Building the Next Generation of UK Decacorns

Supporting Fact Pack

Research Conducted January – March 2023

OC&C Strategy consultants

uncommon sense™

Document Context:

- This document contains supporting materials that formed part of the work OC&C undertook with the CBI in January-April 2023

- Material here should be read in conjunction with the summary conclusions with that work titled: “Building the Next Generation of UK Decacorns: Summary of OC&C work for the CBI”

| © OC&C Strategy Consultants 2023

Agenda

Regulation

National Assets

Funding Landscape

Talent

| © OC&C Strategy Consultants 2023

The UK FinTech sector serves serve as powerful example how a pro-innovation approach can create strong sector tailwinds

Example Case Study

Example Fintech

Action	*Description / Impact*	*Example (where possible scale-up specific)*
Innovation Charter	• FCA "Innovation Pathways" Programme, launched in 2022, providing 6-12 months of regulatory support and a case manager after authorisation to firms with innovative business models	*Requires further examination*
Funding and employee headcount ramp-up post-2013	• 2015-2022, funding rose 2.89% p.a. and employee headcount rose 2.51% p.a. • Massive increase in approvals post-2013: • 5 banking licenses approved 2005-2013, 54 approved 2013-2022	Example: Metro Bank was first bank to get banking license in over 150 years in 2010
Smart Data Initiatives	• In 2018, the CMA launched Open Banking, where the 9 biggest UK banks released transaction data to regulated start-ups, enabling a boom in FinTech firms. By 2022, 270 players had accessed the transaction data, with firms like Revolut taking advantage of these programs to find solutions for consumers • In 2022, Gov't launched long-term plan to expand smart data initiative into energy sector	Revolut, founded in 2015 and authorised by the FCA for Open Banking in 2018, used this access to all customers' online payment accounts to initiate payments through one platform, streamlining banking processes
Regulatory sandbox initiative	• FCA set up regulatory sandbox programme in 2016, a programme where businesses could test new innovative products on live consumers for 3 months with feedback from regulators and no threat of prosecution for lack of regulatory adherence • Firms reported that funding was easier upon completion of sandbox, having seen to be approved by the regulators[1]	184 firms accepted since 2016 and speed to market through sandbox is 40% faster than outside sandbox. SETL and Zilch both were accepted into sandbox programme.

Overarching fintech advice forum/body for regulation questions	• Digital Regulation Cooperation Forum (DRCF):
	  • Non-decision-making body pooling regulatory knowledge for businesses, formed by CMA, ICO and Ofcom in 2020, joined by FCA in 2021.
	  • Cannot penalise businesses to encourage greater interaction between regulators and businesses
		Benefits new firms with a single platform with all points of contact for regulation adherence best practice

Attractive fintech regulator career models	• FCA offers roles from Associate (£20k-£140k p.a., responsibilities of recommending approval or not of applications and conducting analysis) to Director (£150k-£275k p.a., board member, oversee divisions)	*"Regulators woefully under-resourced in UK. In Asia, regulators are extremely well-paid"* CEO, Zopa

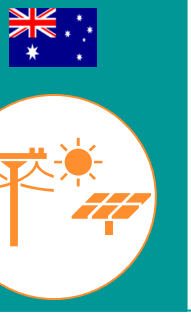
1. "A journey through the FCA regulatory sandbox", Deloitte, 2018

Source: FCA, Deloitte, AltFi, Expert Interviews, OC&C analysis

| © OC&C Strategy Consultants 2023

Open data & regulatory sandboxes have been proven to spur innovation within FinTech - and are also being applied to energy & telco internationally

Overview Sandbox & Open-X Approaches outside of Banking



- Australia introduced **Open Banking** ideas into the **energy & telecommunication sectors**
  - Energy sector
    - Consumer Data Right (CDR) is expanded from banking into energy (called Open Energy) in 2022, with **energy volumes supplied, price and availability** conveyed as information to all regulated providers
    - Retailers will not have to publish data until May 2023, but new firms including Biza already formed to helping energy firms to provide that data and adhering to the CDR
  - Telecommunication sector
    - CDR is planned to expand into telecommunications.
- Next steps: The Australian government aims to **assess and open up a new sector every subsequent year**

- Colombia's Regulation Communications Commission (CRC) regulatory sandbox is intended to enable telecommunications network and service providers, as well as content and application providers, to test **new business models while under the CRC's supervision**
  - Application processes started in **2021** with Sandbox licence valid for **up to 12 months** (possibility to extend by 12 months)
  - In order to participate companies need to demonstrate among others that the project offers innovative products and services **not currently available in the market** and that the product or service **cannot be implemented under the current regulatory framework**
  - From 23 proposals only 3 were qualified to move on to the testing phase in Oct 2021
    1) Rural internet project with **4G Open RAN mobile coverage**
    2) Platform for the **real time measurement of user experience** of the mobile internet service
    3) Convergent contracts that **simplify hiring process for fixed & mobile services** through a unified contract

- Sandbox Korea, established in April 2019, allows regulated businesses to be exempt from regulation for at least 2 years, and options to extend for a 3rd year:
  - E.g. autonomous driving robot developed by Robotis Co. will be allowed to operate on pavements (currently illegal)
  - SK Telecom, Paranenergy, and Omnisystem (energy storage & distribution), have been added to the sandbox as currently there is no legal ground for electricity resale to enforce different pricing systems. The three companies will be able to trade electricity and mediate fees in the areas without going through Korea Electric Power Corp. This will allow consumers to choose electricity fee plans based on their consumption patterns, potentially reducing their energy consumption and bill
- By Nov 2020, 120 institutions were in the sandbox
- Has 237 designated services and 154 services launched

Source: World Bank, bnamericas, OC&C analysis

| © OC&C Strategy Consultants 2023

Establishing a cross-domain AI Governance Hub can help to strike the balance between decentralization & coordination

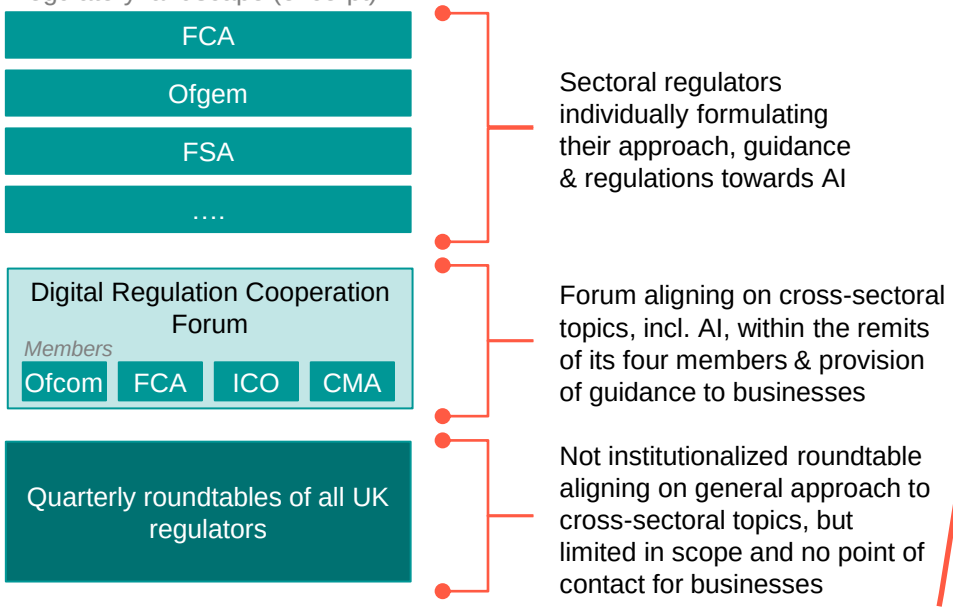
Governance hubs coordinating cross-domain topics

Example AI

Current AI governance is diffuse, varied, and unclear with no national overarching regime

- Generally, **sectoral regulators** are better placed to deal with **specific AI context** than a new AI regulator…
- …but at national level a sector only approach would not address **regulatory overlap, fragmentation & complexity** (eg of companies that sell into multiple sectors like cloud providers)

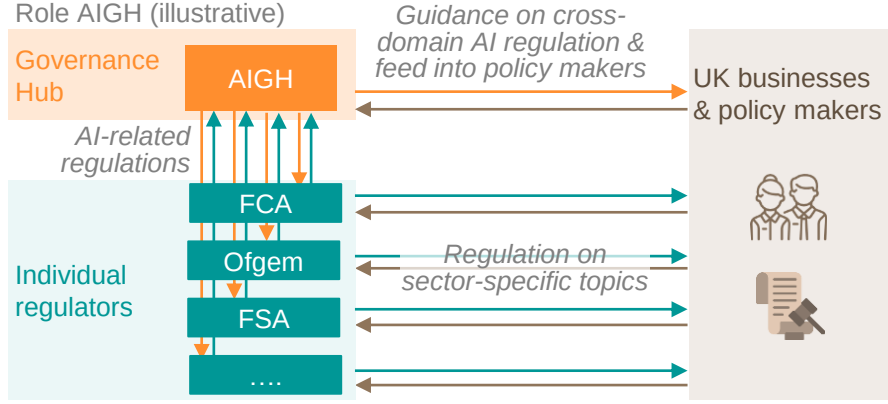
Regulatory landscape (excerpt)



AIGH can help to strike the balance between decentralization and coordination by

- The AIGH supports AI regulation by
  - **Being a cross regulatory body** - Operating between sectors and all regulators rather than becoming its own regulator
  - **Serving a first stop for AI issues** - Providing roadmap to navigating the AI governance landscape and best practices
  - **Coordinating resources** - AIGH to enable roaming AI experts that advise regulators or bring in the private sector to provide 'teach ins' on tech developments
  - **Feeding into policy makers** - AIGH should sit within proposed Office for Future Regulation (within Cabinet Office) to give it power & authority, yet don't make it a de facto AI regulator

Role AIGH (illustrative)



Source: CBI, OC&C analysis

| © OC&C Strategy Consultants 2023

Examples in the UK of supporting innovation by improving collaboration between national regulators and sandboxes…

Overview Regulatory Framework UK

UK Digital Strategy (2022)

Regulation

- Established **Digital Regulation Cooperation Forum** to foster **cooperation between UK regulators**
  - ICO & FCA joined up for **tech sprint challenges** allowing **start-ups & incumbents to test ideas in sandboxes** ***(Note: deep dive to be done)***
  - Ofcom (+Digital Catapult) created SONIC Labs, allowing Ofcom to test and develop new uses for mobile networks to involve new innovators and technologies

Telco Regulation / Infrastructure

- By 2025 at least 85% coverage nationwide of gigabit broadband increasing to at least 99% by 2030
- By 2025 expanded mobile network coverage to 95% of the UK through the Shared Rural Network
- By 2027 majority of population to have access to 5G signal via the 5G Trials & Testbeds programme
- By 2030 35% of mobile network traffic to be delivered by open networks

Tax Reliefs

- Expanding UK R&D tax reliefs to data & cloud computing costs
- Tax reliefs for creative industry with aim to promote the production of culturally British film, programmes, and video game development

Cyber Security Strategy (2022)

Goals until 2025 (excerpt)

- Foster the growth of competitive cyber security sector
  - UK government to support world-leading **flagship cyber events** in the UK and inviting UK cyber businesses to participate in trade missions and international cyber fairs
  - New **Cyber Runway programme** providing **single focal point for support, learning lessons from previous programmes** (eg Tech Nation Cyber Programme)
  - Establishment of **National Cyber Innovation Centre** that includes a **cyber accelerator**
  - Encouraging **National Security Strategic Investment Fund** to **higher risk investments into early stage cyber start-ups** *(-> funding point)*

Data Strategy (2022)

- Establishing joint UK/US Prize Challenge to **accelerate Privacy-Enhancing Technologies** (PETs), which enable data to be analysed and shared without compromising on the privacy or trust of data
- Introducing **Smart Data legislation** *(tbd if done)*
- Established Smart Data Council
- **Smart Data pilots** in 2023/24 *(deep dive to be done)*
- Revised digital identity and attributes trust framework

Source: Gov.uk, OC&C analysis

| © OC&C Strategy Consultants 2023

CBI - Internal

…with a focus on key industries

Overview Regulatory Framework UK

Build Back Better: Our plan for growth (2021)

- **Big Bets on**
  - **Life Science**: Development of 2017 Life Sciences Industrial Strategy, which provided roadmap for the UK to take the lead on cutting-edge, emerging industries such as genomics, early-stage diagnostics, advanced therapies and digital health
  - **Digital and creative industry:** Set supporting conditions through the National Data Strategy and upcoming Digital Strategy
  - **Clean energy:** Targeting investment in technologies like CCUS, hydrogen and offshore wind
  - **Fintech**: Follow Kalifa Report re amendments to UK listing rules, improvement to tech visas, and a regulatory fintech 'scalebox'
  - **Defence**: Forthcoming Defence & Security Industrial Strategy to set out further actions to foster innovative UK defence businesses
- **Regulation**
  - Established **Regulatory Horizons Council** to advise government on regulatory recommendations for emerging technologies
  - Established **Regulatory Initiatives Grid** to ensure better co-ordination of regulatory initiatives affecting the financial services sector
  - Commissioned the **Competition and Markets Authority** (CMA) to produce regular 'State of Competition' reports on how competition is working across the economy and established **Digital Markets Unit** within CMA to oversee pro-competition regime for digital platforms
- **R&D** *(-> rather funding point)*
  - Planned Investment of **£14.6 billion** in research and innovation grants and facilities
  - Target for total UK investment in R&D (public and private): **2.4% of** GDP by 2027
  - Public investment in R&D crowds in private investment at a ratio of around **two pounds on average for each pound of government funding**
    - Schemes such as the Biomedical Catalyst - a joint Medical Research Council and Innovate UK grant programme that accelerates innovations in the life sciences - have proven to be effective in driving business investment in R&D. The government will build on this, e.g. through the public procurement reforms, investing £800 million in new Advanced Research and Invention Agency
  - R&D tax reliefs allow companies to claim an **enhanced corporation tax deduction** on their R&D costs. In 2017-18, R&D tax reliefs of £5.1 billion supported £36.5 billion of R&D expenditure (Note LB: In 2022 tax relief was expanded to **data and cloud computing costs**)

