2014-11

Demographic Growth in Ireland Since 2011: Some Geographic Implications for Future Spatial Planning, Housing and Infrastructure Provision

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Content: Urbanisation; long-term population growth on the Island of Ireland; recent population growth and where that growth is occurring; Analysis of spatial growth; the demographic components of growth and CSO growth projections; Housing and Infrastructure; City Formation and City-led growth; Nature and Change of 'Work', Economics and Wealth Creation; Employment Potential; the Forthcoming National Economic and Spatial Strategy and Growth Options; A case-study of County Mayo and the role of Public Representatives, exemplifying conflicting Urban versus Rural policy objectives.

1: Introduction:

This evidence-based research Paper with a spatial-demographic emphasis is intended as a contribution to public policy formation for the 2015 National Economic and Spatial Strategy (NESS). It advocates the case for city-led growth regions, presents a background to current housing needs and points to the 'agenda' for Ireland's infrastructural priorities. The constrained economic circumstances and size of the National Debt place severe limitations on Governmental intervention, requiring a coherence of issues such as funding for project prioritisation and a revised NESS growth-centre selection. The fusion of the New Economic Geography (NEG) with the established literature of Urban Economics provides the relevant theoretical background to this Paper.

By April 2014 the Central Statistics Office (CSO) estimate for the State's population has risen to 4.623 million; a near one-million increase or some +27.6% above the census of 1996, the base year used for this spatial-demographic analysis. That 15-year period has been one of significant growth in non-indigenous immigration, which commenced shortly after the start of the Celtic Tiger era that marked Ireland's period of unprecedented economic growth. Since the first post-independence census of 1926, the direction of State migration had generally been outward, except for some inward growth for inter-censal 1971-1979, then on a modest scale during 1991-1996, followed by robust growth until the economic crash of 2009. At present migration still outward in direction but is slowing down or is static in the Greater Dublin Area.

2: Background Analysis of Censuses – population growth since 1996:

Between inter-censal 1996 and 2011 Ireland's population grew by 26.53% (+962,165). Natural growth (births less deaths) contributed 51.41% of this growth whilst net in-migration accounted for 48.59%, as set out in the following Table 1. This Table shows the 1996 base population, the 1996-2006 and 2006-2011 growth periods, the two demographic growth components together with this author's projected growths for 2011-2016, are as follows:

TABLE 1: Population Growth and Growth Components:

Census	State Population	Actual Growth	Population growth %	Natural Growth	Net Migration
1996 population	3,626,087	-	-	-	-
2006 population and growth over 10 years since 1996	4,239,848	613,761	16.93	268,549	345,212
2011 population and growth over 5 years since 2006	4,588,252	348,404	8.22	226,112	122,292
15-year growth: 1996-2011	-	962,165	26.53	494,661	467,504
2016 population (forecast) and 2011-2016 growth components	4,700,000	110,000	2.40	200,000	-90,000

Source: CSO Censuses on a *De Facto* Basis and forecasts for 2016 census, compiled by Brian Hughes – see Note 1

By Census 2016 the State's total population is expected to reach 4.7 million, an increase of 110,000 (rounded) above the 2011 level. Estimated 2011-2016 out-Migration will aggregate to 90,000, counterbalanced by Natural Growth of 200,000. Various CSO projections for the State indicate net in-Migration to recommence by 2016 or 2018. The Economic and Social Research Institute (ESRI) projection is for year 2021 when migration is in equilibrium. All such estimates are qualified as to the rate of overall State economic recovery and especially where activity is still flat.

The long-term demographic history, set out in Appendix 1 of this paper, divides the State's 1841-2011 population into its constituent Greater Dublin Area (GDA) and Rest of State (RoS) area. The GDA comprises the counties of Dublin, Kildare, Meath and Wicklow. It is noted that in contrast to a 12.21% share of State population in 1841, the GDA share grew to 23.02% by 1926 and to 39.32% share by 2011. The estimate for April 2014 is for a 39.52% share (CSO) and to reach 50% of State population by the last quarter of this century Hughes, (2010). As at 2011 over 54% of the State's population lives in Leinster.

Appendix 1 also confirms that due to more rapid urban growth and with no population losses, the GDA's share of State population has increased at every census since 1841. The State's average annual population growth for fifteen-year (1996-2011) was 64,144 *(i.e.* 1,234 per week); 51.41% from natural growth and 48.59% due to net in-migration.

However, over that period the net in-migration component represented just 39.80% of the GDA's population growth whereas it comprised some 54.75% in the RoS area, thus:

TABLE 2: Components of Population Growth: 1996-2011

	Natural Growth	Migration	Total Growth	% Migration share and	Total Growth %
GDA	238,700	157,785	396,485	39.80	28.21%
RoS	255,961	309,719	565,680	54.75	25.48%
State	494,661	467,504	962,165	48.59	26.53%

Source: CSO 2011 Census, 'Town and Country', Table 1 and Principal Demographic Results (earlier)

Thus the RoS area population 'mushroomed' because of in-migration, a growth momentum that is unsustainable in the longer term, especially in the absence of the employment potential of large or medium-sized cities, to replicate the 'absorptive' capacity of Dublin. Urban economic theory confirms the beneficial role of cities, in being better able to retain their population, especially during periods of economic downturn, *vide* Fujita *et al.* (2001, 2013). From the above Table 2 data it is noted that the GDA contributed some 48.26% to the State's Natural Growth in population which is proportionately 23.02% ahead of its 39.23% share of 2011 population. In contrast, the RoS area accounted for 66.25% of 1996-2011 State in-Migration; *i.e.* 9.02% greater than its State population share in 1996.

Because most of the RoS area counties had experienced notably stronger population growth from migration than from natural growth, with the State's economic collapse after 2008, a sharp reversal (2008-2009) in the direction of accumulated migration was inevitable. This has had a much more profound population-loss effect on the RoS area, which had now lost most of its construction employment – many of whom had been building 'ghost estates' with little or no end-use demand. Nine counties, mostly in the RoS area will continue to have significant housing surpluses post-2021.

