

FEATURE

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Experimental estimates of rural-urban productivity

SUMMARY

Understanding the economic performance of rural areas is an important part of government policy. This article presents experimental estimates of productivity at the rural and urban level for England as a result of collaboration between the Office for National Statistics and the Department for Environment, Food and Rural Affairs. These estimates, which are available from 2002 to 2005 and which will be produced in spring each year, have been developed to allow policy analysts and others to better measure the economic performance of rural and urban areas in England than is possible with existing regional productivity figures, which do not provide the necessary level of detail. The article outlines the underlying methodology and presents some of the key results.

The Government's central economic objective is to achieve high and stable rates of economic growth and employment. Productivity growth, alongside high and stable levels of employment, is central to long-term economic performance and rising living standards. The economic performance of rural areas is an important aspect of the commitment by the Department for Environment, Food and Rural Affairs (Defra) to sustain strong rural communities, as outlined in its Rural Strategy in 2004.¹ One of the priorities set out in the Rural Strategy concerns economic and social regeneration – supporting enterprise across rural England, but targeting greater resources at areas of greatest need. Rural economic performance has been integral to Defra's rural indicators ever since. To identify variance in performance between different types of areas, it is important to use a robust and recognised measure of productivity. Furthermore, when examining productivity in rural areas, it is essential that estimates are available at least at local authority district (LAD) level, as these are the largest geographical areas to which a rural classification can be applied (see **Box 1**). This gives a picture of rural and urban performance compared with the national average, which can help facilitate greater understanding of economic performance in terms of productivity in areas with different levels of rurality.

During the Spending Review period 2004 to 2008, one of Defra's Public Service Agreements (PSAs) aimed to 'enhance

opportunity and tackle social exclusion in rural areas'. The relevant PSA target was to:

reduce the gap in productivity between the least well performing quartile of rural areas and the English median by 2008, demonstrating progress by 2006, and improve the accessibility of services for people in rural areas.

The indicator developed to measure productivity for this PSA was based on average employment income weighted by employment rate. While this gave an indication of economic performance, it was not a direct measure of productivity that was consistent with official methods of estimating productivity.

For the current Comprehensive Spending Review period (2008–11), Defra's new Departmental Strategic Objective (DSO) for 'Strong Rural Communities' aims, in part, at economic growth being supported in rural areas with the lowest levels of performance.² An essential foundation of this indicator is a robust measure of labour productivity, with a methodology consistent with official measures of regional productivity published by the Office for National Statistics (ONS). Following collaboration between Defra's Rural Statistics Unit and ONS, a new methodology has been developed to produce experimental estimates of productivity at the rural-urban level that will be used to assess performance against this objective.

The rest of this article outlines this new

Box 1

Defining 'rural' at district level

The Rural/Urban Definition, an official National Statistic introduced in 2004, defines the rurality of small census geographies such as census output areas and wards. Areas forming settlements with populations of over 10,000 are urban, while the remainder are defined as rural town and fringe, village or hamlet and dispersed.

This definition forms the basis of the LAD Rural Urban classification system, constructed by the Rural Evidence Research Centre at Birkbeck College. The categories of the classification and criteria for identifying them are as follows:

- major urban (MU) – districts with either 100,000 people or 50 per cent of their population living in urban areas with a population of more than 750,000. There are 76 districts in this group, with an aggregate population at the 2001 Census of 17.2 million
- large urban (LU) – districts with either 50,000 people or 50 per cent of their population living in one of 17 urban areas with a population between 250,000 and 750,000. There are

45 districts in this group, with an aggregate population of 7.3 million

- other urban (OU) – districts with fewer than 37,000 people and less than 26 per cent of their population living in rural settlements and larger market towns.³ There are 55 districts in this group, with an aggregate population of 6.7 million
- significant rural (SR) – districts with more than 37,000 people or more than 26 per cent of their population living in rural settlements and larger market towns. There are 53 districts in this group, with an aggregate population of 6.4 million
- rural-50 (R50) – districts with at least 50 per cent but less than 80 per cent of their population living in rural settlements and larger market towns. There are 52 districts in this group, with an aggregate population of 5.8 million, and
- rural-80 (R80) – districts with at least 80 per cent of their population living in rural settlements and larger market towns. There are 73 districts in this group, with an aggregate population of 5.7 million

These classifications form the basis of the experimental estimates of rural-urban productivity that are presented here.⁴

methodology in more detail, and presents some of the key results. The article then concludes with how these results can be used in a policy context and proposes future developments.