Source: Gov.uk, OC&C analysis

| © OC&C Strategy Consultants 2023

Example AI: The UK has undertaken first steps into clarifying the approach towards AI regulation

Overview Regulatory Framework UK

UK AI Strategy (2021) + Policy Paper "Establishing a pro-innovation approach to regulating AI" (2022)

- **Pro-innovation national position on governing and regulating AI**
  - Establishment of a pro-innovation framework that is guiding regulators based on cross-sector principles to focus on
    - applications of AI that result in real, identifiable, unacceptable levels of risk, **rather than seeking to impose controls** on uses of AI that **pose low or hypothetical risk** so we avoid stifling innovation
    - **lighter touch options** in their regulations (e.g. guidance or voluntary measures)
- Other relevant AI Strategy initiatives, but not more closely defined yet
  - Implement the US UK Declaration on Cooperation in AI R&D that also includes mechanism for **US-UK data flows**
  - Publish open and machine-readable **government datasets** for AI models
  - National AI Research and Innovation Programme that will **align funding programmes** across UKRI & support wider ecosystem
  - Launch joint Office for AI / UKRI programme to stimulate adoption of AI technologies in **high potential, lower-AI-maturity sectors**
  - Consider how **Innovation Missions** include AI capabilities & promote ambitious mission-based cooperation through bilateral and multilateral efforts
  - Build an **open repository of AI challenges** with real-world applications
  - Pilot an **AI Standards Hub** to coordinate UK engagement in AI standardisation globally
  - Explore with stakeholders the development of an **AI technical standards engagement toolkit** to support the AI ecosystem to engage in the global AI standardisation landscape
  - Work with global partners on **shared R&D challenges**, leveraging **Overseas Development Assistance** to put AI at the heart those
  - Include **trade deal provisions** in emerging technologies, including **AI**
  - Medicines and Healthcare products Regulatory Agency has launched a **Software and AI as a Medical Device** Change Programme and **consulted on possible changes to the regulatory framework** to ensure the requirements provide a high degree of assurance that these devices are acceptably safe and function as intended
  - Bank of England & FCA established the Artificial Intelligence Public-Private Forum to further **dialogue on AI innovation in financial services** between the public and private sectors

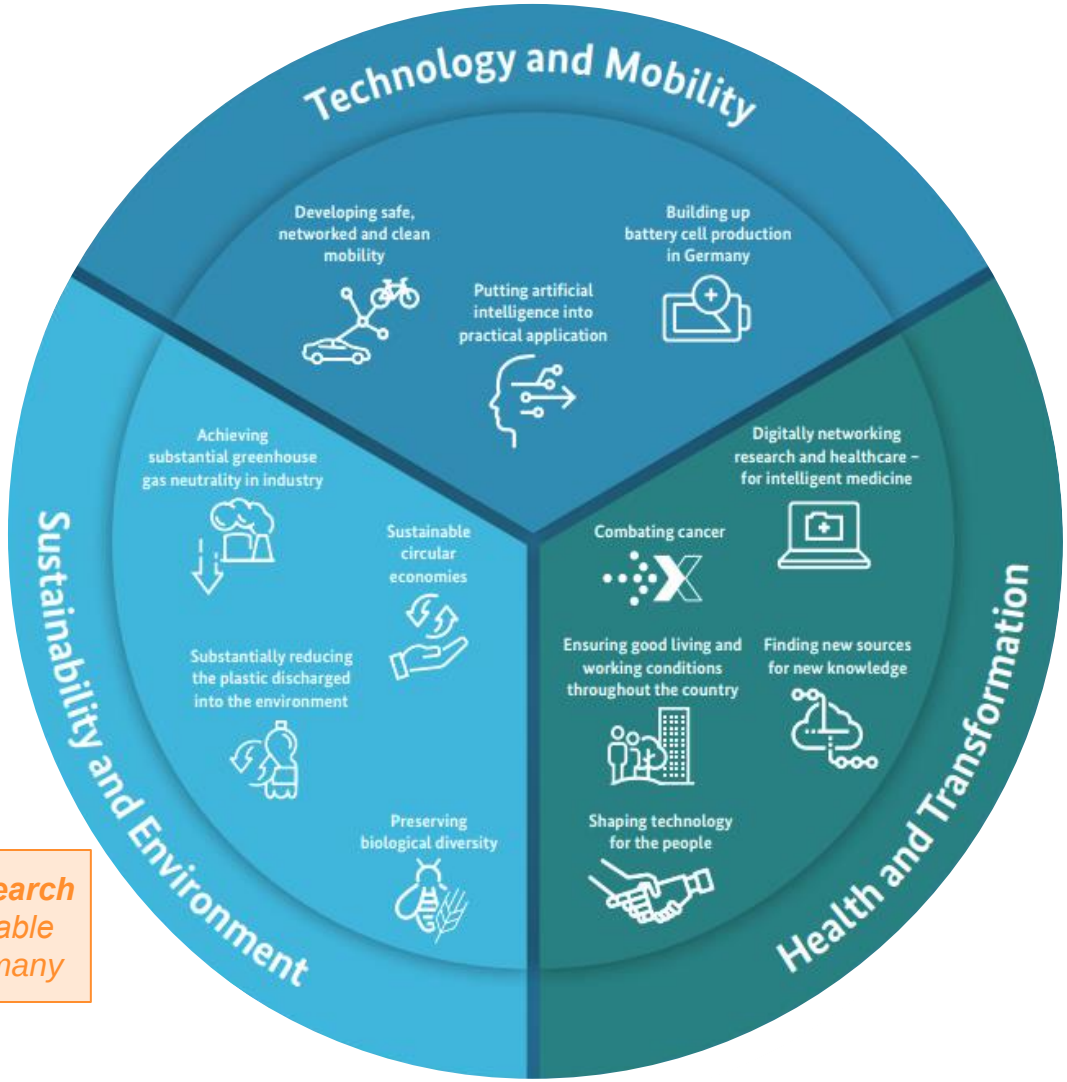
Source: Gov.uk, Bank of England, OC&C analysis

| © OC&C Strategy Consultants 2023

Germany's High Tech Strategy prioritizes technology & mobility, sustainability & environment and health & transformation

Overview Regulatory Framework GER

High Tech Strategy 2025
(passed in 2018,
progress reviewed in 2020/2021,
but doesn't have seem to be altered)



*Also includes governance aspects such as the **'National Research Data Infrastructure**' programme that promotes an interoperable basis for research data mgmt. & data-based research in Germany*

Source: Federal Ministry for Economic Affairs and Energy, Federal Ministry of Education and Research, OC&C analysis

| © OC&C Strategy Consultants 2023

France laid out investment areas among other with focusses on nuclear energy, green energy, low carbon aircrafts and biopharma

Overview Regulatory Framework & Initiatives FR

‘France 2030’ plan

- **What it is**: An investment plan until 2030
- **When:** Unveiled in October 2021 (+slightly adjusted in ‘22)
- **Budget**: c.£27bn between 2022-2027
- **Objectives / Priorities**:
  - **Energy sector** (c.£7bn)
    1) Innovative, small-scale nuclear reactors (with better waste mgmt.)
    2) Green hydrogen (at least two gigafactories of electrolyzers, mass producing hydrogen by 2030)
    3) Decarbonize industry in FR (reducing GHG emission by 35% vs 2015)
  - **Future transport** (c.£3bn)
    4) Producing 2m electric & hybrid vehicles (c.£2bn)
    5) Produce low-carbon aircrafts (c.£1bn)
  - **Food** (c.£2bn)
    6) Invest in healthy, sustainable & traceable diet
  - **Health sector** (c.£3bn)
    7) Produce 20 biopharmaceuticals against cancer & chronic diseases + create medical devices of tomorrow
  - **Culture** *(no defined budget)*
    8) Place France at the head of cultural & creative content production
  - **Space and sea beds** (c.£2bn)
    9) “Play our role in new space adventures”
    10) “Invest in the field of sea beds”

Added to plan in 2022

- C£1bn for **renewables**
- **Cutting energy consumption** by 40%
- Construction of 6 new **nuclear reactors**

La French Tech Central

- **What it is:** Start-up agency funded by government to be a bridge between government, its vast administrative functions, and start-ups
- **When:** Founded 2012
- **Budget:** c.£4m
- **Objectives:** Co-working space with different educational offers: Deep dive on GDPR with the CNIL (French data protection authority), understanding on how to get public funding with the BPI (French Public Investment Bank), UGAP (French government procurement body) **info session on to do bizdev with the government**

Bourse French Tech

- **What it is:** Tech Grant for startups
- **When:** Founded 2013
- **Investments**: Up to c.£80k per company
- **Objectives:** Offering equity-free funding to help pay for initial start-up costs (already more than 3k companies participated)

Source: Euractiv, ANR, Business France, IEA, OC&C analysis

| © OC&C Strategy Consultants 2023

Government funded In-Q-Tel supports the US tech ecosystem by investing in and help start-ups in getting government contracts, while DARPA takes long-term, high risk bets into key technologies

Overview Regulatory Framework US

In-Q-Tel (US)

- **Founded:** 1999
- **Purpose:** Combining the security savvy of government with the can-do curiosity of Silicon Valley
- **Goal:** Deliver the most sophisticated source of strategic technical knowledge and capabilities to the U.S. government and its allies by
  - exploring emerging technology and providing insight,
  - powering its partners with the ability to better anticipate and advance national security in the 21st century
- **How:** Directly investing into start-ups ($0.5m-$3m)
  - Averaging one investment per week, currently counting 500+ investments
  - Every $1 invested by In-Q-Tel leverages $18-29 in private sector investment
  - Supporting start-ups in bidding for federal government contracts

DARPA (US)

- **Founded:** 1957
- **Headcount:** c.200 FTE
- **Budget:** c.£4bn (2023)
- **Goal:** DARPA aims with investments at transformational change instead of incremental advances and works together with academia, corporates and other government bodies to do so
- **What:** Supporting avenues from space exploration to material science and robotics through investments in breakthrough technologies for national security
- **How:** Small, fast-moving group of c.100 project managers is given a free hand and a ringfenced budget to back technological breakthroughs that might only reach commercial fruition in 10 to 15 years

ARIA (UK DARPA equivalent)

- **Founded:** 2023
- **Plan:** Creating an Advanced Research and Invention Agency similar to US DARPA
- **Goal:** Help turning world leading research from British academia into sellable commercial products
- **Budget**: £800mn of funding over four years
- **Review FT 02/2022:**
  - "In spite of the enthusiasm to create a shiny new institution, it remains unclear exactly what Aria will do"
  - "The concern is that the new agency will be too small, too duplicative and too secretive to make much difference. Aria will manage just 1 per cent of Britain's total public research funds"

Source: FT, Gov.uk, DARPA, IQT.org, OC&C analysis

| © OC&C Strategy Consultants 2023

The US identified emerging technologies to focus on, of which especially clean energy related tech companies are also supported by IRA subsidies

Overview Regulatory Framework US

Identified Key Emerging Tech Areas for the US as defined by NSTC (2022)

- Identified **sectors/technologies** to back for the US (National Science and Technology Council '22)
  1) Advanced Computing
  2) Advanced Engineering Materials
  3) Advanced Gas Turbine Engine Technologies
  4) Advanced Manufacturing
  5) Advanced and Networked Sensing and Signature Management
  6) Advanced Nuclear Energy Technologies
  7) Artificial Intelligence
  8) Autonomous Systems and Robotics
  9) Biotechnologies
  10) Communication and Networking Technologies
  11) Directed Energy
  12) Financial Technologies
  13) Human-Machine Interfaces
  14) Hypersonics
  15) Networked Sensors and Sensing
  16) Quantum Information Technologies
  17) Renewable Energy Generation and Storage
  18) Semiconductors and Microelectronics
  19) Space Technologies and System

Inflation Reduction Act

- **Key subsides with regards to clean energy**
  - $14,000 in direct consumer rebates for families to buy heat pumps or other energy efficient home appliances
  - 30% tax credit for installing solar panels on residential roofs
  - Up to $7,500 in tax credits for new electric vehicles and $4,000 for used electric vehicles
  - Subsidies for green hydrogen
- **Clean energy related top line goals by 2030**
  - 950m solar panels, 120k wind turbines & 2,300 grid-scale battery plants
- **Requirements to get subsidies**
  - Green technologies like electric vehicles or hydrogen production plants need to have a substantial amount of US-made parts - unless those are made in a country the US has a free trade agreement with (in total 20 countries, incl. Canada & Mexico, but no European ones)
- **Consequences**
  - Researchers and producers (e.g. of hydrogen technology or batteries) are incentivized to set up operations in the US instead of home country to access subsidies

Status Quo

- EU currently working on a **Green Deal Investment Plan** to counter the IRA and also trying to **influence exact IRA legislation** (as they are still in flux and not detailed out yet) to allow more foreign firms that produce outside the US to participate in subsidies
  - *No specific actions by UK found so far to lobby against IRA*

Source: NSTC, Whitehouse.gov, Science | Business Network, OC&C analysis

| © OC&C Strategy Consultants 2023

Through the SBIR and SBTT the US government ensures every agency with >$100m R&D budget, allocates some of this to start-ups

Overview Regulatory Framework US

Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR)

- **Founded:** 1974 (SBIR) and 1982 (STTR)
- **Budget:** c.£1.8bn pa.
- **Investments:** max. c.£250k for Phase 1 and c.£1.6m for Phase 2
- **What it is:**
  - **Non dilutive Seed Funding** for startups (SBIR) and partnerships between startups and not-for profit research institutions (STTR) to help federal government in their R&D needs
  - Federal agencies with R&D budgets in excess of $100m **must allocate 3.2** percent of that capital to the **SBIR program for startups to develop IP with government support**
  - If awarded an SBIR contract and another federal agency wants to leverage that same solution, the start-ups can **skip the usual "full and open competition" contract bidding process**

State Small Business Credit Initiative

- **Founded:** 2010
- **Budget:** c.£9bn in total distributed via the individual states for small businesses

