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Working Paper No. 298

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## Irish Public Capital Spending in a Recession

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*Abstract:* In the past the first expenditure to be cut during an economic downturn was capital expenditure. However, the cuts in capital expenditure of the late 1980's and 90's had left Ireland with an infrastructure deficit. This note highlights a number of important issues, which should be considered before decisions to spend tax payer's money to support the construction sector are taken. Overall the paper concludes that in the context of a relatively high cost per job created via public investment, public capital projects should be undertaken on the basis that they have a long-run return to the whole economy.

*JEL Code:* E6, H5

*Key words:* Public investment, construction sector, recession

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# **Irish Public Capital Spending in a Recession**

## **1. Introduction**

In the past the first expenditure to be cut during an economic downturn was capital expenditure because cutting capital expenditure is relatively painless in the short run. Few people miss something that does not exist, particularly when the decline of economic activity is reducing infrastructure capacity constraints. In contrast, cuts in current government expenditure are immediately impacting on individuals and therefore tend to be opposed more vehemently. However, cuts in capital expenditure have important long-run impacts as the experience of the late 1980's and 90's has shown, where the cuts in expenditure had left Ireland with an infrastructure deficit, which the significant expenditure over the last ten years has not managed to close.

At a time when unemployment is rising at an unprecedented rate it is understandable that the maintenance of employment is an important government consideration. The construction sector has been hit most severely in the current downturn. At its peak, during the last quarter of 2007, construction accounted for almost 14% of total employment and about 23% of male employment. By the last quarter of 2008 the total number of persons employed in the sector had fallen by almost 55,000 (-20%). Further job losses in the sector are almost inevitable (indeed may have happened and will be shown in the Q1 2009 QNHS). In that context it is understandable that there is some discussion around policies to support the sector, which includes using the NDP as a vehicle to maintain construction jobs. This note highlights a number of important issues which should be considered before decisions to spend tax payer's money to support the construction sector are taken.

The recent Supplementary Budget (April 2009) has set out a revised public capital programme (PCP) which further revises downwards the PCP of Budget 2009. This dramatic cut in capital investment in Ireland stands in stark contrast to the stimulus packages announced by various governments, such as the US, France, Germany and Taiwan, which incorporate substantially increased expenditure on infrastructure. As part of the US stimulus plan some additional €61

billion will be spent on infrastructure. Figures for France, Germany and Taiwan are €19.5 billion, €4.4 billion and €1 billion.

These packages are aimed at improving the infrastructure in these countries, repairing crumbling structures and investing in new ones, as well as creating much needed jobs. Improving the infrastructure in these countries is expected to increase their competitiveness by reducing transport costs, reducing emissions and introducing new technologies. In that sense one might wonder whether cutting expenditure in Ireland is sensible.

This note considers the key issues in relation to setting the level of public capital expenditure. It first outlines the trends in public capital expenditure along with the announced cuts in that expenditure. It also considers the potential cost savings as well as the demand implications of the downturn. The issue of job creation via public capital expenditure is discussed in the context of the net cost per job, and the implications of the changed objectives for project evaluation.

## **2. The Level of Expenditure**

In order to set the context for the discussion it is useful to consider the level of public capital expenditure over time, and how it has been affected by previous recession induced cuts.

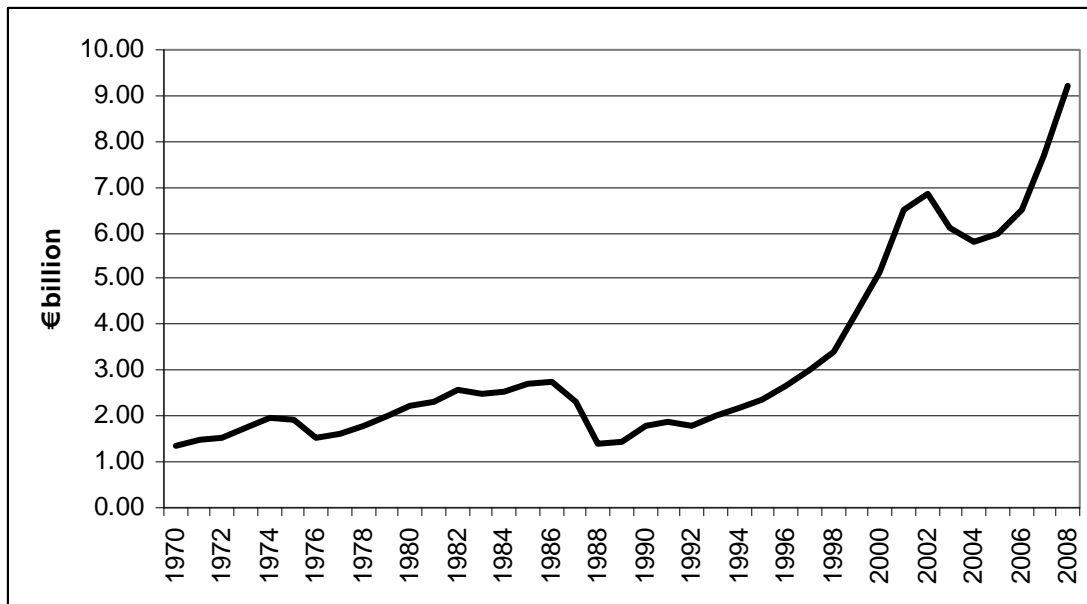
As can be seen from Figure 1, real public capital expenditure had increased very substantially since the cuts of the late 1980's were applied. The peak was reached in 2008 with an interim peak in 2002. The trough after 2002 is explained both by a slight decrease in nominal expenditure and significant construction sector inflation. The 2008 level in real terms is almost seven times larger than the 1970 level.

