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Settlement Selection: a Critical Consideration for a New National Spatial Strategy Plan? Applying Population and Daytime Working Population Data to a Centrality Spreadsheet Model to Inform an Evidence Base for Gateway and Hub Selection

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SETTLEMENT SELECTION: A CRITICAL CONSIDERATION FOR A NEW NATIONAL SPATIAL STRATEGY PLAN?

Applying Population and Daytime Working Population Data to a
Centrality Spreadsheet Model to Inform an Evidence Base for
Gateway and Hub Selection

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December 2013

ABSTRACT

Settlement Selection: A Critical Consideration for a New National Spatial Strategy Plan?

This Dissertation examines both Central Statistics Office (CSO) published and unpublished demographic evidence from the 2011 and previous censuses, so as to evaluate the 2002 National Spatial Strategy's (NSS) selection of Gateways and Hub settlements. On its own, population is an incomplete measure of size. However, when used with emerging employment data, a robust methodological time-dynamic centrality model may be constructed based on population and Daytime Working Population (DWP) behaviour and other related and relevant investigations. The Model compares unpublished 2002 data of the NSS Plan with similar 2011 census for all large and medium-sized Irish settlements of 5,000 and over in population.

The selected methodological approach analyses the group of eighty-five settlements comprising Ireland's five cities and eighty Band 1 and 2 towns as at the 2011 census. A series of criteria are examined including rank order, population growth and DWP. **The central question of the dissertation is: how may population and employment data analysis inform the optimal demographic and economic selection of growth centres in a re-configured National Spatial Strategy?**

The 2011 census outcome forms the half-way point in the eighteen-year life of the 2002-2020 NSS. Emerging evidence points to a mixed performance in the growth of its twenty-three nominated settlements including population decline in one case, Sligo. Consistent with many criticisms, *vide* Hughes PhD (2010), at its Appendix 5, PP. 235-236, that study found that too many growth centres were selected and that the central NSS strategy of balanced regional development ought to be replaced by one of centripetal agglomeration, with a policy focus to concentrate mainly on Ireland's provincial cities together with a small number of other mainly mono-centric locations, wherein such settlements then become the 'central place' economic cores of their respective regions. A number of strategic conversations with senior academics and practitioners also complement the thrust of the quantitative findings of this research.

DECLARATION

I certify that this thesis which I now submit for examination for the award of MSc Spatial Planning, is entirely my own work and has not been taken from the work of others save as to the extent that such work has been cited and acknowledged within the text of my work.

This thesis was prepared according to the regulations for postgraduate study by research of the Dublin Institute of Technology and has not been submitted in whole or in part for an award in any other Institute or University.

The work reported on in this thesis conforms to the principles and requirements of the Institute's guidelines for ethics in research.

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Candidate

DEDICATION

Faith and Reason are compatible St. Ambrose The Great

ACKNOWLEDGEMENTS

I would like to thank my supervisor Paul Lawlor for his guidance and encouragement to undertake this thesis. His thoroughness and close scrutiny of the many ‘work in progress’ sessions, his notated drafts together with his suggestion to articulate the motivation for the subject choice of topic and in facilitating the stretching of the word-count limitation all are much appreciated.

I would particularly like to thank the Central Statistics Office and especially their Dermot Corcoran, for undertaking the special runs which provided the additional, unpublished *Daytime Working Population* data from the 2002 and 2011 census. Dermot also made available unpublished census data for all State settlements of 5,000 populations and over, relating to their *Daytime Working Populations*.

I am grateful to Dublin Institute of Technology and to Dean Mike Murphy for my contract as a Retired Research Active Lecturer and likewise to Tom Dunne, Head of the School of Surveying and Building Technology, for the use of the facilities in Room 350.

A special thanks to my mentor, Dr Lorcan Sirr, Lecturer in Urban Economics in DIT. Also thanks to Kevin, Tony, Eimear, Myles, Emer and Charlie for their technical assistance.

I would also mention in appreciation all those who engaged in the ‘strategic conversations’, as listed in the Methodology chapter.

A special word of thanks to my classmates: to Paula, Mary, Brian and Ciaran for their comraderie and support throughout the Spatial Planning Masters programme.

To my wife Sue and to my family and friends who gave me the time and space to undertake this research.

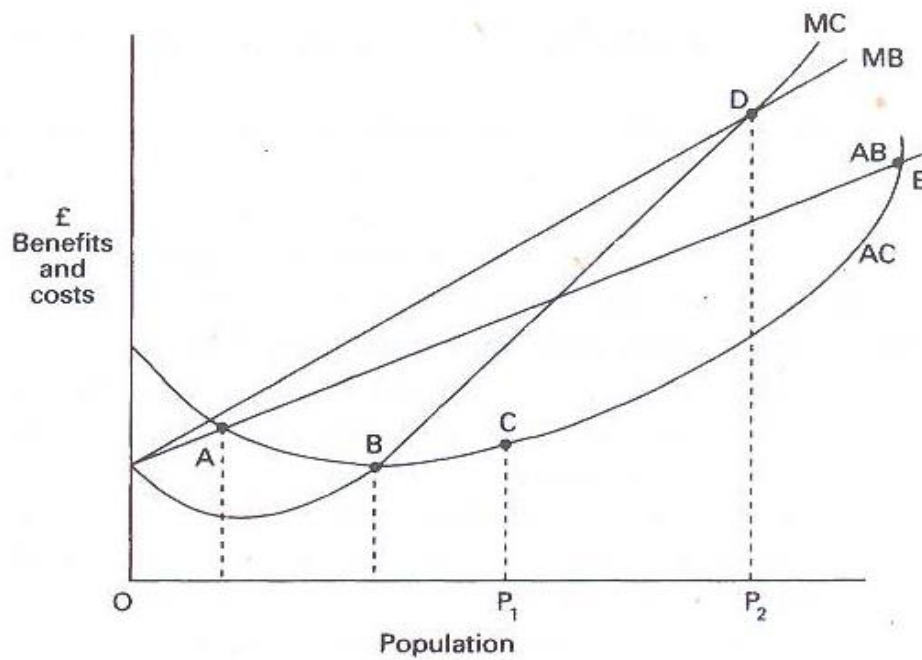
BACKGROUND AND MOTIVATION FOR THIS THESIS

The Irish Planning Institute is encouraging ...*coordinated and comprehensive research on planning and development matters at the national level* in support of evidence-informed Spatial Planning, *vide* Walsh and Kitchin (2012). At this ‘macro’ level, one of the suggested areas for further research contained in this student’s PhD thesis (Hughes, 2010:188) on the DoECLG Website (Arrow) and Hughes, B., RIAN.ie (2010) websites, recommended investigation of whether in small-populated countries, does the primate city (e.g. Dublin) tend to over-dominate the potential for other settlements to achieve critical mass? Likewise, to determine if this stasis can be reversed or compensated by replacing Ireland’s existing spatial strategy based on Balanced Regional Development (BRD) with a policy of Centripetal Agglomeration or ‘lumpiness’. In the absence of an alternative spatial policy intervention to BRD to date, that research concluded that the population of the Greater Dublin Area (GDA) would exceed the Rest of State (RoS) by the last quarter of this century, Hughes (2010).

The Government’s recent appointment of a scoping group to examine the principles, on which a successor National Spatial Strategy (NSS) should be based, now provides timely opportunities to research such fundamental opposites. One of the positive recommendations of the last NSS at P. 120, (2002-2020: 120), to establish a *National Spatial Data Infrastructure*, has borne fruit with the birth of the *National Institute of Regional and Spatial Analysis* (NIRSA) at NUI Maynooth. Both Rob Kitchin and Chris van Egeraat are to be congratulated for producing the new ‘super’ regional datasets and also, for participating in the series of Strategic Conversations that form the principal quantitative element to this dissertation. Professor Edgar Morgenroth of the Economic and Social Research Institute had opined that the application of the emerging New Economic Geography (NEG) to spatial planning continues to be frustrated in the absence of adequate data. The emergence of NEG as a potential spatial ‘tool’ for evidence-informed spatial planning data in applying its concepts such as ‘break’ and ‘sustain’ points in the assessment of settlement size, continues to be as an elusive area of research, Morgenroth (2008 draft). However, the study of demographics offers one such field of potential richness upon which spatial planning policy formulation can be based, particularly since publication of Alonso’s 1971 Regional Science paper on the

Costs and Benefits of City Size, where inflection point ‘A’ represents 100,000 on the population ‘X’ axis, *vide* Figure 0.1.

Figure 0.1: The Benefits and Costs of City Size:



Alonso (1971)

Source: Balchin *et al.* (2005)

MB = Marginal Benefits

MC = Marginal Costs

AB = Average Benefits

AC = Average Costs

Note: In this Figure 0.1, inflection point ‘A’ on the ‘X’-axis is suggested by Alonso as representing a population of 100,000. That was over four decades ago and in the meantime, settlement threshold populations and labour supply minima have escalated in size to satisfy the demand requirements of today’s knowledge economy. The Balchin (2005) literature provides compelling explanations for the critical population thresholds for each of the above A to E inflexion points of this model. Subsequent research points to city efficiencies at the 2-5 million population levels, subject to coordinated infrastructural investment. For a city, the elasticity of its ‘X’ axis measure of population efficiency is extended by countering congestion with such

investment. Van der Kamp (2012) lists a number of impressive infrastructure projects recently completed in Dublin.

Thus, population as a scale measure for cities and towns becomes a central issue. Even more so when combined with employment, *vide* Krugman (1991), which emphasises their inter-related significances. Accordingly, the subject thesis: ***Applying Population and Daytime Working Population data to a Centrality spreadsheet model to inform an evidence base for Gateway and Hub Selection*** is intended as a modest contribution to Ireland's spatial planning data-base, and also in providing a methodological process to assist the selection of potential growth centres for the new NSS.

Both this student's PhD and subject dissertation make clear what should be a primary objective of any new NSS: to fast-track the development of Ireland's secondary cities and a few large towns with recognised growth potential, so as to generate and support an economic 'spillover' into their regions, following the classical core-periphery theory as developed in the mid 20th century by both Williamson and Samuelson. This dissertation argues that nothing is to be gained by promoting the concept of BRD, in the vacuous hope that other settlements of 40,000 or even 100,000 in population, as is suggested in the NSS, somehow can 'balance' the employment potential of Dublin, with false expectation or reliance on local resources.

A similar conclusion is contained in the European Union Commission's Memorandum 13/878 of 11th October 2013, *Refocusing EU Cohesion Policy for Maximum Impact on Growth and Jobs: the 10 Point Reform*, includes as Point 7: *Enhancing the Urban Dimension of the Policy*. Its implementation is specified as *... earmarking a minimum amount of resources under the European Regional Development Fund (ERDF) for integrated projects in cities – on top of other spending in urban areas*. Under the internal PhD supervision and presence of Dr Lorcan Sirr, DIT's Lecturer in Urban Economics, this student delivered a Position Paper on applying this policy to Dublin and the GDA, at the *International Regional Studies Association Conference*, in Katholieke Universiteit Te Leuven, Hughes (2009).

Subsequently, this advocacy was incorporated into the findings of Workshop D: *Demographic Changes and Strategic Spatial Planning*, of the Expert Meeting of the

Belgian EU Presidency under the Chairmanship and Editorial Team of the Department of Spatial Planning, Housing Policy and Immovable Heritage of the Flemish Government, held in Brussels on 8th October, 2010, in which this student participated.

In contributing to the discussion on the policy direction, of over-concentrating development resources into the two world cities of London and Paris at the expense of focusing on intermediate-sized European cities, he questioned the effectiveness and suitability of such EU strategies ...*for countries like Ireland, with a 'tundra' level of population density (outside the Greater Dublin Area), and in the absence of a hierarchy of cities in the 200,000 to 500,000 population settlement size range, vide P. 199, Conference Proceedings, Polycentric Regions Facing Global Challenges, Brussels. The above reference to a 'tundra' density of population is likewise detailed by Van der Kamp in comparing Ireland's density with that of Scandinavian and former USSR Baltic States, vide Pleanail, Issue 18 (2012: 7).*

Spatial Planning policy has to recognise the emergence of the 'knowledge and global economy' and the consequent higher levels of minimum settlement population required to provide the tighter parameters of major FDI employers, *vide Skehan (2008)*. Such influencers relate to time spent in commuting, a settlement's potential to provide sizeable, skilled labour pool, of infrastructure endowments of a physical, social, environmental, cultural and economic nature *vide Florida (2002)*. The population size of city-equivalence has a critical bearing on the size of its labour pool. Its skills and educational attainment, international accessibility, competitiveness and cultural attractiveness as places in which to work and live are likewise critically important, *vide Hall and Pain (2006)*.

In Building on Dublin's achievements and growth, the new NSS must now seek to foster and develop similar attributes for other significant Irish settlements.

This dissertation hardcopy is also presented in electronic format and is intended to be perused in conjunction with the referred-to data spreadsheets on the attached compact disc. These include this Dissertation.doc, Basedocument2.xls and TOWN ANALYSIS.xls

INDEX OF ACRONYMS AND ABBREVIATIONS

ABD	Anywhere but Dublin
ABP	An Bord Pleanála, the Planning Appeals Authority
AF	Agglomeration Focus
APS	Advanced Producer Services
LBM	Laytown- Bettystown-Mornington
BMA	Belfast Metropolitan Area
BRD	Balanced Regional Development
BWR	Border and Western Region
CA	Centripetal Agglomeration
CD	Compact Disc (to be perused in conjunction with this Dissertation)
CD1	Centrifugal Dispersal
CP	Core-Periphery
CSO	Central Statistics Office
DDA	Dublin Docklands Authority
DIT	Dublin Institute of Technology
DMR	Dublin Metropolitan Region (GDA+Louth) – also known as the ‘Core’
DWP	Daytime Working Population
DoECLG	Department of Environment Community and Local Government
ESDP	European Spatial Development Perspective
ESRI	Economic and Social Research Institute
FDI	Foreign Direct Investment
FIUS	Forum for Irish Urban Studies
FUR	Functional Urban Region
GaWC	Globalisation and World Cities (Study Group and Network)
GDA	Greater Dublin Area
GDP	Gross Domestic Product
GEMACA	Group for European Metropolitan Areas Comparative Analysis
GNP	Gross National Product
GVA	Gross Value Added
IBEC	Irish Business Employers’ Confederation
ICI	Immigrant Council of Ireland

IFSC	International Financial Services Centre
IMF	International Monetary Fund
IT&C	Information Technology and Communication
JOC	Joint Oireachtas Committee
MCR	Metropolitan City Region
MM	Model of Measurement
MNC	Multi-National Corporation
MPC	Marginal Propensity to Consume
NACE	Nomenclature General des Activites Economique
NEG	New Economic Geography
NESC	National Economic and Social Council
NG	Natural Growth (births <i>less</i> deaths)
NUTS	Nomenclature of Territorial Units
POWCAR	Place of Work Census of Anonomised Records
POWSCAR	Place of Work School or College Census of Anonomised Records
QNHS	Quarterly National Household Survey (CSO)
RICS	Royal Institution of Chartered Surveyors
RoI	Republic of Ireland
RoS	Rest of State; i.e. the State less the GDA
SQC	Strategic Qualitative Conversation
SCS	Society of Chartered Surveyors
SoI	Sphere of Influence
SSF	Scale Size Findings
TD	Teachta Dála, Member of Parliament
TFR	Total Fertility Rate
UA	Urban Agglomeration

TABLE OF CONTENTS

Abstract	i
Declaration	ii
Dedication	iii
Acknowledgements	iv
Background and Motivation for this Thesis.....	v
Index of Acronyms and Abbreviations	ix
Table of Contents	xi
List of Figures	xvi
List of Tables.....	xvii
List of Appendices	xvii
CHAPTER 1: BACKGROUND AND GLOSSARY OF TERMS AND DEFINITIONS	1
1.1 Foreword	1
1.2 Thesis Objectives	2
1.3 Background to the Subject Choice of Dissertation	2
1.4 Limitations to the Research Area.....	5
1.5 Thesis Datasets and Compact Disc Data Navigation.....	8
1.6 Terms and Definitions.....	9
1.6.1 Daytime Working Population	9
1.6.2 Town Settlements.....	9
1.6.3 Settlement Contiguity and Population Comparison.....	11
1.6.4 Population Threshold	11
1.6.5 Distance and Range.....	12
1.6.6 Economies of Scale and Settlement Size	12
1.6.7 Agglomeration and Clustering	12
1.6.8 Combining Spatial and Statistical Information	13
1.6.9 Densities and Area Definitions	13
1.6.10 Densities of Irish Towns and Cities	14
1.6.11 Settlement Dilution	14
1.7 Structure of the Dissertation	14

CHAPTER 2: THEORY AND PRACTICE – IRISH SETTLEMENT CHARACTERISTICS	16
2.1 Foreword	16
2.2 Introduction to Chapter	16
2.3 ‘Lumpiness’ and Centripetal Agglomeration.....	16
2.3.1 International Economic and Spatial Policy Variants	16
2.3.2 The Criticism of Polycentrism	20
2.3.3 Related Spatial Issues.....	22
2.4 Urbanisation and Agglomeration	23
2.4.1 Urban Growth and Agglomeration.....	24
2.4.2 Introductory Data Background – Population Density and Settlement Distribution.....	24
2.4.3 Spatial Strategy Interventions	25
2.5 The Need to Recognise Failing and Dying Settlements:	26
2.5.1 Irish Examples of Urban Stagnation	27
2.5.2 The USA Influence of ‘Subdivision’	28
2.5.3 Application of Location Theory and Irish Demographic Results	29
2.6 Conclusion to Background Setting Chapter – Linking Theory to Practice.....	30
 CHAPTER 3: THESIS LITERATURE REVIEW.....	 32
3.1 Foreword	32
3.2 Introduction	32
3.2.1 Historic Background to Policy Implementation.....	32
3.2.2 The Buchanan Plan of 1968	33
3.2.3 Countervailing Spatial Strategies.....	34
3.2.4 The National Spatial Strategy (2002-2020:	35
3.2.5 The DIT’s Twice the Size Study (2008)	36
3.2.6 Putting People First (2012) – a New Governance Paradigm	38
3.3 Subject Dissertation – A Literature Basis	38
3.4 Literature on Urban and Centripetal Agglomeration	40
3.4.1 Centripetal Agglomeration versus Balanced Regional Development.....	41
3.4.2 Advances in the Core-Periphery Theory to the New Economic Geography.....	42
3.4.3 The Case in Support of Urban Agglomeration	42

3.4.4	Ireland’s Contrasting Core and Periphery Areas	43
3.5	The Literature on Population Growth, Settlement Formation and Settlement Proliferation	45
3.5.1	The Literature on Ireland’s Long-term Population Trends	45
3.5.2	The NSS Literature on the Selection of Identified Towns	46
3.5.3	Regional Wealth Variations and the Elusive Quest for ‘Balance’	48
3.5.4	Mandates for Spatial Planning	49
3.6	Conclusion to Literature Review (LR).....	50
CHAPTER 4: GEOGRAPHIC AND SPATIAL CONSIDERATIONS		51
4.1	Foreword	51
4.2	Introduction	51
4.3	The Demographic and Economic Dynamism of Cities.....	53
4.4	Geographic Imperative for Economic Success	53
4.5	The Geography of Networking	54
4.6	The ‘Geography’ of Ireland’s NSS 2002-2020.....	54
4.7	Spatial-Geographical Categorisations of the 2002-2020 NSS.....	55
4.7.1	Consolidating	56
4.7.2	Reinforcing	56
4.7.3	Strengthening.....	56
4.7.4	Revitalising	56
4.7.5	Co-operating	56
4.8	Spatial Alternatives	57
4.9	Urbanisation and the Geography of Growth	57
4.10	Economic Geography and Spatial Agglomeration.....	59
4.11	The Geography of Irish Settlements in a New NSS.....	60
4.12	Conclusions on Spatial Geography	61
CHAPTER 5: DESCRIBING THE QUANTITATIVE METHODOLOGY’S ‘EVOLUTION’		62
5.1	Foreword	62
5.2	Introduction to the Methodological Bases Deployed in Subject Dissertation	62
5.3	The Computational Basis of Daytime Working Population (DWP).....	63
5.4	The Base Spreadsheet – Description.....	63

5.5	The Importance of Central Place Functionality	66
5.6	Explaining Dynamic Urban Growth - Labour Mobility and Commuting...	66
5.7	Criteria that Inform the Settlement Model	68
5.8	Scorecard Model Composition for Assessment of Potential Growth Settlements	69
5.9	Model Construction.....	69
5.10	Detailed Observations from Spreadsheet Data Array	75
5.11	Formatting the Data for Ease of Comparison	76
5.12	The DWP Spreadsheet Development.....	76
5.13	Chapter Conclusions	77
CHAPTER 6: AN EVALUATION OF CENTRAL PLACES IN IRELAND		78
6.1	Foreword	78
6.2	Research Literature on Irish Mono-Polycentricity.....	78
6.3	Introduction to ‘Centrality’	79
6.4	Centrality in Detail.....	79
6.5:	The Significance of Working Population (NGL) Movements:.....	84
6.6	Chapter Conclusions	84
CHAPTER 7: OVERVIEW FINDINGS FROM SETTLEMENT ANALYSIS.....		86
7.1	Foreword	86
7.2	Scale Size Findings	86
7.3	Growth Criterion	87
7.4	Combining Scale and Growth	87
7.5	Other Significant Measurement Observations and Related Spatial Strategies	87
7.6	A Theoretical Parallel - Applied to Ireland.....	88
7.7	Conclusions From the Sectoral Analysis Findings	93
CHAPTER 8: ANALYSIS OF ALTERNATIVE SETTLEMENT POSSIBILITIES		95
8.1	Foreword	95
8.2	Zipf’s Law Analysis for the Five Cities of State	96
8.3	Related Literature on Growth and Population Shortfall	99
8.4	Rank Size Assessment Applied to Ireland’s Cities	101
8.5	Chapter Conclusions	104

CHAPTER 9: FINAL SELECTION AND CONFIRMATION OF GROWTH SETTLEMENTS FOR A NEW NSS.....	105
9.1 Foreword	105
9.2 The Eastern and Midlands Region	106
9.3 The Southern Region.....	107
9.4 The Border and Western Region.....	108
9.5 Scorecard Model Confirmations for Each Region	109
9.6 Selected Growth Settlement Scorecard.....	111
9.7 The State’s Five Cities	112
9.8 Literature on Applied Growth Factors for the Four Provincial Cities	113
9.9 The State’s Large Towns – Growth Selection	113
9.10 Chapter Conclusions: Scorecard Points for Selected Regional Settlements	113
CHAPTER 10: THESIS CONCLUSIONS:.....	114
10.1 Introduction	114
10.2 Recurring Conclusions on Ireland’s Settlement Patterns.....	115
10.3 An Invigorated and Strengthened Role for the Planning Profession	116
10.4 Outcome of Dissertation’s Methodological Approach	117
10.5 Summary of the Twelve Nominated Non-City Growth Centres.....	117
10.6 Evidence-Based Justification for the Hard-Choice Omissions as Growth Centre	118
10.7 Avoiding the Inappropriate Spatial Planning Policies of the Past	121
10.8: The Evidence as to the Extent of Past NSS Failures.....	122
10.9 Final Thesis Conclusions	123
10.10 Suggested Areas for Related Research	125
10.11 Primary Recommendation.....	126
 BIBLIOGRAPHY	 131
APPENDICES	143