Likewise, since 2008 the construction industry downturn has resulted in a near 90% reduction in the State's housing output, from over ninety thousand to about nine thousand at present. Increasingly higher levels in housing oversupply were recorded, in the 2006 and the 2011 censuses, particularly in rural counties located further away from Dublin. Unfortunately, those same counties, with poorer land and weather, have little tillage or dairy activity potential. They are overly dependent on low-productivity fattening with marginal levels of income and face an uncertain commercial outlook under the reformed EU Common Agriculture regime.

Low-urbanised West and Northwest areas of Ireland are likely to be the last ones to benefit from the recent economic upturn and the resumption of house building and the employment opportunities therefrom. Increasingly, the geographic tendency for most FDI industry is to locate in larger centres of population in the east and south, with appropriate levels of skills and with the research support from the mainly city-located universities and other higher centres of learning.

The significance of the GDA's population structure is reflected in its Natural Growth performance having a lower age-profile and with a higher proportion of birth-mother. In one recent Quarter, the Natural Growth for Fingal County exceeded the entire Province of Connacht. In that Quarter so did the corresponding figures for Dublin City and South Dublin, CSO *Vital Statistics* (2013, Q 3). Furthermore, as the GDA is almost twice as urbanised as the RoS area – with 86.13% versus 44.61% of total 2011 population living in cities and 'town' settlements of 1,500 and over – it has a much greater facility to retain its population, especially during the current period of net State out-migration.

3: The 2014 CSO Population and Migration Estimates:

This paper draws on the latest-available *Population and Migration Estimates* (P&ME) data for 2014, published in late-August as an important 'mid-term' data point, pending the next census of April 2016. It marks 60% of the time from April 2011 to the next census.

The main focus of the Paper's analysis to this point has been based on *de facto* census data. Recent Property Industry criticisms of Spatial and Housing policy formulation have pointed to an over-reliance and use of out-of-date statistical data. However, each year in late-August the CSO publishes the inter-censal (P&ME), which reports the State and Regional Populations as at April which is *Residence*-based, *vide* Note 1.

Note 1: Since 2006 the P&ME data have been calculated on the "*Residence*" basis which is rounded to the nearest one-hundred of population. It is noted that this basis of population estimation results in a slightly smaller figures than that of the above Table 1 *De Facto* data, to the extent of about 0.29% in the case of Ireland's population as at April 2011, recorded at 4,575,000, *i.e*. being some 13,252 less than the *De Facto* Census population result of 4,588,252. Consequently, for the forthcoming census of 1916 it can be anticipated the *Residence* forecasted population for the State could be about 15,000 less than the *De Facto* outcome.

4: Emerging Demographic Data since the 2011 Census:

The CSO Census data confirms that the Migration component has been shown to be much more volatile than Natural Growth in Ireland over the fifteen year period since 1996, particularly so for rural western and northern counties. This paper now focuses on the short-term prospects for the State's future demographic direction. Based on recent CSO Releases of their *Quarterly Vital Statistics, a* slight reduction in Natural Growth is expected, evidenced from the trend of a reducing birth rate and combined with increasing mortality attributed to Ireland's ageing population.

With the expectation of adding just 110,000 to total State population, the inter-censal 2011-2016 period will compare unfavourably with Ireland's population growth of 321,000 average for each three five-year periods, 1996-2011. This reveals the extent of the demographic downturn resulting from the 'Tiger Economy' collapse. However, the Table 1 data above, also anticipates a 'maturing' of this net outward migration phase as the current economic recovery gathers momentum.

The CSO Regional and National *Population and Labour Force Projections* to 2031 and 2049, respectively, indicate that the State's net out-migration will have reversed, sometime between 2016 and 2018, returning to inward migration flows thereafter. More conservatively, the ESRI forecast 2021 as when the net inward movement will resume.

Already evident from the 2014 CSO *P & ME Release* is the spatial dynamic and continuation of an eastward direction in population share momentum, *vide Twice the Size,* Hughes *et al.* (2008). The GDA's net out-migration thrust has ceased, based on the 2013-2014 estimates for both Dublin and the mid-East Regions. Together, they confirm that the GDA accounted for 76.37% of the State's population growth since 2011. It has to be cautioned that it is somewhat premature to predict a trend-change based solely on figures for this three year period. However, the CSO Quarterly National Household Survey's (QNHS) job creation figures, together with anecdotal evidence of increasing traffic movements and house-prices spreading outward from Dublin also complement these demographic data.

Being a sparsely-populated off-shore island, the direction of its Migration is strongly influenced by the vagaries of Irish economic performance. This 'mirrors' the strategic indicator of the world's Globalisation Index, where Ireland's aggregate of Exports plus Imports is substantially greater than its GDP, placing this State very near the top of this Index. Dublin is the State's only metropolitan city region and elsewhere, without large cities, the limited population-absorption capacity of the RoS area is evident. Consequently, and following the severe and prolonged Irish economic collapse of 2008, the ending of net out-Migration in each of the Planning Regions will likewise depend on both temporal and local responses of their migration responses to the emerging economic upturn and especially to fulfilled 'announcements' in job creation.

The 2016 Census data will provide a regional spatial indication as to the dynamics of a reversal to inward migration as to its time-delayed 'elasticity of response' to Ireland's economic recovery. Whereas the reversal 'flip' from inward to out-migration from about 2009 onwards proved to be sharply time-sensitive, as yet no data is available to measure the corresponding in-migration time-response that may result from the current economic recovery.

ESRI research suggests that once Ireland's unemployment rate is 5% greater than that of the U.K., this 'triggers' a move to out-migration. However no rate of similar 'response' data exists for corresponding, past, inward population movements to Ireland.

In examining the recent CSO *P&ME Residence*-based data, this allows construction of the latest two-area population data, as set out in in the following Table 3, which also shows the estimated 2014 share of State population for both the GDA and RoS areas. The 39.52% GDA's share of 2014 is the highest on record. This 'midterm' growth summary likewise confirms the 2011-2014 GDA population growth to be just over 5.1 times that of the RoS

area. Thus the 2016 census is likely to confirm a GDA share approaching 40% of State population, one that has doubled within the last 100 years, *vide* Appendix 1.