Methodology

Estimates of regional productivity at the NUTS 1 level are published annually by ONS. The NUTS 1 regions for the UK are the nine English Government Office Regions (North East, North West, Yorkshire and The Humber, East Midlands, West Midlands, East of England, London, South East and South West) plus Scotland, Wales and Northern Ireland. The regional productivity estimates are available on an output per filled job basis. These are published as indices relative to the UK average, where the UK is equal to 100, with the difference between the region and the UK a measure of the regional productivity gap. Following the methodology changes that came into effect from February 2008 (see Dey-Chowdhury *et al* 2008), unsmoothed estimates of gross value added (GVA) are used as the output measure. The input of labour is measured by the workforce jobs (WFJ) series, which estimates the number of jobs by region. In deriving these experimental estimates of productivity at the rural-urban level, these data sources and the methodology were followed as closely as possible.

The estimates presented in this article are for England only. In order to produce these experimental estimates at the rural-urban level, it is necessary to first derive estimates

of both GVA and WFJ at the LAD level, using a top-down approach from the nine English Government Office Regions, and then aggregate up from these 354 English LADs to the six categories of the LAD classification (a bottom-up approach). As outlined in Box 1, each English LAD has its own classification, which means that it is possible to map directly from the LAD level to the rural-urban classification that is presented here.

Estimates of regional GVA are published for each of the NUTS 1, 2 and 3 regions. In order to derive estimates at the LAD level, published unsmoothed GVA estimates at the NUTS 3 level were allocated down to the LADs that comprise a particular NUTS 3 region. For example, the published GVA estimate for the NUTS 3 region West Cumbria was split and allocated to the corresponding LADs of Allerdale, Barrow-in-Furness and Copeland. The basis of this allocation was GVA data obtained from the Annual Business Inquiry (ABI). The ABI is just one source that is used to compile the published estimates of regional GVA, and has the advantage of being available at the LAD level. Although the totals differ (see Box 2 for details), these data can still be used to construct GVA-based weights to split the published NUTS 3 estimates. One advantage of this approach is that these weights are being applied to the published totals, ensuring complete consistency with the headline estimates of regional GVA.

Since WFJ data are publicly available at the LAD level, this means that the input

data at this level are constrained with published data at the NUTS 1 level. (Note that the published estimates are rounded to the nearest thousand, so the LAD estimates are constrained to the more detailed NUTS 1 estimates to ensure complete consistency.) Although the underlying input data are consistent with those used to construct headline estimates of regional productivity, the productivity estimates in this article are indexed relative to the England average (so that England is equal to 100) rather than the UK average, as is done in official publications.

Results

This section of the article presents the main findings, and thereby seeks to determine whether the economic performance of rural areas is relatively worse than that of urban areas and the national average, and whether this has changed over the last few years.⁵

Figure 1 shows estimates of output per job for 2005 for the six categories of the LAD classification. Due to the experimental nature of these estimates (and specifically the use of ABI data at such a low regional level), it is advised that differences of a few percentage points are not seen as significant as they could be due to measurement issues. This follows a similar recommendation that ONS uses when making international comparisons of productivity (see ONS 2007a). Figure 1 shows that, whereas there is a significant productivity gap between major urban areas and England as a whole (and likewise between rural-80

Box 2

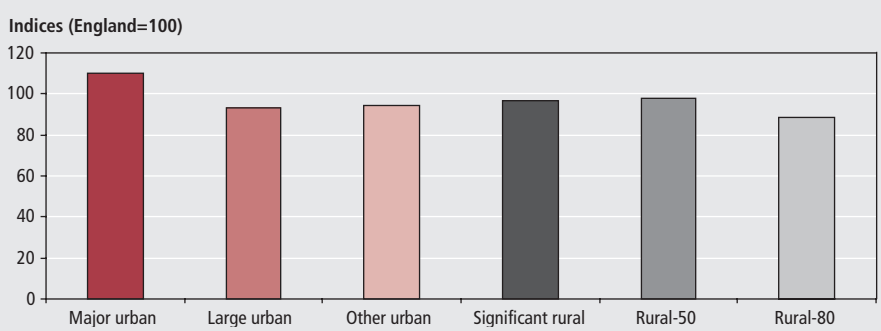
Estimates of regional GVA

ONS currently only uses the income approach to produce its headline estimates of regional GVA. This involves adding up all the forms of income earned in the region in the production of goods and services. Several data sources (including the ABI) are used to produce the components of the income measure of regional GVA. These are available for all NUTS 1, 2 and 3 regions and are allocated to each region using the most appropriate set of available indicators, which are based on a combination of survey and administrative sources (Holmes 2008). These estimates are based on a top-down approach, as national

aggregates are allocated down to the regional level using the relevant indicator of regional activity.