LIST OF FIGURES

Figure 0.1: The Benefits and Costs of City Size:.....	vi
Figure 1.1: The Composite Map from the 2002-2011 National Spatial Strategy	4
Figure 2.1: The Christaller Model of the Urban System.....	18
Figure 2.2: A Time-Series Cartogram Analysis of the Eastern Share of State Population: 1841-2002	19
Figure 2.3: Competing Land Uses in the von Thunen Model.....	20
Figure 2.4: Three models of urban form	21
Figure 2.4: Other NSS Gateways – 2002 and 2006 Populations	23
Figure 2.5: The Causes and Consequences of Urban Shrinkage	26
Figure 3.1: Simplistic Instrumental Perspectives of the Research/Policy Interface, Davoudi (2006:15).	40
Figure 3.2: Core and Periphery Area	44
Figure 4.1: National Spatial Strategy, Map 2.....	52
Figure 5.1: Assessment of Daytime Working Population (DWP)	63
Figure 7.1: Krugman’s Tomahawk (1991).....	89
Figure 7.2: Equilibria in the Base Multiplier Model of Fujita <i>et al.</i> (2001: 29)	92
Figure 8.1: Summary of Percentage Shortfalls in Zipf’s Gini Coefficient Application .	98
Figure 8.2: City Hierarchical Typology – The Missing Tier	98
Figure 8.3: Rank Size (log scale) Application for English and Welsh Cities, 1971	100
Figure 8.4: Distribution of Ireland’s Population by 2030, <i>Twice the Size</i> Report (2009)	103
Figure 9.1: The 17 Selected Growth Settlements in the Dissertation	105
Figure 10.1: Settlement Clustering of Ireland in 2001/2002	127
Figure 10.4: Putting People First - three proposed regions.....	129
Figure 10.5: Showing side-by-side the contrast in selected growth settlements – the gateways and hubs of the 2002-2020 NSS and the 17 settlements of subject dissertation	130

LIST OF TABLES

Table 1.1: Cities Together with Group 1 and 2 Towns:.....	6
Table 5.1: Sectors of DWP Growth 2002-2011 Unweighted	65
Table 5.2: The 85 Settlement Scorecard	70
Table 6.1: Medical Practitioner – Distance Relationship; after Christaller (1933).....	81
Table 8.1: Population Analysis of Irish Cities (2002-2011)	97
Table 9.1: The 17 Selected Growth Settlements – Points Scorecard.....	110
Table 9.2: Omitted NSS Settlements - Scorecard	111
Table 9.3: Aggregate of All Other Growth Centres Compared with Dublin	112
Table 10.1: Summary of the Dissertation’s Three-Region Proposed Growth Settlements	120

LIST OF APPENDICES

Appendix 1: Oireachtas Joint Committee on Enterprise and Small Business:	143
Appendix 2: Case Study 1 – Mitchelstown, Co. Cork and Selected Tipperary Towns	145
Appendix 3: Case Study 2 – Comparing Galway with Waterford.....	147
Appendix 4: Record of DT123/2 Meeting arranged by Ciaran Cuffe, at DoECLG, for talk by Niall Cussen, Senior Planner of the National Spatial Strategy (NSS), on Wednesday, 27 th February 2013.....	149
Appendix 5: The NSS: Eight Key Concepts of Balanced Regional Development.....	154
Appendix 6: Skehan’s FDI Computation of Minimum Population Thresholds	155
Appendix 7: Distortion of Ireland’s Settlement Size and Demographic Fragility.....	156
Appendix 8: Summary findings on the ‘Core’ versus ‘Periphery’ analysis over the first half-life of the NSS, (2002-2011)	160
Appendix 9: Demographic History Section - the Greater Dublin Area and the Rest of State 1966-2011	162
Appendix 10: Factors Essential for the Development of Modern, Moderate-sized Cities	167
Appendix 11: Agglomeration and the Dynamics of Population Growth.....	169

Appendix 12: Growth Dynamics in the ‘Core’ and ‘Periphery’ Areas of State	171
Appendix 13: Cohort Analysis: State Population Growth, April 2007-2012	173
Appendix 14: Case Study 3: Drogheda Compared with Sligo.....	174
Appendix 15: Spatial Geo-demographic Factors that Apply to Provincial Cities	176
Appendix 16: Wider Contextual Comparison for Sligo.....	178
Appendix 17: A Case Study of Drogheda – Reinforcing the Dublin-Belfast Corridor	181
Appendix 18: Extract from Paper on Density of Irish Urban Settlements.....	184
Appendix 19: Survey Methodology – Using Strategic Qualitative Conversations	185
Appendix 20: A Regional Analysis for Ireland	189
Appendix 21: A Sectoral Analysis for Ireland.....	199
Appendix 22: Additional observations noted during the writing of this dissertation ...	216

Settlement Selection: A Critical Consideration for a New National Economic and Spatial Plan

**Applying Population and Daytime Working Population Data
in a Centrality Spreadsheet Model to Inform an Evidence
Base for Gateway and Hub Selection for a New National
Spatial Strategy**

CHAPTER 1: BACKGROUND AND GLOSSARY OF TERMS AND DEFINITIONS

1.1 Foreword

In Mid 2003, just a few months after the launch of the 2002-2020 National Spatial Strategy (NSS), what has become a long line of criticism commenced in the form of a submission to an Oireachtas Joint Committee, made by the Chief Executive of the Industrial Development Authority (IDA), the body responsible for attracting and promoting Foreign Direct Investment (FDI) to Ireland.

Focusing exclusively on local needs while ignoring wider trends would “condemn the regions to long-term decline,” Mr Dorgan added. It may have been wiser for Government to focus on nurturing gateway towns rather than “compromising” by concentrating on developing smaller “hub” centres, he suggested. (IDA’s Chief Executive Sean Dorgan’s submission to the Oireachtas Joint Committee on Enterprise and Small Business: Extract from P. 16, The Irish Times on Thursday, July 3rd, 2003, vide Appendix 1.)

It is significant that a group comprising Sean Dorgan, now former Chief Executive of IDA Ireland, together with former member of An Bord Pleanála Dr Berna Grist of UCD and Jim McKinnon, the Former Chief Planner for Scotland, has recently been appointed by the government to assist the initial stage for developing a successor National Spatial Strategy (NSS). *The Group is to prepare a concise scoping report for the principles on which a successor NSS can be built.* This was stated by Niall Cussen, Planning Inspectorate, Department of the Environment, writing in the Newsletter for the Regional Studies Association (RSA), November 2013.

Since that 2003 criticism by the IDA, a considerable body of similar literature has questioned the Gateway and Hub concept of the NSS. Commencing with O’Leary (2003), the selection of so many NSS growth centres is viewed as ‘distributive’ function wherein the reducing resources of State would have to be spread so thinly, that many of them would not, and have not grown as was planned. Although McCreevy’s intervention was at that time *deemed worthy of support, vide* Van der Kamp (2004), that Decentralisation initiative was subsequently deemed to have strategically weakened the NSS, Meredith (2013).

The census of April 2011 provides abundant evidence to support the fears of dilution in the growth expectations for the NSS-selected Gateways and Hubs. In the Summary Report of May 2013 on the Review of socio-economic performance of the Gateways and Hubs, the purposes of the Gateways and Hubs was articulated, thus:

- Gateways Function: *...is to act as strategically placed engines of growth to enable their functional regions and by extension the country, to grow to its potential, within a national spatial and forward planning framework, ibid, P. 18.*
- The Hubs fall into three distinct categories: *...Towns which are expected to complement and support nearby strong gateways, linked Hubs to comprise two strong county towns and individual Hubs which act as key economic drivers in their local area (ibid).*
- In terms of their overall performance, the Report notes that population growth in percentage point terms was more than twice as strong in the surrounding outer areas than in the Gateways themselves which experienced either negligible growth or decline. The Hubs experienced mixed growth.
- Thus, future population growth must be concentrated within the urban cores of the Gateways and Hubs.

The purpose of the replacement Spatial Plan will be to drive economics growth, with a focus on the regions and in particular, to enhance the urban dimension of the EU Cohesion Policy. Increasingly, it is recognised that *national and regional growth depends on strong and vibrant city regions*, Meredith (2013). Likewise, this is stated in the EU's re-focused ten-point Cohesion Policy of October 2013. This issue is of particular relevance because the subject matter and principal research question of this dissertation is premised on selection of growth centres to replace where necessary, unviable NSSs (2002-2011) gateways and hubs (G&H).

The NSS was scrapped because it had failed. Meredith (2013) states that, *...the NSS has failed to deliver on its key objectives, with settlement patterns continuing to become increasingly diffuse and that it had led to an increasing number of unsustainable*

commuters, had a limited impact on the distribution of economic activity and had failed to reduce spatial imbalances, (ibid.).

This thesis research question is: **How may population and Employment Data inform the spatial selection of Gateway and Hub (G&H) settlements?** The evidence base from the most recent census of population in April 2011 shows a mixed and mainly disappointing population growth outcome for G&Hs when compared with the superior growth of some other settlements, growth towns that this dissertation research findings deem to provide better alternatives.

The thesis presents an evaluative method for the selection for growth settlements. Two principal criteria are deployed in its growth model, namely population and daytime working population (DWP).

1.2 Thesis Objectives

In addition to addressing the above principal research question on the spatial selection of Gateway and Hub settlements, there are three complementary secondary issues of related demographic research pursued in this dissertation, as follows:

- Identifying and contrasting the State's 'Core' and 'Periphery' regions; done so as to inform the principal concentration and density of population in contrast with a much larger peripheral area, justifying the selection of more growth centres within the core.
- The discontinuity in the hierarchy of Irish settlements and profiling of city size through the application of Zipf's Law; done to show a 'missing tier' (200,000 to 500,000 in population) of second line cities.
- A regional demographic analysis is undertaken so as to evaluate where best, the growth centres are needed throughout the State. This includes a comparison of the Greater Dublin Area (GDA) and the Rest of State (RoS).

1.3 Background to the Subject Choice of Dissertation

In May 2012 a ministerial presentation was made in Leinster House led by this student on behalf of Drogheda's Borough Council and Drogheda's City Status Group, in their

joint quest for city status. During that meeting, Minister for the Environment Hogan accompanied by Minister of State for the Environment O'Dowd, indicated that the Gateway and Hub (G&H) selection of the National Spatial Strategy (NSS) had been a disappointment and that the Plan would likely be replaced by Government, Hughes, (2012).

The case for Drogheda's designation as a 'city' remains outstanding but the content of that presentation forms a portion of the background from which this dissertation is posited, *vide* Appendix 17. The analysis on which that presentation was based shows up significant inconsistencies in the G&H selection process, supported by the thrust of the demographic Census evidence then emerging, from the staggered releases of results of the April 2011 census.

Particularly evident was that the potential of Ireland's strongest economic region, both north and south of the border, *i.e.* The Dublin Belfast Corridor (DBC), had been largely ignored in the NSS. The State's largest town Drogheda, now well advanced in its process of agglomerating with another large town, Laytown-Bettystown-Mornington (LBM), has an aggregate population just marginally less than the City of Waterford. Yet unexplained, it has a settlement status similar to the town of Carrick-on-Shannon in the Regional Planning Guidelines (RPG) for the Border Region.

It is instructive to set out in Figure 1.1 hereunder, the NSS Composite Regional Maps – including one for Northern Ireland - which show Drogheda's position - straddling the current Border and Mid East Regions, in its strategic location within the Dublin Belfast Corridor, thus:

Figure 1.1: The Composite Map from the 2002-2011 National Spatial Strategy



Source: The NSS Plan 2002-2020

Additional to the dissertation’s principal research question and in undertaking its background research, the post-2010 Planning Act experience as to the on-the-ground working of that legislation’s ‘Core Strategy’ from NSS down to Local Area Plans, generates further subsidiary objectives as follows:

- Are there too many (23) NSS growth centres resulting in growth dilution?
- Are they in the right locations?
- Perhaps the most profound query is: Does the NSS reflect the demography of Ireland as it is now developing or, alternatively, as one that might be wished for politically?

An Irish Times article concluded ... *that bad planning and ill-thought out housing development were central to what went wrong, P. 8, 31st July 2013.*

In support of the dissertation's research there is the recently published CSO's 2013 *Population and Migration Estimates* and the *National Population Projections to 2046*, together with the awaited *Regional Population Projections (2013-2031)*, which will inform the likely pace and regional direction of growth in the early years of the rewritten NSS plan.

1.4 Limitations to the Research Area

Thus there are a myriad of possible research issues in this subject area. However, given the time and constraining word-length limitation for this dissertation, the decision taken in conjunction with the student's supervisor, is to confine this body of research to a review of Irish settlements with supporting Case Studies and an analysis of population and employment performance for existing gateways and hubs (G&H), as a basis for suggested alternatives.

Accordingly, the selection of possible growth centres is confined to those eighty-five settlements comprising the cities and towns of 5,000 and over in population in the census of 2011. A limited number of Strategic Conversation outputs, likewise, provide a qualitative narrative, complementing the findings of this mainly quantitative-based body of research.

The following Table 1.1 in descending order of 2011 population, contains the 5 Cities, 39 Group 1 of 10,000 and over in population and the 41 Group 2 Towns of between 5,000 and 9,999, thus:

Table 1.1: Cities Together with Group 1 and 2 Towns:

Census 2011 – Population Classified by Area

Table 7 Population of each town with 1,500 population and over, distinguishing those within legally defined boundaries and in the surrounding suburbs or environs, 2006 and 2011

Town	Total population (incl. suburbs or environs)		Population within legally defined boundary		Population of suburbs or environs		Percentage change in total population 2006 - 2011
	2006	2011	2006	2011	2006	2011	
Dublin City and suburbs	1,045,769	1,110,627	508,211	527,612	539,558	583,015	6.2
Other Cities	403,083	416,333	290,119	296,597	112,964	119,736	3.8
Cork City and suburbs	190,384	196,582	119,418	119,230	70,966	79,352	4.3
Limerick City and suburbs	90,757	91,454	82,539	87,106	38,218	34,348	0.8
Galway City and suburbs	72,729	76,778	72,414	75,529	315	1,249	5.6
Waterford City and suburbs	49,213	51,519	45,748	46,732	3,465	4,787	4.7
Towns 10,000 population and over	690,486	730,415	402,250	460,452	150,983	148,127	10.6
Drogheda	36,090	38,578	28,973	30,393	6,117	8,185	9.9
Dundalk	35,065	37,816	29,037	31,149	6,048	6,667	7.8
Swords	33,998	36,924	-	-	-	-	8.6
Bray	31,901	31,872	27,041	26,852	4,860	5,020	-0.1
Navan (An Uaimh)	24,851	28,559	3,710	28,158	21,141	401	14.9
Ennis	24,253	25,360	19,998	20,180	4,255	5,180	4.6
Kilkenny	22,179	24,423	8,691	8,711	13,518	15,712	10.1
Trillick	22,744	23,663	20,288	20,814	2,456	2,879	4.2
Carlow	20,724	23,030	13,623	13,696	7,101	9,332	11.1
Droichead Nua	18,620	21,561	17,042	17,127	1,478	4,434	16.4
Nias	20,044	20,713	20,044	20,713	-	-	3.3
Athlone	17,544	20,163	14,347	16,566	3,197	4,596	14.9
Portlaoise	14,613	20,145	3,281	3,839	11,332	16,506	37.9
Mullingar	18,416	20,103	8,940	9,414	9,476	10,689	9.2
Wexford	18,183	20,072	8,854	19,913	9,309	159	10.5
Belbriegen	15,559	19,960	6,731	19,932	8,828	28	28.3
Leitrim	17,586	19,588	15,062	15,367	2,524	4,201	11.4
Castlerea	17,292	19,537	-	-	-	-	13.2
Sligo	19,402	19,452	17,892	17,566	1,510	1,884	0.3
Clonmel	17,008	17,908	15,482	16,793	1,526	2,115	5.3
Greystones	14,599	17,468	10,112	10,173	4,457	7,295	19.9
Malahide	14,937	15,946	-	-	-	-	6.1
Leixlip	14,676	15,452	14,676	15,452	-	-	5.3
Carrigaline	12,835	14,775	-	-	-	-	15.1
Tullamore	12,927	14,361	10,900	11,346	2,027	3,015	11.1
Kilmealy	14,603	14,219	13,497	12,740	1,106	1,479	-2.6
Arklow	11,769	13,009	11,712	12,770	47	239	10.6
Maynooth	10,715	12,510	-	-	-	-	16.8
Cobh	11,303	12,347	6,541	6,500	4,762	5,847	9.2

Census 2011 – Population Classified by Area

Table 7 (contd.) Population of each town with 1,500 population and over, distinguishing those within legally defined boundaries and in the surrounding suburbs or environs, 2006 and 2011

Town	Total population (incl. suburbs or environs)		Population within legally defined boundary		Population of suburbs or environs		Percentage change in total population 2006 - 2011
	2006	2011	2006	2011	2006	2011	
Towns 10,000 population and over (contd.)							
Castlebar	11,891	12,318	10,655	10,825	1,236	1,492	3.6
Midleton	10,048	12,001	3,934	3,733	6,114	8,268	19.4
Mallow	10,241	11,805	7,864	8,578	2,377	3,027	13.3
Ashbourne	8,528	11,355	-	-	-	-	33.1
Ballina	10,409	11,086	10,056	10,361	353	725	6.5
Laytown-Bettystown-Mornington	8,978	10,889	-	-	-	-	21.3
Enniscorthy	9,538	10,838	3,241	2,842	6,297	7,996	13.6
Wicklow	10,070	10,356	6,930	6,761	3,140	3,595	2.8
Trimore	9,634	10,328	9,192	9,722	442	606	7.2
Cavan	7,883	10,205	3,934	3,649	3,949	6,556	29.5
Towns 5,000 - 9,999 population							
Athy	8,216	9,926	7,943	9,587	275	339	20.8
Shannon	9,222	9,673	8,481	9,573	741	-	4.9
Skerries	9,535	9,671	-	-	-	-	1.4
Longford	8,536	9,801	7,622	8,002	1,214	1,599	8.7
Dungarvan	8,362	9,427	7,813	7,991	549	1,436	12.7
Portlarnock	8,979	9,285	-	-	-	-	3.4
Rush	8,286	9,231	-	-	-	-	11.4
Gorey	7,193	9,114	3,479	3,463	3,714	5,651	28.7
Ratoath	7,249	9,043	-	-	-	-	24.7
Nenagh	7,751	8,439	7,415	8,023	336	416	8.9
Trim	6,870	8,268	1,375	1,441	5,495	6,827	20.3
Tuam	6,885	8,242	2,997	3,348	3,888	4,894	19.7
New Ross	7,709	8,181	4,677	4,533	3,032	3,618	5.7
Kilmore	7,538	8,142	-	-	-	-	8.0
Thurles	7,662	7,933	6,831	6,929	851	1,004	3.3
Youghal	6,785	7,794	6,393	6,990	392	804	14.9
Portlington	6,004	7,788	-	-	-	-	29.7
Monaghan	6,710	7,452	6,221	6,837	489	615	11.1
Lusk	5,236	7,022	-	-	-	-	34.1
Edenderry	5,888	6,977	5,470	6,490	418	487	18.5
Dunboyne	5,713	6,969	-	-	-	-	21.8
Buncrana	5,911	6,839	3,411	3,452	2,500	3,387	15.7
Donabate	5,499	6,778	-	-	-	-	23.3
Clonsilla	4,968	6,702	-	-	-	-	34.9

Census 2011 – Population Classified by Area

Table 7 (contd.) Population of each town with 1,500 population and over, distinguishing those within legally defined boundaries and in the surrounding suburbs or environs, 2006 and 2011

Town	Total population (incl. suburbs or environs)		Population within legally defined boundary		Population of suburbs or environs		Percentage change in total population 2006 - 2011
	2006	2011	2006	2011	2006	2011	
Towns 5,000 - 9,999 population (contd.)							
Ballinasloe	6,303	6,669	6,049	6,449	284	210	8.6
Bandon	5,822	6,640	1,721	1,917	4,101	4,723	14.1
Fermoy	5,873	6,489	2,275	2,223	3,598	4,266	10.5
Newcastle West	5,098	6,327	-	-	-	-	24.1
Westport	5,475	6,063	5,163	5,543	312	520	10.7
Carrick-on-Suir	5,906	5,931	5,866	5,866	80	45	0.4
Kells (Ceanannas)	5,248	5,868	2,257	2,206	2,991	3,660	12.2
Birr	5,081	5,622	4,091	4,426	990	1,394	14.6
Kilnashy-Drinan	3,651	5,614	-	-	-	-	59.2
Passage West	5,203	5,790	4,818	5,122	385	668	11.3
Roscommon	5,017	5,693	-	-	-	-	13.5
Kilcock	4,100	5,533	-	-	-	-	35.0
Roscrea	4,910	5,403	-	-	-	-	10.0
Tipperary	5,085	5,310	4,415	4,322	660	988	4.8
Sallins	3,806	5,283	-	-	-	-	38.8
Loughree	4,532	5,082	4,532	5,082	-	-	11.7
Blessington	4,018	5,010	-	-	-	-	24.7
Towns 3,000 - 4,999 population	100,776	119,706	30,041	31,046	8,622	12,660	18.6

Source: Table 7, CSO, 2011 Census Area Volume

1.5 Thesis Datasets and Compact Disc Data Navigation

This dissertation is also contained in the Compact Disc (CD) in the sleeve of the hardcopy as **Dissertation.doc**. The above-listed eighty-five settlements form the base spreadsheet from which the dissertation's selection of 'growth centres' is chosen. This named '*Basedocument2*' spreadsheet is found in the Compact Disc (CD) attached to the hardcopy cover of the dissertation. In order to assist the perusal of the dissertation's Spreadsheet material, cell references are shown in bold, where relevant. Thus, the **Cells A10 to J95** represents the matrix of Census 2002 data on this spreadsheet. This sets out a range of population and employment parameters as labelled across the top 'X' axis with the settlements being listed down the 'Y' axis.

There is a similar matrix sourced from the same 2011 Census data, at **Cells A100 to J187** and it is from this that the Scorecard assessment for the dissertation's nominated

‘growth centres’ for most of the chosen growth centres is derived. This is set out at **Cells A1,388 to F1,478**, and is also shown hereunder in Chapter 9, Table 9.1.

