

Nesta response to DCMS Digital Communication Strategy Consultation

Video Games Clusters and Broadband

The business benefits of broadband

Better broadband benefits businesses in a variety of ways: it improves their operational efficiency (and therefore productivity) through reductions in costs, for example when it makes it possible to replace business travelling with teleconferencing, or to access ICT services through the cloud instead of keeping them in-house (Shideler et al. 2007).

Broadband also creates many opportunities for product, service, business model and organisational innovations, often of a disruptive nature. Lower barriers to entry and network effects (the fact that online platforms tend to increase their value exponentially as they gain new members) allow smaller, entrepreneurial businesses to enter existing markets and transform them (Varian and Shapiro 1999, Benkler, 2006). Some of the biggest business success stories of recent times – such as search-based advertising, e-commerce or social networking – happened this way. Many academic studies have made an explicit connection between broadband and the ability of firms to innovate¹.

It goes without saying that the magnitude of these benefits and opportunities, and the extent to which they can be realised depends on the capacity of the broadband infrastructure. Broadband quality could be expected to impact on company location in much the same way as transport networks did in the 20th Century.

Video games are a high growth, high innovation UK industry for which the broadband infrastructure is critical.

The Internet has brought with it new games distribution channels (games are the most popular app in Apple's App Store and Google Play, and digital distribution channel Steam just reached its 100th million user), new business models (such as online subscription, or sales of virtual goods) and new creative opportunities (a good example is online 'Maker' platform *Minecraft*). The web is also an important vehicle for video games collaboration and inspiration.

What is the relationship between games clustering and broadband?

In our recent report, 'A Map of the UK Games Industry' [see Mateos-Garcia et al. 2014 *attached to submission*] we explore the relationship between games clustering and access to broadband in the UK. Since there is no available business broadband data, we use residential broadband as a proxy for local connectivity. We would in any case expect that many micro and small games businesses (the majority of the UK games industry) might use residential broadband for commercial purposes instead of leasing a business line.

We measure games clustering in local authorities using a new dataset of UK games companies compiled from a variety of web sources. We normalise games company counts by the size of the local economy (based on business register data) to create an index of specialisation; our broadband access data comes from Ofcom, and is for the year 2013.²

¹ Bar and Riis 2000; Czernich et al. 2009; Brynjolfsson and Saunders 2010; Benkler 2006

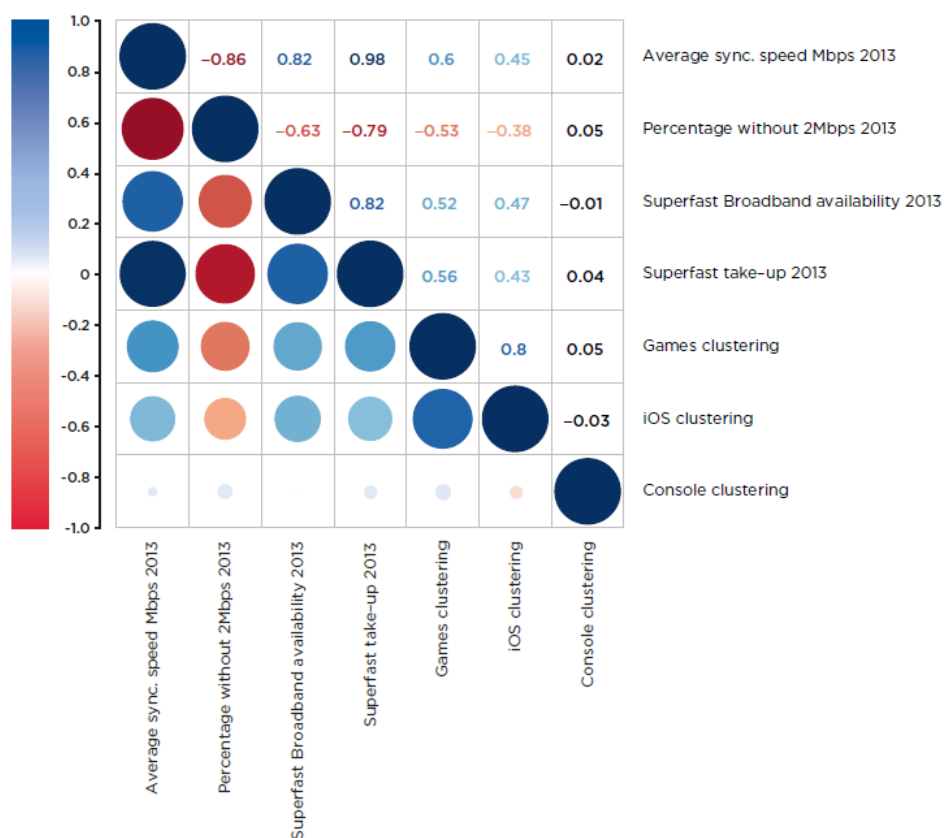
² The matching of Ofcom data and our data was not seamless, due to differences in spelling and inconsistent aggregation of categories in their data (for example, although Ofcom publishes data at the Local Authority level, it

The measures of broadband access that we consider are:

- Average synchronisation speed (Mbps): The average maximum speeds of existing broadband connections.
- Percentage without 2Mbps: The percentage of homes with broadband currently not achieving 2Mbit/s speeds.
- Superfast Broadband availability: The percentage of addresses which are within the coverage area of superfast broadband networks.
- Superfast take-up: Percentage of the total broadband connections which are superfast.