It is also useful to consider previous periods of economic difficulty. The graph clearly shows a decline in real investment in the mid 1970's and again after 1986. The reduction in public capital investment in the mid 1970's reduced the public capital stock by about one billion euro relative to the level which would have been achieved if expenditure had been held at the 1974 level in real terms until 1978. If the level of expenditure had been held at the 1986 level in real terms until 1996 the public capital stock would have been a further €7.8 billion higher. In other words the stock of public capital in the mid 1990s was some 15% below the level one might have

expected if expenditures had not been cut. This explains the significant infrastructure constraints facing the Irish economy since the mid 1990's.

In order to alleviate these constraints successive NDP's have significantly increased the expenditure on public capital investment. But this has come at a price in that construction sector inflation and public capital investment inflation has been significantly higher than general inflation. Indeed, because of the inflationary effects of a further rapid ramping up of public capital investment in conjunction with the unsustainable housing boom, Morgenroth and Fitz Gerald (2006) argued that the 2007 to 2013 should have been more modest, and that the saving should be kept for a rainy day (Executive Summary pages xi and xii). Nevertheless, the ultimate shape of the NDP was to be very ambitious with expenditure reaching over €13 billion per year in 2012.

**Figure 1. Real Public Capital Expenditure, 1970 to 2007.**



Source: CSO National Income and Expenditure Tables. The 2007 data point is from the Department of Finance Revised Estimates 2008. The deflator used to convert the current expenditure into constant 2006 expenditure is derived from CSO data.

The recent Supplementary Budget (April 2009) has set out a revised public capital programme (PCP), which revises the already revised PCP of Budget 2009. Capital expenditure in 2009 will be some €2 billion, or 20% in nominal terms, lower than in 2008. For the years 2010 to 2013 the average capital spending will be a further €1.3 billion lower compared to the 2008 level. This is a

severe cut by any standards and reminiscent of the cuts in capital expenditure in 1987 and 1988. In nominal terms these revised figures imply a total reduction of the capital stock relative to the unchanged investment scenario of almost €18 billion. However, if prices remain unchanged then the level of public capital expenditure will still be very high by historical standards, still at above 2000 levels. If on the other hand prices fall, and arguments for why this might happen are presented below, then the level of real expenditure will be at 2006 levels. At the same time we expect a significant decline in economic activity. Thus, the level of expenditure will help address infrastructure constraints in the economy.

### **3. Demand Implications of the Downturn**

A key implication of the current downturn for public capital projects is that many are less urgent due to the downturn in the economy and can be postponed. Apart from the dramatic change in the budgetary situation the economy has declined by around 2% in 2008 and is expected to contract by at least 8% (see Barrett et al., 2009). Even under a very benign assumption of zero growth in 2010 followed by two years of 5% ‘catch up’ growth will the economy not return to the 2007 position until late 2012 at the earliest<sup>2</sup>. This implies a phase shift of 5 years and under a more pessimistic scenario a phase shift of at least 7 years would be expected.

If the planned expenditure announced in the Supplementary Budget is followed through, the infrastructure stock will have increased by some €40 billion in nominal terms between 2008 and 2013. If prices remain unchanged from the 2007 level (and it is argued below that they should fall substantially), then the stock of public capital will have increased by some €38 billion. In other words, the announced level of expenditure implies a significant reduction in any infrastructure deficit relative to the level of economic activity, which in 2013 will be close to the 2007 level.