The above-mentioned CD also contains the ‘*TOWN ANALYSIS.xls*’ Spreadsheet which collates the populations of all Irish settlements from 1986 to 2011, thereby providing a longer time frame of demographic outcome. Lastly, the PDF version of this Dissertation is included in the CD.

Whereas population itself and population growth for a defined settlement is straightforward, the criterion for measuring a settlement’s employment, its Daytime Working Population (DWP) is somewhat more complex, *vide* Gateway Index (2012). Hence the following section clarifies terms and definitions, commencing with an explanation of the chosen measure for settlements, which is based principally on population and employment and their aggregate growth.

1.6 Terms and Definitions

The following terms and definitions are used throughout the dissertation and some of them have only been recently introduced to the Census.

1.6.1 Daytime Working Population

Appendix 2, Profile 10 *Door to Door*, CSO census of 2011, at page 56 states:

As part of Census 2011 all workers resident in Ireland on Census Night were geo-coded to their place of work. For the purpose of this report the total persons at work in any particular town or city are known as the daytime working population. The term is used loosely in the sense that it includes night-shift workers, along with those who are resident in the area and who work from home. The figures for daytime working populations exclude those who failed to provide information on the location of their workplace, and those who indicated that they had no fixed place of work. The term commuter refers to those who commute away from home to work, and excludes those who work from home.

1.6.2 Town Settlements

The above Table 1.1 forms part of the full Table 7 of *Population Classified by Area*, in the ‘Area’ volume of the 2011 census. The full CSO list comprises 197 settlements of 1,500 population and over, arranged in four groups based on total population. The

above Table 1.1, tabulates just the first and second groups: *i.e.* of towns over 10,000 and 5,000 to 9,999 in population.

Smaller settlements, outside the scope of this dissertation, include a third group with 30 towns of 3,000 to 4,999 and the fourth, most numerous group, having 82 small town settlements of 1,500 to 2,999 in population. The ‘settlement’ population of a town is inclusive of its suburbs or environs, if they exist.

To avoid the agglomeration of adjacent towns caused by the inclusion of low density one-off dwellings on the approach routes to towns, the 2011 CSO criteria were tightened in line with United Nations (UN) standards, to include all occupied dwellings within 100 metres of an existing building, as interpreted by their Geography Section. Their Dermot Corcoran explained to this writer that as one such example of ‘ribbon development’, the CSO had some difficulty in determining exactly where the western limit to Galway city lay. Thus Barna has emerged as a new ‘town’ and likewise on the east coast, Balrothery has become a new town, distinct and separated from Balbriggan.

Commenting on the theoretical size distribution of lower-order towns, Knowles and Wareing (1994:223) distinguish between *the continuum of urban size*, described as a gradual and continuous decrease in population in descending size-order as contrasted with groups of towns within *an urban hierarchy which are approximately equal in size*.

The approach of subject thesis is to evaluate and distinguish between a settlement’s employment as a measure of its central place function and of its population in the evaluation of the selection task. Geographical considerations are also made in that process.

It would be near-impossible to compare settlements as to their high-order and low-order functions at a specific point in time. However, Knowles and Wareing (*ibid*) note that *...between these extremes is a wide range or hierarchy of intermediate functions. Where a high-order function occurs in a town it is normal to find most low-order functions also present, op.cit.* Such explanation was considered to be significant in this dissertation’s chosen measure for settlement employment, based both on the clarity and consistence of

the census count in the CSO definition for daytime working population (DWP) employment data.

1.6.3 Settlement Contiguity and Population Comparison

Resulting from this UN-defined criterion for distance between settlements, the comparison of town population and population growth as between 2011 census and previous censuses has been reduced to 100 metres. Accordingly, this definitional tightening has resulted in the time-series effect of understating population growth for two specific settlements, Galway and Balbriggan, as already noted. This has resulted in the ‘formation’ of Bearna and Balrothery respectively, as two new Band 4 towns in the 2011 census. Interpretation of the reasons for this tightening of the minimum distance rule, include the following explanation. The overall objective is to eliminate clusters of semi-continuous ribbon development, as occurs in the morphology west of Galway City. Another view is that it maintains the distinctiveness of ‘place’, in preventing the merger of settlements. However, such approach identifies the risk in interpreting and under-reporting overall growth, both in the cases of Galway and Balbriggan in intercensal 2006-2011, and likewise, in the masking of an impending agglomeration, of two or more settlements, as in the case of Drogheda with LBM.

1.6.4 Population Threshold

This is described as the minimum market (population or income) needed to bring about the selling of a particular good or service. Knowles and Wareing (1994) defines it as *...the minimum number of people required to support a function or service*. In this student’s 1960s undergraduate Town Planning lectures, Dr Michael Bannon noted that due to Ireland’s uniquely-low population density for a temperate-located country, many of its ‘larger’ settlements, such as Sligo, provide a range of services that would usually occur only in much larger towns or cities, as for example in Britain. Hence, this provides one explanation for Sligo’s much higher daytime working population (DWP) count than its relatively modest population might otherwise indicate, *vide* Case Study 3, Appendix 14.

1.6.5 Distance and Range

This is described as the maximum distance that consumers are prepared to travel to acquire goods. At some point in distance, the cost or inconvenience will outweigh the need for the good. Accordingly, both ‘Range’ and ‘Threshold’ are inter-related to the dynamics of Land-Use-Transportation dynamics; *i.e.* the interfacing of location with accessibility.

1.6.6 Economies of Scale and Settlement Size

Bogart (1998: 7-8) commenting on the economies of scale as they apply to city size notes ... *When the average cost of production falls as a result of the increased total output of a product, we speak of the presence of economies of scale (ibid).* He describes how cost savings may be *internal* to the individual firm, industry or region, as appropriate to the size of the economic unit under analysis. Equally they may be categorised as *external* or exogenous, when a group of firms, industries or regions are contemplated. Bogart further notes how internal or endogenous economies may be influential in the context of clustering of individual activities.

On the other hand, external ones are fundamental to spatial proximity, referred to as agglomerations of scale. In turn, agglomeration economics *is fundamental to the economic expansion of urban growth (ibid.)*. That literature advises however, whereas clustering *per se* is economically beneficial, it must also be balanced by recognising the diseconomies of the ensuing congestion. This places emphasis on a balance between a city’s size and the extent of its land use-transportation infrastructural endowment, *vide* Alonso (1971), *supra*.

1.6.7 Agglomeration and Clustering

Arising from the development of a successful ‘knowledge location’, where in a specific spatial-economic context over a relatively short time-frame, agglomeration will result in the co-location of companies that generate external economies from the clustering of such specialist participants. In turn, this results in the ‘driving mechanisms’ that will benefit the local and regional economy. Van Winden, et al. (2010:21) gives as examples:

Driving mechanisms...include specialized resource and equipment sharing, knowledge spill overs and a number of formal and informal cooperative links. Physical proximity facilitates face-to-face contacts and the location will become a locus for the development of “new combinations” and a cradle of innovation, e.g.

development of new complex equipment linking engineering and medical science, or innovations linking “art, design and science” (*op. cit.*).

1.6.8 Combining Spatial and Statistical Information

The CSO now has additional facility, in being able to provide statistics that can facilitate evidence-based policy decisions. As with other national Statistical Institutes, in recent years it has striven to link statistical data to spatial coordinates. Importantly, this process links the working population to address of employment whereas the former methodology relied on linkage to place of residence.

This is enabled through the use of grids as units of data dissemination. It also allows detailed geo-physical pictures to be obtained on population densities, thereby enabling much more refined details to be obtained on the formation, discrete location and growth of urban settlements. This student has consulted with the CSO as to grid-size selection in the determination of trends and the time-related progression in settlement agglomeration, as in the case of Drogheda with LBM, the subject of Case Study 3, Appendix 14.

1.6.9 Densities and Area Definitions

For a temperate climate country, Ireland has a very low, yet varied density of population which overall in 2011 is just 67.01 persons per sq. km: about one-seventh that of the UK. Arising from such varied density, the State is divided into its two clearly differentiated areas. The ‘core’ area includes the Greater Dublin Area of counties Dublin, Kildare, Meath and Wicklow (the GDA) plus County Louth. It comprises just 11.35% of total land area having a density of 247.95 persons per sq. km in 2011. The ‘periphery’ or Rest of State area’s density is just 43.85 persons per sq.km. and occupies 88.65% of the State’s land area. Thus the ‘periphery’ surface area is 7.81 times as large as the ‘core’ whereas the latter is 5.65 times as dense. Accordingly this presents significant economic and technological challenges for the provision of services in the ‘periphery’ area. One example is British Telecom’s July 2013 assessment on the monetary and physical challenges in rolling-out of high capacity Broadband to much of that area, with the consequent ‘capacity’ handicap for their business customers; *vide* RTE Radio 1 (2013).

The 2011 census confirms the State’s 2011 urban population share is 62.05% as compared with 37.95% for the rural share. The urban population occupies just 2.40%, of the State’s

total land area which extends to 68,466 sq. km, *vide* CSO Profile 1, *Town and Country*. The ‘core’ area population is 86.13% urban, *i.e.* living in settlements of 1,500 and more as compared with only 44.61% in the ‘periphery’ area. Thus the State’s rural population’s contrast is having a ‘core’ population of just 13.81% rural as against the ‘periphery’ rural share of 55.39%, (*op.cit.*).

1.6.10 Densities of Irish Towns and Cities

Economist Colm McCarthy, former Urban Economics Lecturer to this student, on many occasions has expressed criticism of the low density of Dublin, usually in the context of viewing this as a competitive disadvantage. Yet, in the Irish urban context, the capital’s density with few exceptions, is the highest in Ireland, *vide* Appendix 18. Dublin is nearly three times as dense as the average density of the four provincial cities.

1.6.11 Settlement Dilution

This occurs as a result of too many Gateways and Hubs being selected for growth. With twenty three separate settlements selected in the NSS, the growth outcome, for the first half of the Plan’s life span have been much lower than planned. The proliferation of one-off housing in rural locations has also contributed to Ireland’s small settlements and in reducing the growth of towns.

Describing some of the definitional concepts to be found in this dissertation, its composition and layout is now addressed.

1.7 Structure of the Dissertation

Having set out some of the Principal Terms and Definitions, this dissertation’s second chapter links the theory and practice to an Irish settlement context. This is followed by the Literature Review. Next there is a chapter concerning Geography and on Spatial Considerations. This is followed by the Thesis Methodology Chapter.

The Chapter on the Evaluation of Central Places in Ireland is followed by the Overview Findings from the Settlement Analysis. The Data Analysis is succeeded by a wider application to the Alternative Selection of Growth Centres based on the Research Findings. There follows the Analysis on Alternative Settlement Possibilities. The penultimate Chapter

provides a Discussion of the Research Findings with the Final Selection of Growth Centres for the new NSS.

The Dissertation's Conclusions and Recommendations for Further Research ends with Bibliography and relevant Appendices, located at the end of this document.

CHAPTER 2: THEORY AND PRACTICE – IRISH SETTLEMENT CHARACTERISTICS

2.1 Foreword

Preceding the Literature Review, this chapter introduces the theoretical background settings and thematic discussions to be pursued in the dissertation. It also serves to link the dissertation's body of theory and practice. It reviews some of the principal concepts and ideas that comprise the theory.

Three specific theoretical areas are pursued herein. The first relates to 'lumpiness' and centripetal agglomeration in contrast to other Urban Growth theories. Second there is the introduction to urban growth as linked to agglomeration. The third theoretical area relates to settlement formation and their time-dynamics linked to demography.

2.2 Introduction to Chapter

In mirroring Ireland's cycles of population growth as an offshore island, increasingly, its cities and towns reflect uneven demographic growth. This dissertation's quest for spatial policy implementation, to promote 'lumpiness' and agglomeration is a polar opposite of the current policy thrust for 'balance' and 'evenness'. The associated concepts are set out as follows.

2.3 'Lumpiness' and Centripetal Agglomeration

This theoretical area is urban-economic in feel. It is antipathetic to the EU's espousal of polycentric growth based on balanced regional development. It is championed by Krugman and by the World Bank, *vide* Zoellick (2009). This is premised on the Krugman (1999) criticism of Europe's spatial inefficiencies and its excessive polycentricism and likewise, is 'echoed' in the demographic structure of Irish settlements – too many small ones and a dearth of significant-sized towns and cities to counter-balance Dublin.

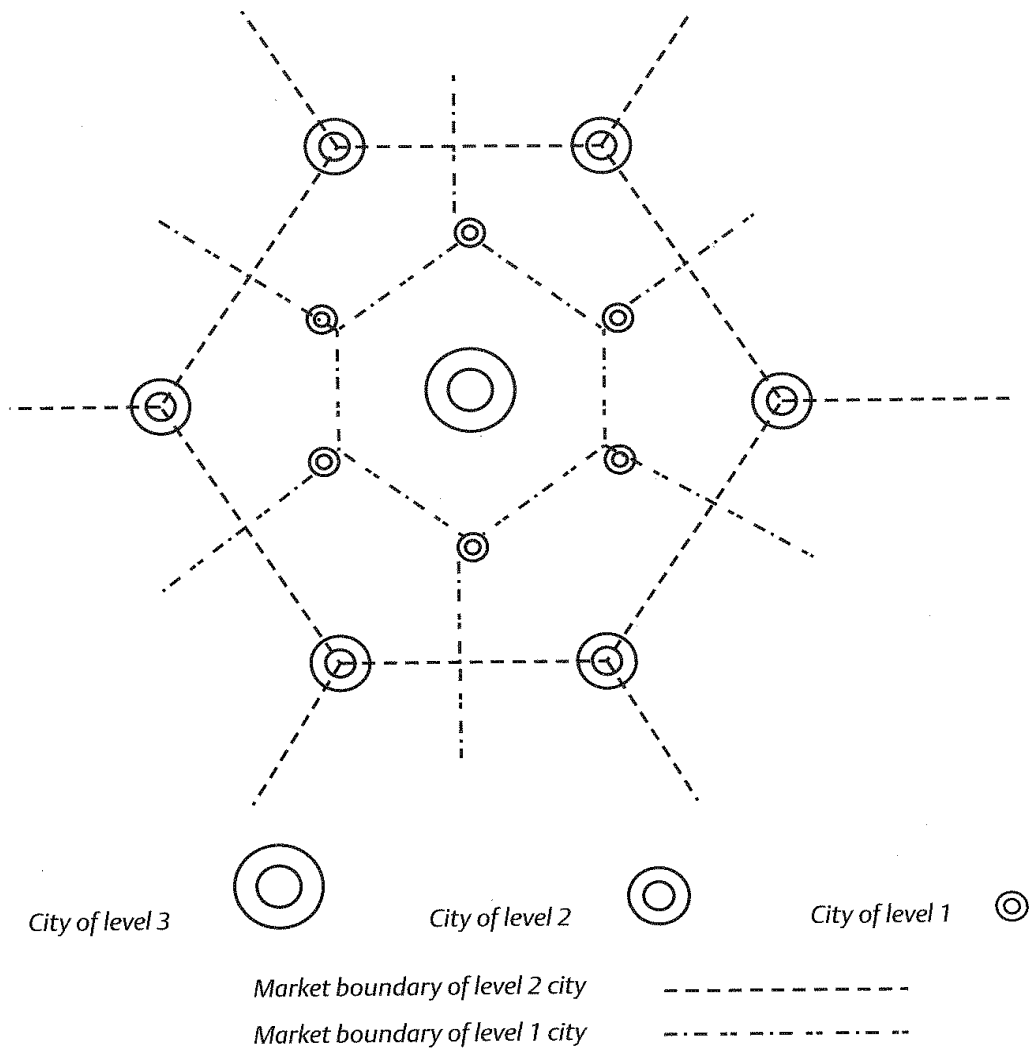
2.3.1 International Economic and Spatial Policy Variants

In the increasingly difficult environment confronting many Western economies, the EU is requiring coordination in the judicious use of scarce, capital spending programmes and infrastructural replacement. Such approach is supplanting the traditional, local 'distributive'

role with more effective and sustainable ‘competitive’ spatial initiatives. Inevitably, this continues to take the form of consolidation with central-place rationalisation in the quest for creating economies of scale. Hall and Pain (2006) have described the application of the Polycentric Model to a number of North-West European Metropolitan City Regions, including the GDA.

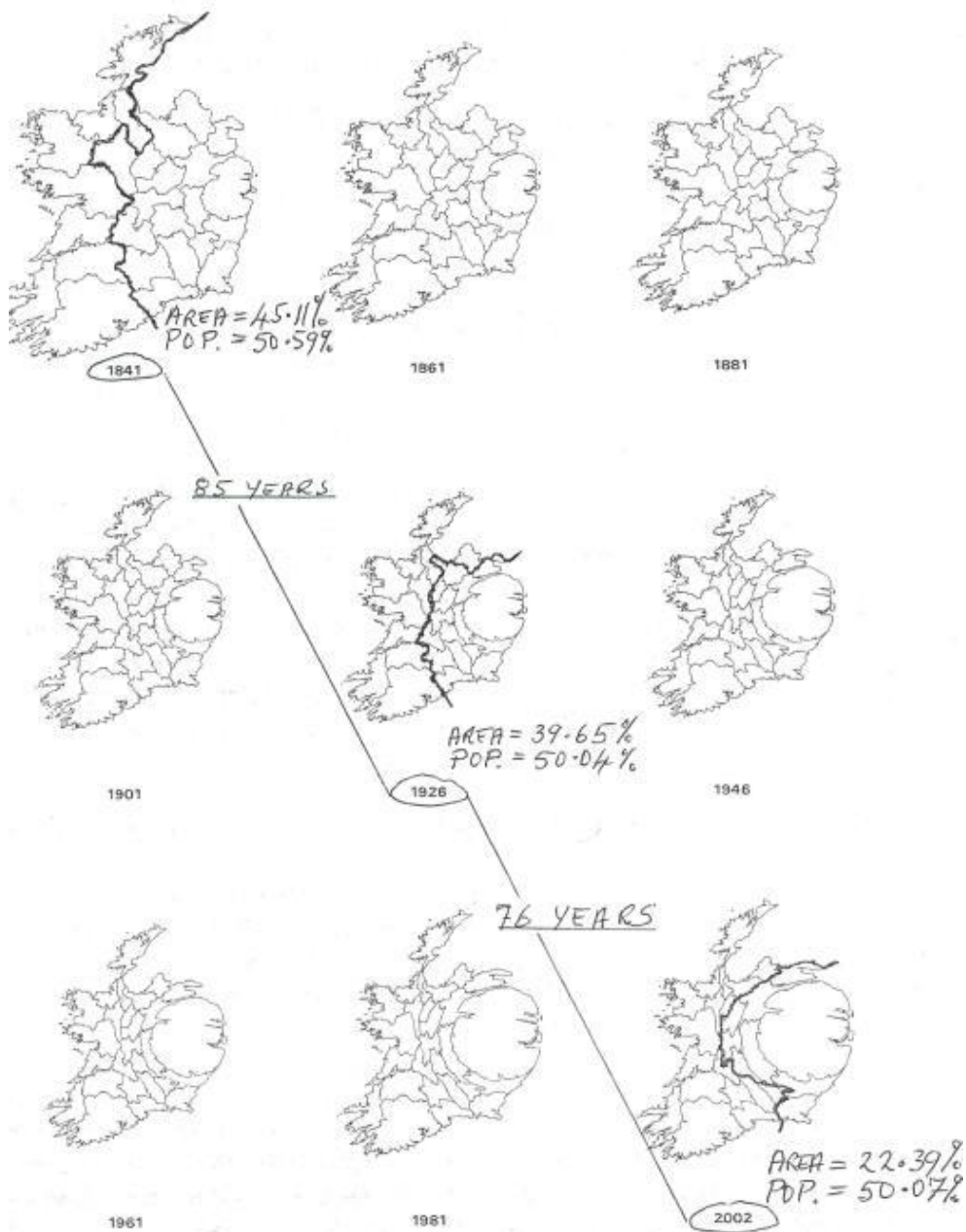
However, one of Europe’s harshest critics for the ‘*relentless pursuit of its polycentric model of its industrial geography*’, has been Nobel Prize-winner Paul Krugman, *vide* Fujita et al. (2001: 348). Such criticism also applies to that of Balanced Regional Development (BRD), and prompts its replacement with fuel-saving, energy-efficient land-use-transportation sustainability, ...*the question of how economies of scale and transport cost initiatives can interact to produce an efficient spatial economy and thereby pursue the central place theory of Christaller (1933) and its theoretical development of location theory in his shape of market area and transportation-axial-linkage by Losch (1940), has received modern application, vide* Fujita, et al. (2001:26). The principles of the Christaller-inspired hexagonal model of settlement distribution on an isotropic plane and free of geographical anomaly, resonated in his seven-tier hamlet-to-regional city hierarchy (1933). The principles of his envisaged size-to-distance spatial relationship of settlement, is captured in the next Figure 1, which for simplicity of clarification is confined to a three-tier hierarchy, thus:

Figure 2.1: The Christaller Model of the Urban System



Throughout Ireland, there is a consistent similarity in the order of its urban settlement system, albeit with some distance-variation. Interestingly, there is a strong correlation of the surface area of each county and its 1841 population, as captured by Martin Charlton in Gleeson et al. (2008). Their time-based Cartogram Map of Ireland (1841-2006), *vide* Figure 2.2, together with supporting CSO data, confirm that the population and county surface areas were spatially proportional at that first census. Furthermore, the city-based population was just a few hundred thousand and settlement size, reflecting the market-serving function of its towns and villages. Taking Figure 2.2 from this student’s 2010 PhD, the nine maps contained therein reflect a progressive 161-year population and density shift towards the east of the island, focusing on Dublin, thus:

Figure 2.2: A Time-Series Cartogram Analysis of the Eastern Share of State Population: 1841-2002

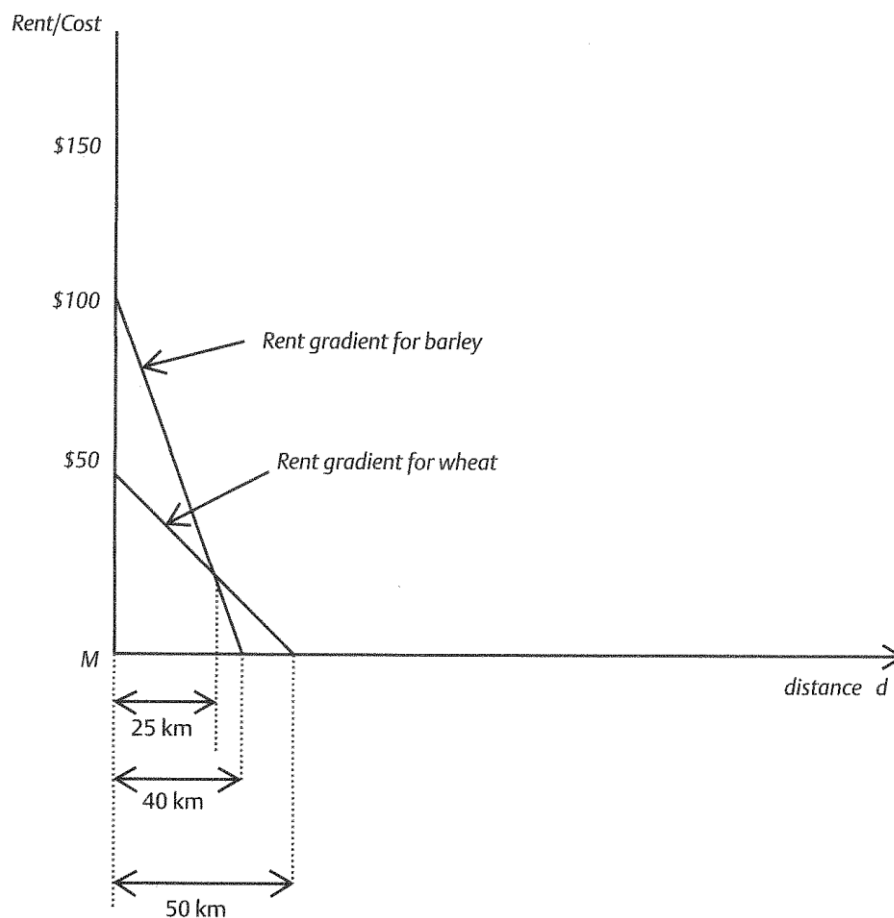


Source: Thesis author's assessment of census populations and county surface areas for 1841, 1926 and 2002 as shown in Cartograms prepared by Martin Charlton in Gleeson *et al.* (2008).