The following Table summarises the three-year population dynamic for the State's two principal areas:

TABLE 3: GDA and RoS areas -
3-year: Population Growth

Summary of growth ('000s):	**2011**	**2014**	**Pop. Grth**	**% Growth**	**2014 % Share**
GDA	**1,795.0**	**1,821.5**	**26.5**	**1.48%**	**39.52**
RoS	**2,780.0**	**2,788.1**	**8.1**	**0.29%**	**60.48**
State	**4,575.0**	**4,609.6**	**34.6**	**0.76%**	**100.00**

Source: CSO Population & Migration Estimates

Most of the RoS area's population growth has occurred in the South West Planning region and is believed to largely reflect the growth of the Cork Area Strategic Plan (CASP).

5: Ireland - An East-West Regional Analysis:

So far, the somewhat constrained demographic investigation of this Paper has been focused on comparing the GDA with RoS areas. Such approach is based on the fact that these areas represent population sizes that are fairly evenly balanced; likewise, those parts of the State that have approximate equality in GDP terms (GDA = c. 54% of State) and, significantly, because of the above-referred contrast in terms of their urban versus rural settlement compositions.

However, because the GDA represents just 9.95% of the State's surface area – somewhat smaller than that of County Cork - the methodological approach now applied in this Paper is to investigate broader territorial units. In Hughes (2013:13), a somewhat wider demographic analysis examined the Dublin-Belfast Corridor, where Louth is added to the GDA. The resultant density is 247.95 persons per square kilometre as against just 43.85 persons for RoS *less* Louth (2011 census). In summary, it is noted that RoS *less* Louth has 7.81 times the surface area size whereas the GDA *plus* Louth is demographically 5.65 times as dense.

Given the fact that such sharp contrasts exist, a wider geo-demographic analysis is now undertaken so as to broaden the population findings and, in so doing, assists in the understanding of the growth differential of the State's East-West demographics. Such geographic broadening investigates the short-term *P&ME* Region-by-Region population growth performance since 2011. This draws on the 2014 CSO *P&ME* Release, where its Table 8 data on Regional population estimates are utilised in the methodology.

This approach divides the State into two halves utilising a North-South geographic division. This dividing line follows the Shannon River southward to the Cork-Waterford border (near Youghal). However, in order to facilitate this Planning Regions analysis, it is necessary to divide and allocate the Border Region into its Eastern and Western counties, with Louth, Cavan and Monaghan to the east and Donegal, Sligo and Leitrim in the western part of the State. The 2011-2014 population growth performances are as follows:

Table 4: East-West Planning Regions Populations ('000) : 2011-2014

Eastern Regions:	2011 Pop.	2014 Pop.	% Growth	Western Regions:	2011 Pop.	2014 Pop.	% Growth
GDA	**1,795.0**	**1,821.5**	**1.48%**	**Mid-West**	**378.0**	**378.2**	**0.05%**
Midlands	**284.0**	**290.6**	**2.32%**	**South-West**	**662.0**	**673.4**	**1.72%**
South-East	**499.0**	**504.8**	**1.16%**	**West**	**441.0**	**437.1**	**-0.88%**
East-Border	**257.1**	**252.0**	**-2.02%**	**West-Border**	**258.9**	**251.9**	**-2.78%**
Total: East	**2,835.1**	**2,868.9**	**1.22%**	**Total: West**	**1,739.9**	**1,740.6**	**0.04%**

Source: CSO *Population and Migration Estimates*, 2011 and 2014 - Table 8.

Note 2: The 2014 population estimates for East-Border and West-Border are based on the 1996-2011 aggregate growth performances for each of the two groups of counties. This analysis confirms that the East-Border counties' aggregate population outgrew the West-Border ones by 36.09% over that 15-year period. Accordingly, this applied methodology for demographic growth was used in reverse to show a similar-proportioned, lower population loss for the East-Border in 2011-2014. Specifically, the 12.1 thousand loss in the entire Border Region's population over this period was proportioned as to 5.1 thousand loss for East-Border and 7.0m thousand for the West-Border Region.

Prior to having the evidence from the 2016 census, it can be counter-argued that such population loss is as yet 'unproven' as the 'Quinn Factor' may have affected the East-Border to a greater degree than the West Border, especially given that County Cavan was the 'epicentre' of its extensive business activity. However, resolution of this argument will have to await publication of the 2016 census, commencing in July of that year, being the CSO Census *Preliminary Report*.

Despite modest levels of population growth since the 2011 census, already it is clear from the above figures that the West Regions of the State have stagnated as a whole, in having almost no aggregate population growth. The South-West has undoubtedly benefitted from Cork City's economic revival but this is counter-balanced by rural losses elsewhere. For the East Regions, with the exception of East-Border, all other of its Planning Regions have shown *P&ME* growth which, in aggregate, accounts for almost 98% of the State population growth 2011-2014 (*i.e.* 1.12% versus 0.04% for the Western Planning Regions, as per Table 4).

The significance of the data from Table 4 herein, shows that the Eastern Regions are estimated to have accounted for all but 700 of the State's 34,500 population growth during the past three years to April 2014. Supporting this hypothesis is the fact that both Dublin and Cork have experienced employment growth due to the thrust of IDA announcements, with Dublin in the vanguard of the current economic recovery.

Note 3: For clarification purposes in referring to settlement populations, the suburbs or environs of cities are included, as recorded by the CSO, Area Volume (1), Table 7, in each census.

6: Contrasting Geo-Physical and Demographic Differences:

This paper has examined and contrasted the demographic growth dynamics starting with the GDA/ RoS areas comparison, then examining the inclusion of Louth as part of the Dublin-Belfast Corridor and thirdly, in analysing the described East-West geographic divide. A fourth analysis of the State's area contrasts has been espoused by Skehan (2011). This 'line' separates the State into a North-West and South-East configuration of contrasting geo-physical resource areas. Skehan describes it as a line running from just west of Dundalk in the north-east to the south coast below Bandon-Clonakilty in the south-west of the State.