The White House Competition Council

- **Founded:** 2021
- **Goals:**
  - Council shall **coordinate, promote, and advance** Federal Government efforts to address overconcentration, monopolization, and unfair competition, among others by developing **procedures and best practices for agency cooperation** and **coordinatio**n on **matters of overlapping jurisdiction**
  - The Council shall also work with each agency to ensure that **agency operations are conducted in a manner that promotes fair competition**, as appropriate and consistent with applicable law
  - The heads of all agencies shall consider using their authorities to further the policies set forth in section 1 of this order, with particular attention to:
    - Potential for their **procurement or other spending to improve the competitiveness of small businesses** and **businesses** with fair labor practices

Source: Whitehouse.gov, OC&C analysis

| © OC&C Strategy Consultants 2023

Agenda

Regulation

National Assets

Funding Landscape

Talent

| © OC&C Strategy Consultants 2023

NPPS's Social Value objectives already include related provisions that could be broadened to stronger support UK scale-ups in public procurement

Mechanism to promote procurement from UK scale-ups

Potential dimension within current Social Value framework that could include Scaleups more explicitly

Social Value – National Procurement Policy Statement

*"Commercial and procurement teams across the public sector do not have to select the lowest price bid, and […] can and should take a **broad view of value or money** that includes the **improvement of social welfare or wellbeing**.*

All contracting authorities should consider the following national priority outcomes alongside any additional local priorities in their procurement activities:

- ***Creating new businesses, new jobs and new skills***
  - *Increasing opportunities for entrepreneurship and helping new and/or small businesses to grow, supporting higher economic growth and greater business creation*
  - *Increasing employment opportunities particularly for those who face high barriers to employment or who are located in disadvantaged areas*
  - *Extending training opportunities, particularly for people in industries with known skills shortages or in high growth sectors*
- ***Improving supplier diversity, innovation and resilience***
  - *Creating a more diverse supply chain to deliver the contract, which will better support start-ups, SMEs[1] and VCSEs[2] in doing business on public sector contracts*
  - *increasing innovation and the use of disruptive technologies and business models throughout the supply chain, to deliver lower cost and/or higher quality goods and services, and encourage the wider adoption of innovation*
  - *contributing to the development of scalable and future-proofed new methods to modernise delivery and increase productivity*
- ***Tackling climate change and reducing waste"***

National Procurement Policy Statement, Cabinet Office (2021)

- Social Value itself provides a good vehicle **to include non-financial considerations** into the procurement process
- Explicitly **broadening the definition** from "new and/or small business" and "startups, SMEs and VCSEs" **to UK scale-ups** can support and stronger engage them in the public procurement process, e.g. by
  - centring the definitions of eligible companies on foundation date or
  - expanding the SME definition to more than 250 employees

1. Organisation with <250 employees 2. Voluntary, community & social enterprise organisations

Source: Gov.uk, OC&C analysis

| © OC&C Strategy Consultants 2023

Backup: Social Value is established as criterion in public procurement and in ongoing Procurement Bill indirectly included via links to the NPSS

B1 Deep Dive: Mechanism to promote procurement from UK scale-ups

Timeline of Social Value-related Initiatives & Procurement Bill

DATE	INITIATIVE	DESCRIPTION
2012	**"The Public Services (Social Value) Act"** Parliament	Requires relevant authorities to consider how their purchasing of services might improve the economic, social and environmental well-being of their area
2019	**"Taking account of social value in the award of central government contracts"** Cabinet Office	Cabinet Office published a new social value model introducing a requirement to explicitly evaluate social value, rather than just 'consider' it. Social value award criterion weighted at a **minimum of 10%** of the overall score
2020	**"Transforming Public Procurement"** Cabinet Office	Green Paper confirms the importance of **Social Value in government procurement**
2021	**"National Procurement Policy Statement"** Cabinet Office	NPPS requires contracting authorities to consider how they could **maximise social value** in creating new businesses, jobs and skills, improving supplier diversity and tackling climate change
Ongoing[1]	**"Procurement Bill"** Parliament	Simplifies existing sets of regulations, enhances transparency requirements and revising **supplier selection regime**

DEEP DIVE PROCUREMENT BILL

Overview Supplier Selection Regime (SSR)

- Principle-based regime: non-discrimination, fair treatment, value for money, maximising public benefit, transparency & integrity
- While value for money remains core objective, Bill requires public sector buyers to take a broad view and take account of the **national strategic priorities set out in NPPS**

Shortfalls SSR

- While the Procurement Bill includes Social Value inherently through links to the NPPS, a direct inclusion would constitute a more steadfast commitment
- The NPPS currently does not mandate a fix % weighting for social value as criterion and consistent application & assessment rules across public sector bodies

> *"Labour referred to the Social Enterprise UK statement that the absence of any reference to social value in the Bill was their biggest area of concern."*
>
> Procurement Bill 2022-23, House of Commons

> *"There are reservations about the use of a NPPS as being the best tool for embedding social value […] as the NPPS could still be changed relatively easily"*
>
> Transforming Public Procurement, 2021, CBI

1. Procurement Bill currently in last stages of getting enacted (House of Lords passed, 3rd reading in House of Commons outstanding)

Source: Gov.uk, OC&C analysis

| © OC&C Strategy Consultants 2023

There are alternative mechanisms that could be introduced to better promote scale-ups in public procurement

Deep Dive: Mechanism to promote procurement from UK scale-ups

Schematic Overview

Public Procurement Process

Standard Process

Contract Notice
(e.g. including requirements, contract value, evaluation criteria, timelines)

- **Open Tender**: (all interested parties can submit bids)
- **Restricted Tender**: (1.Stage: Pre-qualification questionnaire; 2. Stage: Tender among shortlisted providers)
- **Call-offs**: (only to those suppliers that have previously qualified for framework contract)[1]

Awarded Contract
(as a whole to one supplier, as a whole to a consortium of suppliers or split in different lots to multiple suppliers)

All tender-related information covered in 'Contracts Finder' eProcurement system

- Single portal for public sector procurement opportunities (est. 2015)
- Opportunity to set alerts for keywords and filter tenders, e.g. those marked as "suitable for SMEs"

Exemptions

Smaller Contracts
(<£10k for central gov bodies or <25k for wider public sector bodies)

No competitive procurement process & no listing in 'Contracts Finder' required

Awarded Contract

Reserved Contracts
(solely available to (i) SMEs or (ii) businesses within a specific region)

Competitive tender within reserved supplier group

Awarded Contract

Potential Improvements to Support Scaleups

Challenges	Potential Actions
Complex government procurement landscape	• **Training:** Offer tender training & support for Scaleups similar to the Supplier Development Programme for Scottish SMEs • **Innovation Scouts**: Install scouts that help procurement to engage relevant companies for tendered contracts
Strict requirements and narrow wordings exclude innovative solutions	• **Outcome-based Approach:** Strengthen involvement of procurement bodies in innovation process to increase their under-standing & support move from solution-based (i.e. granular requirements on exact design) to outcome-based procurement
Not considered social, economic or environmental benefits of scale-ups as procurement criteria	• **Assign Social Value to Scaleups:** Promote scaleups in government tendering processes by recognizing their inherent social, economic and environmental impact as additional quantified benefit when evaluating against other suppliers

1.Framework contracts run max 4y and fix for included suppliers e.g. terms & prices for predefined products & services

Source: SDP Scotland, Nitrous, Interviews, OC&C analysis

| © OC&C Strategy Consultants 2023

There are several ongoing initiatives by UK Government to unlock the potential benefits of public data assets

UK Initiatives

Ongoing UK Government Data Initiatives

- *Open Data: Unleashing the Potential, 2012, Cabinet Office*
  - Adopting the policy of 'Open by Default' for public sector data across all departments
  - Approach promotes the concept of open data release to increase accountability for gov decision making, efficiency for identify waste, and economic benefits for innovative companies

  National Data Strategy, 2020, DCMS & DSIT
  - Among others, simplifying public data sharing between government bodies
- *Roadmap for digital and data, 2022 to 2025*, 2022, Central Digital and Data Office
  - Making all critical data assets available and in use across government through trusted APIs and platforms
  - Creating a gov-internal data marketplace (incl. data catalogue and standards)
- *Government Digital Service: Updates on our 2021-2024 strategy,* 2022, Cabinet Office & Government Digital Service
  - Platform products GOV.UK Notify, GOV.UK Pay and the GOV.UK Design System developed
  - Currently building a new digital identity and single sign-on service for all of government - something we are now calling GOV.UK One Login
- *Integrated Data Service, 2021, ONS*
  - Platform that compares and combines data held by the ONS and other departments, helping to unlock the full potential of data, inform policy decisions and encourage collaboration across government
  - **Currently only open to government officials and accredited researchers**
- *Introducing our responsible data access work programme,* 2022, CDEI
  - Investigating and facilitating new approaches for organisations to access demographic data (e.g. data on race, sex, disabilities, socio-economic factors) to understand the impact of their technology on different groups *(NB Lukas: Seems to be still in planning phase)*
- *Open Regulation Platform Project, 2022, DBT*
  - New platform which provides access to UK regulation as enriched, machine-readable data
  - Beta supposed to launch in April 2023 (among others build by public.io and MDRxTech)

- *Existing UK initiatives are **less about sharing more public data sets to businesses**, but about transforming inter-government data harmonization and exchange…*
- *…as well as creating more digital government services for citizens (e.g. Gov.uk Forms digitizing 8,500+ document-based forms)*
- ***Nothing on Public-Private Partnerships (e.g. with VC funds) found***
- *Open Regulation Platform as an example where Regulation data will be made available machine readable*

Source: GDS, Central Digital and Data Office, DCMS, ONS, public.io, OC&C analysis

| © OC&C Strategy Consultants 2023

There are potential learnings from how international comparators are approaching data initiatives

Public Data Assets Utilisation – Case Study

	Aim	Example
Estonia Open Data Exchange X-Road	• X-Road, an **open source data exchange platform** operated by the Information System Authority • All transactions (>900 million every year) are banded on some bilateral agreement between 2 or more entities (public of private), that have agreed to exchange data for a specific purpose	• Utilising Population Register from X-Road, Ridango AS, the ticketing machine operator in Tallin, is able to check if validated ticket belong to Tallin registered residents, entitling them to free transport
Open Data UAE	• Private sector, coders, and app developers can **leverage government software interfaces to develop new digital solutions**, apps and services and launching start-ups capable of providing interconnected and seamless digital government services	• Federal Tax Authority (FTA) services linked directly to Amazon, promoting operations automation and acceleration sellers' registration in the Amazon store in UAE
Israel's PPP	• Israel opened up digital access to key medical data • Israel has a well-developed public-private partnership model that provides public funding to match capital that data-sharing and digital health start-ups raise from VCs and angle investors.	• Digital Nurse that pulls together unstructured data from multiple systems and then uses machine learning to deliver automated insights for both patients and staff

1. Economic Impact Of Trust In Data Ecosystems – ODI / Frontier Economics

Source: OC&C analysis

| © OC&C Strategy Consultants 2023

Several very successful businesses have been built off the back or have heavily utilised public data in their business models

	Description	Examples
Open TfL	• All public TfL data is freely released for developers to use in their own software and services • Ranging data sources (e.g. air quality, tube, cycling) that can be accessed thorough unified API	• CityMapper • GeoLytix • TransportAPI
Real Estate	• Local government data such as tax assessment, mortgages and deeds • Potential to utilise more data id due course such as crime statistics and housing permits	• Zillow
NHS	• Deepmind has been **given data on c.1.6 million patients** as part of an app development project by Royal Free NHS Trust - without patients' knowledge or consent	• Deepmind • Mastodon C

Source: OC&C analysis

| © OC&C Strategy Consultants 2023

Case Study: Stanford University is world-leading for creating founders and scale-ups, with spinouts generating revenues of $2.7 trillion annually

Success of Stanford University

- Stanford alumni-founded companies generate $2.7tn in annual revenue, have raised $195bn in capital and account for 10% US unicorns
- Funding Streams:
  - Government contracts: Stanford University receives $1.4bn from the federal government for research funds, whereas in UK, Oxford receives just £164m from the government-backed Research England
  - VC pools (Stanford 2020, a fund raised for and by Graduate Stanford Business class of 2020 students)
- Start-up incubation levers:
  - Facilities – Stanford Research Park, low rent and close to university –c.$7/sq ft compared to traditional Bay Area office space at $120/sq ft
  - Courses – 11 Start-up courses offered:
    - E.g. Faculty-led programme where students form teams through university networking events, before applying jointly with a start-up idea
  - Accelerators – 3 Stanford-sponsored networks of mentors and entrepreneurial advisers
- Spinout support: TTCs are more attractive, ongoing networks, later stage facilities

Key Learnings for UK

1. Lower equity stakes from universities
   - Average equity of 24% for UK vs. 10% for Stanford
   - Royalties on IP avg. UK c.5% of net sales vs. c.1% in US
   - University of Oxford set maximum of 20% of equity in 2022
   - Oxford Nanoimaging lawsuit over demand for royalties of 6% of net sales, judge ruled in favour of TTO
2. Commercial model
   - Increase industry-backed research projects and spinout endeavours
3. Accelerators
   - The US has 274 incubators, of which 80 are university incubators
4. Infrastructure
   - Expand facilitates for spinout including labs
5. Network