Note: The Surface Area distortion of counties is population-driven and the respective sets of percentage outcomes as shown for population and surface areas relate to the eastern portions to the right-hand side of the black line. This Figure 2.2 gives a good appreciation of the thesis hypothesis time-dynamic wherein half of the Dublin-centric portion of the State's population is gradually being corralled, eastward of the black lines, into an increasingly tighter surface area that in time will equate to the GDA.

This early nineteenth century era would have been pre-railway, not dissimilar to the Saxony, German setting and location of the urban market place and its influence on competing agricultural land uses that in turn inspired that his pioneering visualisation of the value-to-distance relationships of competing land uses, articulated (in the denoted ‘Fig. 3.4’) literature on Johann Heinrich Von Thunen (1826), in the next Figure 2.3, thus:

Figure 2.3: Competing Land Uses in the von Thunen Model



In turn, the optimum productivity of the land would have determined its population carrying-capacity and likewise, the density distribution of its settlements, as described in that literature.

2.3.2 The Criticism of Polycentrism

Apart from fuel inefficiency and long-distance commuting, the principal criticism of traffic-generating polycentricism as a growth model is that it is susceptible to generating weak

economic multipliers. As an open, export-dependent economy, with a weak urban base and having a propensity to incur multiplier leakages, Ireland cannot afford to rely on the dilutionary effects of multi-settlement selection in the quest of an elusive and ineffective spatial policy of BRD. This is shown graphically in Van der Kamp's Fig. 3 in his Three Models of Urban Form in that author's proposition of *The City State as an Urban Model* (2012), as shown in the following Figure 2.4.

'Figure 3' as shown in Van der Kamp (2012) contrasts the locations and ordering of W = Work, H = Home and L = Leisure, with their spatial implications for Land Use and Transportation, densities and their respective levels of accessibilities for walking, cycling and public transport modes. With the scenarios of rising fuel costs and time poverty, the Compact City Model becomes increasingly attractive from the economic, social and environmental sustainability aspects.

Figure 2.4: Three models of urban form

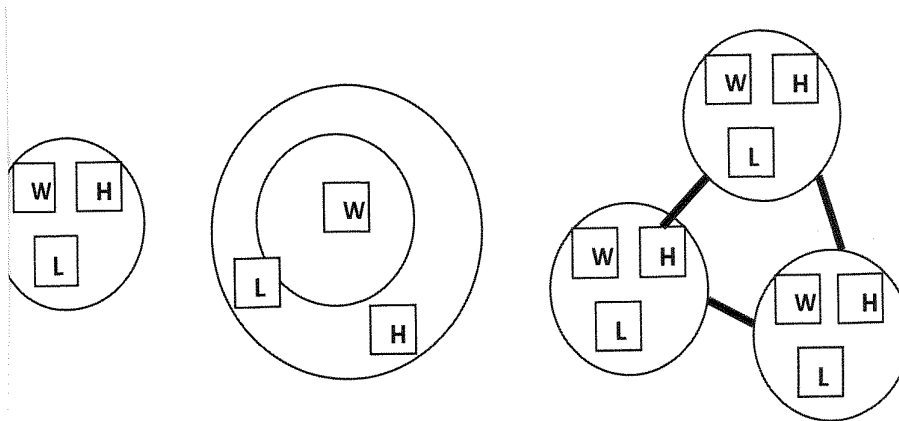


Figure 3 - Three Models of Urban Form: the compact city (a), the sprawling city (b) and the polycentric city (c).

A third spatial model is based on Urban Specialisation and Complementarity. Its potential application to Ireland is discussed in a paper by McCafferty *et al.* (2013), in which literature however, these authors find little evidence of its application, to date, in Ireland. Whereas such model might encourage a compact city morphology as also in the case of polycentrism, its main drawback is the absence of competing cities to Dublin. There is virtually nothing of an alternative urban hierarchy on which to base it.

The ‘centrality’ approach, advocated in the Buchanan Plan (1968), to select and develop a small number of growth centres remains equally valid today. Such validity is confirmed in the State’s conspicuous absence of sizeable city settlements and in the modest populations of its ‘large’ towns. Now that economics is being placed in central role in a revised NSS context, the issue of ‘selecting winners’ is, and will remain paramount in the choice of growth settlements..

Publication of *Putting People First* in October 2012, issued by the Department of the Environment, Community and Local Government (DECLG) as its sub-heading an *Action Programme for Effective Local Government* indicates, presents a multi-departmental initiative to combine economic and spatial planning strategy at the regional level. It remains to be worked out in much greater detail, in its intended process for implementation. In turn, this will require a maturity of broad-based political acceptance for the replacement NSS. Related to this, the background setting to the Parliamentary Debate on Governance in late-November 2013 on the *role and functions* of the proposed Regional Assemblies, is being heavily criticised by the RSA (November 2013) for its ‘underwhelming lack of public debate’ for such an important issue.

2.3.3 Related Spatial Issues

This question of what type of spatial strategic intervention in turn, prompts the inter-linked sustainable issues, of creating housing affordability and reducing medium and long-distance commuting is addressed, *vide Williams et al.* (2010). In that literature, the student of subject dissertation posits that Dublin’s settlement population would be some 120,000 greater, or more than 10% larger than its 2011 census figure of 1,110,628, as measured on a moderate growth rate pro-rata basis, if compared with State’s 33.25% growth rates since 1981 and to the extent of population ‘deflection’ in favour of its Sphere of Influence (SoI) towns. This has profound sustainable implications for medium and long-distance commuting.

It is instructive to note that Buchanan had projected Dublin’s settlement population to be 1,120,000 by 1986, *vide* Table 41, P. 185 *op cit.*, which level of projection still slightly exceeded its 2011 census population, *i.e.* some 25 years later. Also under the heading of high-level spatial policy, the quest for environmental sustainability would require a redressing of the very large trend-increase in medium and long term commuting *vide* Profile 10, CSO (2011). Today’s increasing concern on fuel price levels and rises, on wasteful

land-sprawl, loss of ‘social’ time in commuting and the need to combat the proliferation of discontinuous, small urban morphologies, are detailed in Hall and Pain (2006).

2.4 Urbanisation and Agglomeration

The second area of this chapter links urban growth to agglomeration. Despite the overall trend direction of recent censuses, by international standards, *vide* Poleze (2009:32), the State is making comparatively slow progress in becoming an urban society, albeit dominated by its singular, dominant, metropolitan city-region, Dublin. The aggregate population of its four ‘provincial’ cities is just 38% of the capital and the largest one Cork, in the 2011 census, is just over one-sixth of Dublin’s population and has yet to achieve the ESDP-defined minimum city population of 200,000. Accordingly, by this international definition, the State really has only one city: i.e. two on the island of Ireland (Dublin and Belfast). The fragility of settlement populations, other than Dublin, can be appreciated from the following Figure, taken from Van der Kamp (2012):

Figure 2.4: Other NSS Gateways – 2002 and 2006 Populations

Gateways	2002 Population	2006 Population	% Growth Rate
Cork	186,200	190,400	2.2
Limerick/Shannon	95,600	100,000	4.3
Galway	66,200	72,700	9.9
Waterford	46,700	49,200	5.3
Dundalk	32,500	35,100	7.9
Sligo	19,700	19,400	-1.7
Letterkenny	15,200	17,600	15.5
Athlone/Mullingar/ Tullamore	42,600	48,800	14.5
TOTAL	504,700	533,200	5.6
State	3,917,200	4,239,800	8.2

Rates of population growth for the Gateways. Source: CSO.

Note: Population of cities and towns with their environs and suburbs.

2.4.1 *Urban Growth and Agglomeration*

Of concern, in recent censuses, is the much lower than State-average population growth of Irish cities, Galway being the exception. The NEG literature on urban agglomeration will describe how endogenous growth takes place and accelerates, once a minimum ‘threshold’ size has been achieved. Instead, in the case of Ireland, the trend has been for their satellite-city towns to expand rapidly to form ‘coronas of growth’ around the cities, in an unsustainable commuting manner and without a commensurate growth in local employment to match their polycentric residential-dormitory expansion, *vide* Hall and Pain (2006). Much of such growth reflects the acceptance of long distance commuting ‘exchanged’ for unaffordable house values, resulting in a large increase in the State’s count of medium and long-distant commutes, *vide* Williams et al, (2010).

2.4.2 *Introductory Data Background – Population Density and Settlement Distribution*

The 2011 census confirms that the State’s 66,823 sq.km. of rural land is serviced by 849 nucleated settlements (NS), 192 of which are ‘towns’ – together with the five cities - having at least 1,500 in population. Accordingly, the overall settlement density averages just under one per 79 sq. km, the square-root of which gives an NS ‘linear grid’ distance of just over 8.9 km. The corresponding figures for its ‘towns’ are 339 sq. km, each having an average distance of 18.5 km. The original Von Thunen (1826) ‘market town’ functionality, possessing both a market place and a defined Christaller)-range of ‘central-place’ services to its surrounding agricultural community in Ireland’s case, has very much changed and increasingly so over the past sixty years, *vide* Appendix 2, Case Study: A ‘Band 3’ Town - Mitchelstown, Co. Cork.

As ‘cities’ are comparatively rare in the Irish geo-economic compositional sense, much of its surface area is outside their sphere of influence (SoI). Therefore it is unrealistic to strategically plan for an assumption that all counties or indeed, regions, can keep up with ‘average’ growth. Likewise, it is economically unfeasible to ‘plan for’ the objectives of balanced regional development (BRD) as defined in the 2002-2020 NSS, *vide* Appendix 3.

Short and long-term Irish demographic growth performances demonstrate both ‘lumpiness’ and uneven pace of growth, producing both ‘leaders’ and ‘laggards’. This is the ‘norm’ worldwide and attempts at such rectification should not be the subject of local and short-

term ‘political tampering’ with the planning system and its strategies. It represents the extremes between the disadvantages of rural isolation and the benefits of urban agglomeration, Poleze (2009).

Evidence of moderate growth or even modest contraction is also characteristic of larger towns such as Dundalk or Sligo or indeed for the smallest of the State’s cities, Waterford. In contrast, the dynamic growth with evidence of emerging physical agglomeration is reflective of Drogheda with Laytown-Bettystown-Mornington, *vide* Case Study 3, Appendix 14.

2.4.3 Spatial Strategy Interventions

Spatial planning strategy policy, in the form of ‘distributive intervention’ may result in temporary relief and reprieve for lagging settlements. This type of intervention traditionally, has taken the form of a local initiative in a strategic planning outcome effect. Criticism of the ‘distributive’ nature of Ireland’s NSS, commenced with O’Leary (2003) and by many other commentators since then, have decried the economic inefficiencies and waste resulting such ‘soft option’ policy direction of the NSS and of the need to resist the political pressures of short-term and local ‘vision’.

A near-fatal NSS compromise, introduced within eighteen months of the Plan was the Government’s *Decentralisation Programme for the Civil Service*, in 2003. It went several steps further in the ‘distributive’ direction by announcing 53 locations involving 10,300 civil service jobs, Meredith *et al.* (2013). That figure was further augmented to 12,000 jobs, when centralised semi-State services were subsequently included. Even the supporters of balanced regional development criticise that initiative because of its weak support for G&H locations and its evocative political short-term’ and ‘local’ agenda.

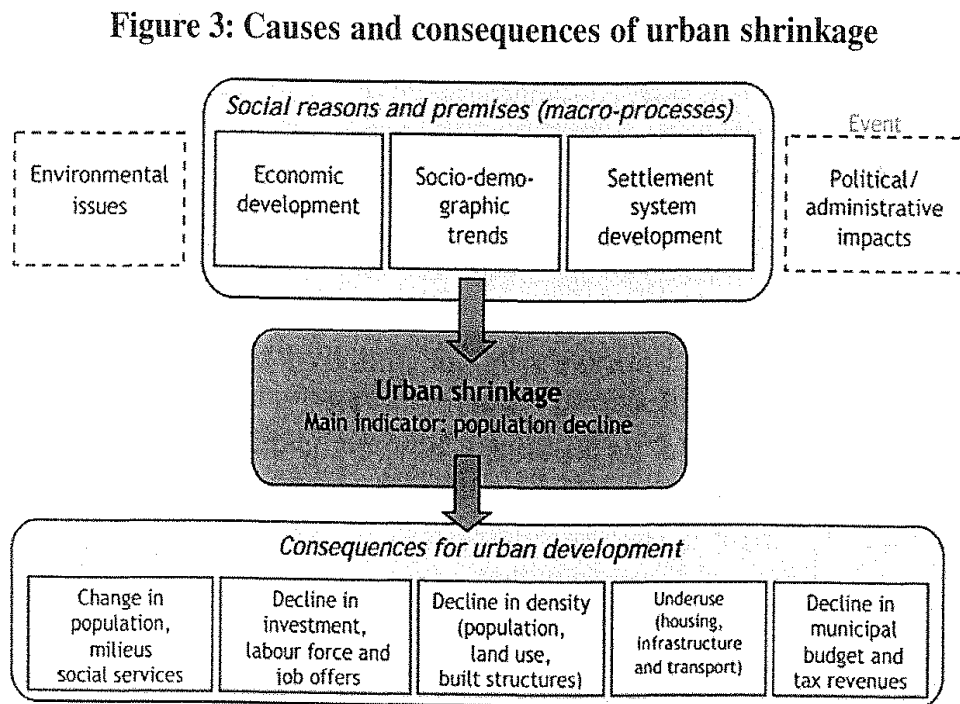
Only four NSS Gateways and a similar number of its hubs were nominated as intended recipients for decentralisation. Thus 73% of the total jobs were to have been relocated from Dublin to mainly small and medium-sized towns. Such ‘Decentralisation’ exemplifies uncoordinated intervention. Political resolve is required, to address the associated wastefulness that can result in many cancelled or deferred projects, for site assembly and construction of ‘unwanted’ offices, *vide* the FAS ‘move, to Birr. More significantly, such interventions can no longer be contemplated, given the new initiative for enhanced local

authority and regional roles, to linking spatial planning with economic development, *vide Putting People First* (2012:21-29). At this juncture it is instructive to address economic shrinkage and examples of urban failure.

2.5 The Need to Recognise Failing and Dying Settlements:

The third theoretical area of this chapter explores the linkages of settlement time-dynamics to demography. At the outset it is noted that some settlements can and do experience failure and contraction. Daly, G. (NUIM) in his impending PhD, emphasises that to date there has been little or no Irish spatial focus on urban contraction. It is politically ‘off limits’. Nonetheless, there is the increasing need for planners and politicians to both recognise and strategise for the causes and consequences of urban shrinkage. The following Figure 2.5, depicted in the Daly (2010) literature as ‘Fig. 3’, summarises these, thus:

Figure 2.5: The Causes and Consequences of Urban Shrinkage



Source: Shrink Smart (2009).

The term ‘Firm town’ originates in U.S.A. Urban Economic parlance, and is not limited to small size, *vide* Bogart (1998). Today, the 0.75 million-populated city of Detroit is the largest example of an unviable city economic unit, in a settlement that is seeking to file for Bankruptcy. That city, which at one stage had upward of two million in population, was singularly unable to address changes in end-use demand for its principal economic product, the automobile. The near demise of outsized ‘gas-guzzlers’ such as Oldsmobile or Buick, reflects that industry’s inability to successfully respond to changes in customer preference, as found in European and Asian car models. Accordingly, settlements or products must be able to meet the economic definition of ‘utility’: *i.e.* the ability of an economic good to satisfy human demand. Car production moved south to lower land cost and labour locations, first to Indiana and through the Ohio Valley into Kentucky and Tennessee, Poleze, (2009:13)

New Orleans has substantially shrunk its population due to a natural disaster. Cultural unwillingness to change and adopt to commercial requirements despite federal assistance, the nature and change of ‘work’ and critically, an absence of urban clusters, all have taken their inevitable toll. Following its political unification, cities in the former East Germany likewise have downsized, *vide* Kitchin and Daly (2013).

2.5.1 Irish Examples of Urban Stagnation

Accordingly, a ‘firm’ town, with its employment dependence on clustering, is especially vulnerable and unfortunately, in Ireland, this legacy of ‘industrial history’ is widespread. Cross Pens, a valued and esteemed product, was an established but unlinked manufacturing industry for nearly thirty years in the east-Galway town of Ballinasloe. Subsequently and in the absence of emerging industrial linkages, the continued justification for this industrially remote location failed. Likewise, the evidence on the continuing economic and demographic decline of former small market towns outside the influence of cities, is starkly portrayed in the Western Regional Authority’s (2013) study of Swinford, Gort and Boyle where their populations all declined, particularly so during the Celtic tiger era.

Waterford, the State’s smallest city recorded a population of 50,567 in 2011. This city’s description fits that of a ‘firm town’; in its case, once having specialised in the glass industry, whose ‘firms’ have now virtually disappeared, *e.g.* Bosch & Lombe and Waterford Glass, together with their many, related service providers. Waterford thus, is

classified as an ‘economic black spot’ and yet in the era of a ‘knowledge economy’, its quest to obtain a University remains unfulfilled. A similar-sized U.K. settlement is Macclesfield, Cheshire, with 51,739 in the 2011 census; once renowned for its silk mills is ‘reinvented’ itself with a range of differentiated products. The essential difference in any comparison with Waterford is that of Macclesfield’s SoI proximity to Manchester.

In terms of minimum critical mass, it can be reasonably argued that for Waterford city, its nearby seaside resort of Tramore’s population growth as a Band 1 town of over 10,000, apart from seasonal tourism, is largely based on its 16 kilometre commute to the city. This raises related questions: should Waterford City or indeed Sligo be that much bigger in population without such outward spillover? Would such growth difference by way of settlement consolidation, have better positioned such locations for future growth?

There is a developing literature on the stagnant or shrinking town or city, *vide* Krugman (2013), Poleze (2009) and Daly *et al.* (2013). The inability of a city or town to adapt to current technology, to commercial needs or in particular, to the functionality demands of the new economic geography, often results in a sustained decline despite the interventions of political initiatives including government ‘Black-Spot’ designation.

2.5.2 *The USA Influence of ‘Subdivision’*

The issue as to ‘subdivision sustainability’, is supported in the 2011 census data on commuting together the ‘mushrooming’ of ‘dormitory-town’ populations within a city’s SoI, as is particularly evident in the GDA and outer Leinster counties, Mac Donald (2002). ‘Edge-city’ settlements are described in Garreau (2001), of which Virginia’s *Tyson’s Corner* is cited as the epitome of discontinuous development-like characteristics, ‘...reflecting the prevalence of automobile ownership, Edwards (2007:391).

In a recent ‘study trip’ to Manchester, Cheshire and Derbyshire, this student was impressed by the contrast between the U.K. and Ireland in the constrained approaches to rural development in England and specifically to an absence of ‘one-off’ rural housing and to the consequent limitations for residential-led sprawl. Because of Ireland’s historic legacy of rural depopulation, there remains a strong and emotive objective to maintaining a viable population in *every* parish.

As a consequence, there is little or no evidence that this objective of ‘maintaining population’ is being addressed through alternative morphologies of residential clustering and town consolidation. Instead, the practice of boosting farm and land-owner revenues, through the frequent sales of one-off sites is widespread and deep-seated. In the inevitable stand-off between these parties and their local politician versus the planning system with its perceived light touch policies, the land-owner invariably wins.

It cannot be over-emphasised that ‘one-off’ rural housing now accounts for at least half of Ireland’s depleted annual housing output and there is little evidence to date that the ‘core policy’ objective under the 2010 Planning Act has influenced a reversal of this trend. One consequence is that the land available for renewable energy production, through wind farm developments, is being ‘squeezed, particularly so in the Midland counties *vide* Miriam O’Callaghan-conducted Wind farm Debate, RTE T.V. 23.09.2013.

2.5.3 Application of Location Theory and Irish Demographic Results

It is therefore instructive to note the gradual reversal to the long-term decline in Ireland’s rural population since 1966. Likewise, the Von Thunen-described (1826) ‘Market Town’ of Saxony, Germany, might aptly represent three ‘isolated’ County Tipperary towns of Thurles, Tipperary and Carrick-on Suir; which the exception of the limited SoI of Waterford City, are otherwise outside the influence of city-generated growth. Their functionality, as market towns, had evolved in a diminishing sense, due to changes in agriculture, to transportation and the need for specialisms: to the requirement for commercial functions that lend themselves, both to horizontal and vertical linkages resulting in economic differentiation.

In the absence of a nearby ESDP-sized city, for such ‘small-town-Ireland’, it is unreasonable to assume that its market towns possess anything approaching the minimum population threshold or endogenous capacity to thrive economically in the absence of population growth from the city ‘spillover effect’. Over 1981-2011, their growth and size order demotion have been unimpressive and static, as the Appendix 3, Table 3.1 of selected Tipperary towns confirms.