That line on the map of Ireland clearly differentiates starkly contrasting land resource and agricultural areas, climatic differences, population densities and other important geo-physical endowments of 'the two Irelands'. In fact, it continues into Northern Ireland; one that marks the East and West-Bann areas, again exhibiting similar, profound, contrasts. Within this State, this fourth area analysis results in a 34-66% north-west – south-east population split coupled with a 68-32% surface-area split. Critically, Limerick and Galway cities – together with Derry in an all-island context – are the only significant centres of population in the North-West area, with Limerick City's location being not too far west of this dividing' line'. Furthermore, this area's town settlements are of a smaller average size when compared to those of the South-East area.

In the absence of inter-censal county and sub-county level demographic data, nevertheless it is clear that this fourth area comparison for 2011-2014 will result in further population growth for the South-East in contrast with anticipated population loss for the North-West area, influenced by the performance of Cork City and its exclusion from the North-West area, *i.e.* in contrast with that city's inclusion in the West area in the third East-West area analysis above.

Apart from the Dublin and Belfast Metropolitan Areas, this absence of medium or large-sized cities represents a critical all-island deficiency in a world where cities are increasingly perceived as being the drivers of regional growth, Glaeser (2011). City-scale economics and optimal resource deployment are the prerequisites for growth.

For the soon to be announced new Economic and Spatial Strategy, the fostering of 'lumpiness', (*vide* Zoellick, (2009) as is advocated in this Paper, would mean a stark spatial policy reversal. of concentrating growth into Ireland's provincial cities as well as Dublin. Such policy is critically needed so as to counteract past, failed, 'scattergun policy' objectives of the 'equality of potential' of *Balanced Regional Development* as characterised in the 2002-2020 National Spatial Strategy (NSS).

It is useful to summarise the outcome results from the four selected criteria of analysis of the different areas of State discussed in this Paper. The next Table 5, the left-hand sets of figures in each column represent the eastern geographic areas and so on:

Table 5: Spatial Demographics – Summary of Analysis:

Area:	**2011 Populations (M)**		**Surface Areas % of State**		**Pop. Density/ Sq. Kilometre**		**2011-2014 Pop. Growth ('000s)**	
Side-by-side Analysis of:	**Left**	**Right**	**Left**	**Right**	**Left**	**Right**	**Left**	**Right**
GDA / RoS	**1.795**	**2.780**	**9.95**	**90.25**	**263.39**	**45.07**	**26.5**	**8.7**
GDA+Louth/ RoS-Louth	**1.918**	**2.657**	**11.35**	**88.65**	**247.95**	**43.85**	**25.7**	**9.5**
East/ West of State	**2.835**	**1.740**	**35.50**	**64.50**	**116.58**	**39.38**	**34.5**	**0.7**
South-East/ North-West	**3.020**	**1.555**	**32.00**	**68.00**	**137.77**	**33.38**	**40.0**	**-4.8**

Source: Summary of Paper's Tables and Text, above.

The detailed findings from the Population Density per Square Kilometre expressed in ratios are respectively: 5.84, 5.65, 2.96 and 4.12, confirming – regardless of spatial definition – the significant 'drag' handicap exerted by the 'near-Tundra' population density level of the larger western portion of the State when compared with that of the East is profound. Likewise, the same ordered 3.05, 2.71, 49.29 and 44.80 ratios, relating to respective population growth differences, serve to reinforce these specific conclusions as to the need for such radical change in future spatial policy implementation.

In the case of the first two sets of data above, there is only a small difference as between the GDA taken on its own and when Louth is included, given its small surface area and the fact that it contains the State's two largest towns, Drogheda and Dundalk. The principal difference between the third and fourth sets of contrasts is the inclusion of the Cork Metropolitan Area (C.A.S.P.) in the South-East variant.

7: Ireland's Demographic-Lagging Cities:

In contrast to the State population growth of 26.53% between 1996 and 2011, its five cities together increased by just 16.42%. Accordingly, the non-city growth at 32.28% is some 96.59% more robust than that of the cities. Yet, the CSO Census data for employment, Profile 10, *Door to Door* (2011) confirms that when compared with the two previous censuses, the State's cities continue to increase their Daytime Working Populations. What is therefore evident is that substantial population is being channelled into the major towns within the cities' 'sphere of influence' (SOI) of the cities. This confirms that they are to a significant extent, substituting the cities themselves as locations of residence for many city-based workers: as it were, enforcing a de-urbanising 'hollowing-out' of Ireland's cities.

Accordingly, both medium and long-distance commuting journeys have significantly grown, reflecting the workings of the land-use/ transportation interface. In terms of spatial planning this represents an unsustainable outcome; it is both time-consuming and costly. It reduces the State's competitiveness and increases traffic congestion and with lower labour productivity. International research points to the inverse relationship of a long-distance commuter with time that otherwise could be spent in assimilating into the home community,

Taking Dublin's six largest SOI towns of 20,000 and over, their 15-year rate of population growth is exceptional, except for land-locked Bray, thus:

TABLE 6: Dublin Commuting Towns of 20,000-plus (2011):

Town	2011 Population	1996 population	Population growth %
Drogheda + L-B-M	49,467	28,960	70.81
Swords	37,816	22,314	69.47
Bray	31,872	27,923	14.14
Navan	28,559	12,810	122.94
Newbridge	21,561	13,363	61.35
Naas	20,713	14,074	47.17
Total – 6 Dublin commuting towns:	189,988	119,444	59.06

Source: CSO Censuses 1996 and 2011, Volume 1, Table 7.

