyclable, or compostable by 2025.⁴¹ Specific initiatives include:⁴¹

- (1) Using recycled polypropylene plastic in Magnum Pints tubs, leading to the use of 160,000 kilograms of recycled plastic each year.
- (2) Increasing the concentration and reducing the size of Persil bottles, which now use 40% less packaging and are made with 50% postconsumer recycled plastic.
- (3) Switching the entire range of Carte D'Or ice cream in the UK to new recyclable paper tubs. The tubs are made with 93% less plastic than the previous packaging, which means that the company is saving over 900 tonnes of virgin plastic every year.⁴²
- (4) Pioneering the use of a new detectable black pigment for its iconic bottles for leading brands, TRESemmé and Lynx, so they could be detected by recycling plant scanners and sorted for recycling.⁴³

Unilever was also a principal partner of the UN's 26th Conference of Parties (COP26) in November 2021 in Glasgow, Scotland. Following COP26, the commitment at Unilever to help tackle the climate crisis has never been stronger. For example, it has reduced its manufacturing carbon footprint in the UK and Ireland by two-thirds since 2018, four of its sites are carbon neutral, and use 100% renewable grid electricity.

³⁸ <u>https://www.unilever.com/news/news-search/2020/could-hydrogen-fuel-replace-natural-gas-on-an-industrial-scale/</u>

³⁹ HM Government, *The Ten Point Plan for a Green Industrial Revolution*, London, 2020.

https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution

⁴⁰ <u>https://hynet.co.uk/hynet-launches-demonstration-at-unilevers-port-sunlight-site-to-fuel-production-with-hydrogen/</u>

⁴¹ <u>https://www.unilever.co.uk/news/2020/the-uk-plastics-pact-our-progress-on-plastics-2020/</u>

⁴² <u>https://www.unilever.co.uk/news/2022/were-introducing-paper-tubs-for-our-carte-dor-ice-cream/</u>

⁴³ https://www.letsrecycle.com/news/unilever-signs-recycled-plastics-deal-with-viridor/



4.6 SUMMARY

In addition to the core economic impacts of Unilever's activity, the company also generates a range of wider economic benefits which contribute to the UK's longer-term economic competitiveness and productivity:

- Unilever makes a substantial investment in R&D in the UK. According to the latest data the company invests £256 million in R&D in the UK, supporting around 1,300 full-time equivalent (FTE) jobs in R&D activities.
- Unilever runs a series of dedicated and structured schemes to attract and up-skill younger workers, and provides training programmes for 2,870 workers, boosting productivity and human capital accumulation.
- The company is pioneering a range of new employment models to provide its workers with flexible employment opportunities.
- Unilever is a leader in sustainable business. Through its Climate Transition Action Plan, Unilever has set science-based goals to have zero emissions operations by 2030, and to halve the greenhouse gas (GHG) impact of its products across the lifecycle by the same year. The company is undertaking a range of initiatives to achieve these goals.



APPENDIX 1 TECHNICAL ANNEX

ECONOMIC IMPACT MODELLING

Economic impact modelling is a standard tool used to quantify the economic contribution of a company. Impact analysis traces the economic contribution through three separate channels:

- Direct impact refers to activity conducted directly by Unilever in the UK.
- **Indirect impact** consists of activity that is supported because of the procurement of goods and services by Unilever throughout the economy. It includes not just its purchases, but subsequent rounds of spending throughout the supply chain.
- **Induced impact** reflects activity supported by the spending of wage income by direct and indirect employees.

Data on the direct impacts were provided by Unilever. Indirect and induced impacts were estimated using an input-output model. An input-output model gives a snapshot of an economy at any 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 and other forms such as corporate profits. The figure below provides an illustrative guide to a stylised input-output model. In building our impact model we have adopted the latest UK input-output tables published by the Office for National Statistics (ONS).



Fig. 22. A stylised input-output model

Source: Oxford Economics



MEASURING R&D SPILLOVER BENEFITS

Our analysis investigated how R&D expenditure benefits not only the entities conducting the research, but also the economy more widely. This occurs as the knowledge gained via research spills over into the wider economy, through channels including sharing know-how with suppliers, customers benefitting from innovations, and staff turnover (including those leaving research institutions for other forms of employment). The channels through which innovation and R&D influence the wider economy are well-established in economic literature. The aim of our model was to update this analysis using the most recent and relevant datasets and evidence.

