

POLICY PAPER

A Needs and Resources Assessment of Fiscal Equalisation in the Irish Local Government System

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Abstract: In 2000 the central government in Ireland introduced a formula-based needs and resources equalisation model in its local government system to ensure that the allocation of general purpose grants to local authorities was done in an equitable manner. However, the equalisation model is lacking in transparency, with few details publicly available as to its exact specification. Within this context, the purpose of this paper is to critically assess fiscal equalisation in Ireland's local government system. More specifically we address the question of whether general purpose equalisation grants bear any relation to expenditure needs and fiscal resources. We achieve this by estimating our own model based upon a number of indicators of potential need and available resources. We outline a number of alternative equalisation models based on different objective criteria, and compare the simulated allocations resulting from the alternative models to the actual general purpose grants, with a view to partly explaining past allocations but also identifying improvements in the future design of fiscal equalisation in Ireland. Our findings show politically sensitive redistribution away from county councils towards city councils, resulting in new winners and losers. The results for Dublin City Council raise the question of whether, given its population size, level of economic activity and budget, it should be treated separately and as a special case with respect to intergovernmental fiscal relations in Ireland.

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I INTRODUCTION

In 2000 the central government in Ireland introduced a needs and resources distribution model in its local government system so that the allocation of general purpose grants to local councils was done in a more systematic manner ensuring equity, objectivity and transparency. It was a formula-based distribution, with equalisation based on differences in local governments' expenditure needs and fiscal capacity, i.e., needs and resources. The model and the criteria used were undefined and shrouded in secrecy for most of its time, leading to its eventual abandonment in the late 2000s when the local authorities were no longer required to submit a needs and resources return to the Department of the Environment, Community and Local Government. Although equalisation is still a central element of the model, the current absence of any formal model based on objective quantitative criteria lends itself to accusations and fears of opportunistic behaviour, bargaining between local authorities and central government, and negotiable, discretionary and ad hoc allocations based on political favouritism, party allegiances and/or local special interest groups. Despite the prevalence of country-specific features of fiscal equalisation models worldwide, lessons from best practice indicate the universal importance of fiscal equalisation allocations that are subject to a hard budget constraint, formula-based and incentive compatible (encouraging local revenue-raising effort and local expenditure restraint), transparent, feasible (in terms of data requirements and availability), reliable, timely (with respect to annual financial budgeting) and relatively simple, using some generally-agreed objective and measurable criteria, *but* also politically acceptable given the nature of equalisation transfers i.e., redistributive, with potential winners and losers.

The purpose of this research is to critically assess fiscal equalisation in the Irish local government system, based on a review of the international literature on fiscal equalisation and best practice worldwide, but subject to the usual country-specific circumstances. More specifically, we address the question of whether general purpose equalisation grants bear any relation to expenditure needs and taxable resources. We outline a number of alternative equalisation models based on a different mix of objective criteria (subject to the normal data limitations), and compare the simulated allocations resulting from the different models to the actual Local Government Fund (LGF) general purpose grants, with a view to partly explaining past distributions but also identifying possible improvements in the future design of fiscal equalisation in Ireland.

Article 9.5 of the European Charter of Local Self-Government states that the "...protection of financially weaker local authorities calls for the institution of financial equalisation procedures or equivalent measures which are designed

to correct the effects of the unequal distribution of potential sources of finance and of the financial burden they must support..." (Council of Europe, 1985). Typically, local authorities or subnational governments have different capacities and needs, of which many are inherent and beyond their control. For example, two local authorities aiming to offer the same standard of public services find they have to levy different tax rates because of differences in revenue-raising capacity. On account of inter-jurisdictional disparities that exist, fiscal equalisation aims for horizontal equity by enabling subnational governments to supply comparable levels of public services at comparable levels of taxation. Equalisation grants or transfers are used to compensate subnational governments with low fiscal capacity or high expenditure needs (i.e., resources less than average or needs higher than average), with the aim to create a level fiscal playing field but disregarding differences in local preferences, cost differences that reflect subnational policy decisions or differences in the efficiency with which resources are used (Boadway and Shah, 2007).

One simple approach would be to give each local government the same amount of revenue per resident i.e., an equal per capita distribution. Alternatively, in order to offset or neutralise, partially or fully, the fiscal inequalities aforementioned, differences in revenue-raising capacity and/or differences in expenditure needs are assessed, and used to calculate equalisation grants. Differences in per capita fiscal capacity arise because of variations in economic activity and local tax bases, e.g., business properties. Differences in per capita expenditure needs exist because of variations in spending needs or in the cost of providing public services. In turn, variations in per capita spending needs arise largely because of demographics and socio-economic factors e.g., an area with a high percentage of the population or households that are unemployed, on welfare, young or old, or in poverty is likely to have a relatively high need for local public services. Variations in costs per unit arise largely on account of geography e.g., an area with a large rural population, or low population density or adverse topographic features is likely to have a relatively high unit cost per capita of public services provision whereas, in contrast, more populous areas are likely to benefit from economies of scale and agglomeration. Ireland is one among a number of OECD countries where at least half the population live in predominately rural and dispersed areas, leading to marked cost differences between concentrated and dispersed areas (Blöchliger and Charbit, 2008).

Fiscal equalisation and ways to measure both fiscal capacity and expenditure needs are outlined in the next section. This is followed by a description of Ireland's fiscal equalisation system, including the needs and resources model. Alternative models of fiscal equalisation based on a mix of

objective and quantifiable criteria are presented in Section IV, with the resulting transfers compared with the actual general purpose grants. Some brief concluding remarks complete the paper.

II FISCAL EQUALISATION

In the middle of the last century Buchanan (1950, 1952) recognised the growing differences in the fiscal capacities of subnational governments in the US, and, based on the equity principle, the need for action to reduce these interstate fiscal differences. Net Fiscal Benefits (NFB) is defined as the difference between benefits from public services and the costs in terms of taxes paid for these services. It is calculated as imputed public services benefits less tax costs. The two sources of NFB differentials are differences in revenue-raising or fiscal capacity and differences in needs for public services. Equalisation transfers that reduce NFB differentials can be both equitable and efficient, it is argued (Boadway, 2001). A country's citizens should not be treated differently solely because of a state or county border, i.e., equals should be treated equally nationwide, with the fiscal system locationally neutral. Otherwise, citizens may migrate due to these fiscal differences as opposed to migrating due to productivity differences. Arising from the fiscal disparities and the resulting horizontal imbalances that exist between local authorities, equalisation grants from central to local government are transferred so that similar levels of public services can be delivered at a similar tax burden. In bridging the fiscal divide the objective of these transfers is spatial distribution, that is, horizontal equity among the residents of different jurisdictions, allowing for equal access to public services and the capacity to provide such services.

Fiscal capacity is defined as the potential revenue a subnational government would raise if it applied, in the absence of specific or minimum standards, the national average tax rate to its tax bases.¹ Expenditure needs, defined as the potential cost of providing a given level of public services, is the estimated amount a subnational government would need to spend to provide a standard level of services. In the case of a needs and resources model the difference between the assessed revenue capacity and the assessed expenditure needs is the equalisation transfer. The grants result in subnational governments having the necessary capacity to fund their separate needs.