Note 4: In Table 6, the population of Ireland's largest town Drogheda, which straddles the Louth-Meath boundary, is shown combined with the population of the fast-growing (+10,000) town of Laytown-Bettystown-Mornington (LBM) in order to demonstrate their impending physical and spatial agglomeration of this, the State's emerging sixth city. Should the 2006-2011 population growth rate and percentage growth difference with that of Waterford be maintained to April 2016, then subject to that growth rate, Drogheda + LBM would then exceed Waterford's population by that next census. Specifically, during inter-censal 2006-2011 their aggregate population grew by 12.25% to 49,467 as compared with Waterford's growth of 4.69% to 51,519.

For the purposes of this Table 6 analysis in just highlighting these large towns, this magnifies the wider picture of what is mainly city-generated growth deflecting to Dublin's city-region area. The same pattern of growth is evident in smaller towns, not just surrounding Dublin but likewise around the provincial cities. Cork now has four 10,000-plus towns: Carrigaline, Mallow, Midleton and Cobh. Town growth has been far superior to that of their respective cities and reflects the fact that spatially, they are substituting for growth which, in sustainable terms, should otherwise be taking place in Ireland's cities.

Many factors contribute to this: enforced population 'deflection' caused by unaffordable residential prices in the cities, requiring a balance to be made in budgeting between the costs: those of commuter distances being balanced against (un) affordable property values, i.e. the Von Thunen– Alonso trade-off. In this regard, the government's rejection of Dublin's ERDO Plan (1985) was instrumental in the 'hollowing-out' of the Capital. Indeed, successive Irish government have been anti-pathetic towards cities, in their misguided ambitions to prematurely transfer urban-generated growth to the wider geographical realm, most notably in their rejection of the Buchanan Plan (1968).

The outcome has been widespread geographic over-zoning for inefficient 'green-field' development sites in preference to the need to promote higher density 'brown-field' urban renewal and particularly, in the urgent, current, particular need to redress Dublin's acute housing shortfall, which threatens the city's and State competitiveness. The issue of harmful political interference is not just confined to their failure to promote cities. The Mahon Tribunal findings together with this Paper's Case Study in Appendix 3, explains the rural dilemma of the long-standing tension between urban and rural interests, exemplified by recent Public Representatives' amendments to the Mayo's Draft Development Plan, *vide* Daly (2014).

8: Paper Synthesis:

In the light of this Paper's 'findings' of the State's recent and projected population growth trends, it is pertinent to include the following discussion, linking emerging demographic findings with the strategic 'choices' to be 'resolved' in forthcoming spatial strategic policy formulation and, importantly, for its prospective implementation. The analysis findings on such contrasting population and spatial ratios from the above Table 5 are instructive as a reasoned basis for an application of policies that promote scale economics in response to Ireland's forthcoming spatial strategy and to its infrastructural needs.

These findings are also critical to the formulation of the State's long-term housing and infrastructure strategies. The European Union is fastidious about macro-economic-level outcomes; ones that provide both positive effects and ensuring that mutual benefits will flow from co-ordinated capital investments. The Irish inter-city motorways are now in place.

Parallel to this is the need to exploit economic potential for Ireland's cities. In particular, there is the imperative to grow the provincial cities and, only as and when they have achieved critical mass thresholds with NEG's 'sustain point' consolidation, should they then begin to generate spill-overs to their city regions, see Appendix 2. This may take several years to happen because of the still-fragile sized populations of the State's provincial cities. However, the economic need to commence this initiative is critical if RoS area employment and economic growth is to be copper-fastened.

With a near-global trend for a majority of the world's fast-growing populations to live in its cities, the formulation of future spatial policy strategy must recognise that Irish Planning Regions, especially in the RoS area, are very vulnerable to further population contraction or stagnation, particularly in the absence of supports from growing and thriving nearby cities. Past political pressures to spread resource allocations with reference to 'balance' and 'scattergun' policies must be resisted, particularly given the legacy of Ireland's debt to GDP ratio, its limited borrowing constraints for capital investment purposes and having regard to the inevitability of long-term increases in interest rate costs.

The changing nature of 'work' places increasing focus on 'knowledge-based' service-type employment through the promotion of urban-located enterprise. Likewise, the growth in third-level education is centred in cities and in some of the State's larger towns. Foreign Direct Investment and Research activities are increasingly city-focused. Both Urban Economic and the New Economic Geography's emphasise is to density both population and employment; *vide* Fujita *et al.* (2002), Fujita and Thisse (2013) and Glaeser (2011).

The demography of employment and on the CSO's daytime working population (DWP) data on larger settlements is likewise a function of settlement scale-size, Hughes (2013). Accordingly, the focus on city-growth must take advantage of the 'cluster effect' and 'nearness' as advocated by Henderson (2000, 2007) and by Kealy-McGrath (2006).

Today, increasing attention is being paid to economies of scale and to the spatially-preferable strategy to eschew one-off urban-generated rural housing; particularly of that which is not essential or related to local and rural-based economic activity. Their potential social costs of isolated housing need to be viewed in the context of Ireland's ageing population and combatting rural isolation through the limitations of viable rural transportation initiatives.

Scale economics are increasingly perceived as an antidote to the 'economic drag' effect of many existing rural morphologies. Daly and Kitchin (2013) points to the need to recognise demographic contraction as a reality; both for some urban and for many rural areas. In the 2016 census, policy makers should be prepared for the inevitability of many more such 'casualties', of significant population contraction in some towns, villages and rural areas.

For their own credibility, the Built Environment and Planning Professions must develop the fortitude in order to resolutely resist the malign pressures of politically-driven local and short-term 'panaceas', *vide* Appendix 3. Rational and phased land-use zoning must replace the excesses of corrupt practices that were exposed by the Mahon and Flood Tribunals.

