**Economic Complexity and Levelling up**

**Executive Summary**

**tbc**

**Introduction**

* The government has announced levelling up the country has an objective and CfC has recently defined levelling-up in i) standards of living ii) help places each its productivity potential.
* On the productivity front, UK’s productivity is below France and Germany but there is a geography to it. Previous CfC research shows that the national productivity lag is mostly driven by large cities located outside the South East as they do not outperform non-urban areas as we would expect.
* Economic complexity helps us understand better the underlying economic capacities of each city. This allows identifying which places are lagging the most, when compared with their productivity potential.
* A comparative analysis between today and 1981 provides guidance on what work and what doesn’t in terms of changing the economic fortunes of a city.

**This paper attempts to understand the productive capabilities of each British cities and it is divided as follows:**

* What is economic complexity and how it looks today in UK urban areas
* How urban complexity changed in the last four decades
* What does this mean for levelling up?

**What is economic complexity and how it looks today in UK urban areas**

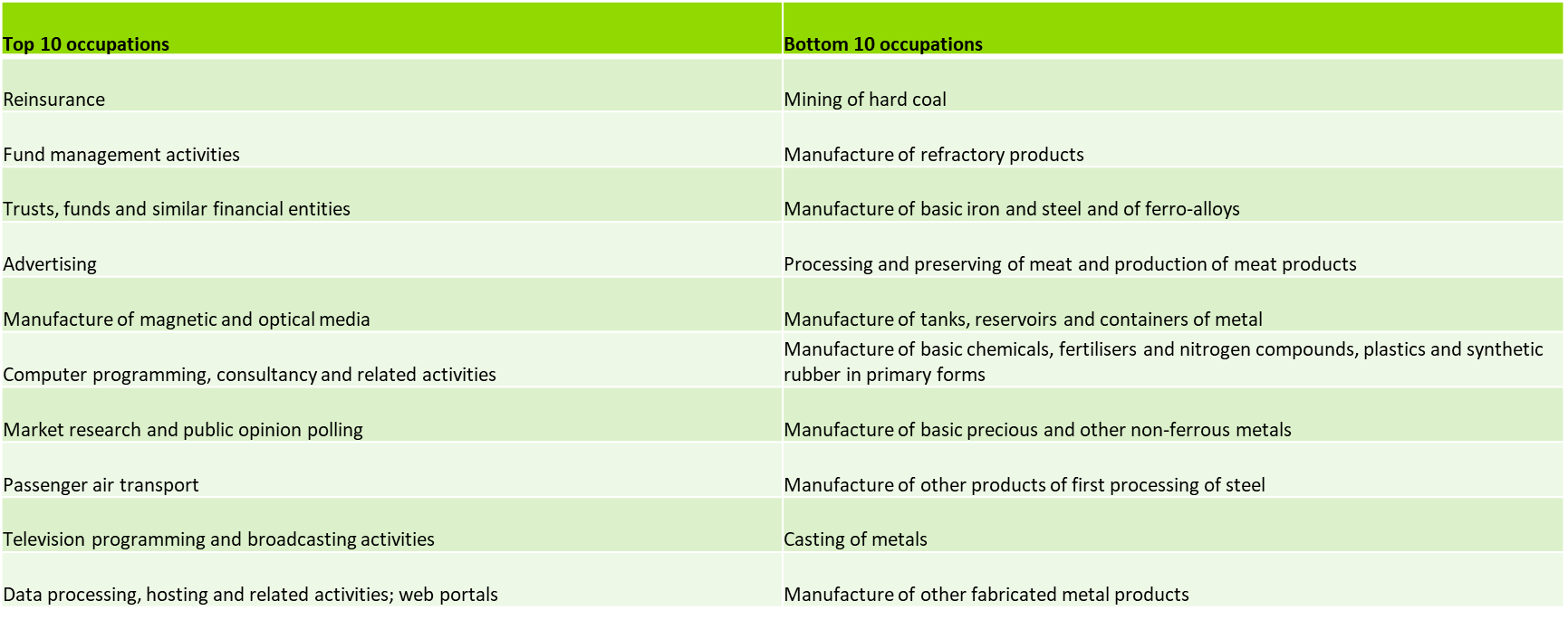
* Economic complexity is a concept that infers the industrial structure of a place, based on which sectors it has a comparative advantage. It considers both the diversity of a place’s exporting sector but also how sophisticated are its exports (ubiquity), by comparing different areas (more details see box 1). **Complex economie**s, with higher levels of accumulated knowledge, are generally associated with **better productivity and income levels.**
* Figure 1 shows that **urban areas in the UK are significantly more complex than non-urban areas** and that is why cities are UK’s economic drivers.