¹ In the definition of fiscal capacity it is potential revenue rather than actual revenue that is employed as the use of the latter can induce negative incentive effects on local fiscal performance. The same distinction applies when measuring expenditure needs (defined as the local government expenditures that would be necessary to provide a particular standard of service), i.e., the use of objectively measured needs as opposed to produced units of service or real spending incurred.

Subnational governments with above average capacity to raise revenues or below average costs to provide services receive relatively less grants, and vice versa.

Fiscal capacity can be measured by a macro/income approach or a tax-by-tax approach. The former uses some macro indicator such as Gross Regional Product, per capita income or something similar. The latter uses a tax-by-tax approach, often called a Representative Tax System (RTS). The RTS is the per capita tax revenue that a subnational government could raise if it applies a representative or average tax rate to a standard set of own-source taxes. Operationally, we begin by getting proxies for tax bases for each tax levied by local government. Then we calculate the average tax rate, equal to the sum of the own-source revenue divided by the sum of the tax base aggregated across all the local authorities. We then multiply the average tax rate as computed above by the tax base for each separate tax. The resulting computation is an estimate of fiscal capacity as it represents the total amount of revenue that each local government would have collected if it applied an average tax rate (Martinez-Vazquez and Boex, 1997).

As for fees and charges, the base varies depending on whether the income stems from (as in the Irish case) local authority housing rents, planning fees, commercial water charges or parking fees and fines, etc. Given the difficulty in measuring any of these bases accurately and consistently, not to mention the likelihood that inclusion in our fiscal capacity measure would encourage local governments not to levy the discretionary user fees or charges, provide the service for free and subsequently benefit from the equalisation compensation, we omit fees and charges from the revenue capacity calculations. Although not ideal, the omission of fees and charges income from the revenue base is recommended by the Council of Europe and is a common practice elsewhere, including in England's detailed and complex four-block equalisation model. Another omission from the model is local tax effort. Capturing the degree to which the local authority actually utilises its tax base, tax effort is often calculated by dividing actual revenues by potential revenue. Although it captures enforcement and collection effort, operationally it is very difficult to measure tax effort and for this reason a fiscal effort correction is, in practice, often excluded from the equalisation framework (Loughlin and Martin, 2008).

For the expenditure needs assessment, the needs of a subnational government are measured by determining the cost which each individual subnational government unit would incur if it were to provide a particular level of service at a standardised level for each citizen in the area. In the absence of a predetermined or minimum standard, often set down by central government, the standardised level of expenditure needs for each service is the average expenditure levels of all local authorities in the provision of the service

examined. Differences between local governments in spending needs can be assessed in two ways, namely a regression approach using the existing pattern of spending across local authorities to infer the factors accounting for differences in needs *and* a unit cost approach which evaluates needs using data on national average costs. The regression-based method assumes that differences in local authority expenditures are systematically related to a set of demographic, geographic and socio-economic variables which, in turn, are all assumed to be proxy variables for the true needs factors. In contrast, the unit cost method removes the need to identify the factors accounting for each local government's current level of expenditure. Instead it focuses on explaining the extent to which particular services contribute to total local authority spending. This approach seeks to identify the contribution of each particular function to the overall local government spending. A priori, various indicators including factors such as the demographic structure of the population, socio-economic and geographic variables are then used to calculate the cost of providing one unit of each service. Funds are then allocated to each authority on the basis of the assessed national unit cost and the number of units each local authority has to provide (Ridge and Smith, 1991; Council of Europe 1998).

Given the difficulty in acquiring reliable and consistent data on unit cost of public service outlays at the Irish local government level, and the absence of any national norms, standards or targets for local government services, for the needs assessment methodology we employ the regression-based approach whereby OLS regressions relate actual per capita expenditures to a range of local government variables or factors including population, population density, local authority housing stock, roads length, etc. To calculate a weighted index of relative expenditure needs, variables with statistically significant regression coefficients are used as needs indicators, and are entered into the grant formula with their respective coefficients as weights (Bradbury *et al.*, 1984; Ridge 1992; Boex and Martinez-Vazquez, 2007).² For more details on our fiscal capacity and expenditure needs models see Section IV.

² As Blair (1992) argued, "...perhaps most fundamentally, there is the problem of which factors to include in the calculation of expenditure needs. In theory, the needs assessment should cover all the functions of local authorities, or at least those which account for most of their expenditure; moreover, for each function it should take account of all those objective characteristics which may significantly contribute to differences in spending needs. But such an approach implies a proliferation of indicators involving a complexity of calculations which is hardly conducive to a general understanding of the process. The alternative is to accept that equalisation will never be absolute and to opt for a simple model covering all services but using only a few criteria considered to be the most important general indicators of need:..."

III IRELAND'S FISCAL EQUALISATION SYSTEM

In this section we measure the degree of fiscal disparity between local authorities in Ireland, outline the system of fiscal equalisation in Ireland using the needs and resources model, report the LGF general purpose allocations for the fifteen year period 1999–2013³ and finally calculate the effect of equalisation in Ireland. We begin with measuring the degree of horizontal fiscal imbalance in the Irish local government system.

3.1 *Local Authority Fiscal Disparities*

Here we measure the extent of fiscal disparity in the Irish local government system using fiscal capacity differences, and, in particular, differences in the size of the business properties base, as the main own-source tax in local government in Ireland is commercial rates. Rates are a form of property tax, on businesses. They are levied on the occupiers of commercial properties, with the rateable valuation of a property based on the estimate of the annual rental value of the property at a specified date. The cumulative total of all valuations of rateable premises in a local authority is called the Net Effective Valuation (NEV). Local government differences in revenue-raising or fiscal capacity are measured by differences in the NEV per capita, as in Table 1. As the differences do not vary much from year-to-year (as properties are only periodically revalued) we only report for two years, namely the population census years of 2006 and 2011.

Table 1: *Local Authority Revenue-Raising Capacity Differences*

<i>Local Authority</i>	<i>Net Effective Valuation</i>		<i>Population^a</i>		<i>NEV Per Capita</i>	
	<i>2006</i>	<i>2011^b</i>	<i>2006</i>	<i>2011</i>	<i>2006</i>	<i>2011</i>
Carlow County Council	65,728	81,174	36,726	40,914	1.8	2.0
Cavan County Council	134,000	185,987	60,069	69,534	2.2	2.7
Clare County Council	461,394	491,810	88,295	94,477	5.2	5.2
Cork County Council	1,110,000	1,255,000	320,602	359,274	3.5	3.5
Donegal County Council	259,367	300,350	127,085	140,517	2.0	2.1
Dun Laoghaire Rathdown County Council	1,153,917	523,206,100	194,038	206,261	5.9	2,536.6
Fingal County Council	1,564,819	792,544,000	239,992	273,991	6.5	2,892.6
Galway County Council	261,100	355,000	153,207	168,875	1.7	2.1
Kerry County Council	209,440	215,346	102,149	107,743	2.1	2.0

³ Since the establishment of the LGF in 1999 to the year 2013 with the introduction of the new own-source tax, namely the local property tax (LPT). In 2014 and thereafter, an amount equivalent to the LPT will be paid into the LGF.