Source: Sifted, Stanford Daily, Case Mine, Tracxn, OC&C analysis

| © OC&C Strategy Consultants 2023

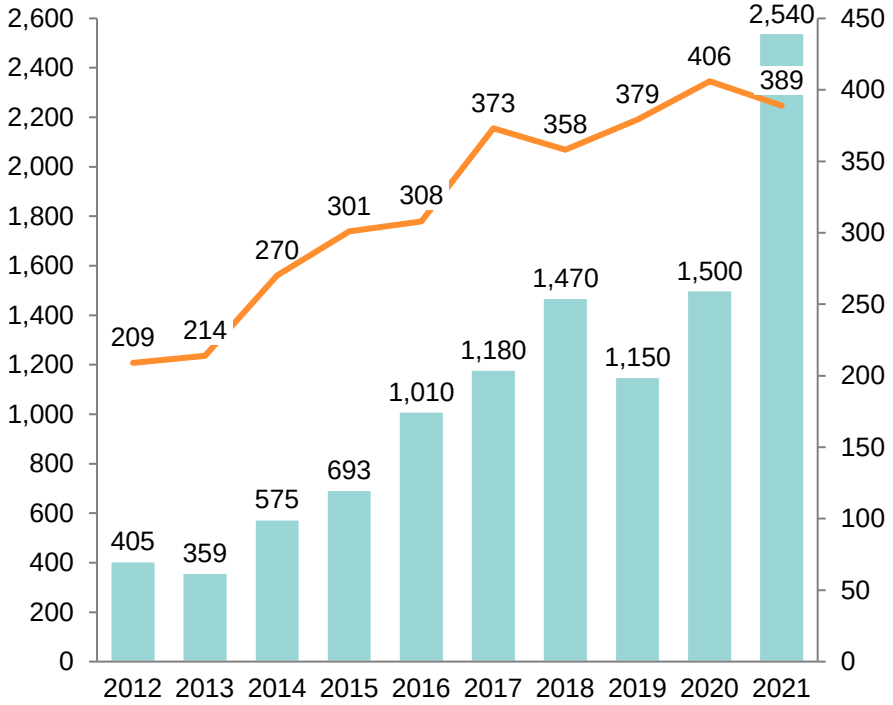
Investment into UK university spinouts has grown to £2.5bn, however the UK is still lagging behind the US to build the "science superpower"

University Spinout Investment

Number of Deals Amount Raise ($/£m)

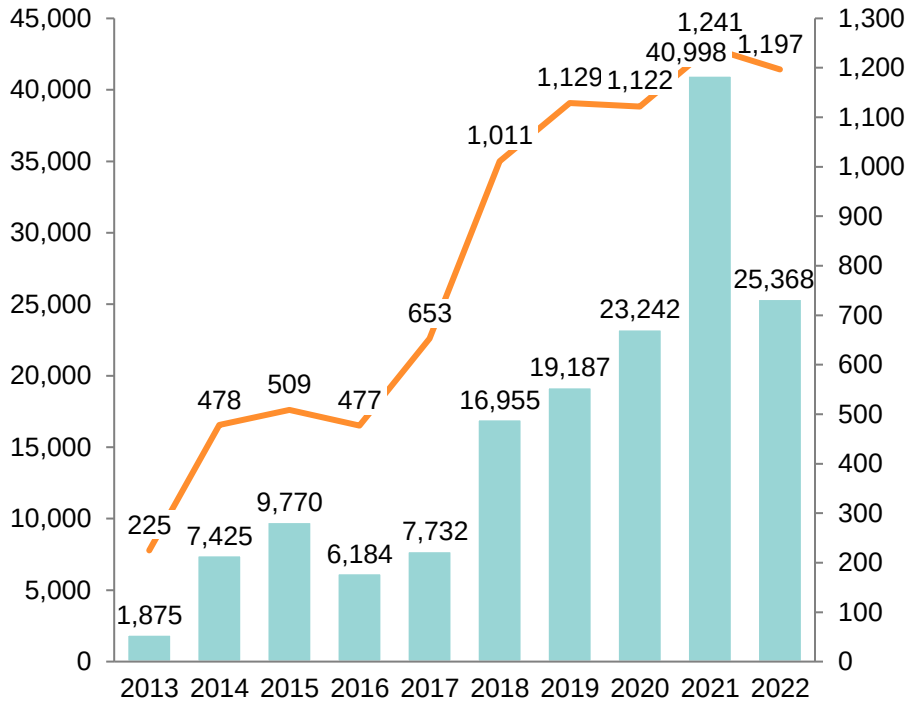
The quantum and number of investments into UK university spinouts has grown over the past decade to £2.5bn

Equity Investment Into UK Spinouts, 2012-21 (£m,#)[1]



However, the UK still lags behind the US with $40.1bn invested in 2021

Investment in US Spinouts, 2013-22 ($m)[2]



1. Beauhurst, 2. Global Venturing 'Spinouts double fundraising in ten years'

Source: Beauhurst, Global Venturing, OC&C analysis

| © OC&C Strategy Consultants 2023

Agenda

Regulation

National Assets

Funding Landscape

Talent

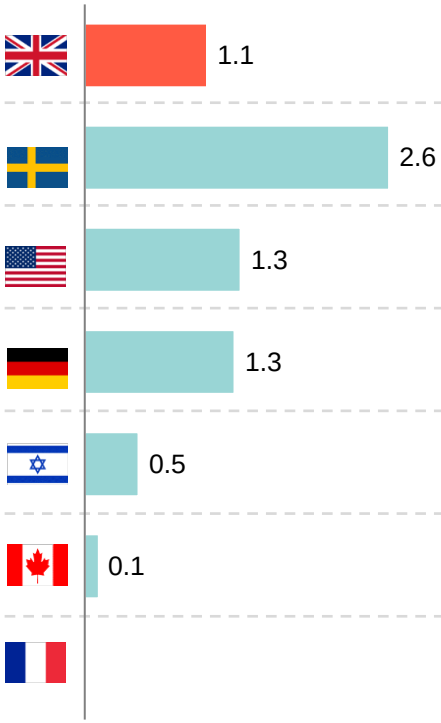
| © OC&C Strategy Consultants 2023

Access to capital important in reaching Decacorn; quantum of capital invested in the UK is the highest in EUR, but is from foreign sources at late rounds

Access to Capital

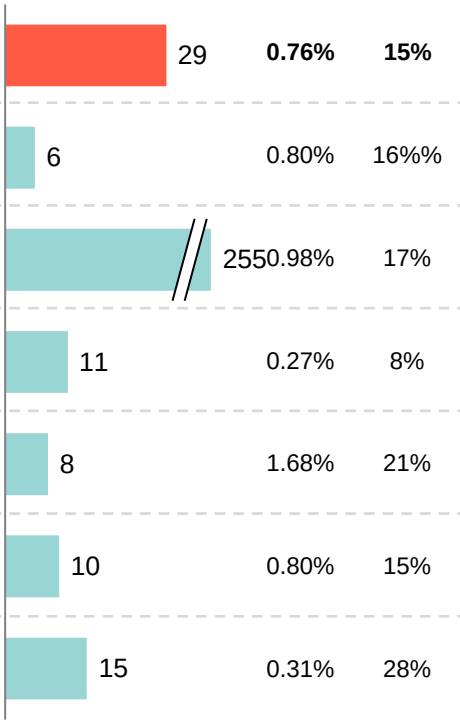
Significant capital required to scale to Decacorn

Average Decacorn Funding, ($bn)



The UK VC market is the largest in Europe

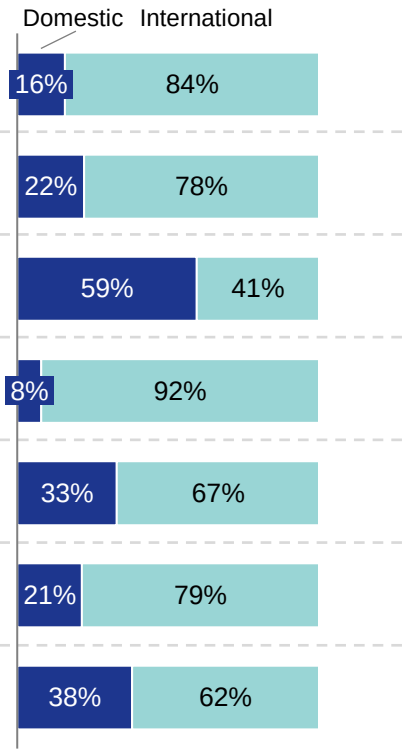
VC Investment, 2022 ($bn)



	% of GDP[1]	CAGR 2019-22
	0.76%	**15%**
	0.80%	16%%
	0.98%	17%
	0.27%	8%
	1.68%	21%
	0.80%	15%
	0.31%	28%

But of large cheque sizes (>$250m), majority is from foreign sources

Share of International Funding, 2022 (% of Total)[2]



And still pockets of firms where getting funding remains a challenge

*"At later stage funding is raised from abroad because there is **limited capital** in the UK"*

Investor

*"There is **lack of funding available for high growth businesses**... unable to get support from government for 3 businesses "*

CEO

*"The UK investing community is highly dividend seeking, with an **unfavourable view to high-growth businesses**"*

Ex- CEO

*"It is **not something only about the quantum of available funds** but a systematic issue of UK attitudes to risk"*

CEO

1. Share of VC Investment as a % of GDP, 2019-21
2. Share of funding rounds >$250m from international sources (% of total quantum raised), tagged as verified unicorns in Dealroom

Source: Dealroom, Crunchbase, British Business Bank, Interviews, OC&C analysis

| © OC&C Strategy Consultants 2023

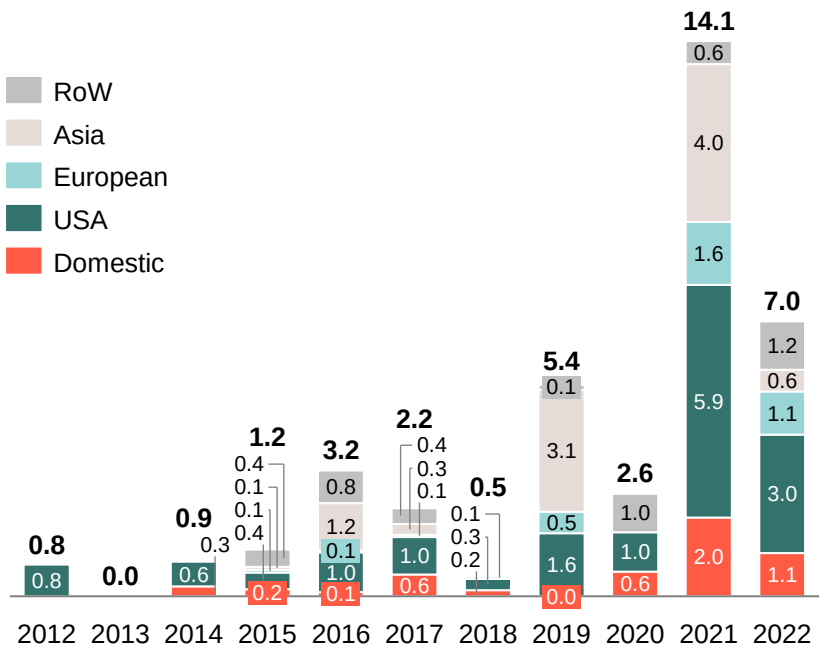
There is evidence which suggests foreign investment increases the likelihood of international exit

Foreign Investment & UK Patient Capital

UK scale ups rely heavily on international funding sources in late-stage rounds

Funding for Mega Rounds by Investor Location[2] ($bn)

UK Only



Some evidence that foreign investment makes exit via a foreign acquisition more likely

Exit route:

Foreign Acquisition

- **Evidence may be more likely**
  - According to BBB between 2012-21 46% of acquired companies were acquired by an overseas company[1]
  - This rose to 64% of all companies with international investors[1]

Foreign Listing

- **Anecdotal evidence more likely**

"The more US voices you have the more they'll push you towards NY, especially given the perceived superiority to the LSE. When you do this it doesn't mean that you will shift overnight, but you will definitely have the US as bigger part of the narrative"

Operations:

Shift Centre of Gravity Overseas

- **Anecdotal evidence that <u>in some cases</u> may be more pressure to shift operations**

"With US investors when I look to expand operations, I have to fight much harder to make the case for the UK, because they are pointing to their familiar, large, well-invested home market. Eventually the weight will push me to move there"

1. British Business Bank: 'Small Business Equity Tracker 2022' p. 78-79 2. 82 rounds of companies headquartered in the UK with round size >$250m

Source: British Business Bank, Dealroom, OC&C analysis

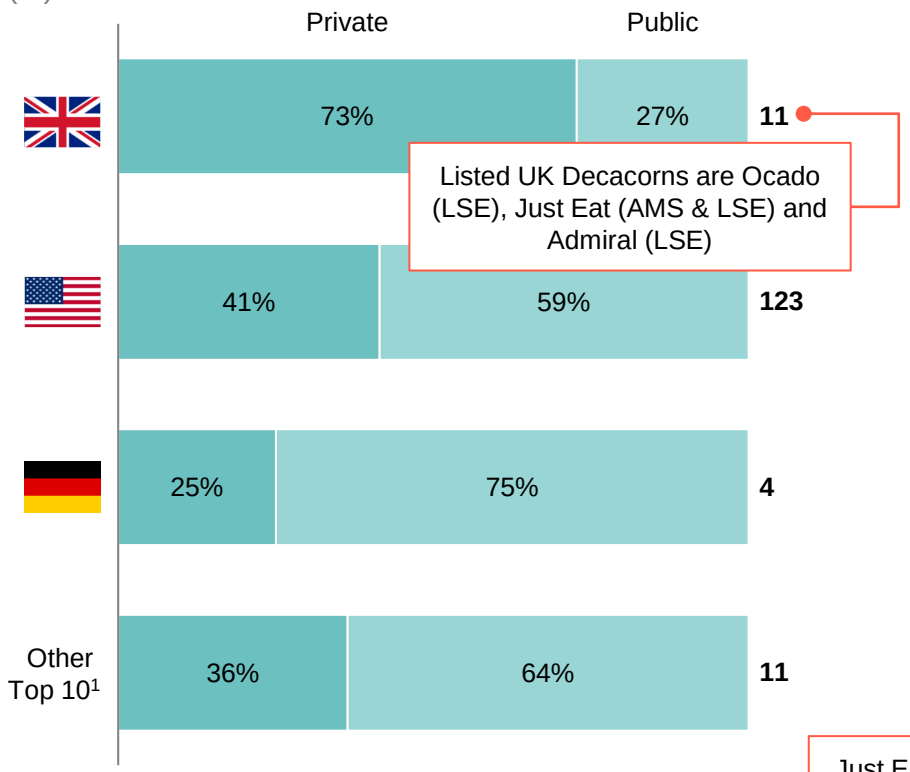
| © OC&C Strategy Consultants 2023

UK decacorns are less likely to list publicly vs international peers; 3 have listed on the LSE - although many more unicorns have chosen the US

Public vs. Private

UK decacorns are choosing to remain largely private in comparison to other markets

Listing Status of Decacorns
(%)



The US is the most common listing location for decacorns

Public Decacorns by Listing Location
(#)

