Wales' Productivity Challenge: Exploring the issues

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1. Introduction and Background

1.1 This Green Paper provides an overview of productivity in Wales in its wider context, to assess the position of the productivity challenge within the wider policy landscape in Wales, and to stimulate discussion and agenda setting by providing an overview of the key potential drivers of productivity performance in Wales. Low productivity was originally identified as a key priority on the establishment of devolved Welsh Government. Despite three significant programmes of EU structural funding to address low GDP, the Welsh productivity gap has remained stubbornly high.

1.2 The range of key productivity themes identified by the Productivity Institute have resonance in Wales. Wales has no significant devolved competency in macroeconomic policy (aside from limited fiscal instruments and borrowing powers). However, a wide set of microeconomic policy instruments are within Welsh Government competency. Any future scale of devolved funding under the UK's Shared Prosperity Fund is a major policy uncertainty. It might therefore be wise for Wales to move away from a macroeconomic 'resource deficit' approach to understanding prosperity to one focused on attracting and leveraging investment. An appropriate balance of microeconomic interventions is likely to prove more tractable, with potential to meet a longer-term perspective.

1.3 Wales is one of the four nations of the UK. Its longstanding history of cultural, political and linguistic independence was progressively threatened during the mediaeval period, and largely ended in conquest by Edward I in the late 13th century. Wales was fully legally incorporated with England during the reign of Henry VIII in the 16th century. It was only from the 1960s that the administration of Wales began to be separated from UK Government departments through the creation of the Welsh Office. During the 21st century the national identity of Wales has seen a resurgence resulting from a process begun in 1999 of political devolution to the Welsh Government and the creation of what is now called Senedd Cymru/Welsh Parliament. Wales has a population almost 3.2 million people, 4.7% of the UK total population.[1] The population of Wales is heavily concentrated in the south along the corridor of the M4 motorway and in the south Wales valleys – the result of population migration to support industrialisation during the 18th and 19th centuries. The capital city, Cardiff, has a population of 350,000. Swansea (184,000) and Newport (133,000) are the two next largest cities by size. Away from the south, population is most dense in the north-east and along the north coast (Wrexham, 62,000; Colwyn Bay and Llandudno combined, 56,000). Mid and west Wales contains some of the most sparsely populated areas of the UK south of the Scottish Highlands. Wales is a bilingual nation with both English and the Welsh languages (Cymraeg) having equal legal status. The arrest in the progressive decline of the Welsh language over the past 50 years, and the political consensus over bilingualism, is identified internationally as an exemplar of success. The 2011 UK Census recorded that 19% of the population were Welsh speakers, with the highest numbers in the northwest and in Cardiff.

1.4 The economic history of Wales since the industrial revolution is dominated by the impact of the development of coal mining from the 17th century onwards and the establishment of iron, steel and copper manufacturing co-located to exploit coal reserves. The growth of heavy industry led to rapid expansion of settlement in south Wales, supported by migration from rural Wales and from further afield. Coal was also significant, although on a smaller scale, in northeast Wales with the development of an economy based on extractive and heavy manufacturing industry emerging as a satellite to Liverpool and Manchester. Welsh iron and steel were hit hard from the late 19th century onwards by competition from Germany and the United States. The First World War coincided with the watershed for heavy industry in Wales, with the return to the Gold Standard and the 1930s Depression hitting the economy very hard. Despite being a society that has traditionally valued education and learning, higher education

[1] Source ONS. 2020 mid-year estimate.

was slower to develop in Wales compared to England and Scotland. There was no significant higher education activity prior to the establishment of the first three university colleges in Aberystwyth, Bangor and Cardiff in the 1870s and 1880s, followed later by Swansea in 1920. Despite some recent institutional mergers, the average size of the now eight universities in Wales remains small in comparison to England.

1.5 The past 100 years have seen the progressive deindustrialisation of Wales, the last deep coal mine (Tower Colliery) surviving in co-operative ownership until 2008, over a decade after all others had closed. The modern Welsh economy, as in other UK regions, has transitioned uneasily towards one dominated by service sector activity. Manufacturing remains more significant in Wales than elsewhere in the UK, supported by some success in attracting foreign direct investment (FDI) from the 1970s onwards. While there have been long-lasting FDI success stories, there have also been high profile failures leading to greater contemporary policy attention towards home grown and 'anchor' companies. By the turn of the 21st century the legacy of industrial structuring had taken its toll on former coal and iron communities in terms of high rates of economic inactivity and poverty, contributing to Wales' persistent prosperity ranking at or close to the bottom of UK regions. Away from south Wales, policy has attempted to support the rural economy through investment in small scale manufacturing and services around market towns, tourism around the coast and in the national parks, and policy to support an agricultural sector whose incomes are low because upland farmland is mostly classified as 'severely disadvantaged'. Economic resilience in many parts of Wales away from the capital depends heavily on public sector activity, some of which, for example the DVLA in Swansea, has arisen from past programmes of dispersal from London. Over the past decade therefore the Welsh economy has been at particular risk from so-called austerity policies.

1.6 Wales has had a persistent productivity gap with the UK as a whole and with other international competitor regions. This has been an important economic feature possibly stretching back for most of the last century and certainly from before political devolution in 1999. Because many potential micro-economic policy areas fall within devolved competency, UK-level industrial strategy has limited direct salience in Wales. However, disparities in productivity performance contextualise the UK's government's aspirations for 'levelling-up' and this is of considerable importance to Wales. During the first term of the Welsh Government (1999-2003) an explicit target was set for closing the gap in Welsh Gross Value Added (GVA) per head. The analysis underpinning early economic strategy statements highlighted the requirement, in closing this gap, to address both the low rate of economic activity (jobs per head of population) and low rate of labour productivity (value added per job, or per hour worked).[2] Economic activity rates in Wales have subsequently converged close to the UK average. Despite implementation of subsequent economic strategies, low productivity has remained a feature of the Welsh economy.[3] Economic activity has proved amenable both to the passage of time (as the long-term impacts of industrial restructuring have worked through population cohorts) and to tractable policy instruments, many of them supported through the deployment of European Structural Funding. Productivity has proved to be a much more complex issue, linked far less directly to precise policy instruments. In consequence a series of subsequent Welsh economic strategy statements have dropped any explicit reference to GVA or productivity targets.

1.7 The current Welsh economic and social policy context is heavily informed by the 2015 Wellbeing of Future Generations Act which requires the Welsh Government and other public bodies responsible for development and implementation of policy to attend to long-term

[2] See L. Gooberman, *From Depression to Devolution: Economy and Government in Wales, 1934-2006*, Cardiff: University of Wales Press, 2017, especially pp. 193ff.

[3] The current Welsh Government economic strategy is Prosperity for All: Economic Action Plan (2017).

considerations of sustainable development and a wider set of wellbeing objectives.[4] Implicitly the Act focuses attention on what economists term the 'efficiency-equity' trade-off - that the pursuit of greater equity in economic outcomes across population and place may require some sacrifice in terms of efficient allocation and use of productive resources. However, this need not necessarily be so. Raising productivity in Wales can be the principal route to environmentally sustainable and inclusive improvements in material and social well-being in the future. However, evidence on this is challenging in that it suggests that more prosperous areas find it easier to prioritise inclusivity.[5]

1.8 Productivity is a widely misunderstood term. It is often treated as an end, rather than as the means through which higher societal objectives are achieved. It is also often misunderstood in terms of scope. In this context there is a need in Wales to reassert the importance of productivity growth. Businesses may translate the term productivity as the meeting of operational efficiency targets or the achievement of unit cost reductions.[6] They may fail to appreciate, despite clear commitment to good corporate citizenship, that productivity is concerned with the wider creation of economic and public value for the full range of stakeholders – customers, employees, investors, supply chain partners and the wider beneficiaries of tax receipts – and to the achievement of wider objectives of inclusivity and environmental sustainability. Consequently, actions and instruments in support of improved productivity are wide-ranging and highly interconnected.