We estimate the correlation between games clustering and broadband metrics (see the results in Figure 1).³ In this matrix, the size of each circle indicates the strength of the correlation between measures. Blue circles indicate a positive correlation between them, while red circles indicate a negative relationship.

Figure 1 Broadband access and video games clustering



Source: Nesta (2014), Ofcom (2013)

includes London as a single area). We address this by using a fuzzy matching approach where we match areas not on their exact name, but on its similarity. In any instances where the matching processes generates no matches, or more than one candidate, we remove the area from the dataset (this means dropping London, for example). We end up with a list of 174 matches out of 200 areas included in Ofcom's list.

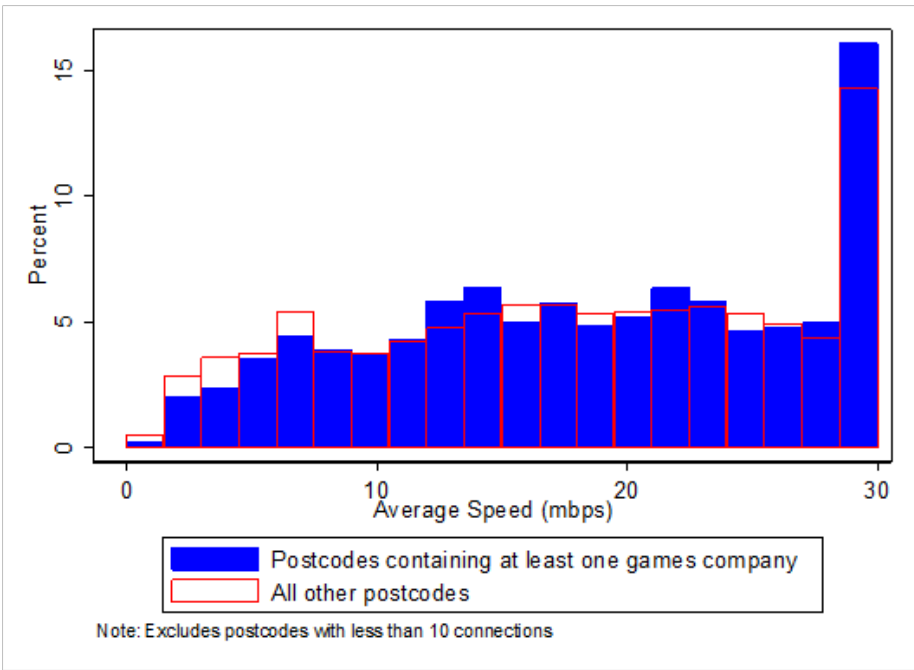
³ We do this after transforming them with logarithms to reduce the effect of outliers, and focusing our analysis on the subset of 45 local authority districts with at least *some* video games presence (measured by whether they have at least five games companies in our dataset). Together with the fact that the location quotients are normalised by overall levels of local industrial activity, this should reduce the likelihood that our findings are explained by urbanisation – the fact that larger areas tend to have both more games companies and faster broadband.

The results of our analysis are consistent with the idea that a stronger broadband infrastructure supports higher levels of video game clustering: that is, clustering is positively correlated with average residential broadband speeds, superfast availability and take-up, and negatively correlated with the percentage of homes without basic connectivity.⁴

Our data also shows that the association between games clustering and residential broadband is stronger for companies that specialise on mobile platforms like iPhones and iPads (this is the ‘iOS clustering’ measure in figure 1). One explanation for this could be that these companies tend to be smaller than those focused on consoles like PlayStation or Xbox, and less able to afford leasing a business line. This would make them more reliant on the residential broadband infrastructure, which they use for commercial purposes.

We have also looked at the presence of games companies in different postcodes conditional on postcodes’ broadband speed, once again using Ofcom data (see figure 2). Our analysis shows that, in the group of postcodes with faster average broadband speeds, there is a higher proportion of postcodes with some games industry presence than postcodes with no games presence, while the reverse is true in postcodes with lower average broadband speeds.⁵ This is line with the patterns one finds in figure 1.

Figure 2 Games company presence and broadband speed



⁴ We cannot rule out that strong broadband infrastructure and video games presence are both explained by a third local factor – this is an issue for further research.

⁵ Caution is advised in the interpretation of these findings: Ofcom top-coding of data, means that all locations with speeds equal to or over 30 Mbps are aggregated. While we tried to reduce the risk that the relationship between games industry presence and broadband might be driven by urbanization by only focusing on postcodes with more than 10 connections, we cannot rule out the possibility that other, unobserved, local factors underlie it (e.g. presence of universities, clients or other amenities that attract workers to areas with better broadband).

The case of Korea

If we take the example of Korea, a strong ICT infrastructure played a critical role in creating demand for online games.

Korea has achieved the highest level of broadband internet penetration in the world; cheap and fast internet connections are available in most households. Supportive cultural factors which stress the importance of education indirectly created demand for online games because Korean parents view computers and the internet as educational tools. Furthermore, unique initial demand conditions were strengthened by the network effect of the online games. As a result, demand soon took off dramatically increasing both the market share and market size of the online and game industry overall⁶.

Conclusion

The submission has highlighted the importance of broadband for UK innovation and competitiveness, with a particular focus on the UK games industry. It also provides evidence of a link between local broadband infrastructure and games clustering. The implication is that the UK government should support further roll-out of high capacity, high-speed broadband in order to support growth in innovative industries like video games. This should be spearheaded by the creation of a UK Broadband Strategy that aggregates national objectives and policy, and develops arguments that are aimed at fostering innovation, providing economic value and enabling consumers and businesses to innovate and explore online opportunities.

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⁶ Aruede et al. (2006)