Table 1: *Local Authority Revenue-Raising Capacity Differences (Contd.)*

<i>Local Authority</i>	<i>Net Effective Valuation</i>		<i>Population^a</i>		<i>NEV Per Capita</i>	
	<i>2006</i>	<i>2011^b</i>	<i>2006</i>	<i>2011</i>	<i>2006</i>	<i>2011</i>
Kildare County Council	483,409	563,884	158,348	180,012	3.1	3.1
Kilkenny County Council	196,507	226,184	78,897	86,708	2.5	2.6
Laois County Council	133,116	155,099	67,059	80,559	2.0	1.9
Leitrim County Council	59,024	75,256	28,950	31,798	2.0	2.4
Limerick County Council	409,677	473,952	124,265	134,703	3.3	3.5
Longford County Council	58,946	69,955	26,729	30,998	2.2	2.3
Louth County Council	124,994	140,469	53,257	61,355	2.3	2.3
Mayo County Council	170,719	187,704	97,965	103,908	1.7	1.8
Meath County Council	280,616	284,649	134,348	152,328	2.1	1.9
Monaghan County Council	94,390	111,828	44,464	48,625	2.1	2.3
North Tipperary County Council	97,400	115,747	49,522	53,429	2.0	2.2
Offaly County Council	121,019	140,768	55,877	60,913	2.2	2.3
Roscommon County Council	111,972	141,281	58,768	64,065	1.9	2.2
Sligo County Council	61,349	70,000	43,002	47,825	1.4	1.5
South Dublin County Council	1,550,000	753,000,000	246,935	265,205	6.3	2839.3
South Tipperary County Council	117,614	132,300	55,055	60,136	2.1	2.2
Westmeath County Council	78,084	110,828	54,400	59,072	1.4	1.9
Wexford County Council	135,930	186,763	64,999	70,606	2.1	2.6
Wicklow County Council	234,294	250,670	105,668	118,032	2.2	2.1
Wicklow County Council	146,067	223,508	80,511	90,257	1.8	2.5
Cork City Council	771,744	862,153	119,418	119,230	6.5	7.2
Dublin City Council	4,581,532	4,505,490	506,211	527,612	9.1	8.5
Galway City Council	411,158	512,622	72,414	75,529	5.7	6.8
Limerick City Council	349,167	401,036	59,790	57,106	5.8	7.0
Waterford City Council	287,775	273,143	45,748	46,732	6.3	5.8
<i>Total</i>	<i>16,286,268</i>		<i>3,754,763</i>	<i>4,088,329</i>	<i>4.3</i>	

^a Excludes the population of borough councils and rate-setting town councils.

^b Due to the revaluation of commercial properties in the three Dublin county councils in the late 2000s the reported 2011 NEV (and, subsequently, the NEV per capita) for those three local authority areas are not directly comparable to the 2006 figures.

Source: Central Statistics Office, Department of the Environment, Community and Local Government, authors' calculations.

In 2006 the NEV per capita varied from a low of 1.4 in the predominately rural County Councils of Sligo and Waterford where business activity and the

number of commercial and industrial properties is relatively low, compared to a high of over 9.0 in Dublin City Council (DCC) where, not surprisingly given it is the country's administrative, political and industrial capital, the number of rateable commercial premises and the level of business activity is relatively high.⁴ Eleven local authorities have a NEV per capita of 2.0 or less, as against 8 local authorities (the five city councils and the three county Dublin councils) with a NEV per capita greater than 5.5. The average NEV per capita for the 34 city and county councils in 2006 was 4.3. Although the commercial rates base revaluation of the three county Dublin local authorities makes for a more difficult comparison in 2011, the differences in the size of the commercial rates base still prevail, with the same rural-urban divide.

3.2 *Needs and Resources Model*

According to official sources, the needs and resources distribution model "...makes an assessment of how much each local authority should spend on each service/activity (needs) and the income (resources) each authority should generate from these services/activities (from rates, charges, fees, rent, etc.) in determining individual local authority general purpose allocations" (Department of the Environment, Heritage and Local Government, 2004). More recently the Commission on Taxation noted that the "...aim of the Needs and Resources Model is to bring about equalisation between local authorities over time, so that each will have sufficient resources from a combination of central grants and local income, to provide an acceptable level of services to their customers." (Commission on Taxation, 2009).⁵ Operationally, every local authority each year provided a return showing expenditure on each service provided, income accruing from each service, and details of infrastructure maintained. On the basis of these individual returns and standard unit costing and income, the computer model generated an expenditure/income gap for each local council, based on the cost of providing an acceptable level of services, and the income that should come from own-source revenues. In the first instance, each local authority is allocated a general purpose grant in proportion to its expenditure/income gap. These initial allocations were then adjusted to ensure

⁴ Urban is defined by the CSO as settlements with a population of 1,500 persons or more. In the largely rural county councils cited above only about one-third of the population live in urban areas.

⁵ According to two experts on local government in Ireland, the needs and resources model "...is used to help distribute funds fairly across local authorities according to a range of factors including size, population and infrastructure, as well as where needs are greater than projected resources" (Callanan and MacCarthaigh, 2008). Also in 2008 the Green Paper on Local Government noted "...there are also issues around the current needs and resources model of funding which helps inform the allocations under the Local Government Fund. It is nearly a decade since the model was developed and financial systems and patterns of expenditure have changed considerably since then. There is a need to update the model and to introduce greater transparency regarding how it works" (Department of the Environment, Community and Local Government, 2008).

that each local council received a certain baseline allocation, usually set at the level of grant that was received in the previous year. In practice, the annual budgetary allocations to local government were only to a small extent based on objective criteria such as population or tax base per capita, but mostly based on baseline projections following trends in the past (OECD, 2008).

3.3 *LGF and General Purpose Allocations*

The LGF was established in 1999 to distribute general purposes grants to local authorities. Initially, the LGF distributable pool was funded from motor taxation and an exchequer contribution determined annually by central government. The fund was then distributed primarily in the form of general purpose equalisation payments to the local authorities *and* a specific purpose regional and local roads payment to assist in meeting costs associated with the non-national roads programme.

In terms of LGF income, motor taxation increased steadily during the boom years from less than €500 million in 2001 to over €1 billion by 2008, and remained at those levels for the next four years coinciding with the slowdown in economic activity. The exchequer contribution also witnessed an increase, albeit smaller, from about €400 million in 2001 to €550 million in 2008, due to the increase in central government revenues arising largely from the property and retail boom. From 2008, and on account of the fiscal crisis, the central government contribution was reduced, and was initially replaced with the flat rate household charge and subsequently the LPT. In terms of LGF spending, the roads payment remained relatively stable, in the €400 million-550 million range for this period. In contrast, the general purpose payments witnessed a large increase, from less than €500 million in 2000 to €1 billion at its peak in 2008, before falling back to less than €650 million by 2012/13, due to the fiscal retrenchment policies of central government (Turley and Flannery, 2013).