2. The Current Welsh Context – productivity measurement and data

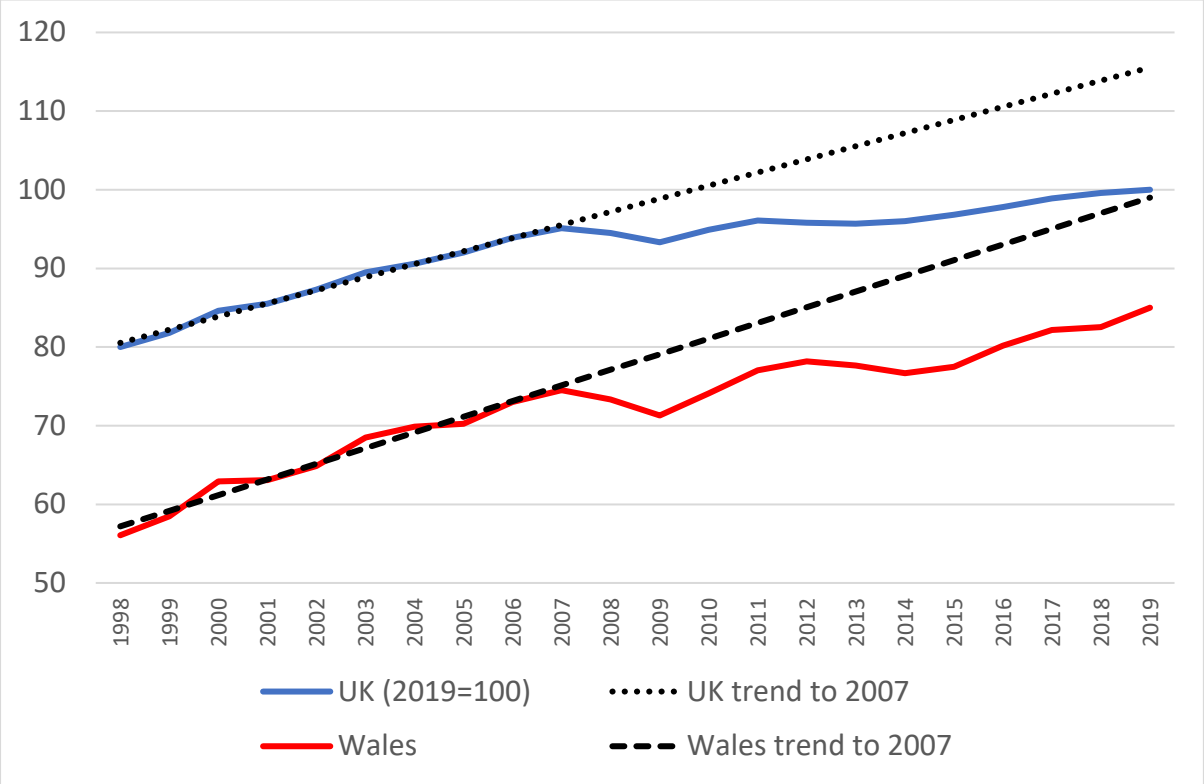
2.1 Figure 1 shows trends in labour productivity (output per hour) from 1998 to 2019, the latest year for which data is available. Trend lines to 2007 for both Wales and the UK are shown. These illustrate both the stagnation in productivity growth that has occurred since the 2008 global financial crisis and the growing gap over the intervening decade between actual levels of productivity and what might have been expected if productivity growth had remained on trend. In Wales up to 2007 the annual growth in productivity was very similar to that for the whole UK. However, because of generally lower historic levels in Welsh productivity, the gap between Wales and the UK by 2019 was broadly similar as a decade earlier, at around 15%.

[4] Responsibility for independent monitoring of progress under the Act rests with the Future Generations Commissioner, see https://www.futuregenerations.wales .

[5] See C. Hoole and S. Collinson, Prosperity, Inclusivity and Sustainability across UK Regions, LIPSIT Project Report, 2020 https://lipsit.ac.uk/wp-content/uploads/2020/04/LIPSIT-Briefing-Note-1-v.Final_.pdf

[6] See J. McBryde et al, *Unpicking the Productivity Narrative in UK Manufacturers*, Report for ESRC Productivity Insights Network, 2019 https://productivityinsightsnetwork.co.uk/app/uploads/2019/07/Pioneer-Project_Manufacturing-Narrative.pdf

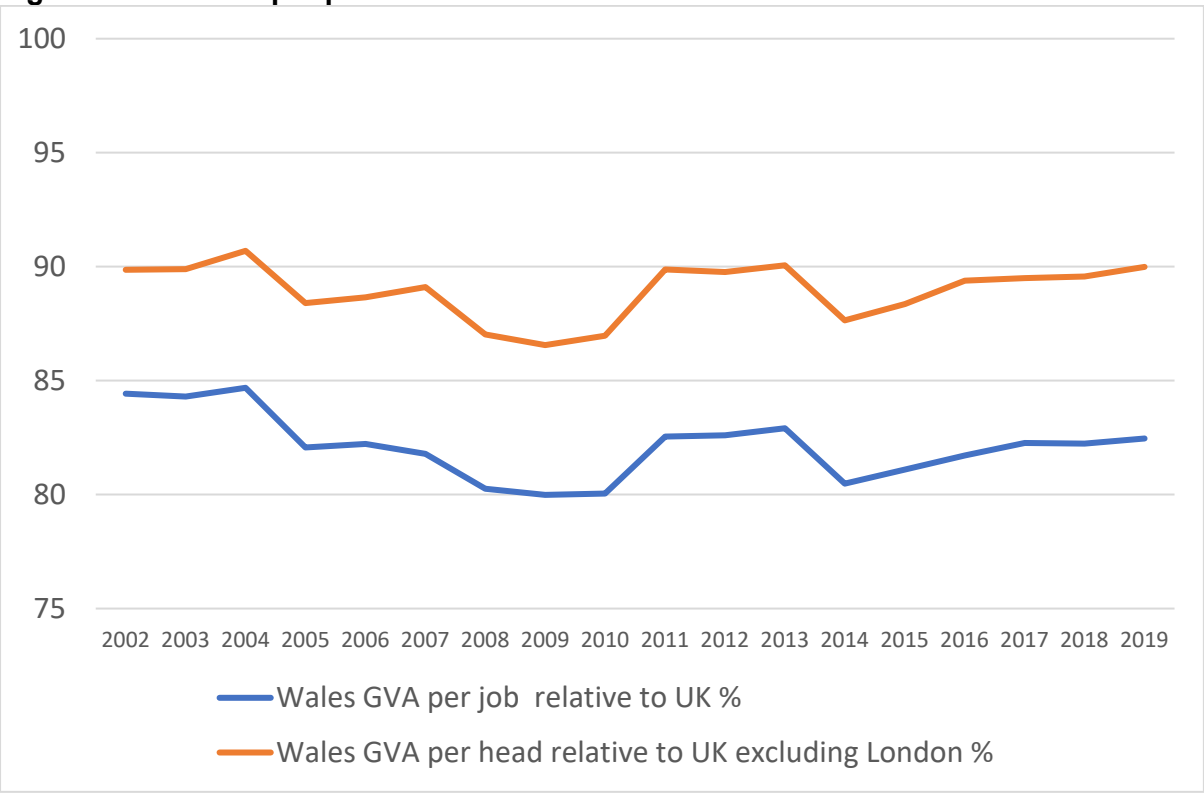
Figure 1: Wales and UK trends in output per hour worked



Source: computed from ONS data. Note: data are shown as index numbers, based to UK=100 in 2019

2.2 Productivity per worker in Wales relative to the UK is shown in Figure 2. This reveals two features. Firstly, since 1998 relative productivity in Wales has remained broadly constant at between 80% and 85% of the UK level. Secondly, UK productivity data is skewed by the performance of London. London has pulled away from the rest of the UK. So once productivity in London is removed Wales' relative productivity performance has remained stable relative to the remainder of the UK at around 90%.