With a State population growth rate that has been at some 7.68 times the aggregate of these particular towns over that period, this raises the spatial strategy imperative to

consider the ineffectiveness of the ‘distributive’ nature of the NSS approach to modest sized ‘Hub’ towns such as Mallow, Ballina, Tuam, Shannon and Monaghan. Alternatively, were there compelling reasons to select these unlikely G&H locations, precisely because they happened to be the only settlements located in a wide and often deprived geographical area. This is despite there being little chance that such settlements, realistically, would be able to achieve critical mass within a specified time-frame of a Spatial Plan. And what represents a critical mass minimum threshold level of population in a cerebral, advanced knowledge-driven economy criterion, in sharp contrast with a ‘growth-town’ of the ‘Fordist’ branch plant era of three decades ago?

As these data show, outside of the SoI of ‘cities’, the original agricultural-serving market town, generally, will not grow unless it is able to demonstrate economic ‘differentiation’ based on some locational advantage or an attribute of economic specialisation. Killarney and Westport’s respective moderate levels of growth based on Tourism specialisation, are perhaps such examples, *vide* Fig. 18.3 Knowles and Wareing (1994: 225) which contains a Graph of the relationship between population size and functional importance (*after B.J. Garner*), *vide* Figure 6.1.

2.6 Conclusion to Background Setting Chapter – Linking Theory to Practice

In conclusion, it has been noted that ‘Market towns’ are replicated throughout the State, very many of which continue to struggle. Increasingly, since his 2003 submission to a Dail Committee on Industrial Development made by Sean Dorgan, Chief Executive of the IDA together with a political response of ‘disappointment’ by the current Minister Brendan Howlin, *vide* Appendix 1, Foreign Direct Investment (FDI) has become even more concentrated in city locations. The underlying realisation was inevitable: that the then hoped-for 1971 alternative strategy, designed to foster the development of ‘everytown Ireland’ through the Government ‘Fordist’ branch-plant industrial strategy, had failed.

Furthermore as Dorgan therein described, the successor to that era - the cerebral and producer-service based type of employment - was found to be increasingly dependent on larger centres of population, *vide* Skehan (2007) in Appendix 8, because of the requirement of a minimum threshold-size of skilled workforce. For those privileged and reducing numbers of selected FDI locations, the ‘bonus’ was achieved in the form of

impressive multipliers to the ‘base’, export-led FDI-type activity. In an Urban Economic context, complementary, ‘non-basic’ employment was occurring nearby in a myriad of SME-type service providers, as theoretically espoused, *vide* Edwards, (2007:172-179) and the larger the host FDI city, with complementary research development and diversified activity base in Ireland, the lesser the risk of multiplier leakage, *vide* Grimes (2003).

If the strategic imperative, to fuse spatial planning strategy with economic strategy as the hallmark of the replacement NSS, and as is espoused in the *Action Programme for Effective Local Government* (2013: 21-29), then the objectives wherein... Regional Strategies will underpin the economic dimension of the NSS and provide a coherent framework for economic action by local authorities...*may provide a basis for spatial planning ‘buy-in’ by the people of Ireland, op.cit.*

An appropriate note on which to summarise this chapter’s linkage of the dissertation’s theory on demographic ‘growth indicators’ with the spatial planning practice of ‘growth centre’ selection is encapsulated in two recent articles. The first is by Marc Coleman, writing in the Sunday Independent of 3rd November 2013, P.34 ‘Analysis’ moots the idea of...*building up to seven or eight regional capitals to rival Dublin*, in his advocacy to replace the current NSS. Whilst recognising the need to curb ‘growth settlement’ proliferation, the author of this thesis would regard this suggested reduction as being overly severe. The second one was a more comprehensive ‘Analysis’ article in the Sunday Independent of the same date, P. 26, by Jodi Corcoran. Entitled: *Suspicion grows two-tier nation is more by design than accident*, in which he speculates that the current shift in demographics is now in line with official policy. With a range of supporting statistical evidence, it emphasises the ‘two-speed’ contrast between the emerging south and east ‘urban’ and the north and west ‘rural’ parts of Ireland. The author of this thesis notes that this analysis is probably intended to be politically provocative, at a time when a new NSS is beginning to command some public attention.

Finally, the attached Appendix 2 and 3 Case Studies demonstrate at both the small ‘town’ and small ‘city’ levels, the critical influences of economic cluster or functions on the demographic fortunes of the State’s settlements over longer time spans. This ‘linkage’ sets the scene for the introduction of the Literature Review that follows.

CHAPTER 3: THESIS LITERATURE REVIEW

3.1 Foreword

This literature review focuses on influencers of spatial planning. They are identified in the tri-section layout of this chapter as:

- The literature on policy implementation: past attempts and effectiveness of in re-directing population and settlement growth;
- The literature on urban agglomeration influencers and centripetal agglomeration, including market forces leading to ‘lumpiness’ and ‘core’ versus ‘periphery’;
- The literature on population growth and settlement formation and proliferation, specific to Ireland.

3.2 Introduction

The first section of this Literature Review focuses on the literature and history of Irish Spatial Policy Implementation. It commences with an historical summary of previous planning strategies in Ireland, starting with the economic and industrial history since the 1960s. Previous spatial planning strategies are first reviewed. The second section focuses on the Buchanan Plan and its IDA ‘replacement’ strategy. This is followed by the ERDO strategy and the NSS (2002-2020) Plan and the final section concludes with the literature foundation to subject dissertation.

3.2.1 *Historic Background to Policy Implementation*

The history of modern Spatial Planning in Ireland coincided with the first significant economic upturn, post-war, Bannon (1989). The decade of the 1960s marked the nadir point in the State’s population decline, confirmed in the census of 1961 with its fragile total of just 2.818 million, *vide* CSO census, Volume One (1961).

That decade saw the end of the ‘protectionist era’ of Irish industrial policy, enforced with tariffs and controlled domestic ownership of public companies and a ban on foreign direct investment (FDI), Leddin & Walsh (2013). Following these ‘Lemass-interventions’, the first ‘wave’ of FDI coincided with the introduction of the mandatory

Planning and Development Act, 1963 which came into force on 1st October 1964, Grist (2013). The country continued to have a rural majority of people living in open countryside and in settlements of less than 1,500 in size until 1971.

Predating this mandatory Spatial Planning era, Gibney's (1943) *A Framework for an Irish National Plan* had proposed a Garden City decentralised model, having a new capital city located to the north of Athlone close to the centre of the island. In the same year, he also made a proposal for an Irish National Survey and published a draft of an Irish National Atlas. Containing 338 maps, it detailed the physical, human and economic interests on the island as a whole, *vide* Bannon (1989: 62). Occasionally, this supply-led 'idea', to locate a 100,000-populated city in Roscommon resurfaces and reflects the need to bolster the weak urban structure of the north west of State.

3.2.2 *The Buchanan Plan of 1968*

This was intended to have been the State's first modern Spatial Development Plan. However, due to long-standing political antipathy towards urbanisation and especially to the planned expansion of its cities, it was quickly shelved by the government. Its principal strategy, to concentrate industrial-led growth into Cork and Limerick, together with three descending-sized 'tiers' of nine other locations forming a select number of 'growth centres, it was revolutionary in concept. It was rejected by the Government, just eighteen months after its publication, Meredith *et al.* (2013).

That plan had a moderate growth projection for Dublin, limited to its natural population increase. Its principal strategic initiative had proposed major growth targets for Cork and Limerick-Shannon. However, this would have required substantial internal migration accompanied by unprecedented, intensive house-building programmes in these locations, Buchanan (1968). Bannon (1989) cites this as being the principal reason for its rejection. Following intensive lobbying by an overwhelming majority of government departments but having been championed solely by The Department of Finance, Buchanan was decisively rejected by a rural-centric political corpus, Meredith (2013).

3.2.3 *Countervailing Spatial Strategies*

The spatio-industrial counter proposal to Buchanan, to promote a State-wide ‘Fordist Production model’, took the form of an industrial branch development strategy led by the Industrial Development Authority. Introduced in 1971, its distributive philosophy was politically more acceptable. However, only short-term benefits resulted from that strategy, primarily because its intended and necessary up and downstream linkages could not be attained in the absence of the necessary critical mass of population required for self-sustaining growth (Bannon, 1989, 2000). Again, this raises the ‘chicken and egg’ dilemma, of how to create such gravity mass without the implementation of radical strategy measures inimical to urbanisation (Fujita *et al.*, 2001).

This student attended a Symposium on that IDA’s Plan in An Foras Forbartha in 1971 and recalls the ‘hub’ example of Portlaoise being cited (Hughes, 2010). That presentation had emphasised the IDA’s ambition to locate upstream-downstream-related industrial plants in the radius of towns surrounding Portlaoise including, clockwise, Mountmellick, Portarlinton, Stradbally, Abbeyleix, Rathdowney and Mountrath. Such dispersed-cluster industrial strategy, it planned, was intended to create industrially-linked manufacturing synergies, intended to be repeated elsewhere, throughout Ireland, *vide* IDA (1971). Considerable low-level industrialisation ensued, in a ‘scattergun’ locational format, *vide* ESRI 33, (1997). However, the small scale and absent linkages resulted in this strategy’s failure, with most plants having since closed.

It is apposite to refer to the Eastern Regional Development Plan (ERDO) of 1985, which was spatially confined to the study of the GDA. Led by Planner Len O’Reilly, it correctly forecast a GDA population of 1.8 million by 2011. Its principal weakness however, was its rejection of Dublin’s inner-city and inner suburbs’ potential for no middle-class housing, undoubtedly influenced by the prevailing mortgage society restrictions’ to ‘red lining’ such areas for residential lending.

There then ensued a period of over twenty years during which successive Irish governments purposely avoided the ‘hot potato’ of implementing national and regional spatial planning, thereby *failing to avail of the advances made in regional development theory*, *vide* Meredith (2013). When the call for spatial growth initiatives was resumed

in the late 1990s, the retreat from ‘Fordist’ branch plant industry was far advanced, marked by the closure of so many factories throughout rural Ireland (ESRI 33, 1999).

Hence, ‘scattergun’ dispersal, although politically popular, was subsequently warned against being repeated, as in ESRI 33, (*op.cit.*). Likewise, it had inconclusively, rejected a second spatial theory based on Radial-led routes, spoking out from Dublin and other cities. Instead the government opted for the third, ‘Nodal’ approach, linked to balanced regional development (BRD), with growth centres comprising single and multi-locational Gateways and Hubs. This was to form the central strategy plank of the 2002 spatial plan, Meredith (2013).

3.2.4 The National Spatial Strategy (2002-2020):

Morgenroth (2013) cites the Celtic Tiger development-led era of economic expansion from 1994 onward, as the principal reason for the formulation of Ireland’s second spatial plan, the National Spatial Strategy (2002-2020). He is critical however, of its contextual absence of both economic and geographical analysis, (*op. cit.*). Its publication was likewise viewed as having been...*a response to the growing imbalances in socio-economic development that became increasingly evident during the Celtic tiger period in the late 1990s*, Meredith, (*op.cit.*).

However, its principal objective was ‘distributive’ in essence, albeit under the European Spatial Development Perspective (ESDP) strategy, of promoting balanced regional development (BRD), by way of its nominated 22 ‘Gateway’ and ‘Hub’ settlements in addition to Dublin, *vide* O’Leary (2003). However, the disimproving economic environment necessitated constraints on capital investment ensued, as Ireland lost its economic sovereignty to the EU-ECB-IMF Troika in 2010.

Although there were nine each of Gateway and Hub designations, because of some cases of multiple and linked settlements, in all twenty-three locations had been chosen. The NSS had ...*conceptualised spatial development within a hierarchical framework of networked places, including the[se] gateways and hubs, as well as ‘other towns’, ‘other places’ and ‘rural areas’, vide Meredith et al. (2013).*

Bannon (2000) had articulated the underlying principles of the ESDP approach to BRD, in which he outlined the three objectives to counteract the then recent development disparities as:

- Economic and social cohesion
- Conservation of national resources and cultural heritage, and
- More balanced competitiveness of the territory

To secure those objectives three principle lines of policy action were proposed

- Developing a balanced and polycentric urban system with new urban-rural relationships
- Securing parity of access to infrastructures and to knowledge for all regions
- Promoting sustainable development, product management and protecting natural and cultural heritage (*ibid*).

Clearly for Ireland, such policy objectives and actions were always going to be problematic. Scarce capital resources and low population density continue to present barriers for implementing Broadband roll-out and Third Level Education provision in the earlier years of the Celtic Tiger. Attaining specific G&H population ‘targets’ likewise was considered ‘ambitious’, given the extent to which rural emigration especially, was affecting the Periphery region’s demographic base as the first decade of the new millennium matured, *vide* ESRI Medium Term Report (2007).

3.2.5 *The DIT’s Twice the Size Study (2008)*

As in the case for most of the reviews undertaken on the NSS strategy thinking, the Urban Forum’s *Twice the Size* study, research-directed by *The Futures Academy* of DIT, concentrated on examining the future for the NSS-nominated Gateway settlements. As reflected in its sub-title: *Imagineering the Future of Irish Gateways*, it might retrospectively, be criticised for the limitations of its scope and in implicitly assuming that these eight ‘locations’ apart from Dublin, would remain as ‘given’. Likewise, this study has been the subject of adverse political commentary, *vide* Harkin

(2008) and following its publication it was unenthusiastically received by Ireland's provincial press.

Yet, it represents a seminal piece of multi-disciplinary research by way of 'Futures' application. Its Foreword states:

the central tenet of present planning in the Republic of Ireland – the attainment of balanced regional development – is mistaken. Further, unless this error is recognised and redressed, then Ireland's future economic, environmental and social prospects are likely to be seriously impaired.

The study identified the principal drivers of change for Ireland as being Demographics, Spatial Continuity, Changing Agriculture, Changing Values and Changing Politics. Perhaps, somewhat exaggeratedly, it forecast that the results of these 'drivers' by 2030, would see over two-thirds of the population of the island of Ireland being concentrated in a linear city within *twenty-five kilometres* of the east coast. The *Twice the Size* study concluded that:

an Eastern corridor, from Belfast to Waterford, is likely to be Ireland's best opportunity to maintain a competitive position among the city-regions of an increasingly competitive Europe, *vide* the study's Fig. 13 showing that 'spine' corridor, in its potential for implementing transversal transport network (*op cit.*).

The tri-feature 'preferred vision' for the *Twice the Size* study can be summarised as:

- Questioning the gateway desirability or indeed, ability to attain the critical mass principle of balanced regional development
- Policy considerations reflecting just a single Eastern seaboard urban settlement – the 'city state'
- Gateway 'distinctiveness' reflecting the need for specialism.

The implicit and radical shift in the strategic thinking of that research study was received with unenthusiasm in 'provincial' Ireland. More to the point, such strident criticisms revealed failures to comprehend and indeed, reflected a fundamental misunderstanding of the benefits arising from a Core-Periphery approach to spatial

development, adduced by Williamson and Samuelson in the 1950s, *vide* Robert-Nicoud (2006).

3.2.6 *Putting People First (2012) – a New Governance Paradigm*

The literature basis for this study's methodology approach focuses on a settlement-level evaluation, influenced by the political realm's October 2012 publication of *Putting People First*. That document's relevance to spatial planning is reflected in its Appendix 9 'Map of Regions' combined with the content of Chapter 3. Under its 3.2 head: *Regional Spatial and Economic Strategy*, it points out that both *...economic activity and economic development need to be reviewed from a regional perspective*.

It notes how *...Recent experience with Regional Planning Guidelines (RPGs) indicates both the importance of the economic dimension in their development, and the capacity of regional strategies to guide successfully planning and implementation at the local levels of policies and objectives adopted at the regional level, linking also with national policy*. Significantly, in terms of where the NSS goes from here, on P. 23 it states *... that the new Regional Assemblies, as outlined in Chapter 8, will formulate Regional Spatial and Economic Strategies, incorporating spatial planning guidelines*.

3.3 Subject Dissertation – A Literature Basis

Focusing on this subject dissertation, its chosen criteria for its quantitative methodological approach are population and daytime working population (DWP) growth. The study's investigative constraints are of Ireland's cities and its settlements, down to 5,000 in population. Its literature's theoretical and empirical bases are urban economic, introductions to NEG and to demography. Official government data are drawn extensively from their Central Statistics Office (CSO) sources, include relevant data from the 2011 census together with that of 2002, being the start-year for the rejected NSS. Regard is also had to the basis for new *Regional Population Projections (2016-2031)*, *vide* CSO (2013) (as yet unpublished).

Although, the 2002-2020 NSS has been largely influenced by the EU's spatial principle of balanced regional development (BRD); it is observed that key policy and political stakeholders had rejected its concepts of Gateways and Hubs as being *...urban-centric and detrimental to the development of rural areas*, Meredith (2013). Diametrically in

contrast to the concept of BRD of the abandoned NSS and likewise to the expressed ‘local’ mindset *...we are still a GAA country, vide Appendix 4*, this subject thesis research is based on and follows the principle of urban agglomeration (UA), being the World Bank’s advocacy of ‘Lumpiness’, influenced by the world’s population growth and importantly, of its increasing urban share thereof, Zoellick (2008). The manifestation of such strategy is reflected in the Core-Periphery literature’s application to the New Economic Geography (NEG).

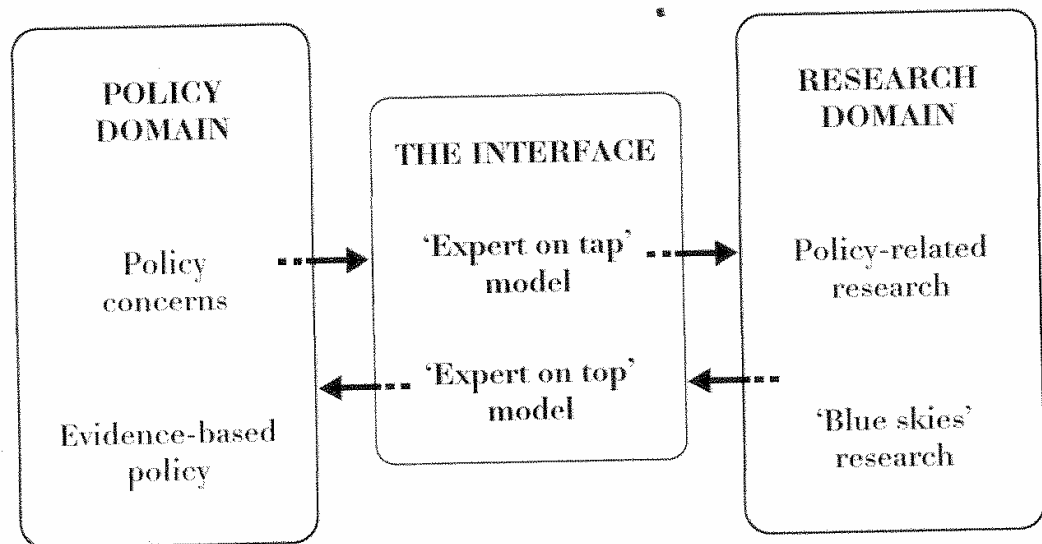
Whereas references to UA generally, are ascribed to ‘the First World’, the literature on lumpiness is pointedly referring to the massive growth over the last twenty-five years or so; that has seen ‘Third World’ cities eclipse in population all but the largest ‘First World’ cities, Zoellick (*op. cit.*). This important distinction relates to the fact that the development of massive shanty towns, therein, reflecting the premature migration from rural to urban city locations *before* cities are resourced to accept such volumes of migration, Zoellick (2008).

It can be argued, technically, that although Ireland is a First World economy, its recent economic history would suggest otherwise *...hit by the several adverse shocks at the start of the new century*, Leddin, *et al.* (2013). This literature cites six specific events: the downturn in the U.S. and European economies, the fall in world equity markets, the local Foot and Mouth crisis, the 9/11 Terrorist Attack, the bursting of the Dot. Com. bubble and the higher oil and commodity prices. An earlier pre-NSS research entitled ‘*The Irish Urban System and its Dynamics*’ (2000:9) had devoted its chapter three to a Central Place analysis of the State’s settlements. It concluded that Irish cities and towns were underdeveloped and lacked ‘centrality’, akin to underdeveloped countries.

The resultant unsustainable and rising Debt-to-GNP ratio, from 44.2% in 2008 to 120.3% as forecast for 2013, combined with the Troika-imposed loss of economic sovereignty in September 2008 were cathartic, Leddin, *op. cit.* (2013). With the eviscerated capital resource-base for vital infrastructure together with its absence of any ESDP-sized settlements of a 200,000 minimum population except for Dublin’s 1,110,628 in the 2011 census, this presents *...A major challenge in the coming years to refashion hegemonic thought in order to act smarter in the development of strategic spatial and settlement policy*, Daly *et al.* (2013).

Accordingly, it is apposite to concentrate on ‘First World’ city-related circumstances, relevant to the ‘recovering’ a capital-constrained twenty-first century Ireland, Hughes (2010). Such mandate for its economic recovery is inextricably bound into ...*building a fundamental new societal consensus for the implementation of NSS policy and territorially differentiated planning strategies*, Daly *et al.* (2013). In summary, it is hoped that subject dissertation’s research can have respect for *The Policy Domain*, can visualise *The Interface* and can Contribute to *The Research Domain*, in informing a new NSS, after Davoudi (2006), as cited in Walsh and Kitchin (2012).

Figure 3.1: Simplistic Instrumental Perspectives of the Research/Policy Interface, Davoudi (2006:15).



3.4 Literature on Urban and Centripetal Agglomeration

This second section of this Literature Review is concerned with Urban and Centripetal Agglomeration: what makes towns and cities grow and densify together with advances in the Core-Periphery Theory as applied to the New Economic Geography. One underlying momentum for such growth is the ‘clustering effect’ of people and firms, impelling market forces. Once recognised, such momentum quickly leads to further waves of growth and land-use intensification. Subject to End Use Demand (demographics) and to Location (accessibility), this creates competition for individual sites, which in turn reflects parameters for developers to work to including height, plot

ratio and site coverage parameters. Increasingly, large sections of the east and south of the State are experiencing demographic growth pressures including evidence of internal in-migration, *vide* Findings of the Government Expert Group (2013).

3.4.1 Centripetal Agglomeration versus Balanced Regional Development

The World Development Bank's advocacy of 'Lumpiness', *vide* Zoellick (2008), was inspired by Krugman's Nobel Prize for New Economic Geography. This articulates a spatial policy alternative to the European Polycentric Model as espoused in the European Spatial Development Prospective's (ESDP) promotion of Balanced Regional Development (BRD). Zoellick, as with Robert Nicuod, had widened the important geographic and economic co-linkage, through a tri-focus of Distance, Density and Demography. Further *Pillars of Agglomeration*, as the foundation of city and town drivers, are articulated, *vide* Poleze (2009).

In contrast, the ESDP-championed spatial strategy of BRD was applied to Ireland despite the virtual absence of cities, as the grounding concept for the 2002-2020 NDP. The eight principles of BRD are set out in Appendix 5. This student had the opportunity to query Peter Mehlbye of the ESPON office at the Questions and Answer session at the June 2012 RSA Conference - *Ten Years on: Revisiting the NSS*, held in the ESRI. Mehlbye clarified that BRD does not absolve Irish spatial policy from its responsibility to develop its cities and especially if this were to result in their growth continuing to be stultified. Accordingly, the new NSS should take this EU advice on board.