				Other Top 10[1]
NYSE		24		2
NASDAQ		48	1	3
LSE	3			
XTRA			2	
STO				1
AMS	(1)			
TSX				1
Avg. Time to Get Listed[2] (years)	11	9	8	15

Just Eat is listed on both the LSE and AMS due to Takeaway.com merger

2/10 'Other Top 10' public decacorns are listed on domestic exchanges (Hexagon AB and Constellation Software)

1. Other Top 10 markets including Sweden, Israel, Canada, India
2. Difference between going public and date founded

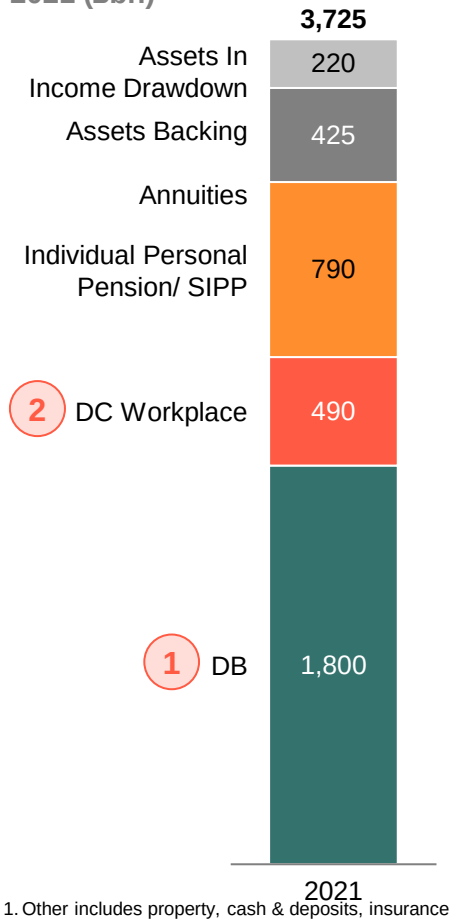
Source: Dealroom, Crunchbase, Desk Research, OC&C analysis

| © OC&C Strategy Consultants 2023

The UK manages £3.8tn in pension assets – where the bulk today are held in DB pension schemes with limited opportunity to unlock further capital

UK Pension Opportunity

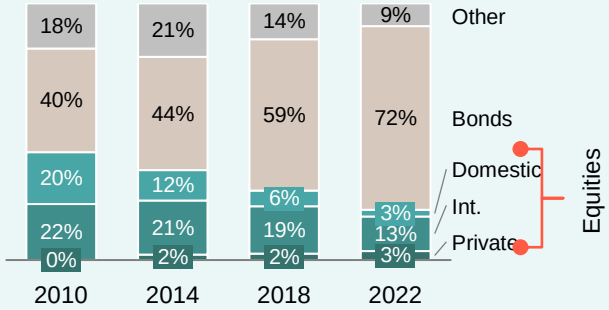
Total UK Pension Assets, 2021 (£bn)



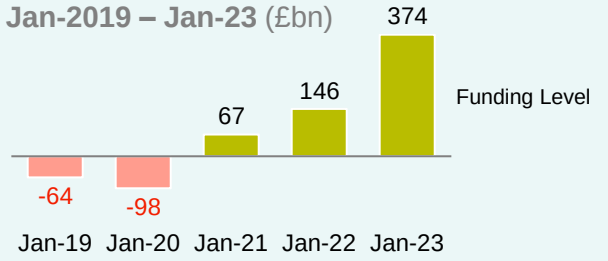
1 Defined Benefit Pensions

- There has been a systematic shift of DB from domestic equities since the mid-2000's; a cultural shift to diversify assets and reduce risk
  - In the mid-1990s, 75% DB pension in in equities and just over 70% of that was in the UK
  - In 2000, pension & insurance firms owned 39% of the UK stock market, by 2020 this had slumped to 4%
- This shift was in part due to new thinking in measuring scheme liabilities and a transition from focussing on asset growth to matching future cash flows resulting in the creation of liability driven investment (LDI) strategies
- DB scheme memberships have been largely closing with only 10% open to new members and 48% were closed to future accrual with active members down from 2.1m in 2012 to c.900k[4]
- In the last year funding levels have soared (assets > liabilities), with DB assets estimated to be £160bn greater than liabilities; resulting in in little incentive for DB scheme to onboard more risk through investing in equity markets

Weighted Average Asset Allocation of DB Pensions, 2006-22 (%)



Net Value of DB Assets and Liabilities[2], Jan-2019 – Jan-23 (£bn)



Limited growth in DB memberships and incentives increase investment into equities due to strong +ve funding levels results in **limited opportunity to influence shift** to **unlock more patient capital for high growth businesses**

1. Other includes property, cash & deposits, insurance policies, hedge funds, annuities, miscellaneous 2. FT / Pension Protection Fund 3.DB includes workplace DB, assets in income drawdown and assets backing annuities 4. DC includes workplace trust-base, workplace contract-based and individual personal pension/SIPP 4. Pensions Age / The Pension Regulator

Source: TPR, PPF, PWC, New Financial, IA, OC&C analysis

| © OC&C Strategy Consultants 2023

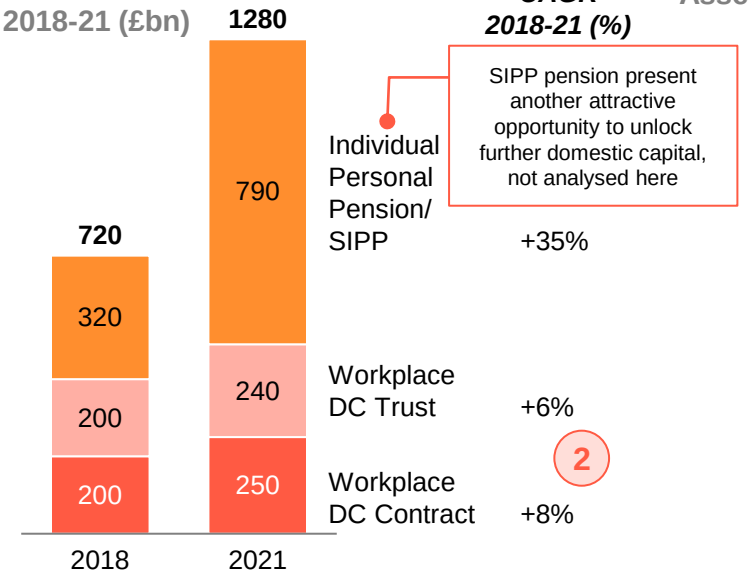
DC pensions however present a sizeable opportunity, but today heavily under exposed to private / unlisted equities

Define Contribution Pensions

DC pensions growth has been accelerating - predominately driven by contributions rather than return to date

- DC pension funds today now have over 18million active members where it is forecast that an additional £670bn will be contributed over the next 10 years

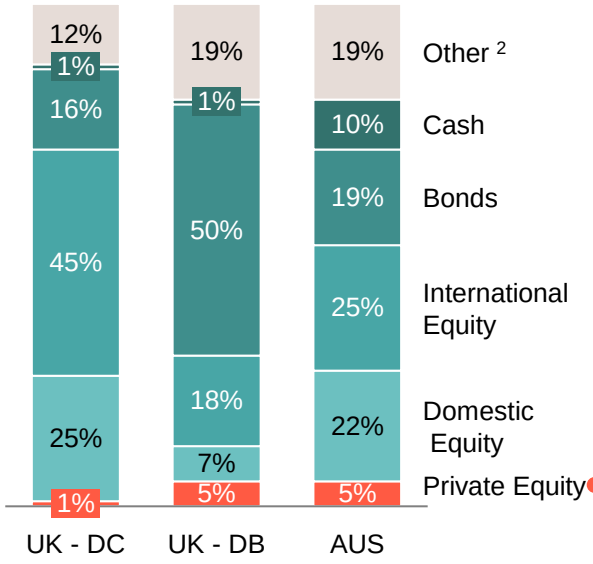
Total DC Pension Assets, 2018-21 (£bn)



Liquidity constraints have resulted in limited investments into unlisted equities causing in lower DC returns & less capital available for high-growth

- DC funds can be bought and sold on a daily basis, constraining them to asset classes such as private equities or bonds

Asset Allocation (%)



There are several levers that can be pulled to increase investment in more productive assets

- There are several levers that can be pulled to shift the mix of asset allocation of DC pension schemes:

1. Shifting focus to long-term value for scheme members (e.g. charge cap)
2. Building scale through further consolidation of the current 28k DC schemes
3. Widening access to less liquid asset classes (e.g. new investment structure LTAFs)
4. Government incentives / penalties including; equity mandate, tax breaks / penalties

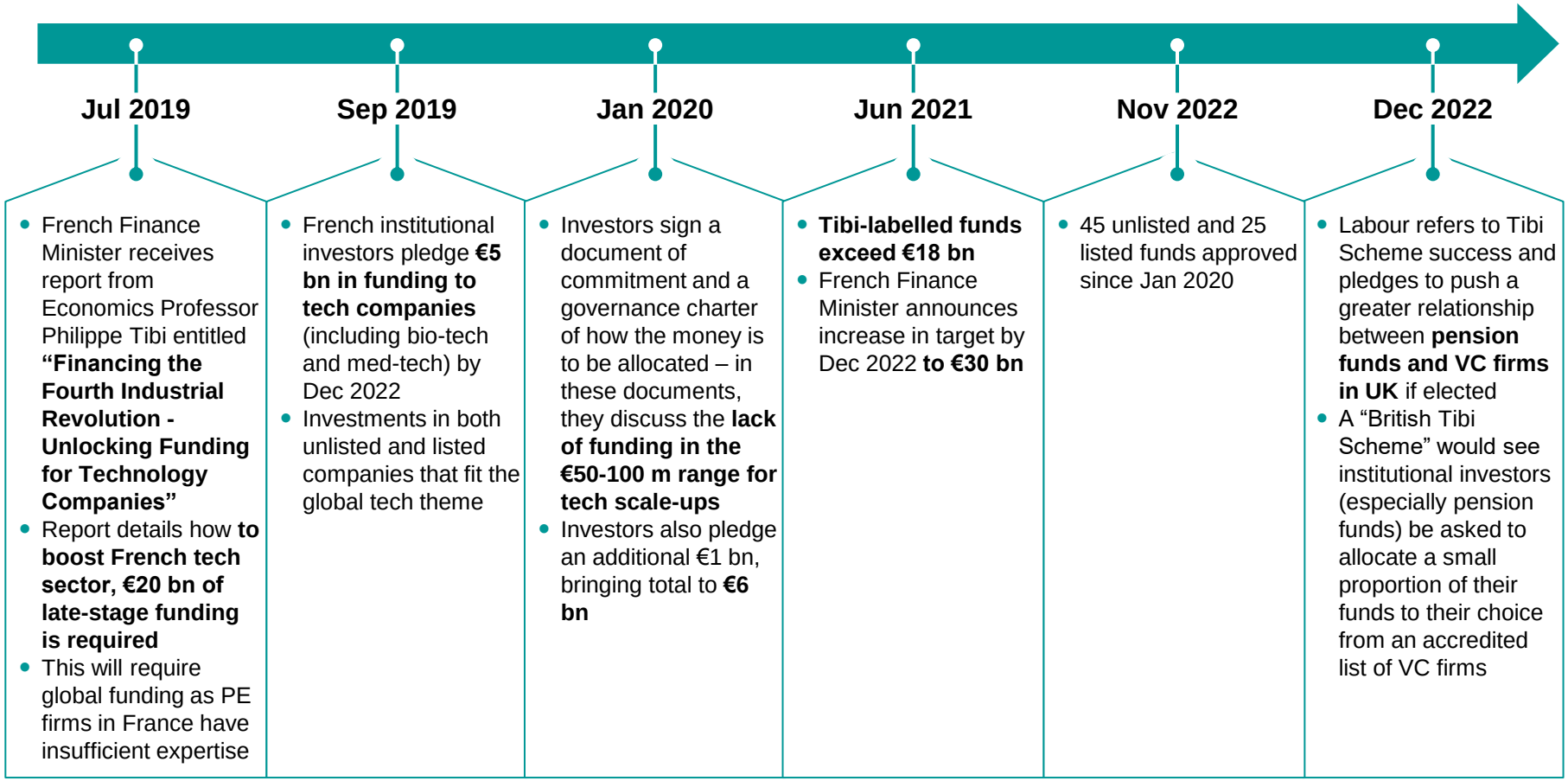
1. Long Term Asset Funds 2. Other includes property, infrastructure, alternatives

Source: AI, WTW, New Financial. OC&C analysis

| © OC&C Strategy Consultants 2023

The success of the Tibi Scheme, which raised €18 bn, shows that institutional investors can be nudged to support tech scale-ups at a big scale