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<sup>2</sup> Barrett et al. (2009) forecast a further decline in GDP of about 2% in 2010.

The decline in economic activity is coupled with a dramatic increase in unemployment. From virtual full employment the unemployment rate is projected to rise to at least 17%. Migration is forecast to return to significant net-emigration at least in the short-run.

In many cases capacity expansion is not required right now and in some cases excess capacity is already emerging. Fewer workers implies fewer commuters, which implies that the pressures on our transport system will ease. Already the LUAS Red Line has seen a reduction in passenger numbers of at least 5% in 2008 compared to 2007. Likewise, Dublin Bus has experienced a decline in passenger numbers by 6% in 2008. In that context the planned expenditure on 300 additional buses under Transport21 and the NDP for the period 2009 to 2012 can safely be postponed. Of course that does not mean that we can forget about other efficiency enhancing measures for public transport. The fact that the buses were to be purchased using public funds in the first place should still be questioned.

Similarly, not all planned infrastructure projects were good projects to start with and some should certainly be abandoned. The Western Rail Corridor which is supposed to act primarily as an inter city rail link along the western seaboard connects urban centres with relatively small populations and runs through sparsely populated areas. As such the potential ridership is very limited and in the context where few rail lines internationally are profitable, investment in this project will need to be supported by further substantial subventions of tax payer's money<sup>3</sup>. In that context this project has been questioned by many economists.

There are also examples of questionable projects on the eastern half of the country. It is remarkable that there are plans to facilitate the avoidance of the toll on the M1 by building a bypass around Slane involving the expensive construction of a bridge over the river Boyne when a simple HGV ban would solve the local traffic problems<sup>4</sup>.

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<sup>3</sup> In 2007 the current (revenue related) subsidy per passenger journey on inter city rail was €13.80 compared to a subsidy of €0.55 for suburban and commuter journeys. The total subsidy including capital subsidies across all types of rail passenger journey was as high as €13.60.

<sup>4</sup> With the published current data only rough calculations are possible. These however, indicate that as much as half of the long distance traffic on the N2 north of Ardee bypasses the M1 toll by using the N2 through Slane.

There are many projects which should go ahead without delay. For example, work on the major national roads is nearing completion. While some of these have been over-engineered, in the sense that they have been built to motorway standard where the expected traffic volume, even in growing economy, would not justify this level of standard, the full benefit from constructing these roads will only be realised once they are completed.

Given the size of the budget deficit it is difficult to see how the Metro North project, which will cost at least €3 billion, can progress in accordance with the planned timetable – this project should be postponed for one or two years. Given the large fixed costs required to develop new fixed rail lines those that are planned should urgently be re-examined independently. This will ensure that we do not fund projects with a poor return.

The Supplementary Budget cut the expenditure allocated to the Department of Environment, Heritage and Local Government by about 19%, of which some will no doubt have to be passed on to the social and affordable housing budget. However, as this accounted for some 16% of total capital expenditure this is still a very large proportion of the total. Given the significant overhang of finished unsold properties, which is estimated to amount to some 40,000 units, some of the allocated expenditure should be used by the State to purchase empty units at a rock bottom price (as opposed to buying them at some historical values). The purchase of vacant housing units for social housing would have a number of benefits. Firstly it will add to the social housing stock at a lower than originally expected cost. Secondly, it will reduce the overhang of unsold properties and thus speed up the transition to equilibrium supply in the housing market. Thirdly, it would put money back into the banking sector via the construction sector or indeed it may be an early windfall for the newly announced National Asset Management Agency (NAMA).

#### **4. Getting Value for Money**

The competitiveness effects of infrastructure are driven not by the amount of expenditure but by the quantity infrastructure that is actually put on the ground. With the severe downturn in the economy and in particular the construction sector, tender prices have fallen very significantly. The Tender Price Index published by the Society of Chartered Surveyors has decline by more than 20% from its peak and might reduce even more as projects are getting scarcer. Likewise



land prices have also fallen back by between 30% and 50%. Thus a cut in expenditure of 20% should actually imply no change in the volume of activity and as such should not affect the number of projects targeted for delivery. In that sense the cuts should be welcomed as a move towards better value for money.

However, better value for money will only be obtained if the cuts are implemented via tough negotiations on pricing rather than the much easier route of cutting the number of projects but paying for projects on the basis of historic tender prices rather than current tender prices.

