

Executive Summary

Background and scope

In May 2010 the Welsh Government commissioned a consortium led by Mott MacDonald and supported by Colin Buchanan Associates and the Institute for Transport Studies at the University of Leeds to undertake research designed to:

- Provide an overview of recent investment in rail in Wales and at a strategic level in the wider UK, in the context of general rail industry developments.
- Provide an analysis of recent trends in rail usage, including a profile breaking down such use.
- Review case studies from previous literature on the economic impacts of rail investments in Wales, the UK and wider Organisation for Economic Cooperation and Development (OECD) countries.
- Draw suitable conclusions from the evidence regarding the effects and effectiveness of different types of rail infrastructure investments, identifying where further research may be required.

The main objectives of the research were to identify broad indicators of what rail investments might deliver in a Welsh context in terms of economic benefits.

The research outlined in this report was undertaken as part of the Welsh Government's Economic Research Programme, which is overseen by the Economic Research Advisory Panel.

Methodology

The methodology used has been focussed around desk research. This work has been supplemented with contact with a small number of academics and rail stakeholders in Wales, the rest of the UK and Europe in order to identify and explore the economic and social impact of rail under the following headings:

- Business location/agglomeration
- Household location/labour market
- Regeneration and land values
- Accessibility and time savings
- Logistics, mode choice and mode shift
- Social

Environmental effects were initially considered but due to lack of relevant evidence, these were excluded from further analysis. The research has also sought to categorise the type of investment and its applicability in a Welsh context according to a number of headings: new line/reopened routes; new stations; line speed improvements; service frequency improvements; introduction of direct services eliminating interchange; new rolling stock; electrification; high speed; light rail; increased capacity; rural; urban; passenger; and freight.

It was recognised that while ex-post studies of rail impact would be preferred; these were likely to be in short supply. In the likely absence of detailed ex-post analysis of new rail schemes ex-ante data – usually provided in support of schemes’ business cases – was likely to be available.

Initial research sought to develop a literature review of previous case studies from across the world along with a Welsh economic and transport policy context and an initial review of passenger, and some freight, rail demand and recent investments in Wales. The emerging findings lacked the capacity to deliver concrete conclusions due to the scarcity of robust, relevant materials. However, early observations included:

- A lack of ex-post economic impact work on rail generally – and even less material relevant to the economic, social and topographical structure of Wales.
- Most reports available relate to new lines or re-openings (and are generally ex-ante), and/or discuss rail by typology (e.g. high speed) rather than impact on specific geographic/economic space.
- Case study materials tend to focus on increased land values – itself only a proxy measure for economic growth.
- Case study materials differentiate between economic benefits from rail investment in urban areas, inter-urban and rural with the latter clearly focussed on social impacts, some commuting and the relevance to the tourism sector.
- Positive growth in rail demand in Wales outstripping the UK-wide performance.
- Anecdotal evidence on recent rail investments in Wales suggests mixed success.

The main consultees whose input has assisted in the production of this report were:

- Welsh Government officials (transport and economics specialists)
- Flintshire County Council
- Cardiff City County Council
- Arriva Trains Wales
- Network Rail (Freight)
- International rail specialists/academics

Given the limited evidence available from previous studies, the existing material was supplemented by our own high-level case studies assessing the impacts of improvements in rail services on selected corridors. This shifted the scope of the research from a focus upon empirical evidence in studies applicable to rail in Wales to a specific assessment of recent local rail investment in Wales. The benefit of this approach and the use of Welsh case studies is of course the direct relevance and local knowledge of these changes. The disbenefits include a limitation on the research in terms of both the type of investment that can be studied in this way (so no High Speed Rail) and the limitations of available secondary data (so no agglomeration or environmental impacts).

Conclusions

More research (including original surveys and other such data) would be required to produce the ex-post material (and indeed ex-ante material about specific investments) that would allow the development of more substantive conclusions and to explore the relationship between rail and other transport modes.

While it is difficult to draw firm conclusions on the economic impact of future rail investments in Wales, a number of guiding principles are evident, drawing together the analysis from the literature review and the case studies, details of all of which are summarised in chapters 3 to 6, we can suggest:

- Increased rail investment in new lines and service improvements is likely to centralise (or re-distribute) economic activity to the better connected areas. Where economic activity will centralise is dependent on the underlying economic conditions of the areas that have been connected. These impacts may be enhanced when rail is part of a wider regeneration investment.
- Rail services can sustain communities by connecting them to larger urban areas. Rural and peripheral communities with access to good local services that provide realistic commuting options to large employment centres can experience growth in population as a result of rail investment – or it can prevent depopulation from areas that have seen significant declines in local economic activities, by allowing them to survive as commuting centres – as seen in the Valleys. The community as a dormitory settlement may not at face value seem desirable, but the positive outcome is that population decline can be halted and a community sustained.