We developed an econometric model to explain how R&D expenditure in different sectors contributes to productivity growth. The boost to productivity identified by the model comes from both new innovations and from enhancing the skills of the labour force. The model includes two channels of benefits supported by this investment:

- those which accrue directly to the sector undertaking the research; and
- the spillover benefits generated as firms in other sectors of the economy apply the knowledge and innovations to help to develop new products and improve operational efficiency.

We begin this section with a description of the existing academic literature on the topic and how it informed our modelling approach, followed by a description of the dataset and the model specification. We conclude with a comparison of our results with other similar studies.

Literature review

A number of studies investigate the relationships between productivity-led economic growth and R&D spending. An extensive literature also exists on the topic of intra-country and inter-country industry spillovers of innovation and R&D influencing overall productivity.

To ensure that the most appropriate approach for our methodology was chosen, Oxford reviewed papers that have modelled the direct effects as well as spillovers. This section discusses studies taking a macroeconomic approach to measuring Total Factor Productivity (TFP), (using R&D data at the country-sector level that is readily available) instead of firm-level data.

Overall modelling approach

The modelling approach was adopted from Badinger and Egger (2008)⁴⁴ who adopted a spatial econometric approach to estimate intra-industry and inter-industry productivity spillovers in TFP (total factor productivity) transmitted through input-output relations in a sample of 13 OECD countries and 15 manufacturing industries. Our methodology follows a similar approach with a larger dataset with more countries and more recent data. To account for the spatial element, a spillover matrix is constructed using the latest Social Accounting Matrices for each country from the OECD, broadly following the approach in Coe, et al (2019)⁴⁵.

Explanatory variables

The choice of the other selected explanatory variables finds its motivation from the study by Coe, et al (2019), who studied the impact of domestic and foreign R&D on TFP. In particular, they included variables to control for human capital and other institutional variables (legal origin and patent

⁴⁴ Badinger, Harald, and Peter Egger, Intra-and inter-industry productivity spillovers in OECD manufacturing: A spatial econometric perspective, No. 2181. CESifo working paper, 2008.

⁴⁵ Coe, David T., Elhanan Helpman and Alexander W. Hoffmaister, *International R&D Spillovers and Institutions,* IMF Working Paper. WP/08/104.



protection) to allow for parameter heterogeneity based on a country's institutional characteristics. Hanel (1994)⁴⁶ also used patent information within the spatial matrix to measure the extent of spillovers in the economy.

Several other studies also emphasise controlling for human capital to measure the extent of R&D spillovers on TFP. For example, Engelbrecht (1996)⁴⁷ and del Barrio-Castro, *et al.* (2002)⁴⁸ use average years of schooling a measure of human capital to account for innovation outside the R&D sector.

Findings from previous studies

Various studies, e.g., Mairesse and Mohnen (1994),⁴⁹ and Hall (2010), Guellec & van Pottelsberghe de la Potterie (2010)⁵⁰, found statistically significant relationships between R&D, including spillovers, and various measures of productivity.

Some papers, such as Bournakis, et al (2018),⁵¹ found that cross-industry differences. For example, Bournakis, et al (2018) found that high technology industries have benefitted more from R&D spillovers, mainly due to knowledge spillovers (as opposed to supply-chain effects).

In terms of qualitative conclusions our macroeconomic approach is in line with papers with microeconomic (firm-level) frameworks, such as Hall, B. et al (1996)⁵².

Moretti, et al (2021)⁵³ is the most recent paper using a combination of macroeconomic and firm-level datasets to understand the impact of government R&D spending on privately funded R&D and TFP. They find that government R&D spending crowds in private R&D spending—a 10% increase in government R&D spending increases private R&D spending by 5%–6% in a sample of OECD countries. They find a one percentage point increase in the ratio of R&D spending to value-added TFP growth rates by 0.05–0.08 percentage points (implying GDP elasticity with respect to R&D spending of 0.12–0.20 over a 10-year period). A comparison of the R&D elasticities⁵⁴ from various studies is shown in Fig. 26.