The essential point in the 'lumpiness' approach or to give it its formal description, Centripetal Agglomeration, is grounded on Core-Periphery theory, as developed in that seminal paper, *vide* Robert-Nicuod (2006):

Therein, it is postulated that urban agglomeration is driven by input-output linkages among firms, of trade in goods and in capital mobility. Where such vertical linkages are strong and transport costs are low, agglomeration enhances product variety which can *Pareto*-dominate dispersion because it lowers producer prices. From such competitiveness, policy-makers and spatial planners have the financial resources to be able to implement associated *Kaldor*-improvements which, in turn, are able to generate consumer surpluses in *both* regions, *vide*. Robert-Nicuod's *Spatial Economic Analysis*, Vol. 1 No. 1 of June 2006, PP 101-126, entitled *Agglomeration and Trade*.

3.4.2 *Advances in the Core-Periphery Theory to the New Economic Geography*

The Core-Periphery (CP) theory was first espoused in the 1950s by Williamson. The commencement point for modern-day core metropolitan-city growth theory is Robert-Nicoud's counterintuitive, normative explanation for his New Trade - New Economic Geography modelling, which gives a working insight as described, thus:

... that, as the firms trading with each other, are clustered in a single location, intermediate inputs are cheapest because firms do not have to pay for transportation or trade costs when they purchase those inputs. This cost-saving aspect of agglomeration, which benefits all firms, is passed on to mill prices at equilibrium. When trade costs are low and vertical linkages are sufficiently strong, these lower mill prices translate into a lower consumer price index (which includes trade costs) for the residents at the periphery. The market also delivers a socially optimal outcome in the opposite case, that is where vertical linkages are modest and where trade costs are near prohibitive, *ibid*, P. 105.

In a contemporaneous paper, Ottaviano and Robert-Nicoud (2006), explain how the winners can compensate losers and both are still better off under agglomeration because product variety is larger under agglomeration than under dispersion. Furthermore, related papers confirm the ensuing demographic trend, wherein the 'core' population will eventually grow to exceed that of the 'periphery', *vide Twice the Size* (2008: 52-55) and Hughes (2010: 78-79). Accordingly, the NEG-researched results conclusively support centres of larger population and of multi-clustered firms. Thus, the economic benefits of scale size, economies of scale and centrality are persuasive.

3.4.3 *The Case in Support of Urban Agglomeration*

Poleze (2009:33 *et seq.*) describes his 'Seven Pillars of Agglomeration' as The Scale Economics of Production and Transportation which comprise the first two pillars; Falling Transport Costs; The Need for Proximity; The Advantage of Diversity; The Quest for the Centre and finally what that literature terms as the 'Buzz and Bright Lights'. It propounds that cities are essential for economic progress and prosperity. Conversely, that their absence from a region is a major impediment to both the region's and to national growth. Independent of that literature, NESG (1997:218) had earlier concluded that Ireland's poorer regions and counties were the most handicapped in the absence of significant and sizeable urbanisation.

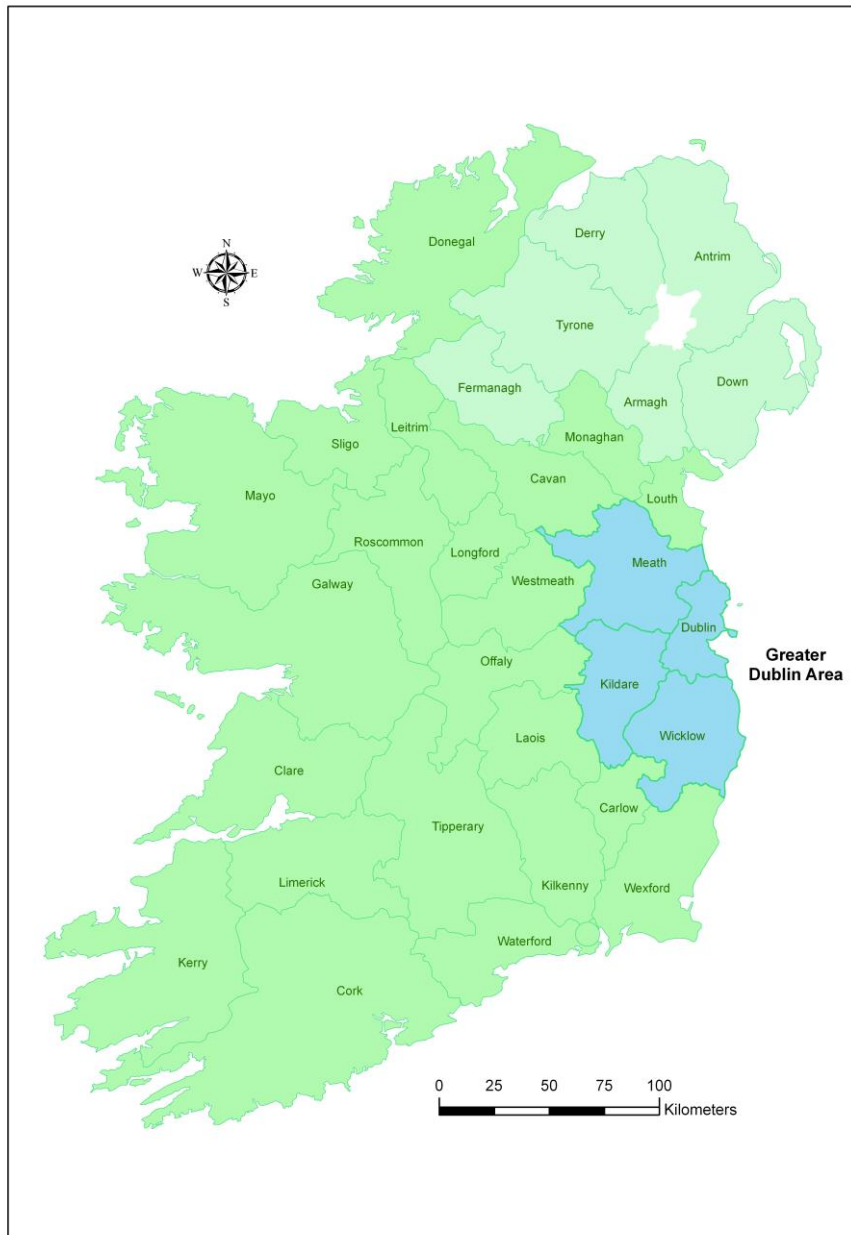
Understanding the dynamics of population growth is enhanced with an appreciation of the growth contrasts between its two components, natural growth and, especially for Ireland, the dynamics of net migration. The census of 1996 marked the commencement of net inward non-indigenous migration, *vide* Hughes (2010). This component of population growth was the singular factor that boosted the short-term growth of many poorer counties. As such, the in-migration momentum ‘appeared’ to have provided a substitute for their absence of having major centres of population.

In the wider geographical context the literature on the selection of NSS growth centres for any new plan also needs to have regard to the concept of technological spillover and distance. In Edwards, (2007), that author cites Anselin, et al. (1997) whose research of 43 States and 125 metropolitan statistical areas (MSA) within the USA reveals *...that a university research centre increases innovation in private firms within fifty miles, but the private innovation does not influence university research and development activities, (op. cit.)* Edwards (*ibid*) likewise notes that Rosenthal and Strange (2003) found *...that the effects of localisation economics in the first mile, is from 10 to 1,000 times larger than the effects two to five miles away. Beyond five miles, the decrease in localization economics (as measured by industrial employment) is less evident, (op.cit.).*

3.4.4 Ireland’s Contrasting Core and Periphery Areas

Crucial to this Literature Review, the central objective of the methodology of subject dissertation, is to compare and measure the performance of both NSS-nominated and non-NSS, 5,000-plus settlements, for their demographic and economic outcomes since the census of 2002 which coincides with the start date of the NSS. Settlement growth is perhaps best viewed from the perspective of the State’s two principal and contrasting regions, ‘Core’ and ‘Periphery’. The following Figure 3.2 of named Irish Counties shows the ‘Core’ region comprising the GDA plus County Louth, together with the ‘Periphery’ as the rest of the State, thus:

Figure 3.2: Core and Periphery Area



Description

The Greater Dublin Area (in blue) and to its north, including County Louth as part of this 'Core' together with (in green) the Rest of the State (*less* Louth) as the 'Periphery' area.

3.5 The Literature on Population Growth, Settlement Formation and Settlement Proliferation

This third section of this Literature Review chapter focuses on the literature on population growth and settlement formation and proliferation, specific to Ireland. It commences with an evaluation of Ireland's long-term population trend, followed by a critique on The NSS Approach to its Selection of Identified Towns, a short reference to Regional Wealth Variations and the Elusive Quest for 'Spatial Balance' and the chapter ending with a short conclusion to the Literature Review.

3.5.1 The Literature on Ireland's Long-term Population Trends

This steady and inexorable demographic '*drift towards the East*', in the State's dynamic population centre-of-gravity is confirmed from the analysis of subject dissertation. The natural growth component was spread evenly with the Core area's share of 49.48% compared with the Periphery's 50.52%. In contrast, the Periphery's impressive growth-share of recent years has been due to net in-migration at 64% which is nearly twice that of the Core area's 36.00%. Already, that direction of migration has sharply reversed, but particularly so in the Periphery area, *vide* Appendices 8, 9, 12 and 13.

That CSO-discerned reversal, from 'Recent' to the 'Traditional' growth projection, is a long-term characteristic and reflects the sharp reversal in Ireland's demographic direction, to out-migration that took place after 2008, specifically in three of the eighteen age-cohorts, *vide* Appendix 13. The 2013 Population and Migration Estimates (PME) have also confirmed this eastward thrust. The second population dynamic is the likely pace of its future growth. In this, the awaited Regional Population Projections (2016-2031) update will confirm the return to the 'traditional' growth pattern and in so doing, will reinforce the spatial planning imperative to consolidate growth centres where the opportunities to enhance Ireland's economic growth can be prioritised. Likewise, it is expected to confirm acceleration in the growth convergence as between these two regions.

The Regional Projections publication will be followed by the DoECLG Scoping stage for the new NSS review in 2014 and its likely publication towards the end of 2014. Unlike the now-rejected NSS, the new strategy should be expected to anticipate the need to nominate some 'Core' area growth centres, apart from just the two settlements

identified in that plan, *vis.* Dublin and Dundalk. In the first instance, the CSO's publication of its 2013 *Population and Migration Estimates* in September of 2013, has given the first definitive indication of post-2011 population performances and their individual regional-level growth differentiations. These data are invaluable when it comes to the projection of future populations for the regions, which in turn will inform the optimal selection of growth settlements and especially so within the 'Core' area.

For a number of years this student sat on the Government Expert Group on Population, Labour Force and Migration, under the aegis of the CSO. Having recently published the National Projections (2016-2041), the Group is now advising the CSOs on the finalisation of their Regional Projections (2016-2031). The CSO intends to quickly complete its deliberations followed by publication of the 2016-2031 Regional Population Projections **on the Friday following hand up of subject Dissertation**, which will form a critical input into the preparation of the new NSS, *vide* this writer's conversations with McCormack, B. (2013). However, the DoECLG may again decide to make its own NSS projections, independent to those of the CSO, as was done for the 2002-20 NSS.

The Expert Group's consensus favours the resumption of the 'Traditional' as opposed to the 'Recent' pattern of growth, reinforced by the post-2011 *Population and Migration Estimates*. Especially having regard to external migration and natural growth trends, the available data point to the 'core' region's population as likely to grow at a much higher differential rate than that of the 'periphery' over this timeframe, *per confidential Minutes of Expert Group* (2013).

3.5.2 *The NSS Literature on the Selection of Identified Towns*

The last Appendix in the NSS Plan (2002-2020), *Appendix V*, PP 149-151, sets out its *Rationale for Identified Towns*. This comprises short summaries for each of the non-city gateways and hubs. Apart from its brevity, this literature gives no comparative argumentation justifying the basis of the NSS selection over *other* potential settlements and in so doing, gives further 'weight' to the strategic conversations' view of it being a 'political decision' of pre-emption. However, the NSS rationale is revealing in its admitting in its pursuit of BDR, that for the selection of the Midland Gateway... *no*

individual centre would be likely to develop to the required scale and critical mass on its own in population or infrastructure terms.

It can be counter-argued that the NSS rationale for that try-Gateway is patently ‘scattergun’-based. Instead of concentrating limited economic resources to say, developing Athlone, its attempts to capture some unspecified and unidentified ‘cluster synergies’ in the choice of its three disparate locations. As confirmed in inter-censal 2006-2011, Portlaoise’s population growth alone, matched the aggregate increase of the these three ATM settlements, reflecting their flawed polycentric perspective, *vide Meredith (2013).*

Even more significant, is that none of the three settlements are *interlinked* by motorways: their disparate locations are served by separate radial motorways to Galway and Sligo as in the cases of Athlone and Mullingar, with no motorway connection to Tullamore. Accordingly, both in terms of the land-use/population-growth criterion and the corridor/transportation criterion, their rationale for linkages is tenuous, with little evidence of the growth that was intended, Morgenroth (2013).

Such findings dispel the popular notion that the introduction of internet technology reduces or eliminates most ‘distance’ in industrial location decision-making and that combined with the peace and quiet of rustic life, thereby ‘could provide’ an alluring factor to set up businesses almost anywhere. Edwards, (*op. cit.*) also notes that ... *the law of urbanization economics is based on the “Law of Large Numbers” ...and ...urbanization decreases labour costs because special services are more easily accessible than in rural areas.*

Cities also provide a greater number of public services and comprehensive infrastructural investment that calls for use intensification. Financial consideration also favour cities because ...*the second-best use of a unique piece of real estate in a large city is more valuable than in a small city and because the range of possible uses for atypical building specifications is higher. Banks are more willing to lend in urban areas for the same reasons and because there are more ways to reprocess failed projects, assets in larger cities have a greater salvage value, (ibid).*

This advocacy by Edwards (2007) is very much evident in the priority order of business being conducted at present by Ireland's National Asset Management Agency (NAMA), in its recovery of failed urban projects on behalf of the taxpayer in contrast with the long-term dilemmas faced in resolving rural 'Ghost Estates' or the downzoning and restoration of former or partially-completed building sites to agricultural usage, with the attendant, significant financial write-offs. Significantly, at end-September 2013, NAMA advised the government that anticipated further losses in selling off rural lands, will result in a 'break-even' outcome rather than the earlier-reported expectation of a one-billion Euro profit.

3.5.3 Regional Wealth Variations and the Elusive Quest for 'Balance'

This literature review has highlighted the State's emerging imbalances: in population, density; likewise, the land-potential capacity, *vide* Skehan. One other consideration relates to DWP variations, to per capita differentials and to their regional variations. The literature on Urban Hierarchies, *vide* Knowles and Wareing (1994: 223-224), points to no differentiation as between high and low-order functionality, and this observation is taken on board in this thesis methodology. Nonetheless, it needs to be recognised that significant regional per-capita incomes, gross value added or other criteria differences exist and increasingly, will continue to so do and therefore need to be planned for in the dynamics of a new NSS.

Although there is a long-term trend toward an levelling-out of regional per-capita incomes over time, currently, Dublin's is of the order of 120, the Border Region is nearer to 80, the State being at the 100 Index mark. It can be argued however, that in-mitigation of such ranges of regional wealth or income criterion, these are countered by the burdens of higher property values, rents and other costs, as are experienced in the capital.

Accordingly, no specific allowance is being made in this thesis to reflect such income variations. Differences will continue to accentuate and this should be spatially anticipated and planned for so that they may over time be further accentuated. In this way the State can take advantage of 'lumpiness' and in doing so, be able to make and take policy strategies that can build upon such differences. In turn this may enable Ireland's economic and social predicaments to be more effectively addressed through

policies for urban agglomeration rather than through the elusive quest for ‘balance’, *vide* Zoellick (2008).

3.5.4 Mandates for Spatial Planning

Today, there is an increasing unison of opinion from international experience, in which Morgenroth (2013), notes...*that strategic spatial planning has an important role to play in promoting and combining economic and social development with sustainability and consideration for the environment.* Meredith and van Egeraat (2013) state ...*how it has become increasingly central to social and economic development in many European countries. (ibid).*

In Ireland, this link was recognised in studies undertaken by the National Economic and Social Council, (1997, 2005, 2006 and 2008) and likewise, in advocacy by successive ESRI Medium-term Reviews for closer co-ordination between National Development Planning and Spatial Planning. The objective of delivering regionally balanced social and economic development as a guiding ‘framework’ document as distinct from having a legally enforceable mandate, proved to be a major handicap for the first decade of the NSS, *vide* Murray, (2012), Lecture Notes SSPL 9003. The ruling of the McEvoy Case - *shall have regard to* – both clarified and resulted in a weakening of the planning hierarchy, from NSS to RPG to County Development Plans.

Furthermore, with 23 chosen G&H settlements being much greater in the number of nominated growth centres compared with the Buchanan Plan – the NSS *modus operandi* was considered to be ‘distributive’ and not ‘competitive’ in its economic outcome, *vide* O’Leary (2003). A further weakness was that its central objective was thwarted, in terms of it being a ‘framework document’ without having a legally enforceable mandate, at least until the passing of the 2010 Planning Act with its ‘core spatial strategy’ objective, Meredith (2013), Murray (*op. cit.* 2012). Even then, the malign effects of the capital spending on sites for decentralised office had dissipated much of the increasingly scarce capital resources that had been proposed for the NSS *Gateway Initiative*. This €300 million Gateway Fund was ‘abandoned’ with the State’s economic collapse in 2008 and the onset of the ‘Troika’ after 2010, Meredith (2013).

It is generally accepted that up to its formal ‘abandonment’ with the Ministerial announcement of August 2013, the NSS has been ineffective as a strategy policy as evidenced by the failure of many of its growth centre to thrive, *vide* Appendix 7. With the decision to replace the 2002-2020 NSS and the question of persisting with the current BRD strategy, this raises the prospect of planning strategists being able to choose from a range of strategic approaches to future spatial planning. In this Literature Review it is therefore appropriate to consider some such approaches, the first one of which this student contributed in the production of its demographic content.

The detailed analysis of Appendix 8, contrasting the population growth differences as between the ‘Core’ and ‘Periphery’ areas of State, provides the finding and serves as a plausible basis for both the forthcoming regional population projections and for a new direction in the formulation of the new NSS: The census affirmation in 2011 of the conclusion made in *Twice the Size* (2008), as to the east-west demographic population ‘drift’, as is further confirmed in that Census outcome, *vide* CSO (2011). For the most recent two year period since that census, it is instructive to note, this continuation of the superior aggregate growth performance for eastern regions of State, as confirmed in the CSO-published *Population and Migration Estimates* (2013) and in its QNHS releases.

3.6 Conclusion to Literature Review (LR)

This tri-sectioned LR chapter has considered the literature basis for informing the dissertation’s methodology. It has demonstrated robust evidence supporting the need for a spatial policy direction that can assess a demographic *cum* economic-based ‘growth centre’ approach to Ireland’s future NSS content. Due to space limitations, three specific issues are addressed in detail in the Appendices. Appendix 10 addresses Factors Essential for the Development of Modern, Moderate-sized Cities; Appendix 11 is concerned with the Agglomeration and the Dynamics of Population Growth; Appendix 12 details the Growth Dynamics in the ‘Core’ and ‘Periphery’ Areas of State.

Prior to addressing the formulation of the dissertation’s methodology, the next chapter, on Geography, focuses on underlying geographic and spatial issues that are considered to be of relevance to enhancing regional differentiation, fostered by the choice and selection of growth settlements that might be anticipated to be nominated, in a revised spatial strategy policy.

CHAPTER 4: GEOGRAPHIC AND SPATIAL CONSIDERATIONS

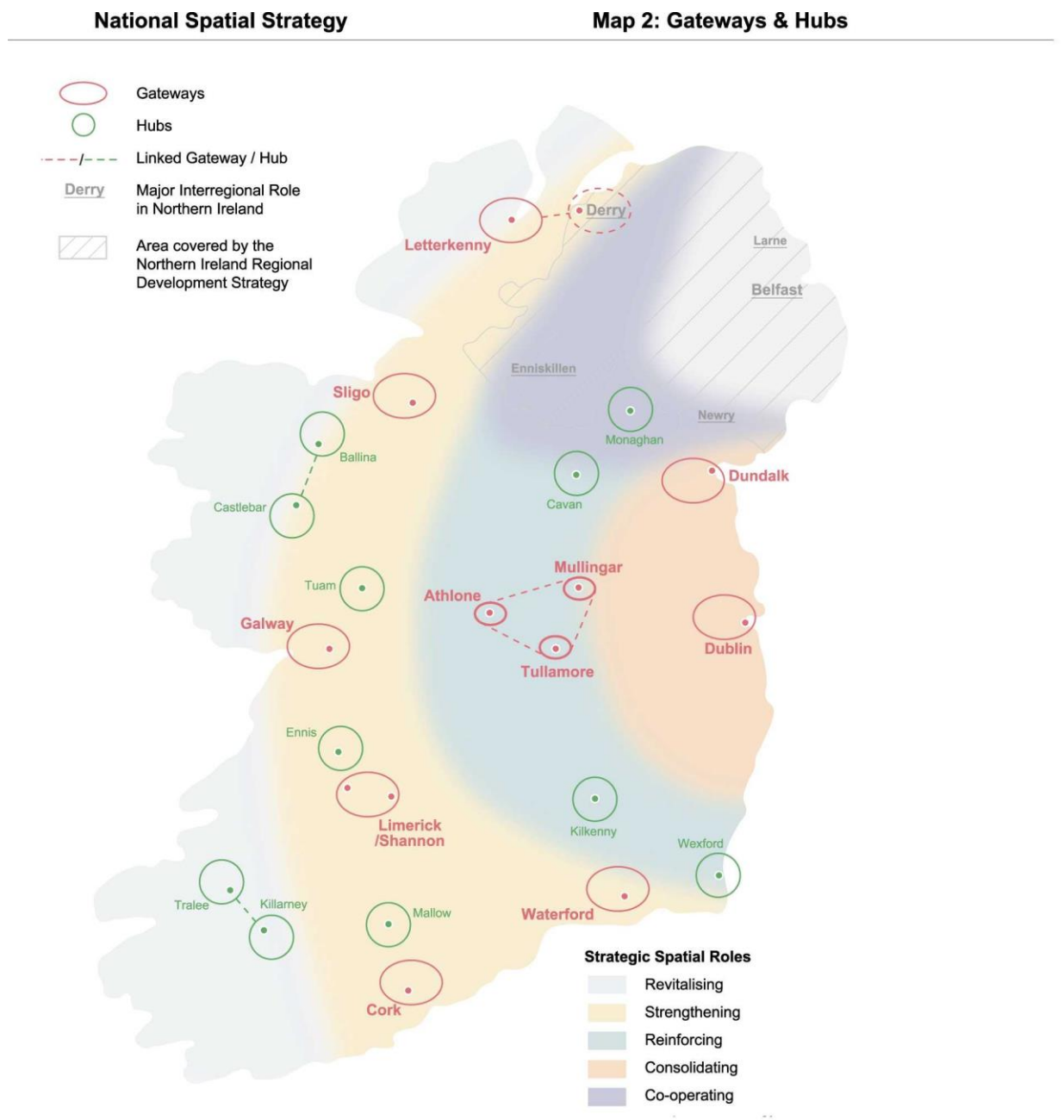
4.1 Foreword

The focus of this chapter is on the fast-changing and evolving human geography of Ireland. At the regional level progress is mixed, determined by the pace of urbanisation. Particularly since the economic collapse of 2007 onward, both EU and State capital resourcing have become more concentrated, spatially. Increasingly, that collapse has resulted in a ‘postponed’ recovery that is still in its early stages and is primarily concentrated on Dublin and with limited focus on the provincial cities.