**Figure 1: Urban areas are more complex than non-urban areas.**

Source: BRES, 2019. Centre for Cities’ own calculations. Weighted-average of economic complexity scores ate the Local Authority level. The most complex Local Authority is the City of London, followed by Tower Hamlets, while Dumfries and Galloway ranks last.

* Urban areas are more complex because cities, through densification, allow firms and workers to agglomerate, benefit from spillover effects and be more productive. Cities capabilities are especially suitable for knowledge intensive sectors like Finance, Advertising and programming; which are today’s most complex activities in the country.

**Table 1:** Products by complexity (2019)



Source: BRES, 2019. Centre for Cities’ own calculations.

* + Box 1: with overall complexity developed by Hidalgo and Hausman, definition and formula. Rare products are not necessarily complex. State the authors argue it is a predictive force of future economic growth
* Even though cities are more complex and UK’s engine of growth, **urban areas are not equally complex**. Figure 2 show that a positive relationship between productivity and complexity in UK’s cities. High productivity cities, mostly located in the South, broadly have high complexity levels relative to the remaining cities.

**Figure 2:** Complexity and productivity are highly correlated

Source: ONS 2018; BRES, 2019. Centre for Cities’ own calculations. **Note that complexity scores are relative to other cities, meaning that there will always be cities with negative scores.**

* Almost all cities with lower complexity also present productivity below average (with some exceptions where productivity does not reflect other welfare indicators). In order to increase productivity levels, these places need to diversify their economic base instead of replicating their existing (low productivity) comparative advantages.
* That said, there are a significant number of cities (bottom right) - like Manchester, Glasgow and Leeds - that simultaneously present **low productivity levels but high complexity**. These are the places where we expect the largest “productivity lag”.
* One of the reasons why such places continue lagging in terms of productivity is the **size of its complex base**. Figure 3 highlights that the most productive cities are associated with a higher share of workers allocated to its’ most complex sectors. Despite similar complexity levels, Glasgow has 13 per cent of jobs in its top 5 complex sector while Brighton is 54 per cent.

**Figure 3:** Low productivity but high complexity cities need a larger export base

Source: ONS 2018; BRES, 2019. Centre for Cities’ own calculations.

* For those cities, their challenge is about expanding on their existing comparative advantages (unlike the other low productivity cities).

**How urban complexity changed in the last four decades**

* The existing correlation between 1981 and 2019 complexity supports the idea that most complex economies are more likely to innovate and adapt overtime and keep relatively high levels of productivity and wages.

**Figure 4:** Complexity changes 1981-2019, at the PUA level

Source: ONS 2018; Census, 1981; BRES, 2019. Centre for Cities’ own calculations. Note that complexity scores are relative to other cities, meaning that there will always be cities with negative scores. Scores are normalised.

* The cities that were able to maintain its complexity above average – mostly located in the South – were able to innovate and reinvent themselves into new sectors: moving from electronics and banking to programming as Table 2 suggests. While the places that lost its (relative) complexity had their economic engine mainly unchanged as the British economy evolved over the decades.

**Table 2:** Cities with high complexity in 1981, most prevalent occupation % of exporting jobs

|  |  |  |  |
| --- | --- | --- | --- |
| **PUA** | **1981** | **2019** | **Complexity** |
| Edinburgh | Radio/electronic capital goods (6.8%) | Computer programming, consultancy and related activities (19.0%) | Remained high |
| London | Banking/bill-discounting (7.3%) | Computer programming, consultancy and related activities (16.8%) | Remained high |
| Reading | Electronic data processing equipment (7.8%) | Computer programming, consultancy and related activities (37.4%) | Remained high |
| Aberdeen | Extraction: mineral oil/natural gas (22.4%) | Extraction: mineral oil/natural gas (28.3) | Deteriorated |
| Blackpool | Aerospace manufacture/repairing (13.2%) | Aerospace manufacture/repairing (26.7%) | Deteriorated |
| Swansea | Motor vehicle parts (8.2%) | Manufacture of basic iron and steel and of ferro-alloys (13.6%) | Deteriorated |

* Places that present above average complexity today, had similar level of knowledge-intensive jobs in 1981, to ones that deteriorated (both at approximately 8 per cent). Figure 5 suggests the main difference between these two groups was mainly their sectorial concentration and not the sector they were specialised.