The ABI estimates of regional GVA, which were used to construct weights to apportion the NUTS 3 estimates of GVA to the LAD level, differ from the headline estimates that are published. These are based on only this one data source, and are derived using the production approach. This approach measures the value of output of goods and services produced, removing the value of intermediate consumption. In addition, the ABI data are not subject to adjustments required to make them consistent with the European System of Accounts 95.

Figure 1
Output per job by LAD classification, 2005



LADs and England), it is not possible to distinguish productivity levels for the other four categories of the LAD classification. This shows that there is no discernible rural-urban productivity gap, except at the extreme end of the LAD classification – major urban and rural-80 LADs.

While the analysis above assesses whether productivity gaps (in terms of levels) exist between rural and urban areas, it is also important to consider whether such gaps have changed over time. Policies are often focused over the long- to medium-term, as is the case in the Defra DSO. **Figure 2** shows rural-urban productivity estimates over the period 2002 to 2005. It should be noted, however, that comparisons of growth between rural-urban categories should not be made because the estimates of GVA used in calculating these productivity estimates are in nominal, not real, terms. Currently, regional price deflators do not exist, so it is not possible to isolate volume changes from price changes. In terms of output growth, it is only the former that are of interest.

Figure 2 shows that there have not been any discernible changes in the productivity gaps observed in 2005 from earlier years. Although the productivity performance of rural-80 LADs seems to have improved between 2002 and 2005, it is not possible

to say whether this improvement is an actual productivity improvement or whether it is an apparent change caused by measurement-related issues. To carry out more meaningful time series analysis, a longer time series should be assessed. This is currently being developed.

Looking at the productivity estimates at the LAD level, there seems to be a ‘London’ effect in that a significant proportion of the major urban areas, which have been shown to perform well on this indicator, are London-based. This can be seen by the concentrated area of LADs around London, whose productivity is significantly greater than that for England as a whole. This raises the question of what is driving the productivity gap that is observed between

major urban LADs and England: is it due to these areas being urban or mainly due to the performance of London?

Since the LADs that comprise London are all defined as major urban, it is possible to separate out the London-based major urban LADs. The results are summarised in **Figure 3**.

Figure 3 shows that an important factor behind the productivity gap seen earlier for major urban local authorities is that many of the major urban LADs are London-based – 33 of the 76 English major urban LADs. When London is separated from the other major urban areas, it is not possible to distinguish the economic performance of these areas from the other categories of the LAD classification; there is no rural-urban productivity gap if London is excluded. This analysis shows that major urban LADs are not necessarily more productive, rather that there is a specific ‘London’ effect.

Economic theory suggests that there may be reasons why cities tend to perform better economically than rural areas. Agglomeration effects or ‘clustering’ describe the forces that make firms in places of dense economic activities, such as cities, especially productive. Ciccone (2001) analyses the role of agglomeration effects in explaining differences in regional productivity across Europe and the United