Achieving these cost savings constitutes a significant challenge to a public service that has, for good reasons, been more concerned with achieving project delivery than cost control. This challenge will require different skills which need to be developed quickly.

The evidence suggests that at least to a significant degree the cuts in expenditure will result in fewer projects rather than better value for money, and as a consequence they are going to affect our competitiveness down the line. The National Roads Authority has just three schemes put out to tender at the moment but 18 under construction and some 41 schemes at the design stage. In other words once the schemes under construction are finished there will be almost no activity.

## **5. The Long-run size of the construction sector**

An important consideration in any further support for the construction industry via public capital projects must be the long-term prospects of the sector. It is generally accepted that the peak level of employment and activity significantly exceeded the likely long term level. Thus it is unlikely that after the current contraction the industry returns to this excessive level of activity. However, it is also likely that the sector will decline below its long-term level. This over-shooting implies that the sector will have to grow again. As such skills will have been lost in the industry and these will need to be build up. However, given excess supply of construction workers in Europe it might not take too long to build up the sector again. On the other hand if policies to support the sector keep the size of the sector above the long-run level then these policies only postpone the inevitable further contraction of the sector, while using up scarce public resources. In the short-run at least social welfare will be cheaper to the exchequer than investment programmes.

It is important to avoid a situation where employment in the construction sector is maintained at artificially high levels through public projects as seems to have been the case in Japan. Japan has been spending consistently more on public capital than other OECD countries<sup>5</sup>. An often cited example is that of dam building. While Japan has only around 100 major rivers and none longer than 367 km, 100s of expensive dams (some claim almost 3,000) were built. Now, construction companies find a lucrative market in dismantling old dams<sup>6</sup>!

In the past dubious employment creation construction schemes have been pursued in Ireland too. During the famine a range of projects, which were subsequently to become known as ‘famine follies’, were started, where the projects had little or no long term return but provided a means by which to redistribute money.

Consequently, it would seem that a more useful strategy to deal with the dramatic decline in construction employment is to apply targeted active labour market interventions, which will make the surplus workers from the construction sector employable in other sectors<sup>7</sup>. For example a significant proportion of the construction workers have a relatively low level of educational attainment, which will prevent them from gaining employment in other sectors once employment grows again. The returns to further education, particularly among younger construction workers, are therefore likely to be high.

At its peak the construction sector employed 285,000 persons accounting for 14% of all persons in employment. Over the period 1980 to 2003 the average construction sector employment share in the OECD was just 7.2%. If one considered this to be the long-run size of the sector and total employment is 2 million then the sector would account for just 144,000 employees, implying a loss of 141,000 jobs or a halving of the size from peak. There are good reasons to believe that the

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<sup>5</sup> Over the period 1980-2003 the employment share of the construction industry in Japan was 9.8% while the OECD average was just 7.2%.

<sup>6</sup> Similarly Germany maintained coal mining jobs at huge expense when it would have been better for the public finances and the workers concerned that the mines had been closed. Germany is spending about €2.5 bn. per year to subsidise the 35,000 coal mining jobs. This subsidy amounts to over €70,000 per employee. Giving each worker the national average wage for not working would save the German exchequer some €1.2 bn.!

<sup>7</sup> O’Connell (2009) identifies the most effective active labour market policies on the basis of the significant analysis carried out on policy measures implemented during the 1980’s and 90’s.

construction sector in Ireland will remain somewhat larger as a long-run shortage of housing and infrastructure will persist to a degree. If one assumes that the actual share will be 8.8% (the OECD average plus one standard deviation) then the level of employment will be 176,000, implying a loss of jobs in the order of 109,000. The last Quarterly National Household Survey (QNHS) for the last quarter of 2008 shows employment in the sector down to 233,100, a reduction in jobs of 51,500 from the peak. If the rough projection of the long-run size of the sector is correct then the sector will shrink by a further 57,100 jobs. The implication of this calculation is that the sector is likely to contract further and thus keeping it at its current size via public expenditure programmes postpones the inevitable loss of jobs down the line. Of course the precise benefit of any potential policy measure in relation to employment creation must consider the social cost of the measure which is discussed in the next section.

## **6. The Cost of Employment Creation**

A key objective associated with the various stimulus packages is that of job creation. Given the record increases in unemployment in Ireland these must feature highly in expenditure decisions. In determining where to direct public expenditures the public cost per job should be the key consideration. It is surprisingly difficult to find reasonable estimates for the cost of creating additional jobs in the literature.