The distribution of these general purpose payments to the 34 local authorities for the period 1999-2013 is reported in Table 2, both the euro amounts and the annual percentage changes.⁶ In order to get a sense of the relative size of grants per resident in the city and county councils, per capita amounts are reported in Table 3, for the years 2006 and 2011. A number of interesting observations are evident from these figures. Some of the biggest increases (in percentage terms) are in rural councils with low fiscal capacity, such as Longford, Leitrim, Waterford, Mayo and Donegal County Councils, with increases for the period equal to 85 per cent or more. In contrast, the smallest changes in the general purpose grants were in the large urban councils, of

⁶ Due to space constraints we only report the general purpose grants for key selected years. The complete table is available from the authors on request.

Fingal (–9 per cent) and DLR (9 per cent) County Councils and DCC (1 per cent). There was much variation in the year-on-year changes, and particularly so in the early 2000s with the implementation of the needs and resources model. The mid to late 2000s witnessed much smaller variations in yearly changes, as the formula-based needs and resources model was abandoned and replaced by, initially, a standard yearly adjustment applied to all local authorities (possibly reinforcing the historical inequalities of needs and resources) followed by a return to some variability in the year-on-year changes thereafter.

The local authorities that receive the highest general purpose grant per capita, in excess of €300 per person, are Leitrim, Longford, Waterford, South Tipperary, Sligo, North Tipperary and Mayo County Councils. All these local authorities are rural and less densely populated, with fewer large towns (outside of the towns with separate town and borough councils) and less commercial activity. In contrast, the urban City and County Councils of Galway, Fingal and South Dublin received, on average, a general purpose grant per capita of €100 per resident, or equal to a third of the size of the general purpose grant per person allocated to the most rural and less densely populated councils listed above.

3.4 *Effects of Equalisation*

For ease of exposition we take the local authority (recurrent) revenues for the year 2006, with and without the general purpose grants. Without the general purpose payments, the ratio of highest to lowest council revenue is 25, based on DCC's income of over €730 million as against Leitrim's County Council income of €30 million. When the general purpose transfers are included, the ratio falls to 19, reflecting a reduction in the horizontal fiscal imbalance between local governments. A measure of the importance of the general purpose payments to the respective local councils is given by the ratio of the general purpose grant to own-source income, comprising commercial rates and user fees and charges. This ratio varies from as low as about 0.15 in both South Dublin County Council and Galway City Council to as high as 1.45 in the most rural and least densely populated local authority area, namely Leitrim County Council where only 10 per cent of the population live in urban areas. As expected, each of the other four city councils and the two county Dublin councils also have a relatively low general purpose grant to own-source income ratio (ranging from 0.16 to .26), whereas, in contrast, the more rural and less densely populated County Councils of Longford, Roscommon and Sligo have a general purpose grant to own-source income ratio of 1.0 or higher. According to OECD (2008) the general purpose scheme in Ireland has an equalising effect, but nevertheless, considerable differences in spending power remain. Despite equalisation, the spending power of, for example, Louth County Council is only

Table 2: LGF General Purpose Grants

<i>Local Authority</i>	1999	2005	2008	2013	% Change 1999-2013	% Change 2008-2013
Carlow County Council	5,009,390	10,682,438	13,171,854	8,560,762	70.9	-35.0
Cavan County Council	8,361,197	16,821,425	20,690,378	14,123,740	68.9	-31.7
Clare County Council	6,762,663	13,831,947	16,476,569	10,072,651	48.9	-38.9
Cork County Council	25,592,321	49,050,276	57,368,547	32,048,612	25.2	-44.1
Donegal County Council	16,637,365	35,713,379	44,097,787	30,840,363	85.4	-30.1
Dun Laoghaire Rathdown County Council	22,640,284	35,043,452	41,261,666	24,772,291	9.4	-40.0
Fingal County Council	21,521,859	28,844,494	33,756,001	19,619,590	-8.8	-41.9
Galway County Council	15,945,476	32,616,878	40,632,067	27,400,744	71.8	-32.6
Kerry County Council	10,612,057	23,399,482	29,139,561	18,374,432	73.1	-36.9
Kildare County Council	10,719,067	21,799,170	28,176,862	20,634,229	92.5	-26.8
Kilkenny County Council	8,122,855	17,878,074	22,021,918	15,105,892	86.0	-31.4
Laois County Council	7,682,049	15,968,328	19,360,800	13,070,064	70.1	-32.5
Leitrim County Council	6,276,363	13,063,981	16,332,646	11,952,743	90.4	-26.8
Limerick County Council	12,787,746	22,513,686	27,483,240	17,668,930	38.2	-35.7
Longford County Council	5,732,402	12,508,061	15,522,985	11,488,728	100.4	-26.0
Louth County Council	6,119,771	11,496,518	14,070,960	9,044,372	47.8	-35.7
Mayo County Council	14,901,700	32,568,821	40,257,276	27,650,043	85.5	-31.3
Meath County Council	11,993,856	23,776,226	30,297,653	21,251,612	77.2	-29.9
Monaghan County Council	7,173,657	13,287,104	16,610,930	11,968,784	66.8	-27.9
North Tipperary County Council	7,861,429	16,453,791	20,481,309	14,504,742	84.5	-29.2
Offaly County Council	6,516,308	13,965,967	17,222,857	12,095,491	85.6	-29.8
Roscommon County Council	10,370,586	19,318,766	23,308,308	15,828,208	52.6	-32.1
Sligo County Council	7,410,891	15,161,087	18,731,673	13,584,307	83.3	-27.5
South Dublin County Council	14,168,634	23,442,061	27,396,258	16,285,348	14.9	-40.6

Table 2: LGF General Purpose Grants (Contd.)

<i>Local Authority</i>	<i>1999</i>	<i>2005</i>	<i>2008</i>	<i>2013</i>	<i>% Change 1999-2013</i>	<i>% Change 2008-2013</i>
South Tipperary County Council	10,287,941	19,813,401	25,062,115	17,302,006	68.2	-31.0
Waterford County Council	9,554,477	18,900,701	24,259,293	18,176,169	90.2	-25.1
Westmeath County Council	8,587,234	18,088,035	22,711,775	16,055,537	87.0	-29.3
Wexford County Council	10,554,362	19,026,652	23,425,682	15,912,433	50.8	-32.1
Wicklow County Council	8,475,222	17,437,258	21,974,808	14,357,641	69.4	-34.7
Cork City Council	14,638,924	22,070,779	28,383,759	16,612,544	13.5	-41.5
Dublin City Council	52,318,304	86,806,479	105,039,762	52,613,531	0.6	-49.9
Galway City Council	4,956,289	8,306,487	9,795,964	5,750,549	16.0	-41.3
Limerick City Council	5,947,262	10,401,855	12,258,639	8,264,861	39.0	-32.6
Waterford City Council	4,021,165	7,538,868	8,941,951	5,415,345	34.7	-39.4
<i>Total for 34 city and county councils</i>	<i>400m</i>	<i>748m</i>	<i>916m</i>	<i>588m</i>	<i>47.0</i>	<i>-35.7</i>
<i>Grand Total (includes 80 town councils)</i>	<i>439m</i>	<i>817m</i>	<i>999m</i>	<i>640m</i>	<i>45.9</i>	<i>-35.9</i>

Source: Department of the Environment, Community and Local Government, authors' calculations.