Timeline of French Tibi Initiative Investments



Source: Gouv.fr, Labour, OC&C analysis

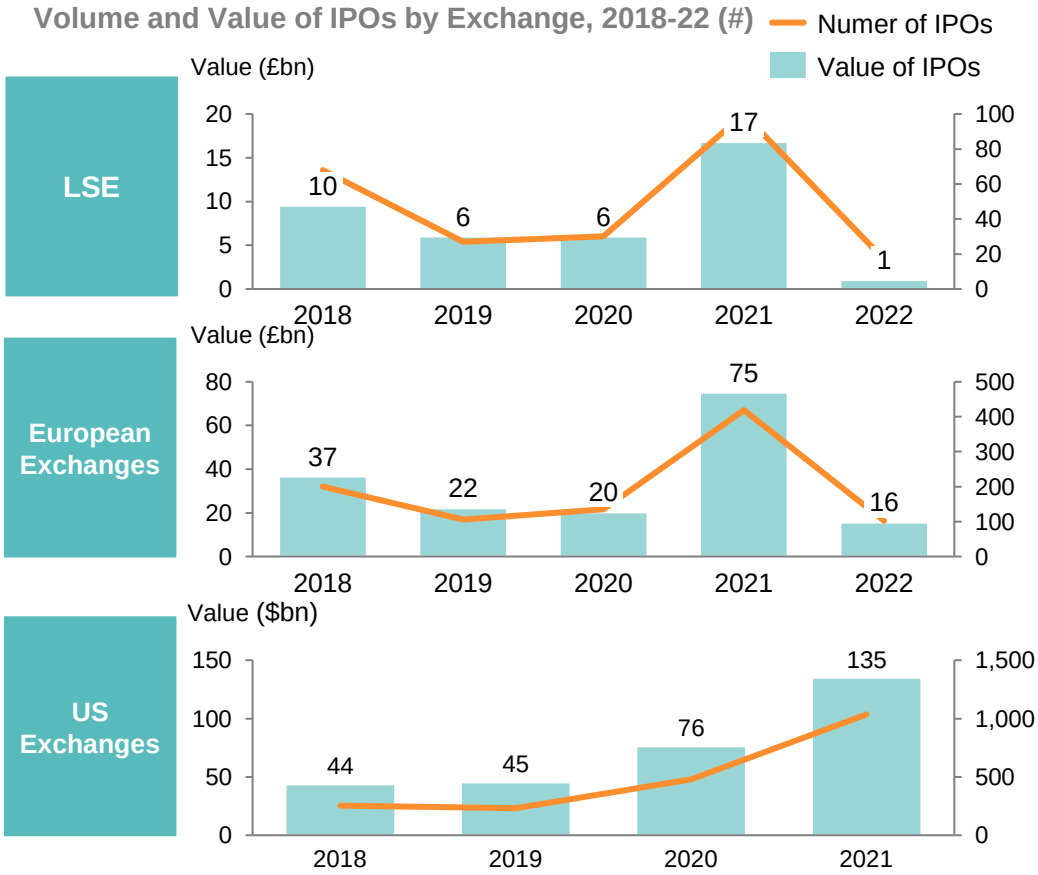
| © OC&C Strategy Consultants 2023

The uncertainty and geopolitical instability led to depressed year for global IPOs, with tech continuing to be the biggest IPO sector

Global IPO Market

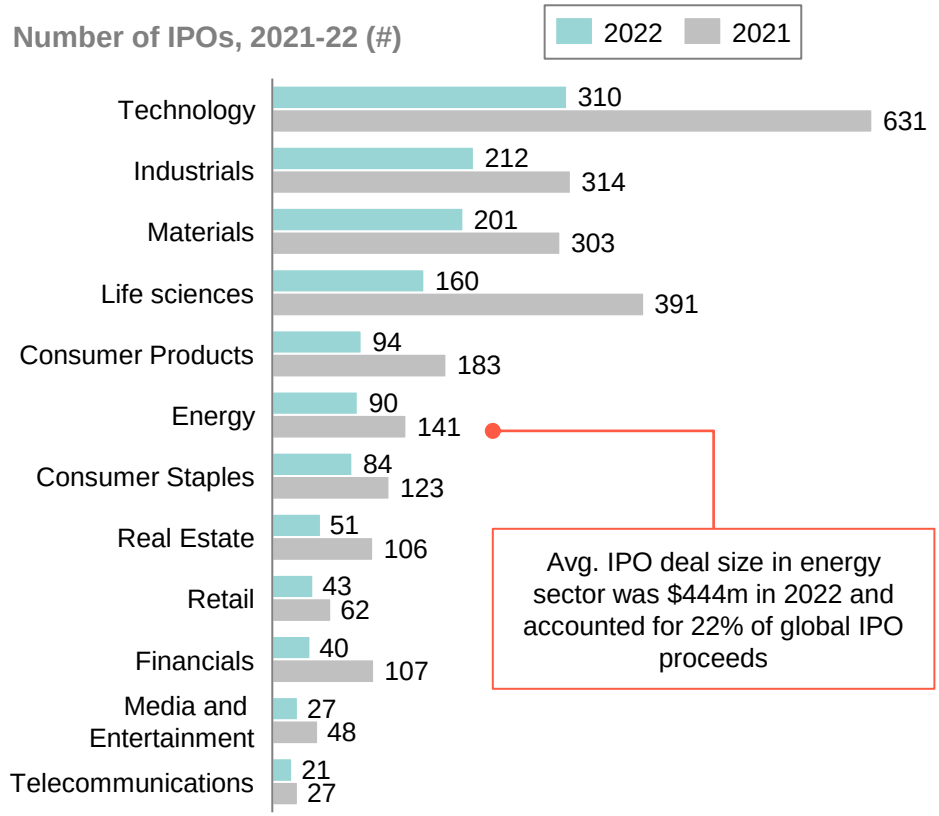
Economic headwinds suppressed the global IPO market

Volume and Value of IPOs by Exchange, 2018-22 (#)



Technology continues to be the sector generating most IPOs worldwide in terms of volume

Number of IPOs, 2021-22 (#)



Source: EY 'Global IPOS Trends 2022', Deallogic, PWC Global IPO Watch 2022, OC&C analysis

| © OC&C Strategy Consultants 2023

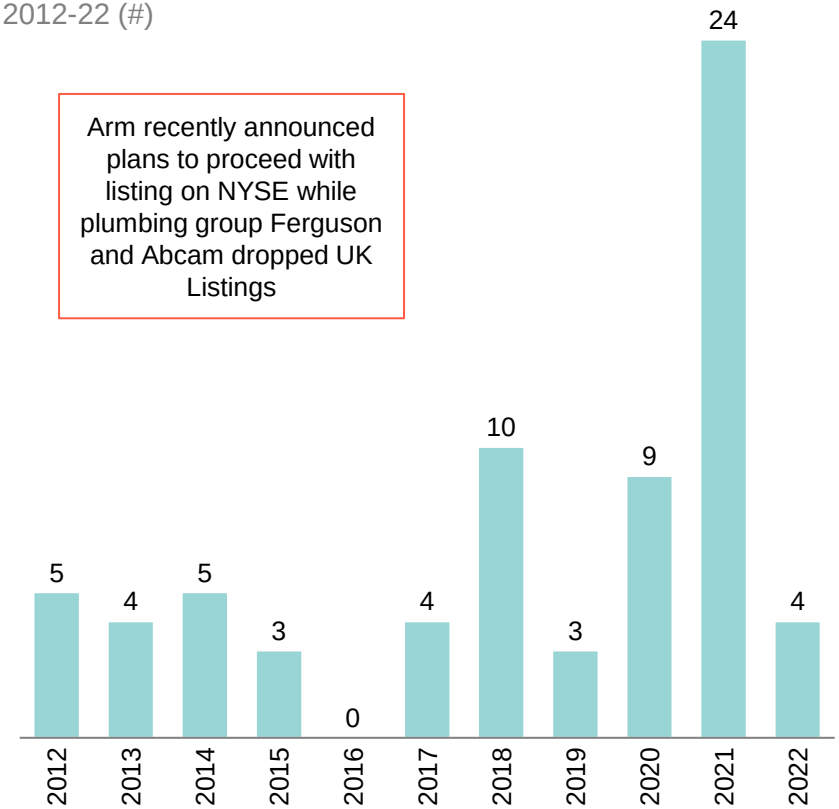
There are growing concerns about the attractiveness of UK public markets for high-growth companies

UK IPOs

More UK companies are choosing to list on overseas exchanges

IPOs of UK Companies on Overseas Exchanges
2012-22 (#)

Arm recently announced plans to proceed with listing on NYSE while plumbing group Ferguson and Abcam dropped UK Listings



Growing concerns that about LSE ability to attract high-growth business IPOs (e.g. tech)

- Uncertainty around London's future as an IPO hub as new listings on LSE represent just 5% of global IPOs between 2015-20. In 2021 for 126 out of the 2,682 global IPOs or 4.7%
- Even though the LSE performed well in 2021 it is continuously slipping behind its EU and US counterparts
  - Tech IPOs on the LSE raised a record of £6.6bn in 2021 more than twice the figure from 2020; however this is only 1/7th of the £47bn raised by tech IPOs in the US' NASDAQ and NYSE in 2021
  - Of the 10 biggest tech IPOs in Europe in 2021, 2 listed in Frankfurt, 2 and Amsterdam and the rest across LSE and US exchanges
- There is little hope of future recovery with poor performance of some tech IPOs in 2021 (e.g. collapse of Made.com)
- Potential, quite difficult options is to change the narrative around potential utilisation of AIM as a "feeder system" (i.e. instead of doing private series B a company could IPO for its series B and continue to grow and raise capital)

Source: EY 'Global IPOS Trends 2022', OC&C analysis

| © OC&C Strategy Consultants 2023

There is a perception that US markets have a stronger investor pool, stronger comparative group and will give better valuations

Strength of US Exchanges

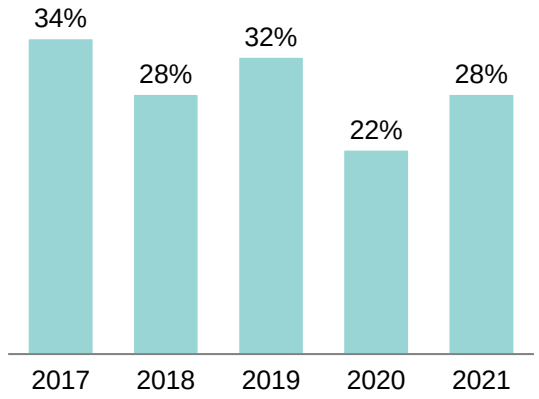
US exchanges have an availability of peer group

- Listing on a stock exchange where there are comparable businesses means that the analysts and commentators in that territory are likely to understand you and your metrics of success.
  - This creates industry clusters on different exchanges e.g. 98% of the US' listed biotech companies are on the NASDAQ
- Exchanges have different images among companies, with NASDAQ stocks considered growth-oriented and more volatile while NYSE are more stable and well-established businesses
- Oxford Nanopore listing on the LSE in 2021 was a game changer as it provides a strong peer for future biotech listings

US Investors embrace higher growth

- UK investors are believed to be more focused on dividend whereas US investors are able to forgo short-term gains for long-term value
- There as few loss-making companies on the LSE while only 28% of US IPO companies were profitable prior to listing in 2021

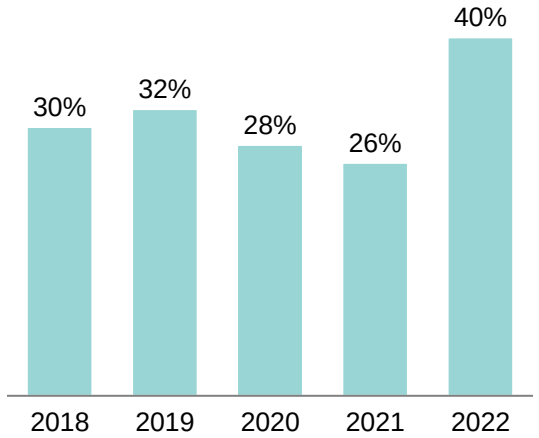
Share of Profitable US IPO Companies, 2017-21 (% of Total)



Powerful gravitational pull of the US stock markets

- New listings on LSE represent just 5% of global IPOs between 2015-20 and in 2021 for 126 out of the 2,682 global IPOs or 4.7%
- Arm recently announced plans to proceed with listing on NYSE while plumbing group Ferguson and Abcam dropped UK Listings

Cross-border IPOs Listings on US Exchanges, 2018-22 (% of Total)



Source: EY 'Global IPOS Trends 2022', Wilmer Hale ' 2022 IPO Report', OC&C analysis

| © OC&C Strategy Consultants 2023

Agenda

Regulation

National Assets

Funding Landscape

Talent

| © OC&C Strategy Consultants 2023

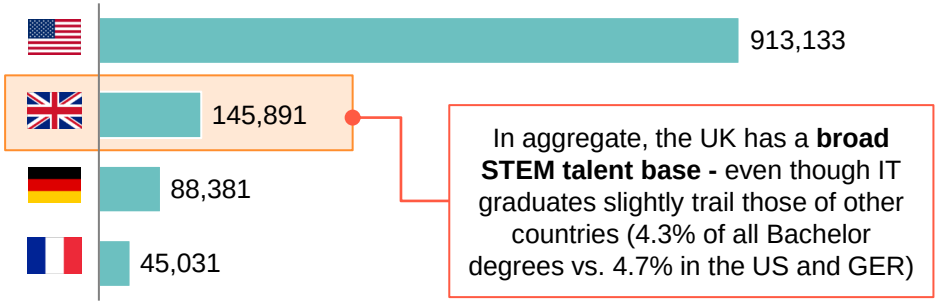
The UK starts from a position of strength – strong university system with high number of STEM graduates & foundations to be an attractive place for talent

UK Talent Base and Proposition

World leading | Relatively well positioned | Mixed | Poor

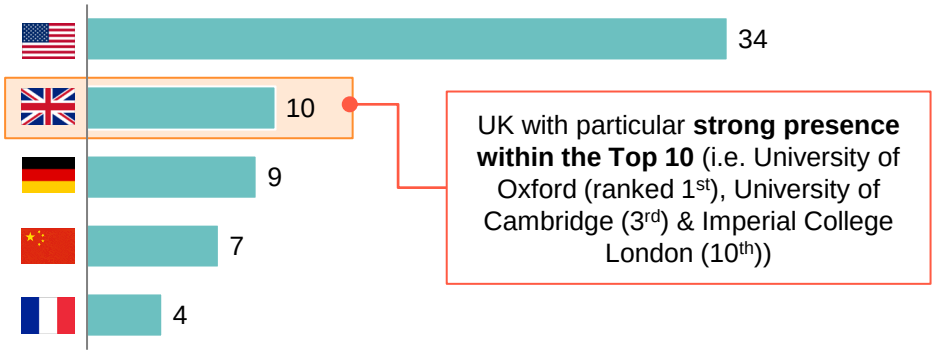
Domestic Talent Pipeline

 # STEM Graduates (2020)



In aggregate, the UK has a **broad STEM talent base -** even though IT graduates slightly trail those of other countries (4.3% of all Bachelor degrees vs. 4.7% in the US and GER)

Quality of University System as measured by # universities ranked within the Top 100 globally[1] (2023)



UK with particular **strong presence within the Top 10** (i.e. University of Oxford (ranked 1st), University of Cambridge (3rd) & Imperial College London (10th))

Ability to Attract and Retain Talent

Popularity of UK as Destination for Talent (2022)[2]