It is also significant that one of the 'Gateway' settlements of the failed NSS is Sligo town in the West Border Region. Of all the eighty-five settlements of 5,000 and over in population in the 2011 census, Sligo is the largest and only one to have lost population during the first half of the NSS timeframe (2002-2011), with its population reduction from 19,735 to 19,452. From being the State's 12th largest settlement in rank-size order in the 1996 Census, Sligo fell to 24th position by 2011, *vide* CSO Area Volume, Table 7. Yet, Sligo recorded the State's seventh highest Daytime Working Population (DWP) in the 2011 census, with its settlement count of 13,176, per the *Door to Door* volume, CSO 2011 census. Only the five cities and the town of Dundalk had higher DWPs. This reaffirms the logic of the decision to reverse the original 'decentralisation' movement to small settlements, *e.g.* to Tubbercurry, and to implement economic and spatial 'recentralisation', in employment consolidation, housing and service infrastructure to Sligo and other NSS Gateways/ Hubs.

This analysis of Sligo's significant rank order 'slippage' of its settlement population size confirms that regions and large towns outside the sphere of influence of cities will struggle to thrive; particularly so if they were unable to grow at a time of Ireland's fastest and longest economic up-cycle, *i.e.* during the *Celtic Tiger* period. In the 1970s, Letterkenny had less than half Sligo's population but because of its relative proximity to the city of Derry its population had surpassed that of Sligo by the 2011 census.

Both the literature of Fujita *et al.* (2001: 69-71) and Thisse (2013: 34-38) reinforce the sustainability of the two-sector core-periphery policy model as postulated in the demographics of this Paper, despite the much improved accessibility afforded in Ireland's new motorway system. In contrast to centrifugal dispersal, centripetal agglomeration offers the way forward as a lead policy for the new, anticipated spatial strategy policy, as set out in Appendix 2.

9: Conclusion:

For urban and rural growth-drivers to become effective influencers of future growth, as espoused in NEG Spill-Over theory and practice, such vital process will only commence where core areas themselves are both growing and are 'established'. A policy objective to redirect and concentrate future growth within Ireland's cities should be a sustainable and lead-objective for the new Economic and Spatial Strategy, particularly in the quest to improve accessibility by reducing home-to-work journey times.

Likewise, it would make more efficient use of established infrastructural resources such as schools and utilities, and public services. It would enhance scale economics. This, in turn, generates increasing returns, empathetic to urban and regional growth, with the economic end-objective of improving national competitiveness, Fujita *et al.* (2001: 2). Replacement of decentralisation and 'backyard capitalism' with a scale economics of urban concentration and demographic 'lumpiness', will be the real proof of a new policy strategy, one that combines and incorporates macro-economic and spatial planning objectives, Meredith Meredith, D and van Egeraat (2013), Zoellick (2009).

In this regard, it is expected that the Irish Government will shortly issue its awaited public response to the first, *Scoping Phase*, of the new Economic and Spatial Strategy, which was completed and presented by its appointed Expert Group back in April 2014; comprising Sean Dorgan, now former Chief Executive of IDA Ireland, together with a former member of An Bord Pleanala Dr Berna Grist of UCD and Chaired by Jim McKinnon, the Former Chief Planner for Scotland Planning. Infrastructural investment, Housing Regional, County and Local Area Planning are all critically dependent on clear strategy policy guidelines and this current 'hiatus' compounding the failure of the 2002-2020 NSS is not at all in Ireland's national economic or social interest.

The task of designing and developing an efficient Land Use and Transportation interface for Ireland suggests that the core tenet of its new Economic and Spatial Strategy should be that of Centripetal Agglomeration replacing Balanced Regional Development, as detailed in Appendix 2. City consolidation as the engines of Ireland's future regional growth should be prioritised and this, in turn requires to be planned, so as to maximise the potential for creating scale economics whilst fostering the growth of identified settlement clusters.

Complementary public and private housing needs will be so deigned, as to focus on achieving higher densities, with expected smaller family-sized and single-use unit demand, located primarily in cities and in larger towns, thereby reduce volumes of longer commuting journeys and responding to local end-use demand. Continental European cities provide excellent examples of family-friendly housing designs appropriate to cities; *e.g.* in double-duplex configurations that provide for small ground or roof gardens. Flexible letting and ownership arrangements can facilitate whole-of-life, affordable occupation for our citizens.

Finally, all such urban and regional objectives will require intellectual processes with a multi-disciplined joined-up inputs and forward planning, so as to avoid the un-coordinated, undisciplined, *laisse fai*re and often contradictory approaches of the recent past. Geography and economics will complement sociology and engineering, law and finance so that the current knowledge and future on-going design and planning research can help avoid past mistakes. Leadership and enterprise will be to the fore in a single-team approach involving both the public and private sectors operating in workable partnerships. It can be done! Let the debate commence!

APPENDIX 1:

Table A: GDA as Percentages of RoS and of the State Population (1841-2006):

Year	GDA Population	RoS Population	GDA as a % of Rest of State (RoS)	GDA as % of State population
1841	797,232	5,731,567	13.91%	12.21%
1851	740,597	4,370,980	16.94%	14.49%
1861	698,050	3,704,061	18.85%	15.86%
1871	663,131	3,390,056	19.56%	16.36%
1881	652,569	3,217,451	20.28%	16.86%
1891	628,545	2,840,149	22.13%	18.12%
1901	640,111	2,581,712	24.79%	19.87%
1911	669,625	2,470,063	27.11%	21.33%
The War of Independence - interruption of census taking				
1926	684,242	2,287,750	29.91%	23.02%
1936	764,791	2,203,629	34.71%	25.76%
1946	827,725	2,127,382	38.91%	28.01%
1951	888,386	2,072,207	42.87%	30.01%
1956	898,364	1,999,900	44.92%	31.00%
1961	906,347	1,911,994	47.40%	32.16%
1966	989,202	1,894,800	52.21%	34.30%
1971	1,062,220	1,916,028	55.44%	35.67%
1979	1,255,533	2,112,684	59.43%	37.28%
1981	1,290,154	2,153,251	59.92%	37.47%
1986	1,336,119	2,204,524	60.61%	37.74%

1991	1,350,595	2,175,124	62.09%	38.31%
1996	1,405,671	2,220,416	63.31%	38.77%
2002	1,535,446	2,381,757	64.47%	39.20%
2006	1,662,536	2,577,312	64.51%	39.21%
2011	1,804,156	2,784,096	64.80%	39.32%
2014	**1,827,000**	**2,796,000**	**65.34%**	**39.52%**
2016 (f) (Rounded)	**1,875,000**	**2,825,000**	**66.37%**	**39.89%**

Source: Hughes (2010), except for Census year 2011: **added subsequently for 2014 as per the CSO's *P&ME* Estimates, and for 2016 Census as above forecast** (all shown on the *de facto* basis).