⁴⁶ Hanel, Petr, R&D, Inter-industry and international spillovers of technology and the total factor productivity growth of manufacturing industries in Canada, 1974–1989, CERGE-EI Working Paper Series 73 (1994).
⁴⁷ Excellence Linear L

⁴⁷ Engelbrecht, Hans-Jürgen, International R&D spillovers, human capital and productivity in OECD economies: An empirical investigation, European Economic Review 41, no. 8 (1997): 1479-1488.

 ⁴⁸ del Barrio-Castro, Tomás, Enrique López-Bazo, and Guadalupe Serrano-Domingo, *New evidence on international R&D spillovers, human capital and productivity in the OECD*, Economics Letters 77, no. 1 (2002):
 41–45.

⁴⁹ Mairesse, Jacques, and Pierre Mohnen, *R&D and productivity growth: what have we learned from econometric studies*, In Eunetic Conference on Evolutionary Economics of Technological Change: Assessment of Results and New Frontiers, pp. 817–888. 1994.

⁵⁰ Guellec, D. and B. van Pottelsberghe de la Potterie (2001), *R&D and Productivity Growth: Panel Data Analysis of 16 OECD Countries*, OECD Science, Technology and Industry Working Papers, No. 2001/03, OECD Publishing, Paris. <u>https://doi.org/10.1787/652870318341</u>.

⁵¹ Bournakis, Ioannis, Dimitris Christopoulos and Sushanta Mallick, *Knowledge spillovers and output per worker: an industry-level analysis for OECD countries*, Economic Inquiry, 2017. <u>https://doi.org/10.1111/ecin.12458</u>

⁵² Mairesse, Jacques, and Bronwyn H. Hall, Estimating the productivity of research and development: An exploration of GMM methods using data on French & United States manufacturing firms, NBER working paper w5501 (1996).

⁵³ Moretti, Enrico, Claudia Steinwender, and John Van Reenen, *The intellectual spoils of war? Defense R&D, productivity and international spillovers*, No. w26483. National Bureau of Economic Research, 2019.

⁵⁴ R&D elasticity, or the elasticity of GDP with respect to R&D, is defined as the percentage increase in GDP (relative to baseline GDP levels) associated with a 1% increase in R&D spending (relative to a baseline level of R&D spending).

Specific learnings for our methodology

We combined the techniques in the existing literature covering spillovers, but our approach was adapted to capture inter-industry spillovers and direct effects separately. Our approach also accounted for various econometric issues which were explored in the existing academic literature such as: non-stationarity in Tsamadias et al (2019);⁵⁵ cointegration techniques in del Barrio-Castro (2002);⁵⁶ and R&D and productivity endogeneity in Bravo-Ortega and Marin (2011).⁵⁷

Our approach also used a holistic selection of available explanatory variables discussed extensively in the papers above, thus mitigating the risk of omitted variable bias. We have also accounted for legal, institutional, R&D, and human capital factors in the analysis, and this examination presents the most up-to-date amalgam analysis of the topic.

Data used in our model

A panel dataset was constructed underpinned by a time series of R&D expenditure by sector across a range of countries. The dataset was sourced primarily from the OECD which documents R&D expenditure in member (and some non-member) states broken down by industry and characteristics, such as type of research (basic, experimental, applied), source of funds (public and private) and subject field. This granularity made it possible test how these characteristics influence the size and sectoral composition of productivity spillovers. Data on productivity (Total Factor Productivity) was sourced from EU KLEMS.⁵⁸ The variables and sources are listed in the table below.

⁵⁵ Tsamadias, Constantinos, Panagiotis Pegkas, Emmanuel Mamatzakis, and Christos Staikouras, *Does R&D, human capital and FDI matter for TFP in OECD countries?*, Economics of Innovation and New Technology 28, no. 4 (2019): 386–406.

⁵⁶ del Barrio-Castro, Tomás, Enrique López-Bazo, and Guadalupe Serrano-Domingo, *New evidence on international R&D spillovers, human capital and productivity in the OECD*, Economics Letters 77, no. 1 (2002): 41–45.

⁵⁷ Bravo-Ortega, Claudio, and Álvaro García Marín, *R&D and productivity: A two way avenue?*, World Development 39, no. 7 (2011): 1090–1107.