Table 3: *LGF General Purpose Grants Per Capita*

<i>Local Authority</i>	<i>2006</i>	<i>2011</i>	<i>% Change 2006-2011</i>
Carlow County Council	321	248	-22.9
Cavan County Council	301	238	-20.9
Clare County Council	167	135	-19.3
Cork County Council	161	119	-26.1
Donegal County Council	303	259	-14.7
Dun Laoghaire Rathdown County Council	191	153	-20.1
Fingal County Council	126	96	-24.1
Galway County Council	230	195	-15.5
Kerry County Council	250	216	-13.6
Kildare County Council	151	133	-11.9
Kilkenny County Council	244	202	-17.0
Laois County Council	254	188	-25.9
Leitrim County Council	489	424	-13.4
Limerick County Council	194	159	-18.5
Longford County Council	497	415	-16.7
Louth County Council	227	178	-21.6
Mayo County Council	359	309	-13.9
Meath County Council	194	168	-13.6
Monaghan County Council	323	281	-13.1
North Tipperary County Council	359	306	-14.6
Offaly County Council	262	232	-11.5
Roscommon County Council	351	289	-17.8
Sligo County Council	386	320	-17.1
South Dublin County Council	100	82	-18.0
South Tipperary County Council	393	336	-14.5
Waterford County Council	379	348	-8.1
Westmeath County Council	301	262	-13.0
Wexford County Council	191	163	-14.5
Wicklow County Council	233	194	-16.9
Cork City Council	203	192	-5.3
Dublin City Council	185	149	-19.5
Galway City Council	121	100	-17.6
Limerick City Council	184	169	-8.5
Waterford City Council	176	144	-18.2
<i>Total for city and county councils</i>	<i>214</i>	<i>178</i>	<i>-17.0</i>
<i>Grand Total (includes 80 town councils)</i>	<i>207</i>	<i>172</i>	<i>-16.7</i>

Source: Department of the Environment, Community and Local Government, authors' calculations.

Note: 2006 and 2011 were chosen on the basis that these were census years, where reliable population estimates are available.

about 40 per cent of the average local authority, around four and half times less than Dublin city. Louth County Council is not an exception: 10 of the 34 local authorities have less than 75 per cent of the average spending power (OECD, 2008).

IV ALTERNATIVE EQUALISATION MODELS AND RESULTS

To investigate the impact of various needs and resources on subnational grant allocations in Ireland we estimate the distribution of these grants based on two equalisation models. Table 4 outlines the two fiscal equalisation models utilised based on objective methodologies employed.

Table 4: *Alternative Models of Fiscal Equalisation*

<i>Model</i>	<i>Type</i>	<i>Objective</i>	<i>Methodology</i>
1	Resources equalisation	Equalise taxable capacity	RTS approach using the average tax (ARV) rate
2	Needs and resources equalisation	Equalise level of services at a similar level of taxation	Expenditure needs – taxable capacity = fiscal gap

We begin by estimating a resources equalisation model for Ireland, where the objective is to equalise taxable capacity by providing grants such that

$$G_L = P(FC_H - FC_L) \quad (1)$$

Where G_L represents the level of central government general purpose grant to local authority L, P is population size, FC_H is the highest fiscal capacity per capita calculated across all councils and FC_L is the fiscal capacity per capita of local authority L. As outlined in earlier sections of the paper we measure the fiscal capacity of the Irish local authorities using the NEV and the national average ARV. Using data from 2006,⁷ the national average ARV was 64.66. We apply this average rate to the rateable business properties base, namely the NEV for each local council. This gives us an estimate of each local authorities' fiscal capacity, or when divided by the respective local council's population, the fiscal capacity per capita. In fully equalising fiscal resources, each local authority's fiscal capacity per capita is raised to the highest fiscal capacity per

⁷ We report for the year 2006 as the central government's needs and resources model was still used in that year to determine equalisation grants to the local authorities. It was abandoned shortly thereafter. It was also a census year where reliable population estimates are available.

Table 5: Grant Amounts Under Fiscal Capacity Equalisation Model

<i>Local Authority</i>	<i>Fiscal Capacity Per Capita</i>	<i>Gap Per Capita</i>	<i>Estimated Equalisation Grant</i>	<i>Actual General Purpose Grant</i>	<i>Difference</i>
Carlow County Council	116	470	12,107,063	11,791,970	315,093
Cavan County Council	144	441	18,599,364	18,075,814	523,550
Clare County Council	338	247	15,333,582	14,741,484	592,098
Cork County Council	224	361	81,343,973	51,554,596	29,789,377
Donegal County Council	132	453	40,445,299	38,547,272	1,898,027
Dun Laoghaire Rathdown County Council	385	201	27,343,158	37,109,051	-9,765,893
Fingal County Council	422	164	27,570,653	30,317,184	-2,746,531
Galway County Council	110	475	51,100,510	35,296,907	15,803,603
Kerry County Council	133	453	32,465,520	25,497,932	6,967,588
Kildare County Council	197	388	43,119,822	23,893,115	19,226,707
Kilkenny County Council	161	424	23,498,133	19,226,389	4,271,744
Laois County Council	128	457	21,511,794	17,019,082	4,492,712
Leitrim County Council	132	453	9,216,174	14,168,597	-4,952,423
Limerick County Council	213	372	32,462,219	24,160,987	8,301,232
Longford County Council	143	443	8,307,094	13,296,084	-4,988,990
Louth County Council	152	433	16,209,088	12,083,486	4,125,602
Mayo County Council	113	473	32,504,263	35,170,634	-2,666,371
Meath County Council	135	450	42,465,041	26,089,431	16,375,610
Monaghan County Council	137	448	13,985,410	14,363,459	-378,049
North Tipperary County Council	127	458	15,927,156	17,775,415	-1,848,259
Offaly County Council	140	445	17,466,161	14,662,707	2,803,454
Roscommon County Council	123	462	19,064,863	20,646,920	-1,582,057
Sligo County Council	92	493	14,884,777	16,617,403	-1,732,626

Table 5: Grant Amounts Under Fiscal Capacity Equalisation Model (Contd.)