Applying these principles to rail investments in Wales would suggest the following with respect to high speed rail, regional rail services and north-south links:

- **Demand.** The review of MOIRA ticketing data has provided a useful insight into the effect of service improvements in Wales. Growth in demand following investments has been positive and very strong, even where the scale of the investments has been modest, and the details included in this report suggest positive impacts with an especially positive growth in demand from the North-South service improvements.
- **High speed rail.** A national high speed rail (HSR) network would strengthen the economies of the cities connected to that network, provided that these cities receive a good level of service. Part of this strengthening would result from economic activity, from areas not connected to the network, relocating to these cities. Issues for Wales are likely, therefore, to concentrate upon Cardiff's role as the key attractor relative to other settlements. Elsewhere there is some evidence for new high speed rail links providing economic benefits, with regeneration found in London, Lyons and Lille, house price increases in London and Ashford and evidence of increased economic activity at intermediate stations along the Cologne – Frankfurt high speed line. Most recently the provision of domestic High Speed services from Ashford, Canterbury and other Kent towns has begun to influence the economy of the area. From a

Wales perspective, it is clear that to achieve the greatest economic benefits from a national High Speed Rail network, Wales should be either directly connected or provide feeder “classic compatible” train services onto the network. The latter policy currently features in the public plans for the HS2 route as far as Birmingham (phase 1), with onward running on “classic” tracks to Manchester. As the Welsh Government has no devolved responsibility or funding for the national rail network, it would be a DfT responsibility to develop and fund the forthcoming High Speed Rail network, hence the need for the case to be made to DfT for such a link to Wales. We also note in the main study the possibility that HSR might have a negative impact in some areas e.g. by opening the area to increased competition.

- **Regional rail services.** Rail services that connect peripheral communities to larger urban areas on commutable train services can have a stabilising effect on rural populations. This is a key issue in a Welsh context and case study work suggests a positive relation between population growth/stabilisation and rail investment.
- **North-south links.** Experience elsewhere has shown that improvements in long-distance rail linkages largely remove the need for air services if journey times can be reduced to less than three hours. Journey times of around three hours between North and South Wales may be a realistic long-term aspiration and the performance of rail on this corridor against national trends suggest that rail has the capacity to achieve growth through modal shift rather than merely increasing mobility.
- **Local investments.** Our research has allowed us to suggest that relatively modest investments in rail improvements (such as linking services together to provide new direct journey opportunities), compared with major HSR infrastructure costs etc, can have beneficial impacts on the local economy.
- **Urban connections: Cardiff - Swansea:** Our research has suggested that improved links between strong regional centres can either lead to “agglomeration benefits” where the two locations can complement each other to act as a single location; or a redistribution of employment services from the smaller to larger centres. The exact balance between these two extremes is complex and can depend upon relative sizes and degree of competition or complementation between the two centres. With respect to the key issue of improved rail links between Swansea and Cardiff, further analysis is required, drawing upon case studies in the UK.

Case study reviews¹ of selected rail corridors in Wales that had recent experience of rail investments and improvements found:

- **Population.** A positive impact on growth. However, this trend may be associated with national population growth patterns.

¹ Based on time series analysis of socio-economic data

- **Employment.** A slowing in the decline of growth. Case study catchment areas saw a reduced decline in employment growth compared to the base line.
- **Deprivation.** No discernable impact.
- **House prices.** A slowing in the decline of growth. Case study catchment areas saw reduced decline in house prices growth compared to the base line.
- **Gross Floor Area.** A negative impact on growth.
- **Car ownership.** No discernable impact.

It is important to acknowledge that we cannot isolate rail or general transport impacts upon the economy from wider investments and trends. Thus the potential deadweight and endogeneity of impacts upon socio-economic statistics is a key issue.

The wider literature on impacts of rail investments on land use, employment and output is mixed however. For commuter services, a number of studies of light rail systems have found no impact, although other studies do claim to have found effects in some regeneration areas. The conclusions on the impact of light rail on house and other property prices are similarly mixed; studies of major schemes in some of the largest cities, including London, Dublin and Glasgow, found an effect, but studies in Manchester, Newcastle, Sunderland and Sheffield did not.