Figure 2: Wales output per worker relative to the UK

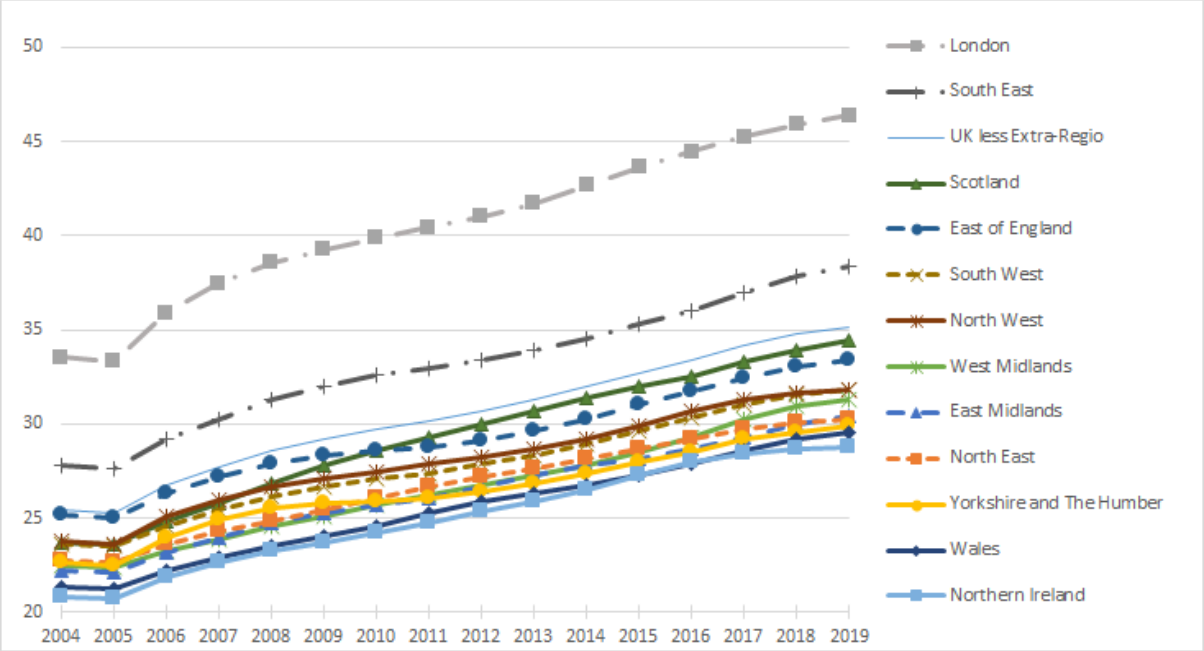


Source: computed from ONS data. Note: percentages

2.3 One further striking feature of the UK experience is that inter-regional differences are wider than in most other European countries.[7] The growth in intra-UK disparity between London and most other regions is seen in the regional trends in gross value added per worker shown in Figure 3. London has continued to 'pull away' from the rest of the UK, including Wales, despite a decade or more of stagnant productivity. The data in Figure 3 are not adjusted for inflation and serve to highlight the point that productivity performance is also likely to be influenced by how prices change across the UK. If the cost of living has risen faster in London than elsewhere then the relative position of Wales may not seem so severe. Nevertheless, since 2002 Wales has experienced lower productivity than all other devolved nations and English regions.

[7] See P. McCann, *The UK Regional-National Economic Problem*, London: Routledge, 2016. The strength of this conclusion depends on choice of data; however, McCann's conclusion is that UK's regional inequality problem is striking in comparison to other OECD economies.

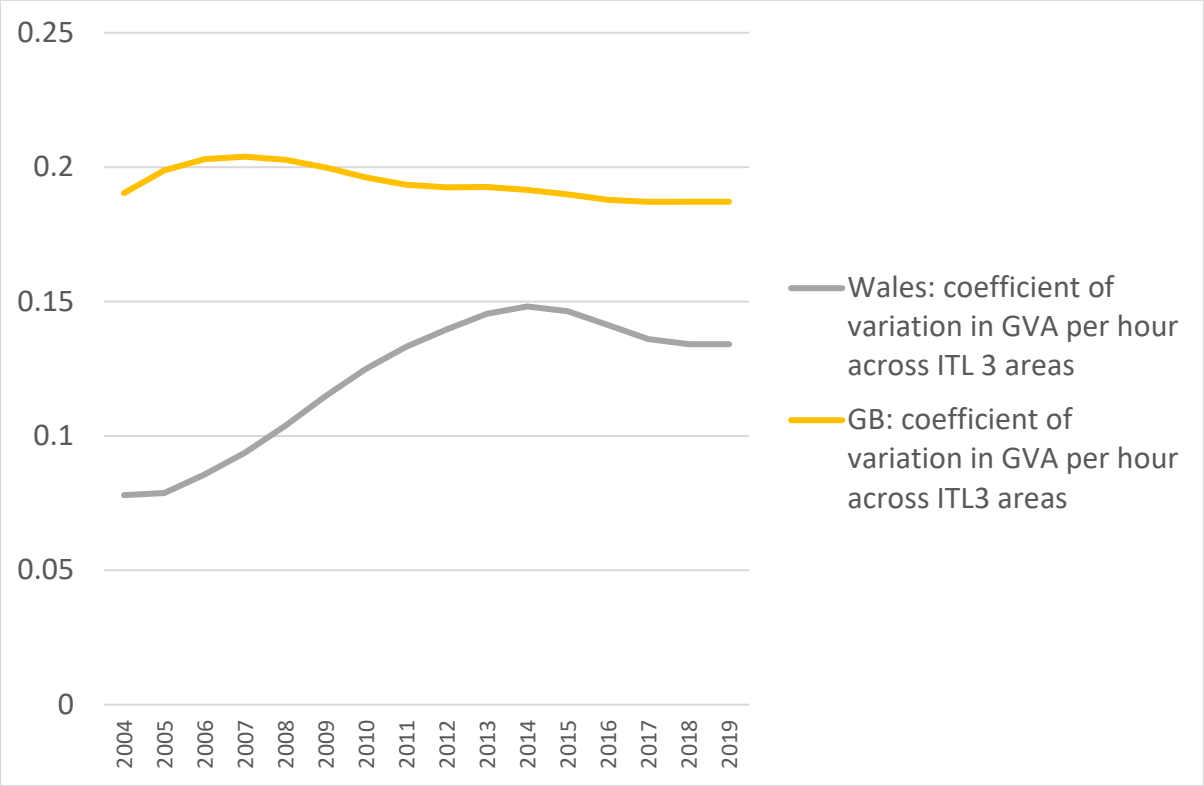
Figure 3: Nominal Gross Value Added per Hour Worked (£) in UK regions



Source: ONS
https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/datasets/subregionalproductivitylabourproductivitygvaperhourworkedandgvaperfilledjobindicesbyuknuts2andnuts3subregions

2.4 ONS sub-regional gross value added for lower-level geography can be used to show internal disparities within Wales. Figure 4 charts movements in the coefficient of variation of GVA per head calculated for the 12 ITL3 (NUTS3) subregions of Wales, and for comparison movements in the coefficient of variation across 169 ITL3 subregions of Great Britain.