					Commentary on UK positioning
Overall	●	◕	◕	◕	• Ranked 10th out of 133 investigated countries
Enable (Regulatory, Market, Business & Labour Landscape	●	◕	◕	◕	• Good ICT infrastructure
Attract (External & Internal Openness)	◕	◕	◕	◕	• High inflow and retention of internationals
Grow (Formal Education, Lifelong Learning)	●	●	◕	●	• Leading tertiary education landscape & good % of vocational enrolment
Retain (Sustainability and Lifestyle)	◕	◕	●	◕	• Good brain retention, but low social protection & physician density
Vocational & Technical Mid-Level Skills	●	◑	●	◕	• Low % of workforce with secondary education & techn. skills
Global Knowledge High Level Skills	◕	●	◕	◕	• Strong quality & good quantity of tertiary educated

1. Based on Times Higher Education – World University Rankings 2023; Evaluation uses criteria: Teaching, Research, Citations, Industry Income and International Outlook 2. Based on Global Competitiveness Index 2022

Source: OECD, Eurostat, U.S. Census Bureau, Times Higher Education, Global Talent Competitiveness Index, OC&C analysis

| © OC&C Strategy Consultants 2023

Many jobs and skills are required to build and commercialise a product / service: we have simplified these to four broad families

Overview Skill Set Taxonomy

	Skill Sets			Exemplary Job Titles
Core Business Functions	Management	HR	Product Management	• Recruiter • Sales Lead • Product Manager • Customer Success agent • Controller / Accountant
	Procurement / Logistics	Sales	Marketing	
	Finance/Legal	Customer Service	Administrative	
Advanced Digital Skills	Software Development	Cyber Security	Big Data	• Data Scientist • Cloud Platform Engineer/Developer • User Interface Designer • Mobile App Developer iOS / Android • Information Security Analyst
	BI	Cloud Computing	Mobile App Dev.	UI / UX
Functional / Industry Expertise	Regulation (e.g. Financial)	Risk Management	Hardware Design	• Financial Regulation Specialist • Know-Your-Customer Analyst / Money Laundering Expert • Hardware Designer • AI Ethics Engineer
Deep Tech Skills	AI & ML	BioTech	Robotics	• AI (Software) Engineer • Clinical Research Associate • Quantum Machine Learning Scientist • Blockchain Engineer
	Advanced Materials & Manufacturing	Blockchain & Web 3.0	Aerospace (incl. drones)	
	Cleantech	Electronics	Hardware Engineering	Quantum Computing

Source: OC&C analysis

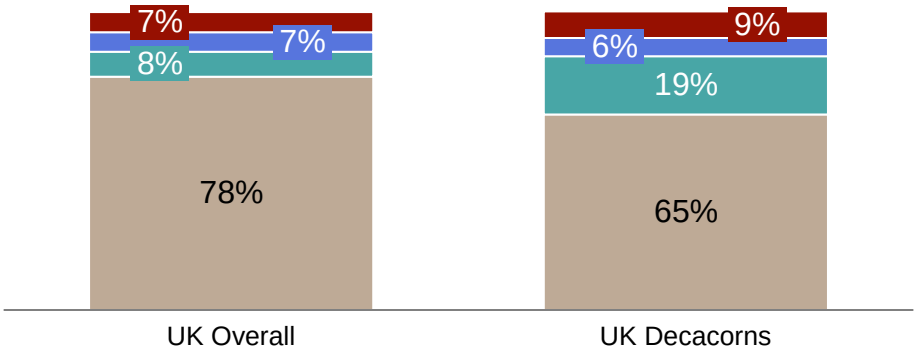
| © OC&C Strategy Consultants 2023

Today's UK decacorns are more reliant on Advanced Digital and Deep-Tech skills than UK average; the profile of talent requires varies by decacorn type

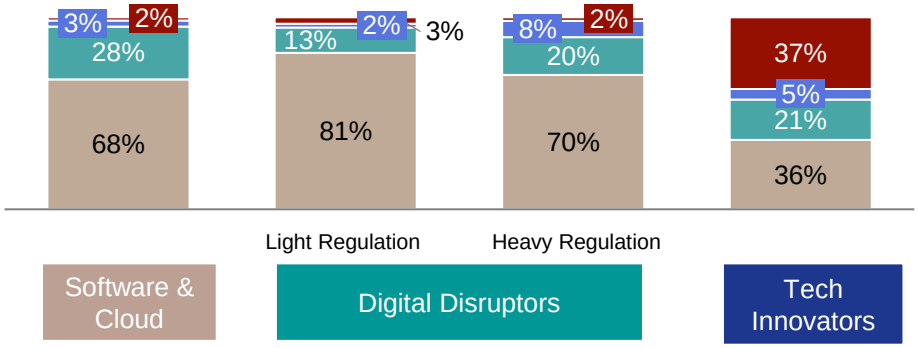
Skills Required (Non-Exhaustive)

Core Business Functions	Management	HR	Product Management
	Procurement / Logistics	Sales / Marketing	Customer Service
	Finance/Legal		
Advanced Digital Skills	Software Development	Cyber Security	Big Data & BI
	Cloud Computing	Mobile App Dev.	UI / UX
Industry Specific Know-how	Regulation (e.g. Financial)	Risk Management	Hardware Design
Deep Tech Skills	AI & ML	BioTech	Robotics
	Advanced Materials & Manufacturing	Blockchain & Web 3.0	Aerospace (incl. drones)
	Cleantech	Electronics / Hard-ware Engineering	Quantum Computing

Skill Set Distribution Decacorns vs. Broader UK Talent Pool (%, 2023)[1]



Skill Sets Distribution Decacorns vs. Broader UK Talent Pool (%, 2023)[1]

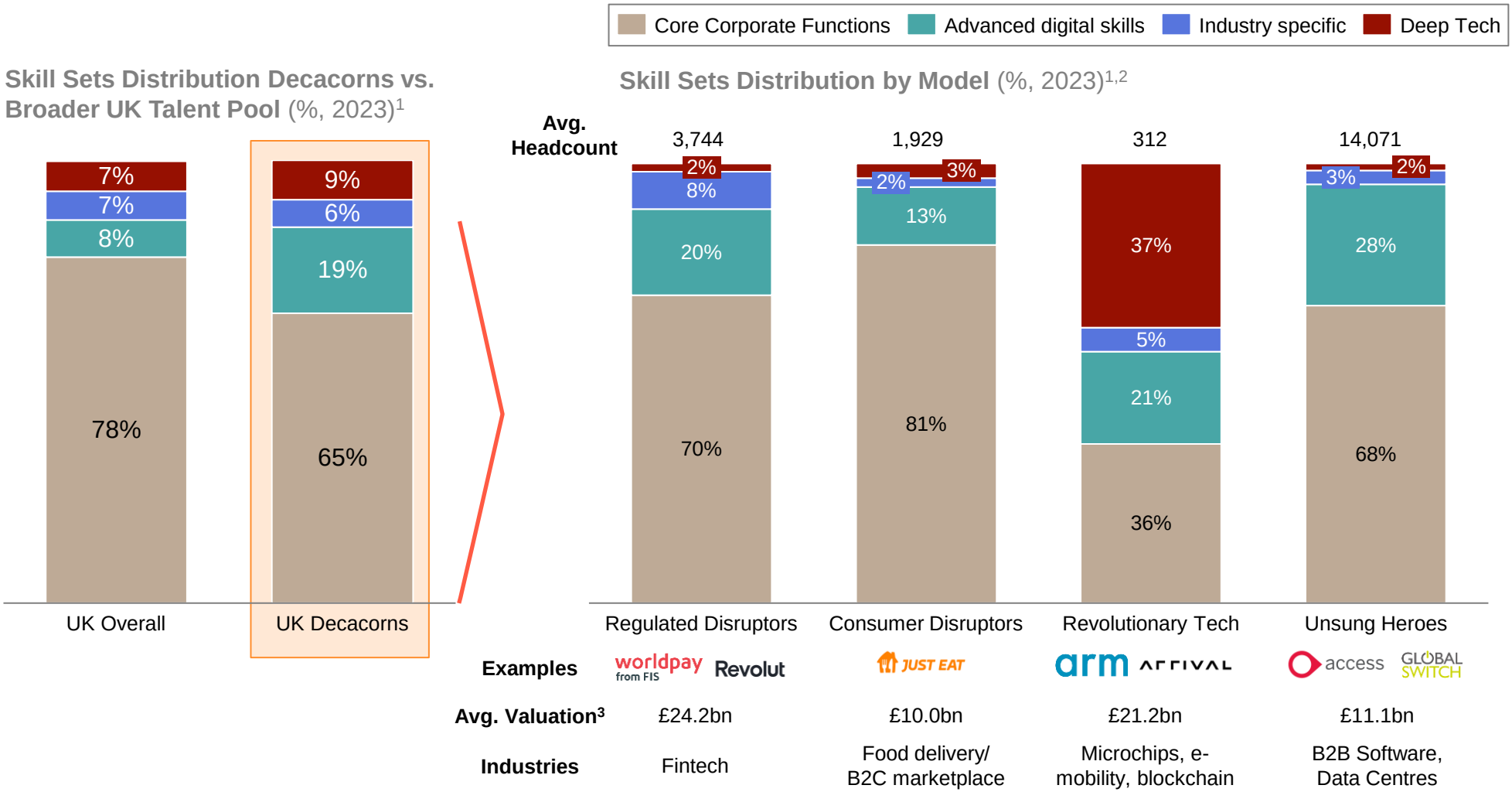


1. Based on LinkedIn Research (# resulting profiles per skill set) as of 24/01/2023; One profile can be tagged to multiple skill sets
2. Regulated Disruptors = Worldpay, Revolut, FNZ, Rapyd, Checkout.com; Consumer Disruptors = Just Eat; Revolutionary Tech = Arm, Arrival, Blockchain.com; Unsung Heroes = Access, Global Switch 3. As of latest funding round

Source: OC&C analysis

| © OC&C Strategy Consultants 2023

Decacorns have a higher than average need for highly-skilled talent, although the shape of the need will vary based on end industry and model



1. Based on LinkedIn Research (# resulting profiles per skill set) as of 24/01/2023; One profile can be tagged to multiple skill sets
2. Regulated Disruptors = Worldpay, Revolut, FNZ, Rapyd, Checkout.com; Consumer Disruptors = Just Eat; Revolutionary Tech = Arm, Arrival, Blockchain.com; Unsung Heroes = Access, Global Switch
3. As of latest funding round

Source: LinkedIn, OC&C analysis

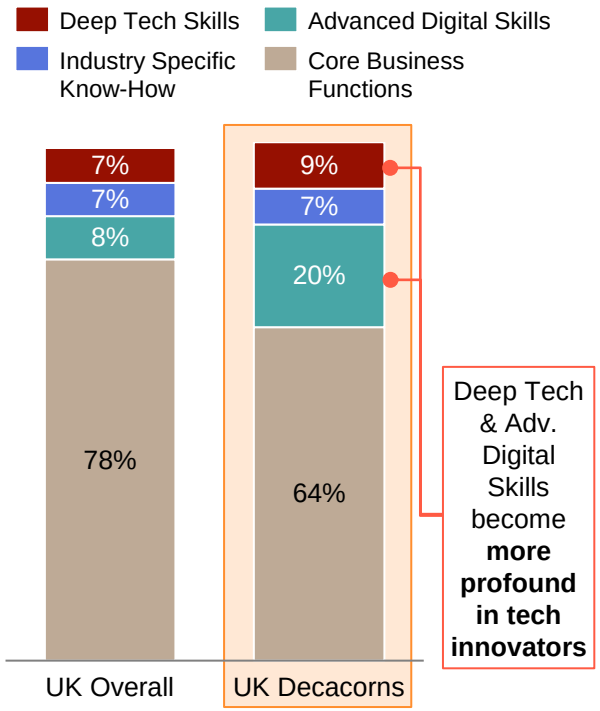
| © OC&C Strategy Consultants 2023

High growth businesses require more highly-skilled worker than traditional - with tighter timelines to hire these employees in to meet growth ambitions

Comparison of Skill Requirements for High Growth Businesses vs Traditional

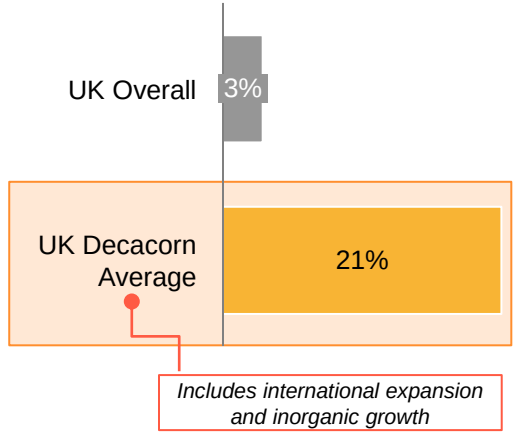
High growth require more highly skilled workers

Skill Sets Distribution Decacorns vs. Broader UK Talent Pool (%, 2023)[1]



These need to be hired in a faster pace to meet demand

Employment Growth UK vs decacorn Average
(2020-2022 or last two years available, pa.)[4]

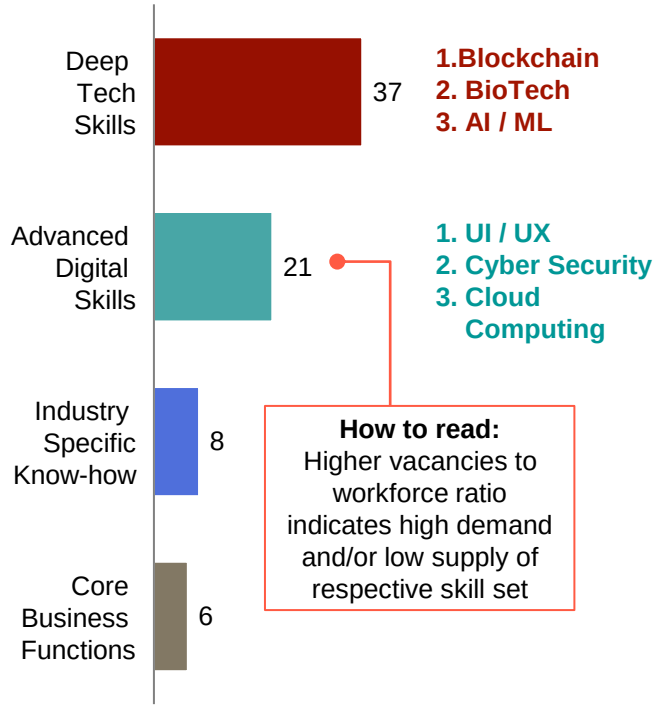


*"Skills shortage was a really big problem though - **couldn't scale the team rapidly enough**."*