**Figure 5:** Low levels of concentration allowed some cities to become more complex

* Cities with the same type specialisation in 1981 presented substantially different paths, depending on their sectorial concentration. Cities with low industrial concentration were able to allow their knowledge-based occupations to flourish and innovate. At the same time, highly concentrated cities continued replicating their existing strengths, leading to a relative decline as the British economy kept innovating.

**Table 3:** Divergence between cities with the same specialisation in 2019

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PUA** | **Most prevalent sector (1981)** | **Sectorial concentration: % exporting jobs** | **KIBS % of exporting jobs (1981)** | **% Private KIBS (2019)** | **Complexity (1981-2019)** |
| Glasgow | Shipbuilding/repairing | 4.3 | 9.5 | 14.2 | Improved |
| Plymouth | 34.2 | 11.9 | 8.0 | Deteriorated |
| Liverpool | Motor vehicle bodies | 7.8 | 8.6 | 12.7 | Improved |
| Luton | 28.1 | 6.4 | 9.9 | Deteriorated |
| Nottingham | Deep coal mines | 6.4 | 9.8 | 12.6 | Improved |
| Mansfield | 26.1 | 5.0 | 6.3 | Remained low |

Source: ONS 2018; Census, 1981; BRES, 2019. Centre for Cities’ own calculations. Note that complexity scores are relative to other cities, meaning that there will always be cities with negative scores. Scores are normalised.

* + Box about coal towns/replicators. Moved from coal to several different low skilled occupations.
* Within today’s complex cities, the places that saw significant complexity **gains are broadly the cities where we observed the largest “productivity gap”**. This highlights that those economies are in an ongoing process of transition.
  + Box with a bit of data and methodology for 1981
* The larger cities with low complexity may be in the process of complexification as their knowledge-intensive base is similar to places like Liverpool or Nottingham and with the exception of Birmingham, presented some complexity gains when compared with 1981.

**Figure 6:** Larger cities are broadly becoming more complex and increased their KIBS. From 1981 to 2019.

Source: ONS 2018; Census, 1981; BRES, 2019. Centre for Cities’ own calculations. Note that complexity scores are relative to other cities, meaning that there will always be cities with negative scores. Scores are normalised.

**What does this mean for levelling up?**

**Recognise the central role of cities in levelling-up**

* Cities are more complex than non-urban economies because the overall economy is moving towards knowledge-intensive services
* Urban economic complexity, like previous CfC research, supports the idea that levelling up is not making all places equally productive.
* Ad-hoc pots of money to towns can improve local wellbeing but not solve the productivity challenges.

**Within cities, different places present different challenges, depending on its economic base**

**High complexity, low productivities**

* Cities with incipient complex sectors (Manchester, Leeds, etc) that improved substantially since 1981, are still in a transition process. Unlocking its productivity potential is key to level up the country as whole. Central and local governments must support cities expand on their emerging strengths.
  + **Central government rec:** End local government austerity, give further devolved power, etc.
  + **Local government rec:** use devolved powers to improve people’s skills; strengthen transport networks; improve conditions for business (office space quality); etc.

**Low productivity and complexity places**

* Central government should not expect these places as a whole to improve their productivity levels rapidly: our research shows that cities that had complexity gains in the last four decades are still lagging in terms of productivity showing how gradual the process can be.

* That said, cities can reinvent themselves and turn things around. In order to achieve it, it will fundamental to diversify the existing economy instead of expanding the existing competitive sectors, which keeps cities in a cycle of replication. Strategies based on attracting large manufacturing plants or freeports will do little to change the strengths of an economy in the decades to come.
  + **Central government rec:** support incomes and wellbeing in the areas, guarantee health and education levels converge with the rest of the country.
  + **Local government:** make cities better places for businesses (office space improvements) and adult education, etc