⁵⁸ EU KLEMS is a dataset on measures of economic growth, productivity, employment, capital formation, and technological change at the industry level for a number of countries in Europe and elsewhere. For further details, see here: <u>https://euklems.eu/</u>.



Fig. 23. Variables used in the productivity model

| Variable | Data | Source | |
|--|---|---|--|
| Total factor and total data | Total factor productivity, index: 2010 = 100 ⁵⁹ | EU KLEMS | |
| l otal factor productivity | Total factor productivity, index: 2010 = 100 | OECD Structural Analysis (STAN) database | |
| | Government budget allocations for R&D | OECD Research and Development Statistics database | |
| Expected research and development, funded by the government sector and performed by private businesses | Gross domestic expenditure on R&D by sector of performance and source of funds | OECD Research and Development Statistics database | |
| | Domestic R&D paid for by the U.S. federal government and performed businesses, by funding agency and industry | National Science Foundation (US) Business Enterprise Research and Development Survey | |
| Domestic spillover variable | Expected government funded research and development carried out by industries—weighted by the strength of industry linkage | OECD Country Input Output tables | |
| Years of schooling in population | Average years of schooling in population | Oxford Economics' Global Economic Model | |
| Strength of intellectual property rights | Protection of intellectual property rights score | Global Competitiveness Index 4.0, standardised by International Property Rights Index | |
| Strength of patent protection | Patent protection score | Patent Rights Index, standardised by International Property Rights Index | |
| Copyright Piracy | Copyright piracy score | BSA Global Software Survey; The Compliance Gap, standardised by International Property Rights Index | |
| Ease of doing business score | Calculated ease of doing business score | World Bank - Ease of Doing Business survey | |
| Public infrastructure | Public infrastructure expenditure as a % of GDP | OECD & International Transport Forum ITF Transport Outlook/OECD. Stat | |
| Origins of legal system | Historical origins of legal system | Web searches | |

Source: Oxford Economics

Spillover variable

Productivity spillovers, which are the subject of this analysis, are supposed to take place mainly among firms. Since a large share of inter-firm trade is in intermediate goods, the SAM (social accounting matrices) is used to measure the extent and intensity of interactions both within and across industries.

The R&D spillover variable was calculated following the approach in Badinger and Egger (2008) ⁶⁰ using OECD SAM data to capture the strength of inter-industry relationships. For example, if innovation leads to improved productivity in AI, then the technology goods manufacturing sector, which is a major supplier to growing AI businesses, will also benefit. Continuing with the same approach as in in Badinger and Egger (2008), the R&D spillover variable was calculated following the approach by taking the dot product of R&D spending and the weight matrix. Algebraically, this can be

⁵⁹ TFP is reported in statistical datasets as an index, reflecting the ratio of the output value relative to the value of inputs as of a particular base year. The base year defines the starting point of the dataset; however, a change in the base year would not change the underlying trend in the TFP data series.

⁶⁰ Badinger, Harald, and Peter Egger, Intra-and inter-industry productivity spillovers in OECD manufacturing: A spatial econometric perspective, No. 2181. CESifo working paper, 2008.



expressed as R&D spending $_{i-1,t} = W \cdot R\&D$ spending $_{i,t}$, where W is the inter-industry weight matrix created using the OECD SAM data as described above. We only modify the Badinger and Egger approach by removing within-sector interactions to avoid double counting the direct effect on sectors to which R&D spending is allocated (the direct effect is modelled separately for this study).

Modelling approach

A dynamic panel data econometric model was developed. To develop the model specification, a series of statistical tests were used to identify the correct specification and functional form for the model. The importance of this step was to ensure that the resulting model was statistically robust with unbiased estimates of relationships.

Specifically, starting with a large pool of candidate explanatory variables, the LASSO (least absolute shrinkage and selection operator) method was used which made it possible to identify a more parsimonious model with fewer explanatory variables. Using a statistical method— like LASSO— instead of manually examining the variables reduces the risk of error due to human bias or judgement.

Next, the Wooldridge test for serial correlation was used to ascertain whether there were neglected dynamics in the model worth accounting for. Based on the results from the Wooldridge test, a dynamic model specification was found to be more optimal in capturing key features of the outcome variable (i.e., productivity).