Figure 2
Output per job by LAD classification

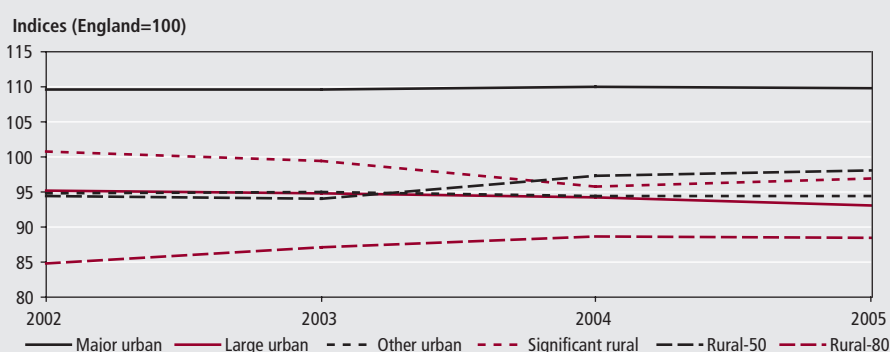
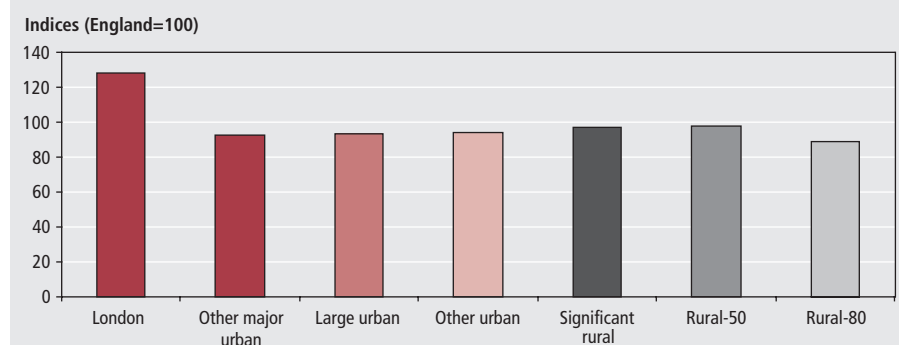


Figure 3
Output per job, treating London-based major urban LADs separately, 2005



States. Ciccone concludes that a large part of regional productivity differences can be explained by agglomeration effects. The analysis of the experimental estimates presented here shows that there is a London capital city effect, which may be being driven by agglomeration effects.

Conclusion

This article outlines developmental work carried out by ONS and Defra to improve the measurement of labour productivity at the rural-urban level, which has helped better assess any productivity differential between rural and urban areas. This is in line with the DSO for which Defra is responsible. The main findings of this work are that a productivity gap does exist between major urban LADs and England as a whole, which has not changed considerably between 2002 and 2005. However, much of this gap is driven by the performance of London. If London is excluded from the analysis, there is little, if any, productivity gap between urban and rural areas.

Going forward, these experimental statistics can be useful in dialogue with regional partners, where the figures can be used to identify relatively strong and weak economic areas and as the basis for exploring the underlying factors behind such differences. By updating the figures each spring, a longer time series will be established and genuine decreases and increases in the productivity gap between rural or urban LADs and the national average will be identified. Further analysis might also compare the economic performance of city regions with that of London. In terms of rural policy, using these estimates as a starting point, approaches to supporting economic development in rural areas with the lowest levels of performance will be able to be assessed more thoroughly.

Notes

- 1 See www.defra.gov.uk/rural/strategy/default.htm
- 2 See www.defra.gov.uk/rural/dso/index.htm
- 3 Certain urban areas with between 10,000 and 30,000 population are identified as 'larger market towns' and are taken into account in assessing the rurality of a district. Such towns are identified by the presence of a prescribed set of services and commercial attributes. Here, the populations of 207 'larger market towns' contribute to the rural population of the districts in which they are located, although within the Rural/Urban Definition they are defined as urban and their populations are not included in the rural domain.
- 4 For more detailed methodological information, see www.defra.gov.uk/rural/ruralstats/rural-definition.htm
- 5 Detailed estimates can be obtained at www.defra.gov.uk/rural/dso/productivity/index.htm

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REFERENCES

- Ciccone A (2001) 'Agglomeration Effects in Europe and the USA' available at www.crei.cat/research/opuscles/op9ang.pdf
- Dey-Chowdhury S, Penny D, Walker M and Wosnitza B (2008) 'Regional economic indicators, February 2008, with a focus on regional productivity', *Economic & Labour Market Review* 2(2), pp 48–61 and at www.statistics.gov.uk/ci/article.asp?id=1945
- Holmes E (2008) 'Regional gross value added', *Economic & Labour Market Review* 2(3), pp 44–54 and at www.statistics.gov.uk/ci/article.asp?id=1954

Office for National Statistics (2007a) *The ONS Productivity Handbook: A Statistical Overview and Guide* at www.statistics.gov.uk/about/data/guides/productivity/default.asp

Office for National Statistics (2007b) *Regional Accounts Methodology Guide* at www.statistics.gov.uk/downloads/theme_economy/regionalaccountsmethodologyguide.pdf