APPENDIX 2:

The Fusion of Urban Economics with the New Economic Geography

When economic and spatial planning are brought together in the 'Core-Periphery' conditionality, posited by Robert-Nicuod (2006) and other such literature, these disciplines must not only be espoused spatially by the planning strategists, but also need to become politically recognised and accepted. A learning process for understanding the power of such urban forces by planners and public represented is warranted and responsibility rests with the related built environment professions to lead the way so that in the best national interest, the pitfalls of NSS (2002-2020) 'distributive' motivation will be replaced by that of 'consolidation', O'Leary (2003). Strategies for demographic and spatial 'consolidation' should therefore replace the political preference for scattergun 'distributive' diffusion.

Brakman and Garretsen (2009) summarise Paul Krugman's Nobel prize-winning achievement in fusing economics with geography as:

> ...where the location of both increasing returns to scale (IRS) firms and workers becomes endogenous, and that Krugman was the first to do this in a fully specified general equilibrium framework (Fujita & Thisse, 2013). The model does not rely on any exogenous assumptions regarding the economic geography possibly *a priori* favouring one location over another. This is a significant step forward with respect to an existing or 'pre-1991' location theories particularly so because Krugman (1991) was thus the first to fully endogenise economic geography in a general equilibrium framework (Ottaviano & Thisse, 2004).

Such potentially exciting, unprecedented, economic possibilities arise from firm, industry and agglomeration economies of scale, thereby promoting the 'lumpiness' approach to future spatial strategy policy implementation, *i.e*. focusing on Ireland's future growth potential for its major urban centres, as is already evident in the IDA's approach to FDI location. With the completion of the series of radial motorways out from Dublin, provincial city accessibility is greatly enhanced, both in the reduced travel time and transport-cost contexts. The missing 'ingredient' is demographic scale size, but Spatial Planning policy-implementation can resolve this if mandated to implement a 'lumpiness' strategy. By definition, this will be focused on developing a few, large centres of population. In a sparsely populated country outside of the GDA: the policy strategy of Balanced Regional Development is thus refuted for its fostering of scale dis-economies and needs to be replaced by centripetal agglomeration for regional cores, as the principle tenet of a new planning strategy.

A compelling series of descriptions of the evolution and growth of an hierarchial urban system is contained in Chapters 9 through 12 in the Fujita, *et al*. (2001) literature. Commencing with von Thunen's classic *The Isolated State*, its spatial evolution through Christaller and Losch's respective approaches for Central Places, the tensions between centripetal 'lumpiness'and centrifugal 'decentralisation' tendencies are addressed. This research culminates in Henderson and Wang's (2007) confirmation of the world-wide fixity of Zipf's Law when comparing the log-linearity size-order of 1960 city populations with those of 2000, despite the intervening forty years of population growth. This sets the platform for the introduction of bifurcations in the evolution of spatial economic systems with population growth. [The spatial distribution of Ireland's (all island) settlements, categorising settlement sizes and showing the lozonged Dublin-Belfast Corridor is shown in Appendix 4.]

In New Economic Geography (NEG) theory, as explained in Fujita, et al. (2001: 10) ...*we can derive explicit formulae for the 'sustain point' at which an economy with agglomeration becomes possible and the 'break point' at which an economy without agglomeration becomes unstable*. With the benefits of Centripetal Agglomeration, once a growth centre has achieved one of its two theoretical 'sustain points' in scale size, it should not move to the 'break point' as depicted in the Krugman tomahawk bifurcation model, with its quadratic equation-flavoured mathematical approach.

Ireland's then-futuristic Buchanan (1968) Plan's strategy for major 'poles of growth' in the two largest provincial cities, substantially predated the emergence of NEG theory and was launched at a time when the State expanding Industrial sector pre-dominated that of its later, Services-based economy. It is salutary to note that this Plan was never given the political support it merited and was promptly rejected by Government, with the lone exception of support from the Department of Finance.

With today's emerging focus on the role of *advanced producer services* for large and medium-sized city growth, how much more favourably positioned would Ireland's knowledge economy be, were Cork and Limerick regions' core-periphery overspill in Munster, complementing Dublin's demographic growth-effect in Leinster? The common good from such enlarged regional 'springboard' effect by now, would have provided the momentum to further overspill, into Connacht, via Galway, and so on, as agglomerated chain reactions.

In turn, an enhanced 'common good' for the State would complement and optimise both economic and social justice objectives, resulting in population retention, much lower emigration, higher employment, providing the vibrant country envisaged by the signatures' of the 1916 Proclamations.

APPENDIX 3:

A Case Study on Urban-Rural Planning Strategy: Mayo's Draft Development Plan 2014

Dr Gavin Daly of Maynooth University (NUIM) in a posting, in WWW.Ireland after NAMA, dated 7th March 2014, pertinently draws attention to a controversial, recently endorsed amendment to Mayo's Draft Development Plan proposed by its County Councillors; one that risks being rejected by the Department of the Environment, for this geographically-large but sparsely-populated county. Their stated objective, as reported, seeks to grow the county's *rural* population: to increase it by nearly 35,000, with the objective of restoring it to the level pertaining in 1951. *Vide* Note 5 below.

In the 2011 Census Mayo was the fifth most rural-populated county in the State with just 37,895 out of a total 130,638, thereby having an 'urban' population of only 29.01%, all residing in its six towns and their environs (*i.e.* in descending size order: Castlebar, Ballina, Westport, Claremorris, Ballinrobe and Ballyhaunis), with an average population size of just 6,316. 'Urban' is defined by the CSO as being a settlement plus its contiguous environs of 1,500 or more people. Mayo has experienced almost continuous outward migration and rural decline, due to its historic over-dependence on largely subsistence agriculture, having few industries and with an absence of large urban centres.