4.2 Introduction

In the selection of settlements earmarked for future growth, the issue of spatial geography is pivotal to location preference; particularly as to its application, interpretation and formulation of spatial strategy policy. In this thesis, there is a working presumption that the replacement NSS will retain some ‘growth centre’ concept, albeit perhaps being ‘promoted’ under some new title. For ease of reference and a refreshment of the existing NSS ‘Map 2’, at this point it is apposite to show in Figure 4.1, the map of the twenty-three G&H settlements, thus:

Figure 4.1: National Spatial Strategy, Map 2



However, there is also the distinct possibility that the NSS may become a much scaled-down policy document, presented as an overview to a *Regional Growth Plan*, thereby being consistent with the press-heading to the Ministerial Announcement of 30th June 2013. This point was raised at several of the Strategic Conversations.

Such impression is reinforced by the content of *Putting People First*, (2012) and in particular by the intention, to divide the State into three ‘super regions’. Accordingly,

the geographic consideration as to the location decision for growth settlements pays due regards to the shape of these regions and to the geographic reasons ‘justifying’ the locations of some sub-optimal sized towns such as Cavan or Castlebar.

This presumption is recognised as being the core of an acute political pressure-point for any Irish government, representing as it does the perceived strategic unavoidability of having to ‘politically-nominate’ geographic growth-settlement locations, as was referred-to in the strategic conversations. However, there is a working presumption that, paradoxically, if only a small number of growth-settlements are selected, such as in focusing primarily on Ireland’s cities, then the political ‘sting’ of having to make growth centre choices can be greatly reduced. This would ‘fit’ parallel to the difficult economic environment that is likely to prevail out to 2020 at least, together with the reality of constrained capital budget financing in the formats of multi-annual programme to that ‘target’ date. Assuming this to be so, the primary focus on city-based regional growth remains a plausible, compelling policy approach for modern spatial strategy.

4.3 The Demographic and Economic Dynamism of Cities

At the international level and the characterisation of cities: they are defined as ...*having both density of firms and of population*, Bogart, (1998). What makes them grow is the process of agglomeration: of the firm, of the industry and above all, the dynamics of urban agglomeration. It was Marshall (1890) who first, succinctly described the impetus for growth as being the process of innovation brought about by human and firm behaviour, communications and knowledge; consciously and sometimes unconsciously: as it were ...*floating in the air*. Dynamic growth likewise, is a function of location and hence, of geographic proximity, *vide* Poleze (2003)

4.4 Geographic Imperative for Economic Success

In the increasingly cerebral world of added value, the growth of the services sector of the economy – particularly that of producer services - has created the impetus for both academic and industrial research application, to examine why success leads to further success. In the *Handbook of Evolutionary Economy*, Boschma and Frenken (2010:120-135) note how the role of *networks in innovation processes* have become a key research area in the field of innovation studies since the start of the 1990s.

4.5 The Geography of Networking

The geography of networking is firmly grounded in a dynamic ‘proximity framework’ as likewise is networking structures with proximity dynamics. Here the issue of the ‘proximity concept’ is tied into the dissemination of ideas and information exchange. Even in a digitising world, most experts of innovation studies conclude that there is no substitute for face-to-face contact, because of the importance of building individual trust. That literature proceeds to identify *five* forms of proximity: cognitive, organisational, social, institutional and geographical, *vide* Boschma and Frenken, (*Op cit.*), p. 121.

Having also considered network dynamics in the context of innovation and knowledge production, those authors conclude that the proximity concept is central to the theoretical and analytical framework of evolutionary economic geography. Accordingly, this student avers that current and future policy strategy to spatial planning must be premised on spatial proximity. As Skehan *et al.* (2008) have argued, in the context of knowledge, human resource count and scale, the population of Ireland is equivalent to just one metropolitan city region. Specifically, the Intel-type employer wants their workforce to be located a maximum 45 minute commute distance from the plant.

In a cerebral world of knowledge and innovation, as envisioned by Jacobs (1969) and Florida (2000), attractive urbanisation is vital to the creation of economic value. The question is: how can such value be ‘captured’ in the policy formulation of Ireland’s future strategy for spatial planning? First, it is instructive to review the dated interpretation of the underlying geographical categorisation of the now-rejected NSS plan.

4.6 The ‘Geography’ of Ireland’s NSS 2002-2020

The NSS (2002-2020) document, in a series of subjective, spatial judgments, identifies geo-physical distinctions that were deployed in categorising the island, based on its geographic endowment, into north-south ‘banana’-shaped concentric zones. Such ‘segmental areas’ denote envisaged strategic spatial roles, radiating westwards and outwards from the Greater Dublin Area. Four such zones are shown within the State and two further ones are ascribed to Northern Ireland, as shown above in Figure 4.1, *vide* Map 1, P. 48 (*ibid*). Over these are laid the Gateway and Hub settlements of the Plan.

The geography of Northern Ireland is divided, based on the Upper and Lower Bann, dominated to the east by the sphere-of-influence and the larger settlements of the Greater Belfast Area with its intensive concentration of population. To the west of the Bann is found a much more sparsely populated density, in an area whose role is described strategically as ‘Co-operating’. Map 1 indicates clearly that this area, which appears to include much of Cavan and Monaghan, is depicted, as a northern continuation of the ‘Reinforcing’ parallel banana-shaped area of the Republic.

In the Republic, the State’s sole metropolitan city-region is based on Dublin as the core region, is where the GDA together with County Louth correspond to the envisaged strategic spatial functional role of this semi-oval segment, described in the NSS as ‘Consolidating’, or Band 1 area. Next to this lies the ‘Reinforcing’ role of the Eastern Border and Outer Leinster counties, as referred to in the preceding paragraph.

The third zone in the Republic is described as ‘Strengthening’ and, interestingly, this comprises an area which includes the State’s four provincial cities of Cork, Limerick, Galway and Waterford. ‘Revitalising’ encapsulates the spatial role for the western-most, outer concentric Band 4.

Figure 3.1 of the NSS depicts five distinctive Rural Area Types, ranging from ‘Strong’ as in Leinster, ‘Changing’ mainly Leinster and Munster, ‘Weak’ as in West Munster, Connacht and Border areas, ‘Remote’ for the western extremes and finally the ‘Culturally Distinctive’ description for the Gaeltacht, Irish Speaking areas, DoECLG (2002).

4.7 Spatial-Geographical Categorisations of the 2002-2020 NSS

Given these consistent geo-physical and social evaluations, essential for spatial planning strategy purposes, the task for policy-makers is one of how to spatially interpret such zones and their respective settlements for their future growth potential. The ‘geography’ agenda for a new NSS will be driven by the *Putting People First* Map of the three proposed new ‘super regions’, *vide* Figure 9.1. Specifically, how to achieve the optimum selection of such settlements thereby enhance their respective regions and not least, of the State itself. Before addressing this task it is instructive to consider how the ‘geography of the 2002-2020 NSS is interpreted in that Plan.

The NSS document describes in Boxes 3.2-3.6, PP.55-56 (*ibid*); these area (coloured) segmentations, *vide* Figure 4.1 above, and their ‘Strategic National Roles’, as are summarised, outward from Dublin, as follows:

- **4.7.1 Consolidating:** Land Use and Transportation integration, Dublin Airport and Port, supporting innovation, accessibility, the environment and importantly:... *clarifying the role of other urban areas within and at or near the edges of the GDA.*
- **4.7.2 Reinforcing:** Addressing the challenge of achieving critical mass for the Midlands tri-linked-gateway, collaboration and joint promotion of towns and how to take advantage of its central location.
- **4.7.3 Strengthening:** Focusing on the identified roles for its nominated Gateways and Hubs. Strategically, this third area segment contains the major settlements, including the State’s four provincial cities.
- **4.7.4 Revitalising:** Dependent on Hub and medium-sized town potential, the economic challenge for this peripheral area is to improve transportation, accessibility with specific focus on marine and natural resources.
- **4.7.5 Co-operating:** The imperative of the all-island economy, with specific linkages between identified towns, principally west of the Bann. On Map 1 this segment is interpreted as being an extension of the ‘Reinforcing’ segment, which together, form a leaning ‘Y’-shaped curve with the top ends located at Coleraine, (Derry) and Newcastle (Down), respectively

Significantly, these summaries of key considerations for spatial policy, whilst emphasising and geographically identifying the strategic spatial roles of various parts of the country and talk about (1) underlining the spatial aims that areas share in regional policy terms and (2) illustrating...nevertheless, and fundamentally, they are silent on the major all-island economic potential of the Dublin-Belfast corridor. Indeed the *Twice the Size* footnote 6, at P. 131, states:

It is perhaps interesting to note that the NSS did not look at the Dublin-Belfast corridor in the way that this study seems to conclude it as a compelling driving force in spatial development. The reason for this might be quite simply that Northern Ireland, while it was considered in the preparation of the NSS, did not for part of the NSS itself. Belfast therefore escaped gateway city designation.

Furthermore, given the ‘Core-Area’s’ population and economic output contribution to the State, it is surprising that the NSS nominates just Dundalk as the only Eastern settlement apart from the capital, to this ‘Consolidating’ segment. This important omission is addressed in the alternative selection of growth centres as proposed, *vide* Chapter 6 in subject dissertation.

4.8 Spatial Alternatives

Skehan’s (2008) alternative evaluation of the island’s potential, in *Twice the Size*, reflects its sharp north-east to south-west divide ‘endowment line’, *vide* Fig 10 (a), (b), in that report, marking its two distinct, geographical and spatial classification based on their respective geo-physical and disposable income-per-person characteristics, together with their diversive yet different agricultural and environmental potential: *Source*: Module Lecture Notes SSPL 9001, (2011-2012). This NSS approach was criticised in the formulation of that Study and to its findings.

Despite the strident, political and ‘provincial’ resistance to this DIT study, commenting on *Values*, which Skehan believes, are in response to and reflect the eastwards ‘drift’ and urbanisation of Ireland’s population. Inevitably, mirroring the island’s population directional shift, its policies and politics will reflect such movement after the necessary ‘political time-lag’, *ibid* P. 59.

4.9 Urbanisation and the Geography of Growth

At the turn of the Millennium, partly based on extensive interviews with this student, Frank MacDonald (2000:32 *et sec.*) had stated that Ireland faced an important decision within that decade, that would determine its future and long-term urban morphology. Unless the growth and size of Dublin is counterbalanced, by mid-century it would have become the country’s city state with more than half of the State’s population.

This central theme of that literature had been discussed by that author with this student and subsequently led to the title and content of this student’s PhD (2010). Implicit in the subject matter is the assumption that urbanisation and city growth are synonymous. It is an area that commands the attention of academics and related professions of the built environment, not least geographers and of late, economists. Thus, a specific criticism relating to the ‘geography’ of the 2002-2020 NSS relates to the fact that it paid so little

attention to the evaluation of 'settlements'. Neither have urban geography and city growth been accorded sufficient consideration in its formulation.

In Boschma et al. (2010:146), Stam argues that urban areas and population density have important advantages for entrepreneurship. This is particularly the case for big cities. Indeed, the potential for the further densification of Dublin's inner city has been the subject of two urban design and renewal projects undertaken during this student's Spatial Planning Masters for DT/123 (2012 and 2013), Modules SSPL9012 - Urban Design and SSPL9004 - Local Area Plan, each of which were presented to Dublin City Council. The classic Urban Economics 'Incubation Hypothesis' is that ... *persons aspiring to go into production on a small scale have found themselves less obviously barred by a high cost structure at the centre of the urban area than at the periphery*, (Chinitz, 1961; Dumais et al.,1997; Hoover and Vernon, 1959).

Most importantly is the fact that cities provide contexts for serendipitous meetings which are more likely to occur in areas of higher than lower density, Marshall (1920), Jacobs (1969). Such meetings can result in collaborations which result in the formation of new firms. Human capital is enhanced by the availability of universities and other third and fourth level institutions, (*ibid*). Finally, the abundance of employment opportunities in larger urban centres has been emphasised by Skehan (2007) in his studies of major FDI firm location preferences, *vide* Appendix 6.

In linking geography with demographics, the CSO Expert Group, in discussing regional growth population differentiations, view the benefits of urban agglomeration as perhaps the most persuasive reason for spatial planning strategic policy implementation, to adopt as 'probable' the State's return to its 'Traditional' demographic growth path with a resultant higher growth for Dublin in particular and for the East of the State area in general.

It should also be pointed out that the morphologies of Physical Geography, present their own challenges. Of particular relevance to the State's 'core' area and a physical challenge to its proposed Outer Orbital Route linking Naas with Wicklow Town, is the Wicklow upland 'massif' surface area including its foothills; the largest of its kind on the island of Ireland, extending to nearly one-thousand square kilometres. It presents

challenges for all-weather road access between east and west Wicklow. More significantly, as this largely uninhabited upland represents approximately one-sixth of the surface area of the ‘core’ area of the State, it thereby significantly dilutes the nominal population density, which otherwise gives the ‘core’ area an average of 300 persons per sq.km.

4.10 Economic Geography and Spatial Agglomeration

It has already been pointed out that the NSS of 2002-2011 had not contained a sufficient economic focus in the areas of urban geography and settlement growth, particularly in the spatial policy approach to Ireland’s cities, as is indirectly referred to in *Putting People First* (2013). In a recent International, EU and UK-level of research advancement, the *Regional Studies Association* devoted the entirety of its June 2012 issue of *Spatial Economic Analysis*, Volume 7, Number 2, to a literature investigation of Geography and Spatial Agglomeration. In its Editorial, it summarises some of the research measurement tools that were deployed in a number of peer-reviewed papers as well as summarising some significant findings.

These tools include: using the modified versions of Krugman’s core-periphery (CP) model, Markov’s chain analysis methodology, cross-section data regression and measures of scale, specialisation, knowledge spillovers and labour data; the latter deploying both exogenous and endogenous variables across territorial space.

The findings from these papers include:

- In a wider international context for developing countries, the Krugman CP model finds that for ‘peripheral’ cities, a larger critical mass of mobile workers is needed before a formal sector becomes profitable. Clustering and sectoral specialisation are key attributes.
- For Europe, the net effect of agglomeration economics is more than seven times larger than the net effect of geography, in a per-capita GDP evaluation of 1,171 NUTS3 regions throughout Europe, *i.e.* equivalent to Ireland’s eight Planning Regions.

- In offsetting an agglomeration focus (AF), as is apparent in the current decade's regional policy in the UK, manufacturing industry's moving to the 'periphery' regions is not offsetting services' concentration in the 'core' regions.
- As is the case for Ireland's 'core' region, FDI location choice is increasingly focused in south-east regions of Britain.
- In turn, these findings point to a strong north-to-south shift in economic activity.

For such research studies, European and UK regions appear to be, largely fixed and clearly defined whereas for Ireland, their geography is inconsistent is very often changed: *e.g.* in recent attempts to reconcile the two recent 'carve ups': for the four new Irish EU MEP-constituencies in contrast to the *Putting People First*-proposal for its three newly-defined Regions and Regional Assembly areas, *vide* Figure 9.1.

4.11 The Geography of Irish Settlements in a New NSS

A cursory examination of the spatial shape of the proposed State's Regional Assemblies impels the conclusion that political considerations were foremost in the chosen shape and 'carve-up' of the State. Already, there has been some criticism of geographic issues and in particular, the attachment of the Midland Planning Region to the super East Region. At the October 2012 Regional Studies Association Conference in NUIM, the Minister for the Environment gave the first 'public' confirmation that a new NSS was being contemplated and in particular that regard would be had to the geography of the State's population growth rates since 2002 and to an expanded democratic role for the regions.

Thus the counter-argument as to where the Midland Region should 'fit' is based on the fact that some of its principal towns have achieved substantial population growth, particularly due to Dublin's residential deflection. Portlaoise, Mullingar and Carlow stand testament to this fact. It is noted that a significant portion of Carlow town is located in Laoise. Thus, it might well be justified that a Dublin-centric super region should encompass geographic areas that have noticeably benefited from such deflection.

Assuming that the future prospects for the ‘super regions’ will result from the growth of their major settlements, this places particular importance on the ultimate arbiter role for ‘growth town’ selection. For example, because of the awkward shape of the northern parts of the West and Border super region, the largest towns in a number of counties therein are ‘borderline’ growth settlement choices due to their small populations, and aggravated by the fact that such counties also have particularly low rural population densities, having higher proportions of rural population. Yet the geographic imperative to have a ‘growth centre’ is very persuasive.

Accordingly, if as is ‘hinted’ in the *Putting People First* document, it may well be left up to the three Regional Assemblies to be responsible for the content of own new Regional Planning Guidelines (RPG) Plan. Thus, there are both a temptation and danger that if this is to be the case, then their revised RPGs could be drafted without adequate, co-ordinated consultation with the two other Plans. In geographic terms, there are risks that both sub-optimal settlement selections and having too many ‘growth centres, akin to the same criticisms that informed Dorgan’s prophetic and downbeat view of the ‘hub’ tier’s subsequent growth outcome, *vide* Appendix 1. Similar concerns have also been expressed in the Qualitative Survey, *vide* Appendix 19.

4.12 Conclusions on Spatial Geography

Given the progress made since the 1990s in the NEG understanding of the roles of knowledge transfer, innovation, networking and locational proximity, it is concluded that the current NSS fell short in strategising for the Ireland that is emerging and, in particular, for its articulated understanding of the ‘core’ metropolitan region within the State and in the wider geographical context, of its wholly inadequate and neglectful approach to the potential of the Dublin-Belfast corridor, especially given the demographic direction of the island’s population growth. In turn, such deficiencies have had major implications for the planning for the State’s largest and fastest growing settlements, *vide Twice the Size* (2008).

In the following Chapter the thesis addresses how best to measure the choice of growth centres under a revised NSS, commencing with a description of the chosen methodological quantitative basis and of its grounding, statistical spreadsheet sources.

CHAPTER 5: DESCRIBING THE QUANTITATIVE METHODOLOGY'S 'EVOLUTION'

5.1 Foreword

The primary focus of this chapter is quantitative; the construction and deployment of the model for the preliminary assessment of the growth centres. Appendix 19 focuses on the qualitative side, where the approach taken is to summarise the findings from the Strategic Conversations which this student conducted with some of the principal practitioners and academic experts in spatial planning. Both elements are then synthesised to produce the dissertation's 'findings' with the results and conclusions.

5.2 Introduction to the Methodological Bases Deployed in Subject Dissertation

Considerable attention has always been given by spatial planners and other 'strategists' to the criteria that should inform the selection of 'growth centres. For example, in the Buchanan (1968) Report, Part Three: *Appraisal of Counties and Towns*, PP.115-160, it sets out fifteen wide-ranging economic, geographic and social criteria for town selection.

Long established urban economic theory posits that size and growth are the two core measures of urban centres, *vide* Richardson (1973: 100-101). This conclusion is later affirmed in Fujita *et al.* (2001) and in other NEG literature. Given the constrained length and 'brief' of subject dissertation, in consultation with one's supervisor, the set of considerations for the measurement model used in the 'growth centre' selection was considered to be the most suitable approach to take in the development of the dissertation's methodology. Briefly, it is confined to two numeric attributes for which up-to-date data were available:

- **Scale Size** – a combination of base date (2002) population of town and environs together with that of daytime working population (DWP).
- **Time Dynamic** - assessment of Growth between 2002-2011, comprising both population and DWP.

At a later stage the 'considerations' widened to allow for Geographical factors, including Regional Spatial representation, Density/ Proximity and sufficient distance from a city, say 40 km. Finally, the selection 'basket' was limited to the 85 largest settlements, as already noted.

5.3 The Computational Basis of Daytime Working Population (DWP)

In the spreadsheet *Basedocument2*, vide the attached Compact Disc, some of the numeric aspect of this thesis methodology are displayed, in the CSO *Door to Door* Table 9 (2011), in the format as shown in the following Figure 5.1. Opposite each named settlement, commencing with Dublin (whose figures are shown hereunder), are the eighty-four other 'large' settlements arrayed in vertical order on the 'Y' axis.. Displayed on the horizontal 'X'-axis in the next six columns (A) to (F), are the CSO compositional assessment, e.g. $E=B+D$ from which the Daytime Working Population (DWP), is derived, thus:

Figure 5.1: Assessment of Daytime Working Population (DWP)

Total residents with a fixed place of work (A)	<i>of which</i>		Persons commuting into the town to work (D)	Daytime working population (E=B+D)	Net Gain/Loss in working population (E-A)
	Persons working in the town of usual residence (B)	Persons working outside the town of usual residence (C)			
388,083	352,223	35,860	117,764	469,987	81,904

Source: Table 9, *Door to Door*, CSO Census 2011.

Note: These figures shown in Fig. 5.1 are the 2002 employment data for Dublin. For every city or town, these data correspond with the units of its settlement Populations, as are shown in the CSO Area Volume, Table 7, set out in Table 1.1 of Chapter 1 above.

5.4 The Base Spreadsheet – Description

The initial design of the *Basedocument2* is informed by and follows the layout of the Census Profile 10: *Door to Door*. This Table 9 matrix at P. 46 (*ibid*), released by the CSO in December 2012, was contained in this last of the CSO's reports on the 2011 census. As published, this Table applies to the five cities and to the thirty-nine towns of 10,000 and over in population. Their descending size-order is *not* informed by their 2011 respective town and environs populations listed in the Table 7 of the CSO Area

volume, but instead, by the descending size-order of their Daytime Working Population (DWP).