<i>Local Authority</i>	<i>Fiscal Capacity Per Capita</i>	<i>Gap Per Capita</i>	<i>Estimated Equalisation Grant</i>	<i>Actual General Purpose Grant</i>	<i>Difference</i>
South Dublin County Council	406	179	31,096,454	24,638,923	6,457,531
South Tipperary County Council	138	447	17,282,993	21,643,602	-4,360,609
Waterford County Council	93	492	18,808,567	20,618,871	-1,810,304
Westmeath County Council	135	450	20,537,540	19,562,134	975,406
Wexford County Council	143	442	32,783,108	20,163,308	12,619,800
Wicklow County Council	117	468	26,451,404	18,791,404	7,660,000
Cork City Council	418	167	14,032,043	24,267,960	-10,235,917
Dublin City Council	585	0	0	93,847,042	-93,847,042
Galway City Council	367	218	11,088,664	8,765,669	2,322,995
Limerick City Council	378	208	8,715,767	11,025,361	-2,309,594
Waterford City Council	407	178	5,733,028	8,030,490	-2,297,462

capita, i.e., an amount equal to €585, in DCC.⁸ For each local authority we calculate the gap, in euro amounts and/or as a percentage share of the total. When the percentage share is applied to the total distributable pool for 2006, of just over €800 million, the resulting amount is the fiscal equalisation grant.

Table 5 reports the different fiscal capacities and equalisation grants computed using this model for all 34 local authorities. As we can see from Table 5, the implementation of such a model in Ireland would bring about a large change in the amounts received by local councils. Unsurprisingly, as the council with the largest fiscal capacity, the biggest loser would be DCC. The results also indicate that such a model would benefit the county councils close to Dublin City the most, with Kildare, Meath and Wexford County Councils all seeing a large increase in their allocated amounts. This seems to be driven by a combination of having relatively low fiscal capacities per capita compared to DCC combined with large populations. It is also interesting to note that some of the estimated grants are strikingly similar to the actual general purpose grant received. This raises the question of whether resources were the only measure used for the distribution of grants in some cases.

While these results are useful in indicating how a model of fiscal equalisation based on resources may shape the distribution of central government transfers to subnational level, it ignores the possible needs of each council in its calculation. To address this omission we next estimate a needs and resources model where the objective is to compensate for *both* differences in tax capacity and expenditure needs. Following on from Ridge (1992) Equation (2) illustrates this type of model,

$$G_L = S_L - \bar{c} - B_L \bar{t} \quad (2)$$

Where G_L represents the level of central government grant to local authority L, S_L is the spending needs of the same authority, \bar{c} is an average level of fees and charges and $B_L \bar{t}$ is the tax base of each local authority multiplied by the standard or average rate of tax (\bar{t}). While the latter measure is available from the fiscal equalisation model presented above, we now require a measure of expenditure needs. To this end, we utilise a regression based approach. Conceptually, the expenditure needs assessment begins with identifying local authority characteristics or variables that influence local authority spending. As the assigned expenditure functions to local authorities in Ireland are limited, the number and choice of criteria is more straightforward than in more decentralised countries. The difficulty, however, is in determining the relative

⁸ This is the equivalent of calculating a fiscal equalisation grant based upon setting the fiscal capacity per capita at the mean (€280) and supplementing each council by an amount just enough to set the most negative grant (€305 per capita) to zero as Allers and Ishemol (2010) undertake.

weights for each needs factor or variable, and for this we rely on a statistical regression approach to generate (implicit) weights from the actual expenditure data. Before the regression analysis is run, the spending data is adjusted to remove the impact of specific purpose grants. This is achieved by subtracting the income amounts each council received from central government that were earmarked for a specific expenditure function. A separate analysis was carried out for each expenditure function or service division within the council remit in Ireland.

Table 6 outlines the needs variables selected across the various service divisions. The variables chosen for each service division were selected based upon their significance in statistical tests and their relevance to the service itself.

Table 6: *Indicators of Need for Regression-Based Expenditure Model*

<i>Service Division</i>	<i>Independent Variables / Indicators of Need</i>
Housing and Building	Population, number of local authority houses rented, housing density
Road Transportation and Safety	Population density, regional road length, local road length
Environmental Services	Population density, Net effective valuation per capita
Recreation and Amenity	Population density, index of urbanisation

All the regressions run presented with statistically significant F-statistics and produced adjusted R²s ranging from .44 (Road Transportation and Safety) to .82 (Housing and Building).⁹ For the remaining services, namely, Water services, Development management, Agriculture, Health, Education and Welfare, and Miscellaneous services it was not possible to robustly model any meaningful regression results. Therefore, in calculating expenditure needs for these services we follow the methodology chosen by Ridge (1992) and apply actual expenditures. Table 7 presents the actual and estimated expenditures for each council based upon our OLS models. As we see the models seem robust in their predictions. While we do see some variation across councils in the predicted/actual expenditures, the total expenditures are broadly similar. This provides some support that our estimations may be similar to those used to estimate spending needs of the local government units in Ireland.

In calculating the grants amounts as specified in Equation (2), our expenditure estimates provide the term S_L . For the term \bar{c} we apply an average charges/fees per capita to each council and derive the $B_L \bar{t}$ from our analysis of

⁹ The full results are presented in the Appendix to this paper.

Table 7: Grant Amounts Under Needs and Resources Equalisation Model

<i>Local Authority</i>	<i>Actual Expenditure</i>	<i>Estimated Expenditure</i>	<i>Estimated Equalisation Grant</i>	<i>Actual General Purpose Grant</i>	<i>Difference</i>
Carlow County Council	24,300,000	24,600,000	9,149,293	11,791,970	-2,642,677
Cavan County Council	34,900,000	37,100,000	10,100,000	18,075,814	-7,975,814
Clare County Council	65,300,000	66,200,000	9,396,088	14,741,484	-5,345,396
Cork County Council	200,000,000	215,000,000	45,600,000	51,554,596	-5,954,596
Donegal County Council	94,100,000	105,000,000	49,100,000	38,547,272	10,552,728
Dun Laoghaire Rathdown County Council	156,000,000	158,000,000	24,600,000	37,109,051	-12,509,051
Fingal County Council	197,000,000	186,000,000	11,900,000	30,317,184	-18,417,184
Galway County Council	72,400,000	84,100,000	20,500,000	35,296,907	-14,796,907
Kerry County Council	78,300,000	69,700,000	24,900,000	25,497,932	-597,932
Kildare County Council	99,100,000	102,000,000	22,600,000	23,893,115	-1,293,115
Kilkenny County Council	41,500,000	47,600,000	10,900,000	19,226,389	-8,326,389
Laois County Council	41,700,000	43,300,000	14,300,000	17,019,082	-2,719,082
Leitrim County Council	22,500,000	24,100,000	11,500,000	14,168,597	-2,668,597
Limerick County Council	68,700,000	78,100,000	13,700,000	24,160,987	-10,460,987
Longford County Council	24,800,000	22,600,000	10,700,000	13,296,084	-2,596,084
Louth County Council	45,000,000	39,200,000	14,800,000	12,083,486	2,716,514
Mayo County Council	79,500,000	69,200,000	28,200,000	35,170,634	-6,970,634
Meath County Council	66,100,000	83,400,000	24,300,000	26,089,431	-1,789,431
Monaghan County Council	35,800,000	34,100,000	14,500,000	14,363,459	136,541
North Tipperary County Council	36,000,000	34,300,000	12,900,000	17,775,415	-4,875,415
Offaly County Council	38,900,000	41,000,000	16,200,000	14,662,707	1,537,293
Roscommon County Council	39,800,000	41,600,000	16,400,000	20,646,920	-4,246,920
Sligo County Council	33,700,000	32,900,000	15,800,000	16,617,403	-817,403

Table 7: Grant Amounts Under Needs and Resources Equalisation Model (Contd.)