Figure 4: Coefficients of Variation in Gross Value Added per head across ITL3 areas

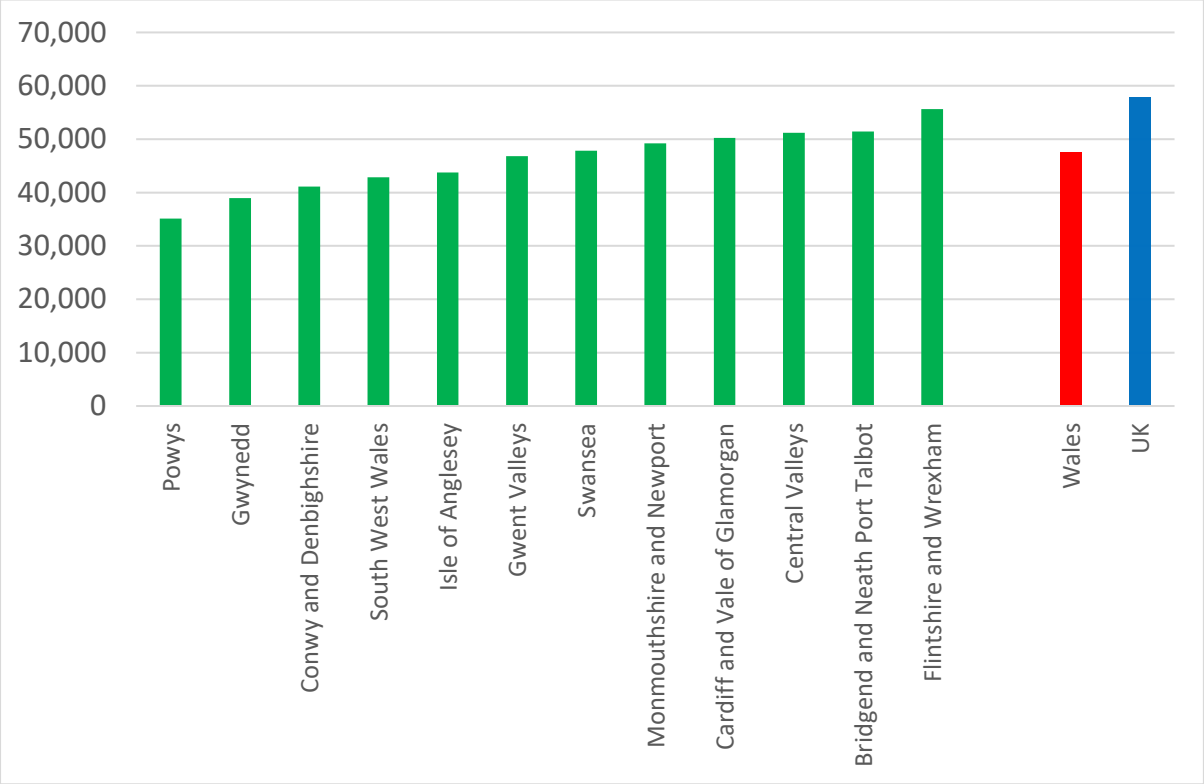


Source: computed from ONS data
https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/datasets/subregionalproductivitylabourproductivitygvaperhourworkedandgvaperfilledjobindicesbyuknuts2andnuts3subregions
Note: ITL is International Territorial Level (formerly NUTS), data are smoothed.

2.5 Levels of internal disparity between local areas in Wales are lower than across Great Britain as a whole. This again partly reflects high productivity in London. However, in the aftermath of the global financial crisis there has been some widening of productivity disparity within Wales. This appears to have occurred despite the intervention of European Structural Funding to support the poorer areas of Wales throughout this period.

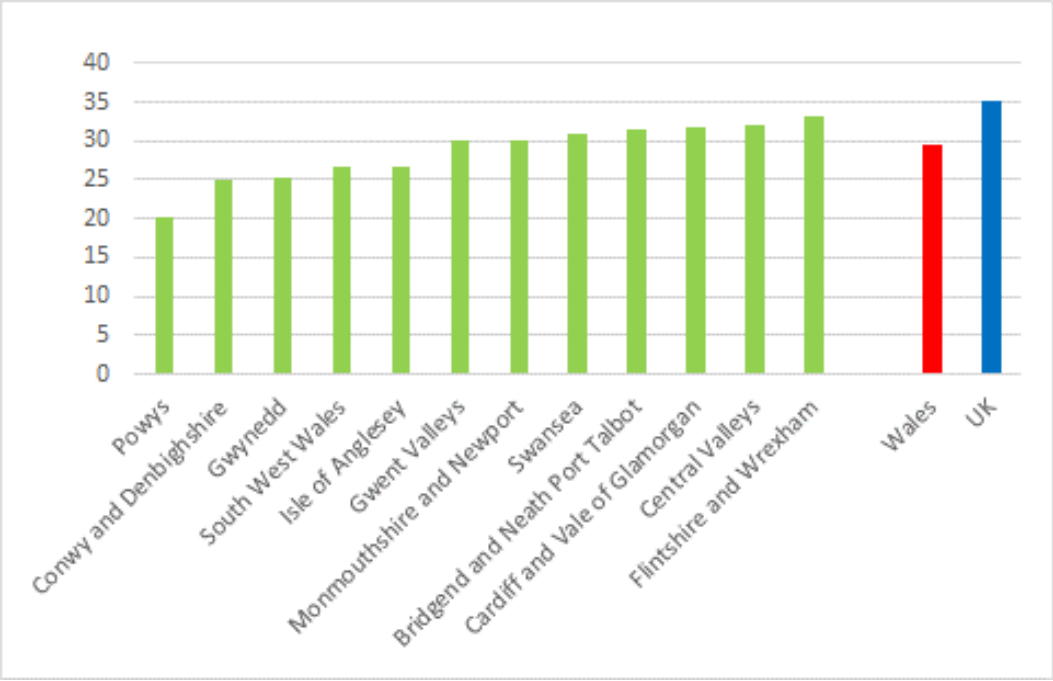
2.6 Figure 5 ranks subregions within Wales by GVA per worker in 2019, with all Wales and UK figures for comparison. Productivity is lowest in the most rural areas of mid and West Wales. Areas such as Powys have some of the lowest levels of productivity anywhere in the UK. These are areas with the lowest population densities and worst transport connections, and where employment opportunities are reliant on sectors such as tourism, retailing and other low wage service activity. Many of these areas also have high levels of self-employment, for example in agriculture. The higher productivity areas are a mix of areas with, or close to, larger conurbations, as well as some Valleys areas. In the latter there is a higher preponderance of jobs in manufacturing, but also areas of high deprivation.

Figure 5: Subregions within Wales ranked by output per worker in 2019



Source: computed from ONS data
https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/datasets/subregionalproductivitylabourproductivitygvaperhourworkedandgvaperfilledjobindicesbyuknuts2andnuts3subregions

Figure 5: Subregions within Wales ranked by output per hour in 2019



Source: computed from ONS data
https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/datasets/subregionalproductivitylabourproductivitygvaperhourworkedandgvaperfilledjobindicesbyuknuts2andnuts3subregions

2.6 Fine grain productivity analysis at sectoral and sub-regional level is possible using the ONS Annual Respondents Database business microdata service, which compiles information collected from compulsory annual business returns. Such analysis is not without its limitations – for example the lack of matching detailed information on the nature and structure of management within firms, the challenge of attributing productivity at the 'branch' level when firms operate in multiple locations (a particular concern for Wales), and the limited set of information available on the smallest firms which account for a very large percentage of businesses.