Following the Wooldridge test, another diagnostic test was run to ascertain whether the key explanatory variables used in the parsimonious model can be treated as exogenous. Based, on the results of this test, it can be concluded that the explanatory variables considered can all be treated as exogenous.

Based on the statistical results of all the pre-estimation tests, the model was estimated using the bias corrected LSDVC (least square dummy variable) estimator, where the chosen estimator is the Arellano-Bond estimator.

Finally, the results model passed the Nickell Bias test which is a key statistical test for model robustness.

Further details on the robustness tests and the test results are shown on p.39.

The preferred model specification developed using the modelling approach described above was as follows:

 $TFP_{i,t} = \beta_1 TFP_{i,t-1} + \beta_2 R\&D \ spending_{i,t-1} + \beta_3 R\&D \ spending_{i-1,t-2} + other \ control \ variables$

where, the dependent variable, $TFP_{i,t}$ indicates the productivity in sector *i* at year *t*, $TFP_{i,t-1}$ corresponds to the previous year's value, $R\&D \ spending_{i,t-1}$ indicates the R&D spending in in sector *i* in the previous year, $R\&D \ spending_{i-1,t-2}$ indicates R&D spending in the rest of the economy (i.e., excluding sector *i*).

The model specification was extensively tested to identify if quadratic or higher polynomials of the R&D spending variable should be included, but these tests did not provide any basis for their inclusion. Similarly, various lag lengths were also tested, but provided no statistical basis for their inclusion.

Control variables included patent protection, average years of schooling and a time trend. As discussed above, the LASSO approach meant that other control variables (listed in Fig. 23 above) were not found to be statistically significant. A time trend was also included to isolate the impact of trending elements on the explanatory variables. In other words, some variables trend up with time and



this may lead the model to falsely conclude that they are correlated. This risk is mitigated through the introduction of a time trend variable.

STATISTICAL ROBUSTNESS TESTS

Wooldridge test

This test was used to ascertain whether if there was no first-order autocorrelation in the model residuals. The presence of autocorrelation in the residuals signalled the presence of neglected dynamics in the model that ought to be accounted for.

One way to account for such dynamics was to adopt a dynamic model specification. The pvalue for this test was 0.000, this meant that the null hypothesis of no first-order autocorrelation was rejected.

Nickell bias

Monte Carlo simulation revealed that estimating a dynamic model using a pooled OLS or Fixed Effect (FE) model results in a bias in the coefficient of the lagged dependent variable.

Specifically, for the pooled OLS estimator, this bias is upward whilst for the FE model, the bias is downward. Hence the correct coefficient ought to be somewhere between the latter two coefficients.

Indeed, the model passed the Nickell bias test given that the coefficient on the lagged productivity is 0.669, this was smaller than the coefficient from the OLS model which was 0.944 and bigger than the one from the FE model; 0.526.

Endogeneity test

A separate diagnostic check also tested for the hypotheses of whether each of the explanatory variable used in the model can be treated as exogenous. The test results indicated that all the variables, except for the lagged productivity variable, can be treated as exogenous.

| Variables | Endogeneity test | Hansen instrument validity test | Result interpretation |
|--|----------------------------------|-------------------------------------|-----------------------|
| 1 st lag of research and development—direct | P-value=0.15 (no endogeneity) | P-value=0.55 (valid instruments) | Exogenous |
| 2 nd lag of research and development—indirect | P value=0.41 (no endogeneity) | P-value=0.48 (valid instruments) | Exogenous |
| 1 st lag of change in average schooling | P value=0.24 (no endogeneity) | P-value=0.05 (valid instruments) | Exogenous |
| 1 st lag of patent protection | P-value=0.14 (no endogeneity) | P-value=0.07 (valid instruments) | Exogenous |
| Source: Oxford Economics | | | |

Fig. 24. Endogeneity test results



Discussion of results

The estimated model results and coefficients are shown in the table below.