In the Census of 1951 the county's total population was 141,867, 11,229 above that of 2011. At that time just 14,612 or 10.30% was 'urban' living in three towns (Ballina, Castlebar and Westport). Prior to April 2002 no Mayo town had exceeded 10,000 in population and up to that date Ballina was the county's largest town. In the absence of consolidation urban growth is notably weak: Castlebar, now the largest town increased, from 5,288 to 12,318 over the sixty year period since 1951; a rate of just 0.35% per annum.

In the NSS (2002-2020) the two largest Mayo towns Castlebar and Ballina, despite being spatially quite removed from each other - in a county which has the State's third-largest surface area - were contrived as a 'linked-Hub', overlooking the crucial emergence of county's fast-growing central Economic Corridor of Claremorris-Castlebar-Westport, centred on Castlebar. That decision was influenced by the now-discredited principle of Balanced Regional Development (BRD), the idealistic notion whereby every city, town, village and rural area is encouraged to achieve their full economic potential. A BRD spatial strategy is singularly unsuited to the fragile population densities of the RoS area of Ireland, where 'Hubs' are envisioned as having a minimum 20,000 population threshold.

Daly also notes the county Council's advice, that on Environment Assessment grounds, it is not deemed sustainable to restore the rural population to 1951 levels because of the inevitable proliferation effect of one-off housing in preference to the pressing need for urban consolidation the Draft Plan also disregards Mayo's existing surplus of 12,000 mostly newly-built, vacant housing stock. Evidence-based Planning when coupled with responsible behaviour by elected representatives can avoid most of the past, costly, planning mistakes, Daly notes.

Local politicians also appear to have ignored the need to 'densify': a necessary urban pre-requisite for firm clustering and employment creation. Specifically, they appear to have overlooked scale economies arising from urbanisation; the fast growing Tourism-Pilgrimage potential, focused on Knock and its nearby 'Ireland West' Airport, which is convenient to Castlebar and is *in proximo* to the numerous hotels and restaurants of Westport, the gateway to Ireland's sacred mountain, Croagh Patrick (765m). Westport is also a significant FDI Pharmaceutical location and has been Mayo's fastest growing town. Its recently-completed trail-blazing, tourism-friendly cycle-way from Westport to Achill has already proven to be a particular attraction of the Wild Atlantic Way.

Pivotally-located in the heart of this county's east-west road and rail *growth-corridor* is Mayo's largest town Castlebar, the county's administrative centre. The town was amongst the first three centralised locations for Government offices in Ireland. What is needed is spatial-economic analysis to investigate the potential for the aforementioned central Economic Corridor, in contrast to advocating widespread population dispersal, as reported, from Mayo's Council Chamber's deliberations. Daly emphasised that randomly built scattered housing will not resolving economic and population decline. Both ill-judged tax breaks and bad planning are costly.

Apart from 'living in the past', their councillors' approach exhibits a disturbing lack of understanding of urban economics and of the need and role for Mayo's lagging urbanisation, so as to establish a regional 'core' area in order to driver the county's prospective economic growth.

In conclusion, the contents of this March 2014 web-posting from NUIM, raise profound questions as to the philosophical-direction in their responsibilities for this county's public representatives: when these are counter-posed with their duties, civic leadership role and decision-making powers, *inter alia*, in such vital economic and in spatial planning matters. The pivotal, national, question is: can new Planning legislation and the Government's *Putting People First* governance initiative promote coordinated strategic economic and spatial planning appropriate to the twenty-first century?

Note 5: Shown bold above are this author's amendments to some of the demographic figures contained in Daly's web-posting. Specifically, these relate to the sentence: …In 1951 the population of County Mayo… The data for the populations of the three 1951 town were kindly provided by the CSO.

APPENDIX 4:

Figure (2002): Spatial Distribution of all-Ireland Settlements of 5,000 and over Identifying the "Lozenge" cluster within the Dublin-Belfast Corridor, comprising about half of the island's 6.4 million people in 2011: showing the East-North East clustering of the island's settlements.

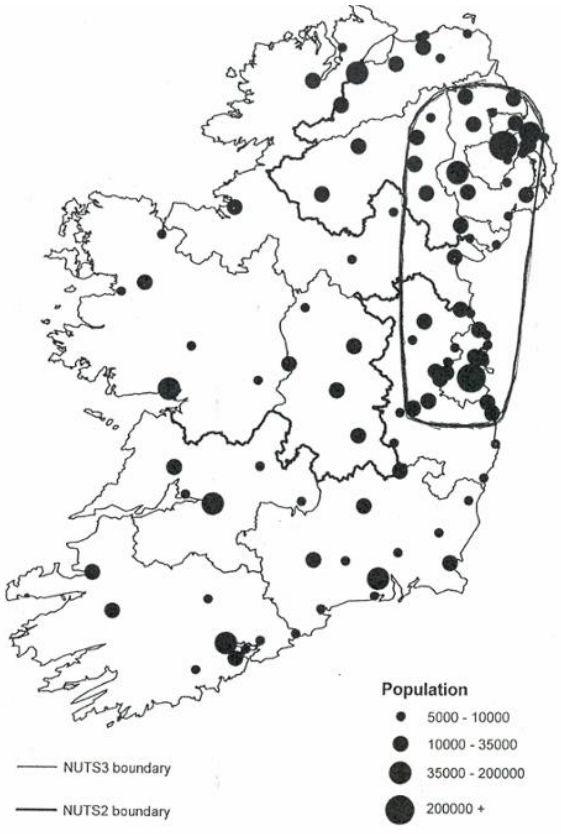

Figure 4.1 Urban centres over 5,000 population in Ireland and Northern Ireland, 2001/02

Sources: Central Statistics Office, Census SAPS file 2002; Northern Ireland Statistics and Research Agency, Census files; Ordnance Survey Ireland

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