2.7 The analysis of business microdata does permit investigation of broader productivity concepts. Governments and statistical agencies report labour productivity measures, defined as output (economic value added) per job or per hour worked, in part because they can be more readily interpreted. Economists and international organizations such as the OECD also employ the concept of multi- (or total-) factor productivity (MFP) growth.[8] MFP data will reveal the extent to which productivity is influenced by the capital investment decisions of firms. Investment in physical plant and equipment as well as in intangibles such as digital assets will improve the productivity of those working in firms. Increases in productivity may also be attributed to a range of other productivity-enhancing factors, such as improved management practices and organizational effectiveness, innovation and spill-overs in knowledge, agglomeration advantages, as well as the impact of market power on profit margins. In addition, MFP data may also reflect other areas of measurement error and statistical 'ignorance'.

2.9 OECD estimates suggest that MFP growth rates for the UK were well aligned with those of key international comparators up to the 2008 financial crisis. Since the crisis the UK has performed much less well, and for a number of years is estimated by the OECD to have achieved zero or even negative MFP growth. So, the overall story is very much the same as that for labour productivity. This borne out by the most recent ONS MFP decomposition analysis which shows that the widening gap in labour productivity since 2008 is largely explained by sluggish MFP growth.[9] And of course, while this provides further description, it does not provide explanation, particularly down to the level of regions and devolved nations. New analysis of MFP growth for Wales would significantly add to our understanding of the productivity challenge.

3. Key productivity themes in Welsh context

3.1 Workforce skills and employee well-being

3.1.1 Education and skills, termed 'human capital investment' by economists, are regarded by many as a critical productivity driver. The performance of the education and skills sector in Wales is hotly contested. Performance indicators cover the full range of provision from early years education through to the ability of Welsh universities to attract and retain the most talented in Wales, in the face of graduate migration towards London and other larger English

[8] See, for example, R. Harris and J. Moffat, The UK productivity puzzle, 2008-2012: evidence using plant-level estimates of total factor productivity, *Oxford Economic Papers*, 69(3), 529-549 (2017).

[9] See https://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/articles/multifactorproductivityestimates/julytoseptember2019

cities.[10] Wales, on some indicators such as PISA rankings[11] or average attainment at NQF levels, may underperform both within the UK and internationally. However, the extent to which low attainment is a consequence rather than a driver of economic underperformance is unclear.

3.1.2 Effective education and skills provision must match supply with demand. Research evidence points to systematic mismatch between the qualifications that employers need and the skills available in the workforce.[12] UK Government Employer Skills Surveys highlight a persistent skills mismatch problem (see Figure 6). Regions with tighter labour markets tend to experience higher gaps. Wales, in common with some English regions has a bigger gap at the intermediate skills levels. Employers consistently report that hard-to-fill vacancies are caused by a lack of appropriately skilled applicants rather than the nature and location of the job. Recent research affirms, at the regional level, the linkage between skills gaps and lower firm productivity.[13] Metropolitan areas tend to achieve better levels of matching because pools of talent are larger. Good transport systems and affordable housing can also ease access to jobs and reduce mismatch.

3.1.3 The policy literature points to alleged shortcomings on the supply side, and the problems of sustainability in publicly funded initiatives. Sustainability has been a particular issue in Wales because skills programmes have relied heavily on fixed rounds of European Structural Funds. The supply-side presents a range of challenges, including the funding and incentivisation of skills provision, the articulation of employer skills needs, the opportunities to provide learners with required work experience, the balance between technical and subject knowledge and 'soft' skills, and the extent of 'over-qualification' for jobs. To maintain productivity, employee skill levels need to evolve and develop as individual careers develop. Low aspiration and supply barriers have to be overcome. For example, the effectiveness of the roll-out of high-speed business broadband provision in Wales requires appropriate investment in the skills to exploit that infrastructure. However, evidence of recent trends in provision of on-the-job training in the UK suggests falling levels of employer training provision.[14] The reasons for this are not well understood. Increased 'flexibilization' in the labour market may disincentivise employers from making long term investments in workforce human capital.

[10] This is highlighted as a particular concern for Wales in the most recent Welsh Government statement on post-Covid recovery https://gov.wales/moving-welsh-economy-forward-team-wales-recovery-built-all-us-economy-minister

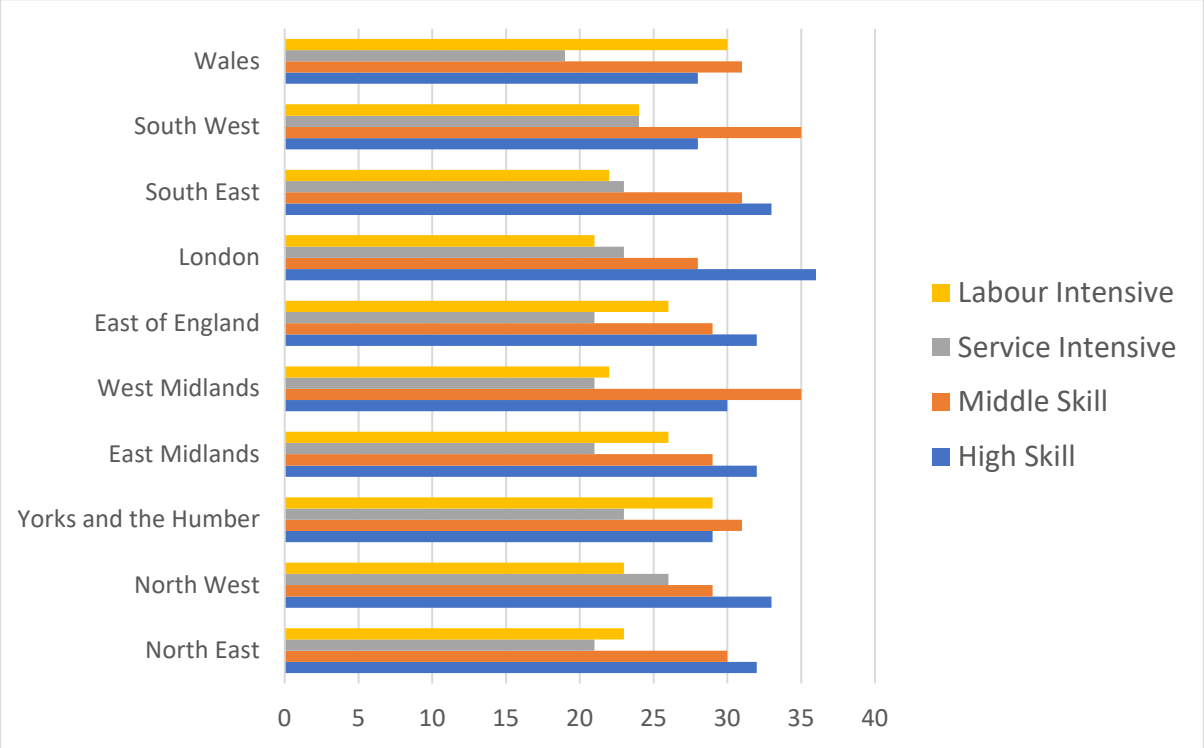
[11] https://gov.wales/sites/default/files/statistics-and-research/2019-12/achievement-15-year-olds-program-international-student-assessment-pisa-national-report-2018_0.pdf

[12] See M. Abreu, Human capital, skills and productivity, Ch. 8 in (eds.) P. McCann and T. Vorley, *Productivity Perspectives*, Cheltenham: Edward Elgar Publishing, 2020, and for recent 'big data' evidence J. Djumalieva, S. Garasto and C. Sleeman. Measuring Regional Skills Mismatches and Access to Jobs, ESRC Productivity Insights Network report, 2019 https://productivityinsightsnetwork.co.uk/app/uploads/2019/08/Nesta_regional_skill_mismatch_reportv2.pdf

[13] See D. Morris, E. Vanino and C. Corradini, Effect of regional skill gaps and skills shortages on firm productivity, *Environment and Planning A: Economy and Space*, 52(5), 933-952 (2020).