Where there are supply constraints creating heightened issues for high growth

Indexed Vacancies to Work-force by Skill Set (UK, #, 2023)[1,2,3]

Highest demand-supply mismatch



1. Based on LinkedIn Research (# resulting profiles per skill set) as of 24/01/2023; One profile can be tagged to multiple skill sets; Only includes those profiles with LinkedIn account and correct tagging; Among others, "Deep Tech Skills" includes AI, BioTech, Hardware Engineering; "Advanced Digital Skills" includes Software Development, Cyber, UI/UX; "Industry Specific Know-How" incl. Risk, Regulation; "Core Business Functions" includes HR, Sales, Customer Service
2. Vacancies per 100 employees 3. Based on LinkedIn (22/01/2023); Only includes vacancies posted on LinkedIn 4. Includes inorganic growth via M&A; Growth in employment of 9 decacorns equally weighted

Source: LinkedIn, Scaleup Institute, ONS, Company Homepages, OC&C analysis

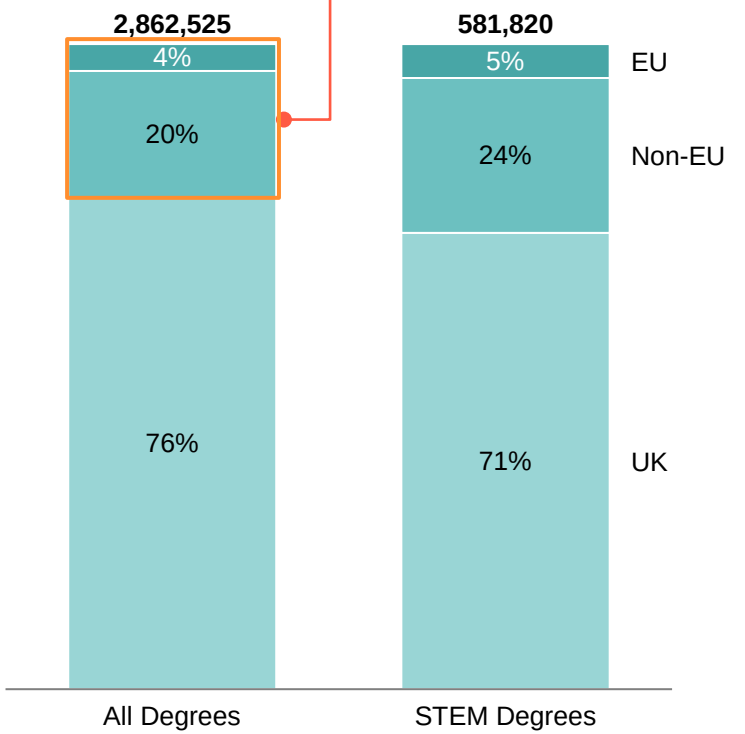
| © OC&C Strategy Consultants 2023

While almost every fourth student in the UK is coming from abroad, only 13% of these still remain in the UK 10 years after starting to study

Conversion international STEM graduates at UK universities into UK labour market

Higher Education student enrolments by subject of study and domicile (2021-22)[1 2]

While Internationals only constitute **17% of full time undergraduates**, they make up **64%** of full time **post-graduate students**



% of International non-EU Students Remaining in UK after Graduation (2016-2021, 2011-2021)

# Non-EU students issued initial sponsored study visa in 2011	**222k**
Of which remain in 2021 (#,%)	**29k** (13%)
# Non-EU students issued initial sponsored study visa in 20116	**152k**
Of which remain in 2021 (#,%)	**26K** (17%)

Of the top 5 nationalities in 2011, **Chinese and American** students have a particular **low remain rate** (CN: 4%, USA: 5%)

1. All Levels of Study (i.e. Undergraduate, First degree and Postgraduate) 2. STEM = Physical sciences, Mathematical sciences, Engineering and technology, Computing, Biological and sport sciences

Source: Higher Education Statistics Agency, UK Home Office - Migrant Journey 2021, OC&C analysis

| © OC&C Strategy Consultants 2023

The government is aware of this skill demand and already carrying out initiatives (I/II)

Overview UK Government Initiatives since 2018

Initiative	Starting Year	Key Stakeholders	Impact	Horizon
Smart Specialisation Platform	2011 *(ongoing)*	• European Commission, OECD, selection of global regions & countries (e.g. Wales, Thailand)	• Partnership of EU Member States, 7 non-Eu countries & EU + non-EU regions collaborating with businesses to enable each region to identify and develop its own competitive advantages (e.g. for Wales: Low carbon energy, ICT cyber security & Neuroscience among others)	Long term
Digital Skills Partnership	2017-2022	• Co-Chairs: Dept. for Digital, Culture, Media & Sport + Innovate UK • Board with 19 members incl. CBI, Google, Oxford	• Coordinating national and local business and government activities • Creating a common framework for digital skills in charities and small businesses • Piloting Local Digital Skills Partnerships at regional level to coordinate digital skills demand & provision • Developing an AI Industrial Master's Programme and supporting AI PhD places	Long- term
National Retraining Scheme	2018	• HM Treasury, Department for Education, CBI, Trade Union Congress	• £100 million scheme that offers workers access to guidance and training that will support them to find more secure work in in-demand areas	Mid-term
Institute of Coding	2018	• HM Government • Office for Students	• Together with Digital Skills Partnership developing Industrial Masters for AI programme • Campaigning to fill 2,500 new places on postgraduate AI & data science conversion courses • Developing & delivering a series of skills bootcamps for Depart. of Education (£20m committed in total)	Mid-term
Secondary School Teacher Training in IT	2018	• Department for Education	• The UK government committed £84 million to upskill 8,000 computer science teachers who don't have a post A level qualification in computer science with at least 40 hours of teaching to treble the number of qualified teacher to 12,000 by 2022	Mid-term
T-Levels Introduction	2020	• Department for Education	• Potential for GCSE graduates to study a specific two-year programmes, incl. a substantial work placement, in designated pathways (among others "Digital") • T-Levels set learners up for further study, apprenticeship, or employment	Mid-term
Skills Bootcamps	2021(?)	• Department for Education, Institute of Coding, Digital Skills Partnership	• Up to 16 weeks of classes online or classroom-based, free to enrol for those looking for a new job; Classes include data science and coding and every participant is guaranteed a job interview at the end of the course	Short-term
National Skills Fund	2021	• Department for Education	• National Skills Fund to help eligible adult learners access government funded level 3 courses, also across digital & engineering subjects (£1.6bn committed) • Eligible are those over 24, earn below annual National Living Wage (£18,525) or be unemployed and must not already have a level 3 qualification	Mid-term
Post-graduate conversion courses in DnA	2023	• Department for Digital Media, Culture and Sport	• Scholarships (£10k each) that aim to encourage more women, black students, disabled students and students from lower socioeconomic backgrounds to **Data Science and AI** related subjects (£17m committed capital)	Mid-term
Computing Skills for children	2019	• National Centre for Computing Education	• Ensure programmes that engage children with AI concepts are accessible and reach the widest demographic (39k+ teachers engaged across 20k+ schools in England, 12k+ teachers taken CPD)	Mid-term

Source: CBI – Delivering Skills for the New Economy, Schoolweek, OC&C analysis

| © OC&C Strategy Consultants 2023

The government is aware of this skill demand and already carrying out initiatives (II/II)

Overview UK Government Initiatives since 2018

Initiative	Starting Year	Key Stakeholders	Impact	Horizon
Skills Value Chain approach	2022	• Department for Education • Office for AI	• Help for the UK industry and providers to identify needed skills for the future • Lessons learned from this pilot will support businesses in adopting the skills needed to get the best from AI • The Office for AI & Department for Education will analyse after the pilot how these needs can be met and mainstreamed through national skills provision	Long-term
Promote AI as attractive career pathway	2022	• Department for Education • Office for AI	• Ensure career pathways for those working with or developing AI are clearly articulated on career guidance platforms, including the National Careers Service, demonstrating role models and opportunities to those exploring AI • Ensuring that leaders within the National AI Research and Innovation Programme will play a key role in engaging with the public and inspiring the leaders of the future	Mid-term

Making UK attractive for AI researchers	2022	• Advanced Research and Invention Agency	• Includes
			  • The National AI Research and Innovation (R&I) Programme that among others creates an UK AI ecosystem of relevant stakeholders
			  • National Data Strategy, that improvs access to data for AI researchers (incl. to public sector data)
			  • 'Horizon Europe' and the 'US UK Declaration on Cooperation in AI Research' which help strengthening international collaboration on research and innovation
				Mid-term

Digital Skills Council	2022			

Source: CBI – Delivering Skills for the New Economy, Schoolweek, OC&C analysis

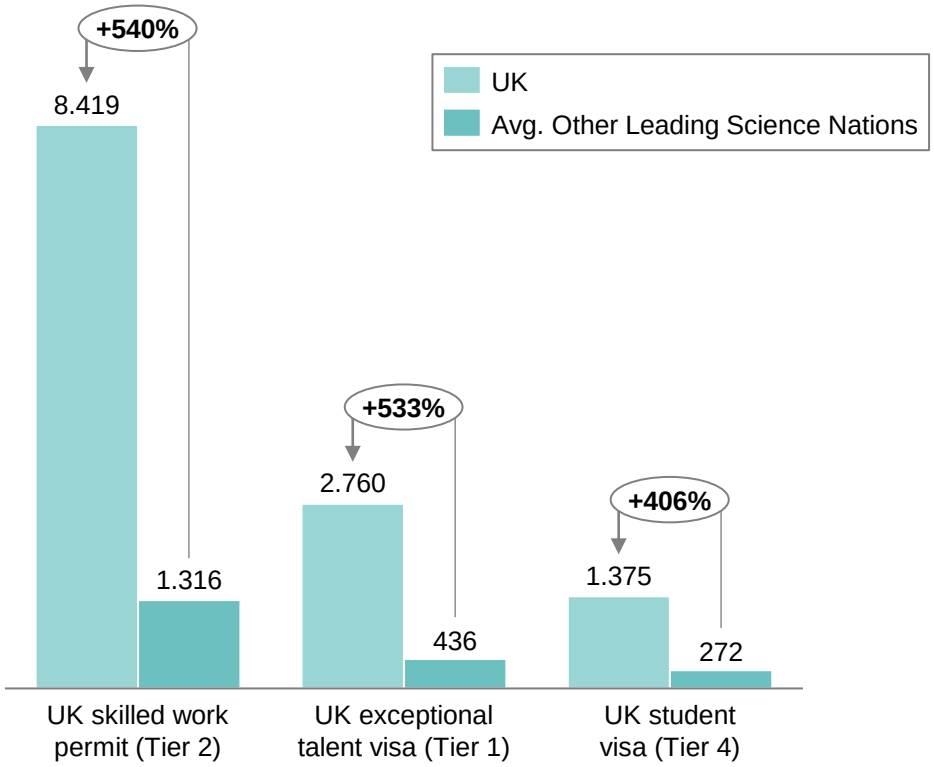
| © OC&C Strategy Consultants 2023

Although the UK's visa costs are high by international standards, they perform relatively well on processing times

Visa Processing Costs & Time

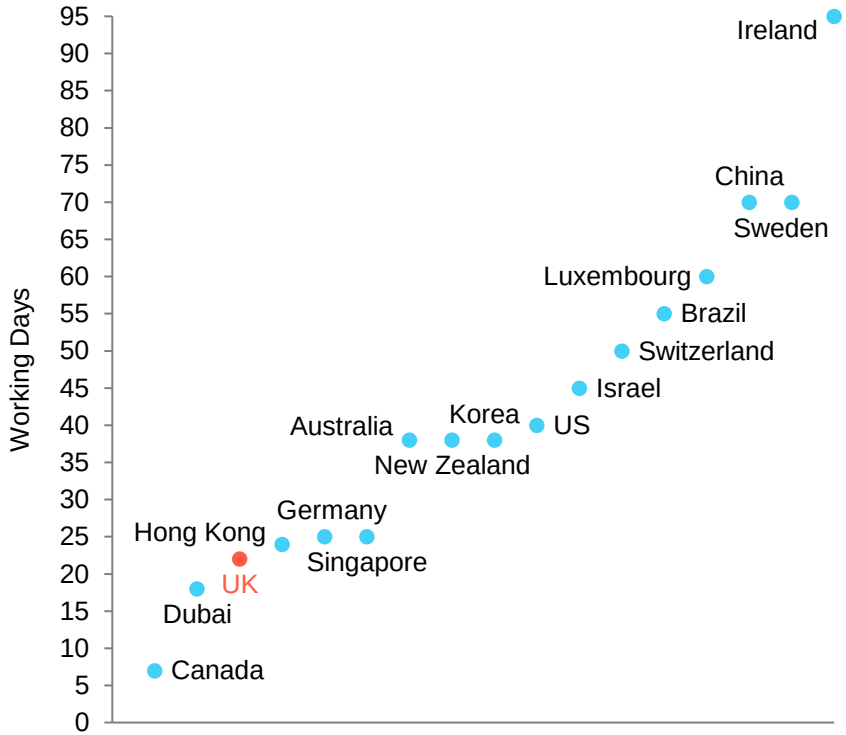
Visa application costs are highlighted by scale-up as being high in the UK vs international comparison

Visa Application Costs



The UK performs relatively well on visa processing times

Avg. Visa Processing Times[1]



1. EY 'Streamlining the UK Visa System' comparison assess the timeframes associated with an application by a US or British citizen for a two-year intra-company Transfer Visa 2. Royal Society 'International Visa Explainer' Avg. application costs compared to other leading science nations, July 2019

Source: Royal Society 'International Visa Explainer' , EY ' Streamlining the UK Visa System, OC&C analysis

| © OC&C Strategy Consultants 2023