Analysis of the profile of travellers on case-study corridors provides some evidence to suggest that rail is performing an important task in providing links to jobs, education and other opportunities for those living in communities known to be deprived.

While it is hard to draw absolute conclusions, it would be expected that rail investment that provides services useful to commuters and businesses generates economic growth in the vicinity of the rail line. Access to local services and to education is also an important function fulfilled by rail. Without this wider connectivity communities may not be economically sustainable entities. Some of this growth may be due to re-distribution, but rail investment (as with other transport investment) can be important in terms of sustaining peripheral communities and binding a nation together.

Further research

It is clear that Welsh stakeholders will want to be involved in the debate over high-speed rail and other major potential improvements in the UK's rail network. What the evidence confirms beyond doubt is a clear and growing demand for rail travel in Wales at all levels. Significant projects like HSR appear unproven in terms of their economic benefits being consistent and comprehensive in all the areas studied – again emphasising the importance of endogenous factors. It seems clear however that major urban areas not considered or developed for HSR will be at a disadvantage in terms of their attractiveness to investors. Much more detailed work on this is required if we are to draw firm conclusions in a Welsh context.

The general buoyancy of rail in Wales and the results from our case studies suggest that smaller-scale investments may offer a strong foundation from which to enhance the growth of the Welsh economy. Further research with reference to case studies would appear to be required to address the key question

over whether better links between Swansea and Cardiff can create significant integration between the two cities' economies, which can raise productivity levels in both ("agglomeration benefits"), rather than the alternative prediction of a redistribution from the smaller and more peripheral economy to the larger one. Similar scenarios exist to that of Swansea-Cardiff, with Manchester-Liverpool most closely reflecting a stronger-weaker city pairing, to be contrasted to the more equal and complementary city pairings of Manchester-Leeds and possibly Edinburgh-Glasgow.

Our report highlights numerous areas where further investigation might be considered beneficial to economic policy-makers in Wales and the UK. These include inter alia:

- Consideration as to whether better links between Swansea and Cardiff can create significant integration between the two cities' economies which can raise productivity levels in both with comparative analysis between the paired cities of Edinburgh: Glasgow, Leeds: Manchester and Manchester: Liverpool.
- Refinement and enhancement of the socio-economic datasets used e.g.:
 - A longer or larger data set is obtained – this may enable regression analysis to be undertaken and tests of statistical significance to be produced (see below).
 - Analysis of results by station rather than line.
 - Rail demand by station to be drawn out so that a more direct comparison with employment and population growth by station can be made.
 - Passenger behaviour and business location surveys are undertaken to explore reasons behind encountered trends.
 - A case study is undertaken in relation to the Valley Lines to test the hypothesis that land values/house prices respond to new station provision.
 - Use of an alternative control line/corridor.
 - Widen the evidence base to beyond Wales with such examples as the Robin Hood line in Nottinghamshire/Derbyshire, and the reopening of Airdrie-Bathgate as potential examples.
 - Further work to better integrate these measures with NRTS, MOIRA, PDFH and other transport/rail data.
 - Regression analysis to identify the significant impacts of rail investment for key case studies alongside detailed work to establish net economic and social impact.
- A fuller study (such as back-casting) to analyse increases in rail demand relating to rail service improvements. This would provide firmer evidence as to:
 - The comparison of each line's performance: whether the improvement in the service is linked to a clearly increased propensity of individuals to make rail journeys, as opposed to not travelling or to choosing other modes.
 - Whether the growth seen on the study corridors has exceeded PDFH predictions, and how this growth can be explained by reference to social, economic and demographic changes in the areas served, and/or to changes in rail's service offering.
- An examination of the case for HS2-compatible trains to link London and Birmingham to North Wales coast towns.
- A comparison of the data from NRTS with the socio-economic and demographic profile of *all* the population within station catchments – that is, including those not using rail, would be desirable. This would allow a study to ascertain which travellers are benefiting from the rail service – and which are being missed, such as through car-dependency or through social exclusion.

- The NRTS data can be regarded as a little out of date and may not fully reveal changes in the profiles of rail travellers - particularly the make-up of the North Wales Coast rail market – so there would be a strong case for gathering new data from rail users on the study corridors. This would enable the impact of rail improvements on the *type* of people travelling to be studied, complementing our analysis in the previous chapter of the numbers of rail travellers.