[14] See F. Green, A. Felstead, D. Gallie, H. Inanc and N. Jewson, The declining volume of workers' training in Britain, *British Journal of Industrial Relations*, 54(2), 442-448 (2016).

Figure 6: Percentage of employers reporting hard-to-fill vacancies at different skills levels in 2019



Source: Employer Skills Survey (2019) data tables, available at https://www.gov.uk/government/collections/employer-skills-survey-2019

3.1.4 A growing volume of research points to the importance of employee wellbeing as a driver of labour productivity.[15] The COVID-19 pandemic and the impact that this has had on working lives has brought this issue into sharp relief. Wellbeing is affected in turn by a wide range of factors linked to individual and household circumstances, the attractiveness of places to live and work, the ease and reliability of commuting and, not least, material and psychological conditions at work. Poor management can be a contributory factor. Satisfaction surveys demonstrate the perception that Wales is a good place to live, particularly in terms of the natural environment. But they also reveal the importance people place on the provision of and access to high quality public services.[16] Short-term and zero-hours contracts can also be bad for well-being as they exacerbate job and financial insecurities.

3.1.5 The strength of the local skills 'eco-system' is important in addressing skills gaps and mismatch. The eco-system approach focuses policy on a range of processes and institutional arrangements through which supply side provision is matched dynamically to well-articulated skills demand. In Wales three Regional Skills Partnerships, involving local government, business and large employer representatives, and higher and further education providers, are key actors, articulating skills strategies and providing labour market intelligence. Issues of funding and 'who pays' remain important as individual employers are often reluctant to make private investments in general training with wider value in the labour market, although, as the Wales apprenticeship scheme illustrates, success can be achieved with collaborative mixed public-private approaches. General education is thought to bring benefits to wider society,

[15] Bryson, A, J Forth, and L Stokes (2014), *Does Worker Wellbeing Affect Workplace Performance?*, Department for Business, Innovation and Skills.

[16] Welsh Government, Wellbeing of Wales: 2020 https://gov.wales/wellbeing-wales-2020

establishing the case for public provision. However, in the case of post-compulsory general education (at further and higher level) researchers have struggled to quantify precisely these benefits.[17] A key driver, and one on which detailed understanding is scarce, is the extent to which businesses, and particularly SMEs, demonstrate absorptive capacity to translate skills into enhanced productivity performance.

3.2 Organizational capital and the business base

3.2.1 With a legacy of past reliance on foreign inward investment in 'branch plants' the case might be made that Wales has paid insufficient attention to the role of organizational capital. Wales has faced a common challenge of seeking to support 'leading sectors' or technologies seen to be successful in other regions across the world.[18] Policy has recognised the role of 'anchor' companies in these and other sectors. These are companies with strong regional skills demand, such as Admiral, Iceland (food retailing), Airbus and BAE Systems. Such companies need to be recognised not only as sources of jobs, but also as engines of supply chain development and productivity. Such companies reflect not only a desire to support success in manufacturing but also a wish to support diverse development in service sectors across Wales. However, only some are headquartered in Wales.

3.2.2 Successful indigenous companies, who can support the full range of organizational functions in Wales, do not appear from nowhere fully grown. They arise because of start-up and scale-up, processes which benefit from access to venture capital and other forms of business support. There is a strong view that 'patient' long term finance is a key enabler of small business scale-up. Scale-up can support innovation and internationalisation activity amongst SMEs, which in turn may stimulate higher productivity.[19] A recent Wales Audit Office analysis (2018) concluded that the range of financial support for business available since 2010 has suffered from fragmentation in monitoring and evaluation and failed to translate fully the economic development vision articulated in the 2010 Welsh Government 'Economic Renewal' strategy.[20] The establishment of the Development Bank of Wales, as a Welsh Government Sponsored Body, in 2017 has created a major regional investment bank able to leverage private sector loan and equity finance. It has enjoyed substantial success over the past 4 years, as well as serving recently as a key provider of COVID-19 emergency business support.[21] Nevertheless, Wales in common with other devolved nations and English regions appears to suffer from the London-centric nature of the UK venture capital industry, with lower probability of finding venture capital and smaller deals.[22]

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[17] Brennan, J., Durazzi, N.and Séné, T. Things we know and don't know about the wider benefits of higher education: a review of the recent literature. BIS Research Paper, URN BIS/13/1244. Department for Business, Innovation and Skills, London, UK, 2013.

[18] See for example the 2014 Welsh Government Innovation Strategy https://gov.wales/sites/default/files/publications/2019-04/innovation-wales-strategy.pdf

[19] See, for example, A. Henley and M. Song, Innovation, internationalisation and the performance of microbusinesses, *International Small Business Journal*, 38(4), 337-364 (2020), and D. Higón, D., and N. Driffield, N. (2011). Exporting and innovation performance: analysis of the annual Small Business Survey in the UK. *International Small Business Journal,* 29(1): 4-24 (2011), and other references therein.

[20] Auditor General for Wales, Welsh Government Financial Support for Business, Wales Audit Office, 2018

[21] Quarterly and annual evaluation of DBW impact is provided by the Economic Intelligence Wales partnership with Cardiff University, see https://developmentbank.wales/other-services/economic-intelligence-wales .

[22] See N. Wilson, M. Kacer and M. Wright, *Equity Finance and the UK Regions*, BEIS Research Paper no. 2019/12 (2019) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/821902/sme-equity-finance-regions-research-2019-012.pdf

3.2.3 Business support activity in Wales over the past decade or more has relied extensively on European Structural Funding. The impacts of this have been hard to assess, and some programmes, such as the Technium business incubation programme (2001-2010), have failed to deliver on promised benefits.[23] Aside from SME finance, fragmentation may have characterised other areas of business support activity managed indirectly via the Wales European Funding Office. Again, a mixture of sector-focused, function-focused (for example academic-industry partnership support) and spatially focused programmes have been supported. In consequence, for a given SME, the availability of support has been dependent on what the business does and where it is located. SME leadership development and scale-up advice has formed one important element of this provision. Evaluation has focused on the KPIs of job creation and revenue growth. However, support for job creation has appeared at odds with the improvement of productivity performance, especially if the indicator is a head count rather than one focused on job quality. A common evaluation conclusion from SME leadership and growth programmes, both in Wales and elsewhere, is that peer-to-peer networking, action learning and mentoring can be powerful tools in unlocking tacit knowledge about how to improve individual business performance, but that the benefits may be non-monetary as much as on the 'bottom line'.[24]

3.2.4 SME representative organizations have identified the local impact of social procurement spend as a concern for supply-chain integration and success.[25] Welsh Government policy has not been deaf to these concerns but has arguably struggled to achieve traction in the face of other pressures arising from the well-intentioned requirements of UK and EU regulatory compliance. However, very recent experience has demonstrated the extent to which COVID-19 and Brexit may be exposing businesses, particularly in manufacturing and distribution, to supply chain risks.

3.2.5 Wales has not used European Structural Funding to support infrastructure enhancement to the extent possible in the past in other lagging European nations. Space precludes a full exploration of this topic here. Infrastructure investment in Wales has been affected by environmental concerns (M4 relief road), extent-of-devolved-authority concerns (Wales rail franchising and investment in electrification), physical topology and the legacy of past disinvestment (leading to 'east-west' rather than 'north-south') as well as uncertainties about the economic returns to investments (bypasses which improve quality of life but increase commuting and reduce local economic footprint). The one area of infrastructure which has been a recent priority is high-speed broadband access, in terms of both 'wiring-up' and upskilling to take advantage of the 'wiring'.[26] Significant investment is now underway to support public transport and connectivity in the Cardiff Capital Region.