The Construction Industry Federation estimates that for every €1 billion spent on construction projects 10,000 jobs are created (see CIF, 2009). They estimate that this would save about €300 million on social welfare payments and yield the exchequer a further €300 million in tax revenue so that the net cost would be €400 million, which implies that each job costs approximately €40,000.

The recent modelling exercise by Bergin et al. (2009) considered the impact of cutting public investment by one billion euro. Their analysis which also incorporates the indirect effects through the impact on the labour market and thus wages indicate that such a cut in expenditure would result in the loss of approximately 8,000 jobs in the short run, and just 4,000 jobs in the long run. Thus the short run estimates are not dissimilar to those reported by the CIF but they have been derived in a comprehensive modelling framework.

A study by DKM (1993) on the employment content of road improvement projects found that the cost of a directly created job was close to €100,000. Indexing this to the consumer price index yields a cost of €270,000. In other words an investment of €1 billion would yield less than 4,000 directly created jobs, which is similar to the long-run impact estimated by Bergin et al. (2009).

A recent US study used the US Input-Output tables, which are significantly more detailed than those available in Ireland, to consider the impact of infrastructure investment in different types of infrastructures on job creation<sup>8</sup>. The study estimates that \$1 billion spent on infrastructure investment would generate about 18,000 jobs both directly and indirectly (See table 1). These slightly higher numbers reflect the fact that the US economy is more closed than the Irish economy and thus less of the benefit of the public expenditure leaks out of the economy, and consequently more jobs are created.

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<sup>8</sup> This study appears to have been sponsored by proponents of public investment

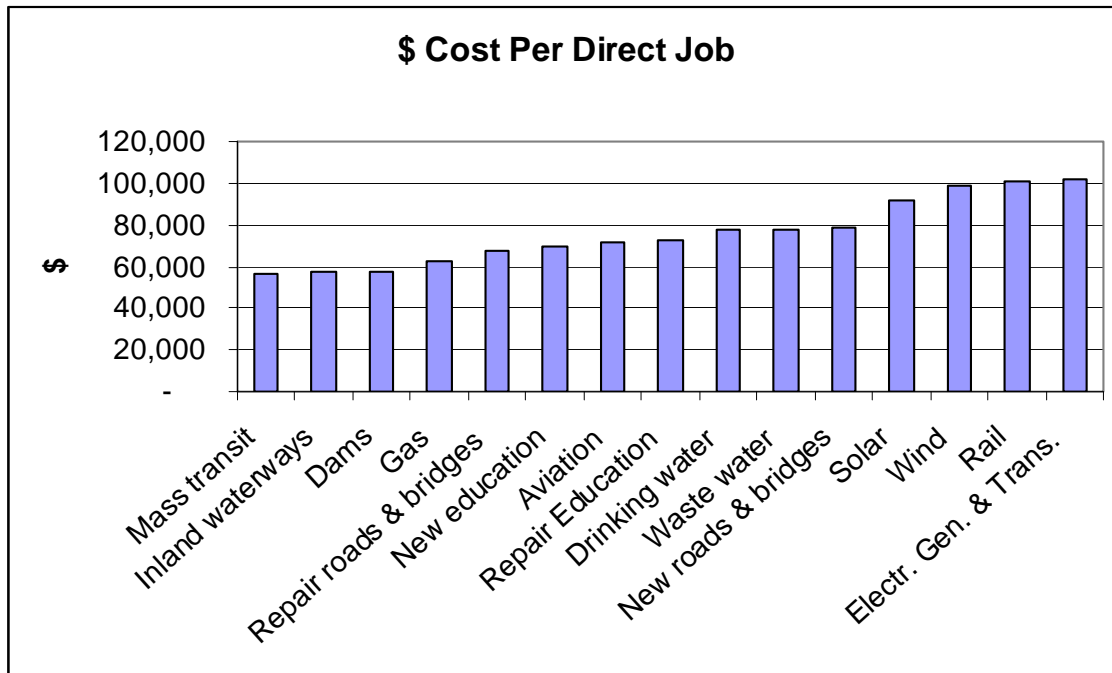
**Table 1. Estimated Employment Effect of Infrastructure Investment by Category of Infrastructure**