<i>Local Authority</i>	<i>Actual Expenditure</i>	<i>Estimated Expenditure</i>	<i>Estimated Equalisation Grant</i>	<i>Actual General Purpose Grant</i>	<i>Difference</i>
South Dublin County Council	218,000,000	194,000,000	18,500,000	24,638,923	-6,138,923
South Tipperary County Council	46,800,000	38,100,000	13,700,000	21,643,602	-7,943,602
Waterford County Council	44,300,000	39,500,000	17,800,000	20,618,871	-2,818,871
Westmeath County Council	45,000,000	46,000,000	17,400,000	19,562,134	-2,162,134
Wexford County Council	63,600,000	68,600,000	21,300,000	20,163,308	1,136,692
Wicklow County Council	52,000,000	51,300,000	17,400,000	18,791,404	-1,391,404
Cork City Council	135,000,000	137,000,000	51,100,000	24,267,960	26,832,040
Dublin City Council	686,000,000	674,000,000	223,000,000	93,847,042	129,152,958
Galway City Council	61,900,000	59,300,000	10,700,000	8,765,669	1,934,331
Limerick City Council	55,200,000	61,700,000	20,900,000	11,025,361	9,874,639
Waterford City Council	42,300,000	39,800,000	7,264,816	8,030,490	-765,674
<i>Total</i>	<i>3,045,500,000</i>	<i>3,048,400,000</i>	<i>851,110,197</i>	<i>803,460,683</i>	<i>47,649,514</i>

fiscal capacity. Given these needs and resources we then calculate the expected grant allocations for each council. Table 7 presents the grant levels estimated from our model, the actual general purpose grant levels for the same year and the difference between the two.

From Table 7 we first note that the particular specification of needs and resources equalisation in this study brings about a broadly similar level of total grant amount to be distributed. The total amount to be allocated to the various councils is about 6 per cent higher using our specification of the needs and resources model compared to the actual total amount distributed. This may lend itself to suggesting our model may be broadly similar to that used by central government. However, when we analyse the grant allocations across the councils we see that there are significant differences between those simulated by our model and the actual amounts. For instance, DCC would be allocated just under €130 million more under the model presented here. While our estimated expenditure figure is virtually identical to the actual expenditure amount for DCC, the biggest driver of this gap seems to stem from the fact that DCC has much higher charges/fees per capita (€524) compared to the average (€305). When we apply the national average rate of this revenue source to DCC, with the objective of calculating the grant amounts for a standard level of service across all councils, the fiscal gap for DCC proves to be quite large and hence results in a large grant amount. It could be argued that the lower grant in the actual system employed forces DCC to levy higher charges to provide a similar level of service to other councils. The general trend in our estimates suggests that a needs and resources model specified as we do would result in significant transfers from rural to urban councils. Cumulatively the five city councils in 2006 would see an increase of €167 million compared to a reduction of almost €120 million for the 29 county councils. The stark differences in the distribution of these grants across councils from the needs and resources model estimated here, combined with the similarities in estimated and actual expenditure amounts suggests that there were other factors behind these allocation decisions.

V CONCLUSIONS

Fiscal equalisation is a key financial element in Ireland's local government system. To ensure equalisation grants were allocated in an objective and equitable manner, a formula-based needs and resources model was introduced in 2000. It was abandoned shortly afterwards for reasons of complexity and excessive data requirements placed on the local councils. Given the lack of transparency and general understanding of the current allocation of general

purpose grants, we present alternative equalisation models based on a more defined and transparent mix of objective and quantitative criteria including, on the taxable capacity side, commercial rates and the business properties base, and on the expenditure needs side, a needs assessment using a range of needs variables combined with a statistical regression approach. While our results show that the actual general purpose grants do bear some relation to expenditure needs and fiscal capacity, further research is required to fully explain the actual allocations and gaps identified in our work. The results for DCC from both models raise the question of whether, as in many other countries, the metropolitan capital city is a special case and should be treated differently with respect to, in general, intergovernmental fiscal transfers, and, more specifically, future LPT revenues retained or pooled and redistributed (for equalisation purposes).

As recognised by the Barrington Report (1991) a quarter of a century ago, any new grant distribution will differ, in some cases significantly, from the existing allocations, resulting in local council winners and losers. In the absence of an increase in the distributable pool and cognisance of the effect of the new LPT, the 80/20 divide and the 15 per cent +/- local adjustment (which constitute our next step in this research space, namely an investigation into the distribution of the LPT revenue, and particularly for the more urban county councils and city councils, especially DCC, as against the most rural county councils), we recommend a gradual change to any new or revised equalisation model, and only after prior consultation with stakeholders. However, for reasons of equity and efficiency we urge policymakers to reinstate a needs and resources model, and one that is both workable and transparent. Given the recent local government reforms in Ireland it is a good time to formalise and strengthen the fiscal equalisation system and, by doing so, comply with Article 9.5 of the Council of Europe's Charter of Local Self-Government.

REFERENCES

- ALLERS, M. A. and L. J. ISHEMOI, 2010. "Fiscal Capacity Equalisation in Tanzania", *Local Government Studies*, Vol. 36, No. 5, pp. 697-713.
- BAHL, R., 2000. "Intergovernmental Transfers in Developing and Transition Countries: Principles and Practice", Urban & Local Government Background Series, No. 2 Municipal Finance, Washington, D.C.: World Bank.
- BARRINGTON REPORT, 1991. *Local Government Reorganisation and Reform*. Dublin: Stationery Office.
- BERGVALL, D., C. CHARBIT, D. JAN KRANN and O. MERK, 2006. "Intergovernmental Transfers and Decentralised Public Spending", *OECD Journal on Budgeting*, Vol. 5, No. 4, pp. 111-158.