3.3 Knowledge capital, research and innovation

3.3.1 This theme is a major challenge for Wales, in both public and private sectors. In the public sector areas of concern relate to the quality of basic research undertaken in Welsh universities and the capacity of those institutions to translate that research into direct benefit for the Welsh economy. Most UK public financing of research is not devolved, and so the

[23] Pugh, R., MacKenzie, N.G. and Jones-Evans, D., From 'Techniums' to 'emptiums': the failure of a flagship innovation policy in Wales, *Regional Studies*, 52(7), 1009-1020 (2018)

[24] Jones, K., Sambrook, S. A., Pittaway, L., Henley, A. and Norbury, H., Action learning: how learning transfers from entrepreneurs to small firms. *Action Learning: Research and Practice*, 11 (2). pp. 131-166 (2014).

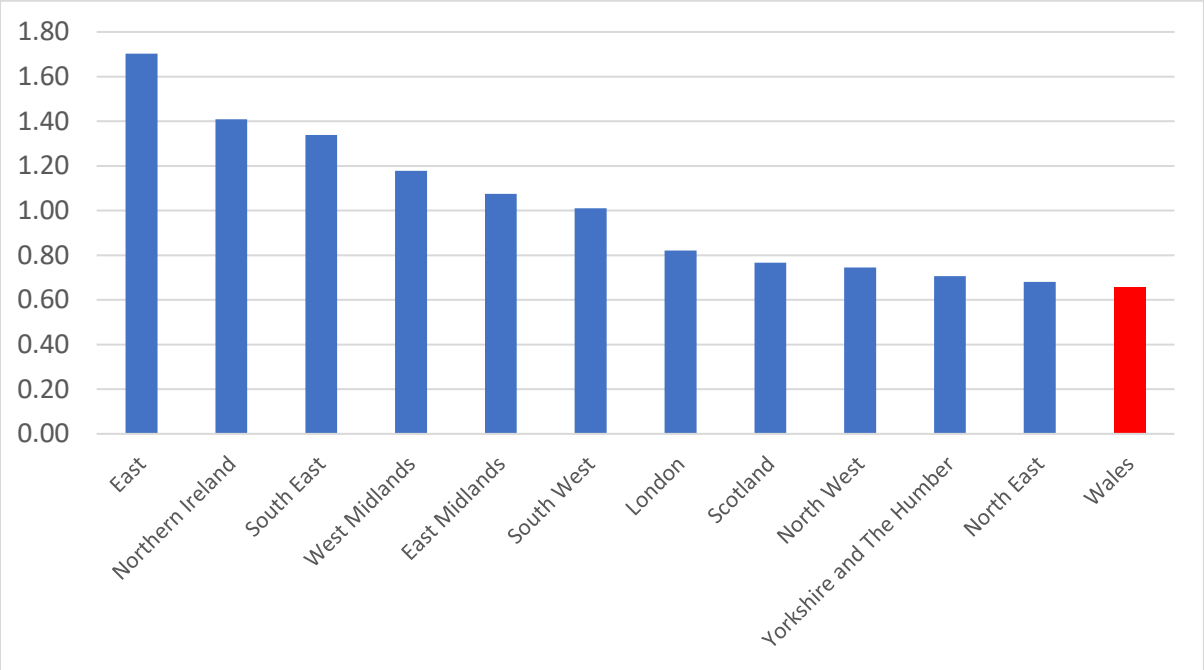
[25] For example, Federation of Small Business Wales, A Fresh Start for Procurement, Policy Paper, Sept 2020

[26] Henderson, D., Munday, M. and Roberts, A. 2020. The regional consequences of new digital infrastructure: can Welsh SMEs gain an edge from access and adoption of superfast broadband?. National Institute Economic Review (forthcoming)

ability of Welsh universities to rise to this challenge depends in part on their ability to win funding, either in competition with other UK research organizations or by forming effective collaborative partnerships between Welsh universities or with those beyond. At the translational level, aside from specific Welsh Government initiatives, the key actor at the UK level is Innovate UK. It is responsible for a range of programmes including the long-standing and successful Knowledge Transfer Partnership programme. A critical question concerns the appropriate balance between support for pure and basic research and support for the development of new products and services further along the technology readiness scale.

3.3.2 In the private sector Wales has failed to attract research and development activity at the same scale as in other devolved nations and regions of the UK. This is seen in stark terms in Figure 7. This charts the latest available data on the proportion of private sector employment accounted for by R&D roles. This partially reflects the choices of large companies on where to locate their R&D functions, and the limited scale of head office activity in Wales. But it may also indicate a lower level of innovativeness in smaller companies located entirely within Wales. Low private sector R&D is accompanied by one of the lowest regional per capita levels of public and third sector R&D spending.[27]

Figure 7: R&D employment as a percentage of total in the private sector by region in 2019



Source: computed from ONS data

3.3.3 Crude indicators such as expenditure or employment may not however reflect the level of vibrancy in the innovation eco-system. Its performance depends on the depth and quality of networking interactions between key public and private stakeholders, the scale of the regional talent pool, the capacity of businesses, especially smaller ones, to absorb talent and knowledge, the level of support from the regional financial system, and the effectiveness of regional governance institutions. Supply chains and their effectiveness form an increasingly important element of intangible knowledge capital. The extent to which businesses in Wales are embedded into effect supply chains and can derive both upstream and downstream

[27] Evidence for this and a wider discussion of poor regional R&D performance can be found in R. Jones and T. Forth, *The Missing £4 Billion: making R&D work for the whole UK*, 2020 https://media.nesta.org.uk/documents/The_Missing_4_Billion_Making_RD_work_for_the_whole_UK_v4.pdf

benefits form an important element of productivity performance. For indigenous SMEs it is the strength of relationships with larger customers and anchor companies that will be critical. Some research argues that Wales has strong but small networks, and that network under-development acts a constraint on SME performance, undermining innovation and business growth.[28] Detailed evaluation of this range of issues for Wales would be valuable.

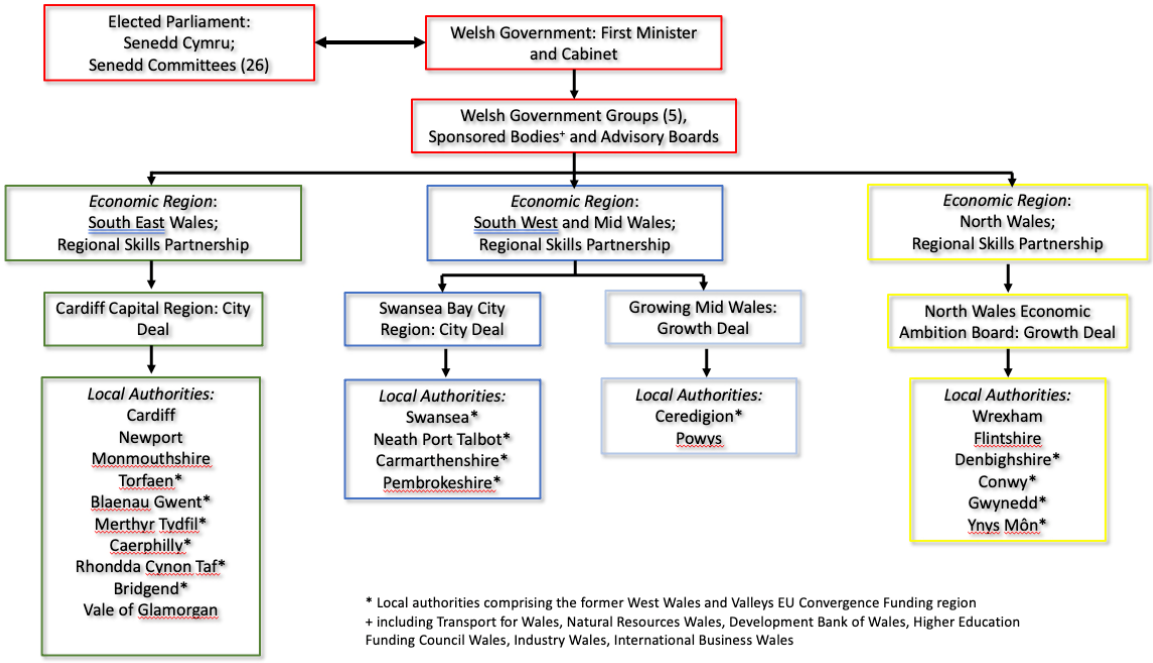
3.4 Institutions and Governance

3.4.1 The devolved context to Welsh economic policy has already been described. With some exceptions, notably in the domain of research and innovation, most microeconomic policy instruments with potential to enhance productivity fall within devolved competency. Macroeconomic policy instruments, outside of some very specific and limited fiscal tools such as housing stamp duty, do not. The Welsh Government has very limited borrowing powers for capital spend, which are subject to capping by HM Treasury.