<b>Category of Infrastructure</b>	<b>Jobs per \$1 bn infrastructure investment</b>	
	<b>Direct</b>	<b>Direct &amp; Indirect</b>
<b>Energy</b>	11,705	16,763
gas	15,976	21,888
electricity generation, transmission, distribution	9,819	14,515
solar	10,951	15,767
wind	10,076	14,880
<b>Transportation</b>	13,829	18,930
average roads and bridges	13,714	18,894
roads and bridges new	12,638	17,472
roads and bridges repair	14,790	20,317
rail	9,932	14,747
mass transit	17,784	22,849
aviation	14,002	19,266
inland waterways and levees	17,416	23,784
<b>School buildings</b>	14,029	19,262
new institutional construction	14,291	19,637
repair of non residential buildings	13,768	18,886
<b>Water</b>	14,342	19,769
dams	17,416	23,784
drinking water	12,805	17,761
waste water	12,805	17,761

Source: Reproduced from Heintz et al. (2009) "How Infrastructure Investment Supports the US Economy: Employment Productivity and Growth" Alliance for American Manufacturing and Political Economy Research Institute.

Another way to look at this issue is to compare the cost per job with that of other schemes. The latest IDA Annual Report (2007) shows that the cost per sustained job from IDA supported investments was as low as €12,600 for the period 2001 to 2007 and reached €20,200 for the period 1992 to 1998. The 2003 Mid-Term Evaluation of the NDP (Fitz Gerald, McCarthy, Morgenroth and O'Connell, 2003) assessed the cost per job of some schemes under the Regional Operational Programmes. The best value for money schemes had a cost per job created of €5,700. In that context the cost of over €40,000 per job identified in the US study and by the CIF looks very expensive (see Figure 1). This is especially striking if one considers that the construction jobs are essentially temporary jobs, dependent on further public investment while IDA created jobs are more long lasting. However, it must also be acknowledged that it will be more difficult to generate a large number of IDA supported jobs in the present world economic slowdown.

**Figure 2. Estimated Cost per Job of Investment In Infrastructure by Category of Infrastructure**



Source: Own calculation using impacts derived in Heintz et al. (2009).

## 7. Evaluation Procedures

It is important at this time when the public finances are particularly constrained to ensure that all projects that are considered for funding are properly evaluated. If employment creation is to be part of the aim of the public investment programme then this should be explicitly included in the evaluation criteria. The Department of Finance Guidelines for the Appraisal and Management of Capital Expenditure Proposals in the Public Sector argue strongly that the market wage be used in Cost-Benefit Analysis (CBA). This implies that the alternative use of labour would attract the market wage, which is appropriate during times of full or near full employment. It also implies that employment creation has not been part of the evaluation criteria as 100% displacement has been assumed. Given the dramatic rise in unemployment and the downturn in the world economy which reduces emigration probability of the unemployed, that value of the alternative use of

labour will be less than the market wage and indeed may be less than had been suggested by Honohan (1998)<sup>9</sup>.

A further issue in reallocating resources towards more labour intensive activities must be that there is a proper evaluation of need. It is a relatively simple task to identify labour intensive activities. However, if the investment is not needed then such expenditure is essentially a social transfer and in that case social welfare payments will be the cheaper option. The overriding consideration in devoting scarce public resources to infrastructure investment should be the long term return. Projects that only have a short term impact are no different to other redistributive programmes and should be avoided (infrastructure projects which only have a short term impact are follies – see above).

For example, it may well be the case that the schools infrastructure requires significant improvement. Ultimately one can't expect world class education in third class infrastructure. However, there is no evidence that a proper evaluation of needs has been carried out.

## **8. Conclusion**

The level of public capital expenditure has been at record levels over the last decade. The recent cuts in this expenditure, while severe at first glance are tempered by the fact that economic activity is declining and prices for public capital investment are not rising. Indeed if the public service pursues the potential cost savings then the severe nominal cuts will in real terms be quite minor, thus addressing the infrastructure constraints in the economy and thereby will help in positioning the economy for the period after the current recession.

Public capital projects should be undertaken on the basis that they have a long-run return to the whole economy. Those projects with the highest long-run return should be prioritised. Short-term employment considerations should be secondary to this. If public investment is to support

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<sup>9</sup> Honohan (1998) had suggested a shadow wage of 80%. The more recent study by Murphy et al. (2003), in the context of full employment and substantial net-immigration, argued that this was too low and that the shadow wage in Dublin should be set at 100% i.e. the market wage, but outside of Dublin and in particular in the less developed Border, Midlands and Western region it should be set at 90%.

employment creation this should be done on the basis of proper evaluation, considering the cost per job and the value of the alternative use of labour. Ad-hoc reallocation of investment resources is likely to be wasteful of scarce public funds and thus counterproductive.



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