| Fig. 25. Floudelivity model. econometric results |
|--|
|--|

| Productivity | Coefficient | Standard error | Z value | P value | Lower bound | Upper bound |
|-----------------------------|-------------|-------------------|---------|---------|----------------|----------------|
| Productivity lag | 0.671 | 0.03 | 19.51 | 0.00 | 0.600 | 0.740 |
| R&D spending (first lag) | 0.002 | 0.001 | 1.85 | 0.06 | 0.000 | 0.004 |
| R&D spillovers (second lag) | 0.008 | 0.01 | 0.72 | 0.01 | 0.001 | 0.016 |
| Average schooling | 3.745 | 1.49 | 2.51 | 0.01 | 0.819 | 6.670 |
| Patent protection | 0.072 | 0.04 | 1.76 | 0.08 | -0.008 | 0.153 |
| Time trend | 0.008 | 0.002 | 4.39 | 0.00 | 0.004 | 0.011 |

Source: Oxford Economics

The coefficients estimates are in line with expectation in both their magnitudes and signs. Both the direct and indirect impacts of real R&D spending on productivity are positive and statistically significant.

Specifically, in relation to the direct impact, there is a one-year lag between an initial investment in R&D and its subsequent effect on productivity, whilst for the indirect impact, a two-year lag length is observed.

Note that R&D spending generates some short-term demand-side gains (building new research facilities, consumer spending by newly hired researchers, etc.). Further, there are short-term supply-side gains (new research facilities helps various industries focus and optimise their efforts), and eventual long-term supply-side innovation-led gains (new processes, products, etc.). The model captures all these effects together but does not allow for them to be separated. In other words, it is not possible to identify when the innovation-led gains leading to new products or processes begin to be realised. The model only implies that GDP gains are observed within the sector in a year's time and in the wider economy in two years.

In relation to the relative size of the effects, the results indicate that a ten percent increase in the oneyear lagged real R&D spending is associated with a 0.2% increase in returns on inputs measured using GDP. The indirect effects are relatively larger, with a ten percent increase in the two-year lagged real R&D spending associated with a 0.8% increase in average productivity.

It is reiterated that different lag lengths and higher polynomials of R&D spending were tested in the model and were found to be statistically insignificant.

Benchmarking the findings

The implied productivity elasticities with respect to GDP (i.e., the percent increase in TFP per 1% increase in R&D spending) from this analysis is roughly comparable to estimates from other studies, if slightly on the higher side.



Fig. 26. Comparison with R&D elasticities in other studies

| Study | Elasticities | Study geography |
|--|--------------|--------------------------------|
| Blanco, et al (2013) ⁶¹ | 0.06-0.14 | United States |
| Moretti, et al (2021) ⁶² | 0.12-0.24 | OECD countries |
| Guellec and van Pottelsbergh de la Potterie (2001)63 | 0.13–0.17 | OECD countries |
| Bravo-Ortega and Marin (2011) ⁶⁴ | 0.16–0.17 | 65 OECD and European countries |
| Zachariadis (2004) ⁶⁵ | 0.17–0.38 | OECD |
| Gumus and Celikay (2015) ⁶⁶ | 0.44–0.98 | 52 OECD and European countries |
| Oxford Economics | 0.20-0.80 | OECD countries |

⁶¹ Blanco, Luisa R., Ji Gu, and James E. Prieger, *The impact of research and development on economic growth and productivity in the US states*, Southern Economic Journal 82, no. 3 (2016): 914–934.

⁶² Moretti, Enrico, Claudia Steinwender, and John Van Reenen, *The intellectual spoils of war? Defense R&D, productivity and international spillovers,* No. w26483. National Bureau of Economic Research, 2019.

⁶³ Guellec, D. and B. van Pottelsberghe de la Potterie (2001), *R&D and Productivity Growth: Panel Data Analysis of 16 OECD Countries*, OECD Science, Technology and Industry Working Papers, No. 2001/03, OECD Publishing, Paris, <u>https://doi.org/10.1787/652870318341</u>.

⁶⁴ Bravo-Ortega, Claudio, and Álvaro García Marín, *R&D and productivity: A two way avenue?*, World Development 39, no. 7 (2011): 1090–1107.

⁶⁵ Zachariadis, Marios, *R&D-induced Growth in the OECD?*, Review of Development Economics 8, no. 3 (2004): 423–439.

⁶⁶ Gumus, Erdal, and Ferdi Celikay, *R&D expenditure and economic growth: new empirical evidence*, Margin: The Journal of Applied Economic Research 9, no. 3 (2015): 205–217.



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