3.4.2 The internal organization of Welsh Government for economic development purposes has changed over time since devolution. Perhaps the most significant change was the abolition of the Welsh Development Agency and its direct incorporation in 2006, along with the Wales Tourist Board, into the Welsh Government Department of Economy and Transport. In consequence Wales does not have the semi-independent local public-private sector enterprise partnerships found across England, although the Welsh Government has sought to appoint private sector leaders to key sectoral advisory panels brought together under the umbrella of Industry Wales, another Welsh Government Sponsored Body. Since 2006 the internal structure of economic and business development support has switched between organization along sectoral and spatial lines. At present there are three economic development regions: South East Wales, Mid and South West Wales and North Wales, each with a Regional Skills Partnership. Their geographical boundaries are coincident with 22 single-tier local authorities. Four 'regional growth deals' each leveraging direct UK funding map onto these – the Cardiff Capital Region City Deal (2016-) covering the ten local authorities of the South East Wales Economic Region; the Swansea Bay City Region Growth Deal (2017-) covering four local authorities and the Mid Wales Growth Deal (2020-) covering two local authorities both across the Mid and South West Wales Economic Region, and the North Wales Growth Deal (2020-) covering the six local authorities of the North Wales Economic Region. Figure 8 sets out this hierarchy and administrative geography. Each of these levels of administration have economic development responsibilities, and across the different regions there exists different nuancing in terms of, for example, social, sectoral and urban versus rural priorities, conceptions of entrepreneurial and innovation eco-systems and infrastructure investment priorities. It seems likely that the deals, by dint of differences in geography and economic structure, will attract varying levels of private sector leverage and investment.

[28] See, for example, in the context of a wider review of innovation support in Wales, R. Pugh, Universities and economic development in lagging regions: 'triple helix' policy in Wales, *Regional Studies*, 51, 982-993 (2017).

Figure 8: Administrative and Institution Structures in Wales



3.4.3 The departure of the UK from the European Union has created very specific uncertainties for Wales because of its heavy reliance on three successive 7-year programmes of European Structural Funding. Welsh Government proposals to replace the activities of the Wales European Funding Office with a new Regional Investment Fund are at an advanced stage.[29] These are drafted around a wide set of economic and social priorities consistent with the aims of the Well-Being of Future Generations Act. Decentralisation of decision-making to local areas is a key feature. The major uncertainty for Wales here concerns the extent to which the scale of future activity will match that achieved through past Structural Funds programmes, and whether decision making over how funds are used will remain devolved. However, combined with the rationale for the City Deals, there is a risk that the Regional Investment strategy could perpetuate a culture of demand- or investment-deficit dependency in Wales.

3.5 Productivity and Future Generations

3.5.1 As noted, the 2015 Wellbeing of Future Generations Act provides a highly significant context to any discussion of productivity in the Welsh context. This legislation articulates very clear aspirations towards greater environmental sustainability and towards closing levels of spatial and demographic inequalities. The danger here is that improved social and environmental sustainability and inclusion is seen in terms of a trade-off with higher productivity. This would be a mistake – improved productivity provides the potential to deliver the aspirations of the Act over the long term to successive generations. In this sense, the long-term perspective provided by the Act is a particular strength of the Welsh policy context and provides considerable opportunity to support the necessary shift in culture, described in the previous paragraph.[30] This will however depend on the extent to this feature of the Welsh

[29] The public consultation document is at https://gov.wales/sites/default/files/consultations/2020-06/framework-consultation-document-2.pdf

[30] For a shorter-term assessment of the extent to which recovery from the Covid-19 pandemic can 'build back better' consistent with a number of themes in this paper and with the priorities of the Wellbeing of Future

policy landscape, rather than being seen as adding cost to doing business, is able to support private sector business in the creation of wider public value.

3.5.2 Welsh Government has ambitious plans for transition to net zero carbon emissions, as set out in a 2019 strategy document.[31] The challenge is significant in Wales because current Welsh industrial structure generates a higher carbon footprint than the UK average. The strategy identifies a wide range of pathways to reducing emissions, including plans for transport, land use and the continued development of renewables generation in Wales. However, policy competency for major renewables and low carbon investment, for example in tidal energy of wave power schemes and in rail electrification, currently rest with the UK Government. However, at present the size of the low carbon sector in Wales is still relatively small, with important issues concerning local governance and ownership under debate.[32] Decarbonization may be a particular challenge for rural Wales given poor public transport provision and the preponderance of pastoral agriculture. The Welsh Government has recently delayed the introduction of a new post-Brexit farming support policy, based on switching towards support for environmental public goods and away from subsidising food production.

4. Key Issues

- The need for improved up-to-date analysis of the drivers of the productivity gap in Wales, including spatial and sectoral disaggregated analyses to understand dispersion of productivity performance within Wales.
- The need to raise awareness of the definition, nature and implications of the productivity challenge in Wales for business and for public policy, and to highlight greater appreciation that improved productivity performance is not in conflict with wider Welsh indicators of success encapsulated in the Wellbeing of Future Generations framework, but can support the achievement of low carbon, inclusive growth.
- The need to highlight the salience of productivity performance in the design and implementation of the future Regional Investment strategy, and to shift attention to the creation of and upgrading to value-adding employment.
- The need to understand more fully the nature of skills 'eco-system' in Wales and how this operates as a system to match future skills needs with the supply capacity of education providers at a range of levels.
- The need to identify appropriate policy instruments, interventions and institutional design, involving private sector, public sector, and higher education actors to raise the level of R&D activity in Wales, and to better embed that activity within the wider innovation eco-system.
- The need to understand better what works for the enhancement of organizational capital in Wales, to learn from past failure, capitalise on current and recent successes, and address issues relating to the fragmentation of business support.
- The need to clarify the shared and complimentary responsibilities of local authorities, city regions, Welsh Government and its regional infrastructure, alongside other public bodies such as the Development Bank of Wales in assuming ownership of the productivity 'agenda'.

Generations Framework see https://www.wcpp.org.uk/publication/building-back-better-priorities-for-reconstruction-after-the-coronavirus-pandemic/

[31] Welsh Government, *Prosperity for All: A Low Carbon Wales*, 2019 https://gov.wales/sites/default/files/publications/2019-06/low-carbon-delivery-plan_1.pdf

[32] See Jones, C. and Munday, M. 2020. Capital ownership, innovation and regional development policy in the economic periphery: an energy industry case. *Local Economy* 35(6), pp. 545-565.

- The immediate need to understand better the impacts of Covid-19 on Welsh economic performance, in partnership with related research and evaluation programmes including Economic Intelligence Wales and the Wales Centre for Public Policy.