- BIRD, R. M. and V. A. TARASOV, 2004. "Closing the Gap: Fiscal Imbalances and Intergovernmental Transfers in Developed Federations", *Government and Policy*, Vol. 22, No. 1, pp. 77-102.
- BIRD, R. M. and F. VAILLANCOURT, 2007. "Expenditure-Based Equalization Transfers" in J. Martinez-Vazquez and B. Searle. (eds.), *Fiscal Equalization: Challenges in the Design of Intergovernmental Transfers*, New York: Springer Science & Business Media, Inc., pp. 13-31.
- BLAIR, P., 1992. "Financial Equalisation between Local and Regional Authorities in European Countries", *Local Government Studies*, Vol. 18, No. 4, pp. 7-27.
- BLÖCHLIGER, H. and C. CHARBIT, 2008. "Fiscal Equalization", *OECD Economic Studies*, Vol. 44, No. 1.
- BLÖCHLIGER, H., M. OLAF, C. CHARBIT and L. MIZELL, 2007. "Fiscal Equalisation in OECD Countries", *OECD Working Papers on Fiscal Federalism*, No. 4, OECD Publishing.
- BOADWAY, R., 2001. "Equalization Revisited: Its Role and Design", Paper presented at the 30th Annual Conference of the Atlantic Provinces Economics Association, New Brunswick, Sept. 28-30.
- BOADWAY, R., 2004. "The Theory and Practice of Equalisation", *CESifo Economic Studies*, Vol. 50, No. 1, pp. 211-254.
- BOADWAY, R. and A. SHAH (eds.), 2007. *Intergovernmental Fiscal Transfers: Principles and Practice*, Public Sector Governance and Accountability Series, Washington D.C.: World Bank.
- BOEX, J. and J. MARTINEZ-VAZQUEZ, 2007. "Designing Intergovernmental Equalization Transfers with Imperfect Data: Concepts, Practices and Lessons" in J. Martinez-Vazquez and B. Searle (eds.), *Fiscal Equalization: Challenges in the Design of Intergovernmental Transfers*, New York: Springer Science & Business Media, Inc., pp. 291-343.
- BRADBURY, K., H. F. LADD, M. PERRAULT, A. RESCHOVSKY and J. YINGER, 1984. "State Aid to Offset Fiscal Disparities across Communities", *National Tax Journal*, Vol. 37, No. 2, pp. 151-170.
- BUCHANAN, M. J., 1950. "Federalism and Fiscal Equity", *The American Economic Review*, Vol. 40, No. 4, pp. 583-599.
- BUCHANAN, M. J., 1952. "Federal Grants and Resource Allocation", *Journal of Political Economy*, Vol. 60, No. 3, pp. 208-217.
- CALLANAN, M. and M. MACCARTHAIGH, 2008. "Local Government Reforms in Ireland" in B. E. Dollery, J. Garcea and E.C. LeSage Jr. (eds.), *Local Government Reform, A Comparative Analysis of Advanced Anglo-American Countries*, Cheltenham: Edward Elgar.
- COMMISSION ON TAXATION, 2009. *Commission on Taxation Report 2009*, Dublin: Government Publications Office.
- COUNCIL OF EUROPE, 1985. *European Charter of Local Self-Government*. Council of Europe CETS No. 122, Treaty Office, Strasbourg, 15.X.1985.
- COUNCIL OF EUROPE, 1998. *Limitations of Local Taxation, Financial Equalisation and Methods for Calculating General Grants*, Local and Regional Authorities in Europe, No.65, Strasbourg: Council of Europe Publishing.
- DEPARTMENT OF THE ENVIRONMENT, COMMUNITY AND LOCAL GOVERNMENT, 2008. *Stronger Local Democracy: Options for Change*. Dublin: Department of the Environment, Community and Local Government.

- DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT, 2004. *Local Authority Budgets 2004*. Dublin: Department of the Environment, Heritage and Local Government.
- INDECON CONSULTANTS, 2005. *Indecon Review of Local Government Financing*. Report Commissioned for the Minister of the Environment, Heritage and Local Government in association with the Institute for Local Government Studies at the University of Birmingham, Dublin.
- LOUGHLIN, J. and S. MARTIN, 2008. "Local Government Finance: International Experience", Paper presented at the Foundation for Fiscal Studies Conference, 20 June, Dublin.
- LYONS INQUIRY INTO LOCAL GOVERNMENT, 2007. *Place-shaping: A Shared Ambition for the Future of Local Government*, London: The Stationery Office.
- MARTINEZ-VAZQUEZ, J. and J. BOEX, 1997. "Fiscal Capacity: An Overview of Concepts and Measurement Issues and their Applicability in the Russian Federation", International Studies Program Working Paper No. 3, Atlanta: Andrew Young School of Public Policy, Georgia State University.
- OAKLAND, W., 1994. "Fiscal Equalization: An Empty Box?", *National Tax Journal*, Vol. 47, No. 1, pp. 199-209.
- ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, 2013. "Fiscal Equalisation: A Key to Decentralised Public Finances" in *Fiscal Federalism 2014: Making Decentralisation Work*, Paris: OECD Publishing.
- ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, 2008. *Ireland: Towards and Integrated Public Service*, OECD Public Management Reviews, Paris: OECD.
- RIDGE, M., 1992. "Local Government Finance and Equalisation: The Case of Ireland", *Fiscal Studies*, Vol. 13, No. 3, pp. 54-73.
- RIDGE, M. and S. SMITH, 1991. "Report on the Role of Central Grants in Local Finance in the Republic of Ireland", in *Local Government Reorganisation and Reform*. Dublin: Stationery Office.
- SHAH, A., 1996. "A Fiscal Needs Approach to Equalization", *Canadian Public Policy*, Vol. 22, No. 2, pp. 99-115.
- TURLEY, G. and D. FLANNERY, 2013. "The Impact of the Economic Boom and Bust on Local Government Budgets", *Administration*, Vol. 61, No. 2, pp. 33-56.
- TURLEY, G. G. ROBBINS and S. McNENA, 2015. "A Framework to Measure the Financial Performance of Local Governments", *Local Government Studies*, Vol. 41, No. 3, pp. 401-420.

APPENDIX
REGRESSION RESULTS FOR LOCAL AUTHORITY EXPENDITURES
ACROSS MAJOR SERVICE DIVISIONS

Table A1a: *OLS Regression Results for Housing and Building Expenditures of City and County Councils*

<i>Variable</i>	<i>Coefficient</i>	<i>t</i>
Population	0.0001029*	1.97
Number of local authority houses rented	1,547.27***	2.91
Housing density	0.44**	2.71
Constant	31.34**	2.27
Observations: 34	R-Squared: .82	F-Stat: 46.6

Table A1b: *OLS Regression Results for Road Transportation and Safety Expenditures of City and County Councils*

<i>Variable</i>	<i>Coefficient</i>	<i>t</i>
Population density	0.020**	2.57
Regional road length (Km)	8,148.7*	1.69
Local road length (Km)	887.6	1.27
Constant	78.6***	4.45
Observations: 34	R-Squared: .44	F-Stat: 7.6

Table A1c: *OLS Regression Results for Environmental Service Expenditures of City and County Councils*

<i>Variable</i>	<i>Coefficient</i>	<i>t</i>
Population density	0.05***	3.89
Net effective valuation per capita	12.1*	1.88
Constant	106.5***	6.08
Observations: 34	R-Squared: .78	F-Stat: 56.1

Table A1d: *OLS Regression Results for Recreation and Amenity Expenditures of City and County Councils*

<i>Variable</i>	<i>Coefficient</i>	<i>t</i>
Population density	0.62**	2.68
Index of urbanisation	0.01**	2.06
Constant	28.28**	2.53
Observations: 34	R-Squared: .6	F-Stat: 23.3