On request, the CSO kindly provided this student in similar formatted data, the forty-one Group 2 town settlements of 5,000-9,999 in population for the 2011 census. That initial request to the CSO was based on the working assumption that the existing NSS twenty-three G&H settlements were 'sourced' from the five cities and all settlements of 5,000 and over in population. For any modification to the list of 'selected' settlements in subject dissertation, it is reasonable to assume that none would be chosen from a smaller town size of less than 5,000 in population from the 2011 Census. Accordingly, the vertical 'Y'-axis lists all eighty-five settlements, in *their descending size order* of their respective DWPs.

Coinciding with the April 2011 census, the CSO's Quarterly National Household Survey (QNHS) Q2 Release, it confirms that total State 'in employment' was 1,861,300 and likewise the CSO total DWP as at that date was 1,466,855, thus being 78.81% of the 'in employment figure. Once they confirmed that the CSO could provide DWP data to match the 2002 and 2011 censuses for the eighty-five settlements of 5,000-and-over, further requests eliciting the total State DWP for the respective censuses enabled sectoral growth to be computed, as follows:

Table 5.1: Sectors of DWP Growth 2002-2011 Unweighted

Sectors of DWP Growth 2002-2011 Unweighted				
Sector /%share @ 2002	2,002 DWP	2,011 DWP	9-yr growth	% growth
Dublin / 32.85%	428,360	469,987	41,627	9.72%
Totals 62 setts. / 12.22%	159,357	194,509	35,152	22.06%
Total Gateways / 14.98%	195,382	266,048	70,666	36.17%
Totals Hubs / 5.36%	69,952	81,508	11,556	16.52%
<u>Remaining smt+ru /</u> <u>34.59%</u>	<u>451,129</u>	<u>454,803</u>	<u>3,674</u>	<u>0.81%</u>
State / 100.00%	1,304,180	1,466,855	162,675	12.47%

Source: Author's analysis of CSO-provided DWP data.

Note: The above-referred 62 settlements represent the entire 85 cities/large towns less the 23 NSS-designated G&Hs.

This DWP analysis confirms that the Gateways have achieved above State-average DWP growth over the first half-life of the 2002-2020 NSS. This Gateways growth of 36.17% is particularly noteworthy and *inter alia*, it reflects well on the IDA. As shown in Table 7.1 compared alongside the comparative sectoral outturn over the same time-frame for population growth performance. The overall State DWP growth (2002-2011) is just 72.80% of population growth in 2002-2011.

From perusal of *Basedocument2*, it is noted that the DWP growth for individual settlements shows up Cork as having performed particularly well. The CSO has emphasised that the individual 2002 DWP figures for some of the larger settlements need to be treated with caution because of address issues. Postal addresses issues, relating to individual work addresses and to related commuting, would require additional interpretational refinement. For instance, is the work address a headquarters one or of a branch office?

Nevertheless, the overall DWP picture emerging, when compared with population growth, suggests that the DWP performance is more in line with settlement size, except for Dublin. As discussed elsewhere, Dublin's population is particularly constrained due to house affordability issues and the resultant growth in the size of its satellite-commuter towns. The next task in the methodology is to outline the origins and components of the data spreadsheets, leading up to the formulation of the central dissertation model for settlement assessment and selection.

5.5 The Importance of Central Place Functionality

From earlier discussions with academic colleagues, the basis for the CSO definition and their formulation of DWP was regarded as being significant. It appears to reflect the 'centrality' and commercial importance of a settlement in the 'Christallerian' (1933) tradition of Central Place, not just for the settlement's own population but in addition, for that of the surrounding territory which that settlement serves. This is so because the make-up of DWP allows for not just the settlement's resident population who work in that settlement, but because it also provides for those who commute daily to work therein.

It is reasonable to assume that many of those who commute to work in a particular town reside in close proximity to that town and its environs, and that the commuting workforce thereby includes and to some extent, reflects the extent of its SoI. In correspondence with this student, the CSO were careful to point out, that the DWP count excludes both 'mobile workers' and also 'not stated' workers, as per the CSO *Email* of 15.07.2013. Nevertheless, the very large increases in the medium and long-distance commuting in 2006 and 2011 are reflective of an Ireland which has a large owner-occupied residential population and where in many instances, issues of 'affordability' and of consequent residential immobility superseded those of first location choice.

5.6 Explaining Dynamic Urban Growth - Labour Mobility and Commuting

Relevant to the growth of commuting towns and also to the composition of DWP, recent Swiss studies have shown that there exists a strong inverse relationship between house ownership and lower labour mobility at the national level. Lower national home ownership together with more renting is associated with 'advanced' economies such as

Germany and Switzerland and in turn, this is correlated with improved labour mobility, Teirlinck, P and Spithoven, A (2008).

For Ireland, the CSO's 2011 census, Profile 1, *Town and Country*, provides a useful picture of county resident movement within the State, confirming much reduced levels of movement for rural counties such as Donegal. From the *Central Place* research paper produced as part of the research background to the 2002-2020 NSS (2000), particular emphasis had been placed on the functional levels of a settlement, such as its having a regional hospital, a university, a working port, and so on, *vide Irish Urban Systems and its Dynamics*, Ch. 3, P. 9. For a settlement selection process to be as thorough as possible, the levels, of the particular service provision as identified, are critical especially in an Irish context because of extraordinarily high DWP-to-population ratios that can be found, especially in the west of the State, outside the SoI of a city.

This is all the more relevant, given that so few Irish settlements have recognised, exclusively 'specialist' functionality, *vide* McCafferty et al. (2013). Perhaps the one exception to this comprises 'mushroom' settlements that have grown rapidly as recorded in recent censuses, *e.g.* Ashbourne. These are towns that do not as yet have as large a DWP count as might be anticipated from their population size, but which in 2011 have a 'large town' population. This has happened, because of population deflection from a nearby city with less affordable housing, *e.g.* as is likewise interpreted in the case of Laytown-Bettytown-Mornington.

Referring back to the DWP Definition and its explanation, as set out in the First Chapter's section 1.2, it is noted from this Figure that DWP is the sum of **columns** (B) plus (D); *i.e.* (B) 'Persons working in the town of usual residence' plus (D) 'Persons commuting into the town to work'. Perhaps the most instructive observation from this table's settlement order, is the extent to which DWT counts differs from the CSO Table 7, Area Volume's descending order of Town and Environs population: to be detailed *supra*, in Table 1.1.

Accordingly, a more balanced evaluation of a settlement's ranking and its growth, ideally, should combine DWP and population, in line with Krugman's (1991) thinking. Again this view was the subject of some interesting discussion with colleagues from

various academic backgrounds in other universities and coincidentally, it also featured within the CSO's Expert Group deliberations. It is noted that an earlier paper on Central Places, prepared for the DoEHLG as part of its background research for the 2002-2011 NSS also considered measurement criteria for settlement selection, *vide* Brady Shipman and Martin et al. (2000).

5.7 Criteria that Inform the Settlement Model

In combining the data on population with DWP, the ascribed weighting is an important consideration. With the *Putting People First* emphasis now being placed on economics as the primary driver for the new NSS plan, it is considered logical to place *equal importance* on DWP as for population; both in terms of ascertaining a settlement's scale size and its growth dynamic.

To therefore place the two elements on an equal footing, the weighting applied is in direct proportion to the State's total DWP and total population counts as at the 2002 census, i.e. 1,304,180, which is deemed to be equal to the population of 3,917,203. This gives a DWP multiplier of 3.003575. The State 2002 DWP figure together with those of the subsequent censuses was advised by Dermot Corcoran of the CSO to this student.

Settlement scale is a dominant issue because of the size of the 'gini' coefficient and extent of that measure of distortion from the linear 'track' resulting from the application of the Zipf Law to the State's major settlements, *vide* Appendix 7. The primacy of Dublin and its influence, on the resultant steepness of the concave-shaped population curve as it moves down to the subsequent order of settlements cities and towns is noted. Furthermore, the 'missing tier', being the conspicuous absence of intermediate sized cities in the 200,000 to 500,000 size category, is an aggravating factor in the Irish settlement selection process, *vide* Figure 8.2: City Hierarchical Typology – The Missing Tier.

Another related issue is that of the the relatively small differences in town settlement population sizes which contributes to a very Zipf-like graph. Simply, such concavity of shape is contrasted with the theoretical linearity of a 'normal' country's settlement order thereby producing the State's particularly high gini-coefficient 'distortion' with its 70.65% percentage 'deviation', *vide* Appendix 7. For example, other similar European

countries with primate conditions include Greece's Athens and to a lesser extent, Portugal's Lisbon.

5.8 Scorecard Model Composition for Assessment of Potential Growth Settlements

The model's mathematical design, in combining population with DWP for each settlement, includes the two other considerations for the model's construction: scale and time-based growth. Scale size is somewhat more important than growth, not just having regard to the settlement-size commentary of the preceding paragraph, but also because the time period for the growth measure is just nine years, from 2002 to 2011. It is observed that trial and error iterations have resulted in several model-variations being 'tested'. In the end and based on consultations with other academics, it was concluded that 'simple is safest' provided the model's ability to ability to balance its principal components.

Thus, this model comprises the following two elements: scale size and growth. Clearly, both are important but scale size tends to dominate the final scorecard outcome. Growth on the other hand has been confined to assessing the performance of the 2002-2011 NSS and thus is limited to its nine-year term. Likewise, the two measured components of and population and daytime working population were used for the reasons already discussed.

5.9 Model Construction

Keeping the model straightforward, whilst incorporating its measurement objectives, it is described as the sum of:

Settlement Scale Size: This is half the sum of the 2002 population plus the weighted daytime working population (wDWP), **and**

Settlement Growth: The sum of the 2002-2011 population growth and the weighted daytime working population [note subscript 'w' for weighted]

This provides the initial equation, for Scale Size: $(2002 \text{ pop.} + \text{wDWP})/2 + (\text{pop. gth.} + \text{wDWP gth. for 2002-2011})$.

For example, Dublin's settlement population in 2002 was 1,004,614 and its DWP was 428,360.

Applying the Scale equation, Dublin's weighted scale-size computation is expressed in the Population plus weighted DWP, *i.e.* $[1,004,614 + (428,360) * 3.003575]$, which gives $2,291,225/2 = 1,145,613$

Next, the Settlement Growth computation for 2002-2011 combines the Population Growth element $(1,110,627 - 1,004,614 = 106,013)$ + the wDWP Growth element $(455,375 - 428,360 = 27,015) * 3.003575 = 81,142 + 106,013$ gives a total settlement growth performance of 187,155 and an overall 'scorecard' total of 1,332,768 for Dublin. This process is applied to the other 84 large settlements.

The summary Scorecard results for all 85 settlements are set out in the second (of the five) columns of the next Table 5. 2. This is the sum of Scale size and Growth (*i.e.* the third and fourth columns).

Table 5.2: The 85 Settlement Scorecard

Gateways shown bold; Hubs in italics				
		Scale size	Growth	% growth
(nearest integer basis)	Model	Half *	2002-2011	G+J/E
	Scorecard	Population	Pop. Gth. +	2002-2011
	Results	+ wDWP	wDWP	growth %
Dublin city and suburbs (1) = 2002 rank order	1,332,768	1,145,612	187,155	16.34%
Cork city and suburbs (2)	278,060	179,779	98,281	54.67%
Galway city and suburbs (4)	114,925	84,576	30,349	35.88%
Limerick city and suburbs (3)	117,659	81,855	35,804	43.74%
Waterford city and suburbs (5)	71,640	57,486	14,154	24.62%
Dundalk Legal Town and its Environs (6)	44,685	34,731	9,954	28.66%
Sligo Legal Town and its Environs (13)	32,259	28,099	4,160	14.80%
<i>Tralee Legal Town and its Environs (11)</i>	31,314	28,031	3,283	11.71%

Chapter 5: Describing the Quantitative Methodology's Evolution

<i>Kilkenny Legal Town and its Environs (12)</i>	31,312	25,793	5,519	21.40%
Bray Legal Town and its Environs (8)	30,818	28,531	2,287	8.02%
<i>Ennis Legal Town and its Environs (10)</i>	30,695	23,517	7,178	30.52%
Drogheda Legal Town and its Environs (7)	44,875	27,962	16,913	60.48%
<i>Castlebar Legal Town and its Environs (29)</i>	20,137	18,069	2,068	11.45%
<i>Wexford Legal Town and its Environs (17)</i>	26,814	20,975	5,839	27.84%
Letterkenny Legal Town and its Environs (23)	30,270	19,621	10,649	54.27%
Navan (An Uaimh) Legal T. and its Env. (14)	30,945	21,069	9,876	46.87%
Carlow Legal Town and its Environs (15)	26,982	20,287	6,695	33.00%
Mullingar Legal Town and its Environs (22)	24,065	18,462	5,603	30.35%
Leixlip Legal Town (24)	18,775	18,066	709	3.92%
Clonmel Legal Town and its Environs (18)	22,473	18,734	3,740	19.96%
Tullamore Legal Town and its Environs (31)	21,435	15,801	5,634	35.66%
Athlone Legal Town and Envir (21)	26,341	17,495	8,845	50.56%
Portlaoise Legal Town and its Environs (27)	24,858	15,564	9,294	59.71%
Naas Legal Town (16)	26,253	18,365	7,888	42.95%
<i>Killarney Legal Town and its Environs (26)</i>	18,823	15,225	3,598	23.63%
Swords (9)	33,962	21,080	12,882	61.11%
Droichead Nua Legal Town and its Env. (19)	24,953	15,572	9,381	60.24%
Longford Legal Town and its Environs (45)	13,898	10,724	3,174	29.60%
<i>Ballina Legal Town and its Environs (36)</i>	13,944	11,641	2,303	19.79%

Chapter 5: Describing the Quantitative Methodology's Evolution

Nenagh Legal Town and its Environs (51)	12,620	10,032	2,588	25.80%
<i>Cavan Legal Town and its Environs (54)</i>	14,779	9,017	5,762	63.91%
<i>Monaghan Legal Town and its Environs (57)</i>	11,719	8,871	2,848	32.10%
Enniscorthy Legal Town and its Environs (39)	12,423	10,363	2,059	19.87%
Dungarvan Legal Town and its Environs (46)	12,049	8,936	3,113	34.84%
Ballinasloe Legal Town and its Environs (53)	7,401	8,305	- 904	-10.89%
Thurles Legal Town and its Environs (47)	9,124	8,673	451	5.20%
Westport Legal Town and its Environs (60)	8,735	7,573	1,162	15.35%
<i>Mallow Legal Town and its Environs (40)</i>	12,378	9,063	3,315	36.57%
Arklow Legal Town and its Environs (34)	12,181	9,580	2,600	27.14%
Roscommon (72)	9,081	6,545	2,536	38.74%
Middleton Legal Town and its Environs (44)	12,378	8,021	4,358	54.33%
Shannon Legal Town (41)	10,294	7,930	2,364	29.82%
<i>Tuam Legal Town and its Environs (56)</i>	8,879	6,391	2,488	38.92%
Celbridge (20)	15,272	11,413	3,859	33.81%
Gorey Legal Town and its Environs (64)	11,830	5,922	5,908	99.76%
Roscrea (70)	5,270	5,516	- 246	-4.45%
New Ross Legal Town and its Environs (50)	9,339	6,450	2,889	44.79%
Wicklow Legal Town and its Environs (37)	10,423	7,856	2,567	32.68%
Tipperary Legal Town and its Environs (67)	6,574	5,590	984	17.61%
Athy Legal Town and its Environs (55)	10,970	6,120	4,850	79.25%

Chapter 5: Describing the Quantitative Methodology's Evolution

Youghal Legal Town and its Environs (49)	6,915	6,376	540	8.46%
Fermoy Legal Town and its Environs (68)	7,672	5,461	2,211	40.49%
Newcastle West (75)	8,759	4,969	3,790	76.26%
Maynooth (33)	13,226	8,016	5,210	64.99%
Buncrana Legal Town and its Environs (65)	7,135	5,564	1,570	28.22%
Malahide (25)	11,946	9,778	2,167	22.16%
Birr Legal Town and its Environs (73)	6,473	4,932	1,541	31.23%
Balbriggan Legal Town and its Environs (32)	19,537	7,809	11,728	150.18%
Bandon Legal Town and its Environs (66)	8,280	5,208	3,072	58.98%
Carrigaline (30)	11,607	8,118	3,489	42.98%
Edenderry Legal Town and its Environs (71)	7,970	4,654	3,316	71.24%
Trim Legal Town and its Environs (58)	9,100	5,236	3,864	73.81%
Greystones Legal Town and its Environs (28)	15,288	8,136	7,153	87.92%
Carrick-On-Suir Legal Town and its Env. (62)	5,679	4,946	733	14.81%
Cobh Legal Town and its Environs (35)	9,852	7,028	2,824	40.18%
Ceanannas Mór (Kells) Legal T. and Env. (74)	5,897	4,304	1,593	37.02%
Loughrea Legal Town (81)	5,917	3,848	2,069	53.75%
Kildare (59)	7,694	4,554	3,141	68.97%
Tramore Legal Town and its Environs (43)	8,487	5,857	2,630	44.91%
Clane (80)	6,521	3,881	2,640	68.04%
Skerries (38)	7,170	6,141	1,029	16.76%

Ashbourne (52)	11,288	4,656	6,632	142.42%
Dunboyne (63)	6,388	3,851	2,537	65.87%
Portmarnock (42)	6,431	5,341	1,090	20.41%
Kilcock (96)84	5,476	2,508	2,968	118.33%
Rush (48)	7,507	4,461	3,046	68.28%
Portarlington (76)	8,460	3,032	5,428	179.04%
Blessington (91)82	5,466	2,277	3,188	140.00%
Donabate (77)	5,805	2,769	3,035	109.61%
Laytown-Bettystown-Mornington (61)	9,466	3,540	5,926	167.40%
Passage West Legal Town and its Env. (69)	4,164	3,008	1,156	38.42%
Lusk (79)	6,438	1,921	4,517	235.16%
Ratoath (78)	8,888	2,324	6,564	282.49%
Sallins (95) 83	4,473	1,759	2,714	154.24%
Kinsealy-Drinan (106) 85	<u>5,099</u>	<u>1,211</u>	<u>3,888</u>	<u>321.12%</u>
85 settlements in 2002 census total	3,076,128	3,415,255	697,765	20.43%

Source: Author's computation based on 2002 and 2011 Census Data, CSO

Note: In 2002, some of the towns towards the end of this table would have had a lower 2002 population rank order: Kinsealy-Drinan would then have been 106th as against 85th in 2011.

It is observed that the Growth component of Dublin's score is just 14% whereas in Cork's case it contributes some 35%. This inconsistency again relates back to the CSO-expressed caution as discussed in section 5.4 above. Over a longer time series of responses, and perhaps aided with sharper and clearer questioning in future censuses on 'place of work', it is expected that such inconsistencies will be resolved thereby leading to more accurate DWP outcomes. As an important aspect of the census routine, the

process of formulating changes for the questions to be asked in the 2016 census form is due to take place in early 2014, when this is likely to be addressed.

Having applied the model and produced the above-listed results, the following are initial observations that inform the selection of the new NSS Growth Centres. Galway is marginally behind Limerick in its scorecard result, reflecting a closer parity in DWP 'weighting' compared with their population difference. A number of commuter towns such as Bray are observed to have 'slipped' down the DWP order between 2002 and 2011. Several towns which geographically could be described as 'stand-alone' in centrality function such as Sligo, Ballina and Longford have a much higher DWP 'status' than their population size would otherwise indicate. Another observation is the appearance of so many former smaller towns towards the end of this list, reflecting their 'mushroom-like' population growth in recent censuses, indicating city 'deflection overspill' of more affordable housing, principally from Dublin.

5.10 Detailed Observations from Spreadsheet Data Array

The above data array is extracted from the Excel *Basedocument2* Spreadsheet. In that Spreadsheet it is noted that the DWP data when compared with the population size of settlements, confirms how few are the numbers of settlements that have a sizeable DWP working population, of say ten thousand and over. In 2002 there were just nine such DWP settlements: *i.e.* the five cities plus Dundalk (6th), Sligo (7th) Tralee (8th) and Kilkenny (9th), *vide* 2002 Matrix, **Cells A6 to P96**.

The second observation is that this list of ten thousand and over DWP towns by 2011, *vide* 2011 Matrix, **Cells A97 to P188**, had expanded to include six further (as underlined) settlements, some others of which had changed their DWP rank order since their listing in 2002. Again, after the five cities, this Matrix confirms in order: namely Swords (6th), Sligo (7th), Dundalk (8th), Kilkenny (9th), Athlone (10th), Tralee (11th), Drogheda (12th), Letterkenny (13th), Wexford (14th) and Ennis (15th), Athlone (14th) and Swords (15th).

This is in line with Skehan's employment minimum-threshold observation, consistent with the increasingly constrained list of settlements in which FDI-type plants are locating. Apart from the five cities, it is economically significant that no town's DWP

had yet attained the 14,000 mark in the 2011 census, a circumstance that when based on Skehan's FDI Guidelines, *vide* Appendix 6, explains the constrained settlement selection possibilities for FDI locations for sizeable projects, as has been articulated by the IDA.

From these data it is interesting to speculate, had such DWP information been available when the 2002-2020 NSS was being formulated, as to what extent within that NSS, might the designated G&H 'list' have differed and particularly in the Plan's selection of Hubs? Significantly, shortly following the NSS publication, the IDA's Chief Executive questioned the Oireachtas presentation on the advisability of having a Hub tier, *vide* Appendix 1.

5.11 Formatting the Data for Ease of Comparison

The decision to include 'Totals' for each relevant columns, was done so as to match the additional information provided by the CSO, on the total numbers of DWP in the State at each census. From this, the relevant State share for Dublin or any other settlement could instantly be gleaned. In following the standardised, six-column format of the CSO's Table 6, this was extended to include all eighty-five settlements. It was noted that the aggregate population of these settlements was 2,194,552 being 56.02% of the 2002 State population.

5.12 The DWP Spreadsheet Development

The next element in this spreadsheet extension likewise added six further columns (H to M) as follows: H: Census Population for that year, *e.g.* for 2002; I: DWP as a percentage of Population; J: the sum of DWP plus Population; K: a Population plus DWP index where Dublin equals one hundred; L: population as a percentage of Dublin and, finally, column M: a no-weighting % Combination of Population plus DWP. This process was undertaken so as to enable population to be merged with DWP, being the first computation measurement - in the thesis model's methodology for settlement evaluation.

The initial extension to the CSO *Door to Door*, Table 9, DWP 'array', takes the form of assigning the 2002 population size order, placed in brackets beside the town name. The purpose of doing this is that the observer or user of this research can maintain a focus on

the important contrast between the population and the DWP-size order for the same census. From this first extension to the *Basedocument2* Spreadsheet, again it is noted that so few alternative settlements are immediately apparent for NSS nomination to the selected G&H lists.

5.13 Chapter Conclusions

It is appreciated that as in the case of the Buchanan Report, a wider range of criteria would be brought to bear in the settlement selection process of a new NSS formulation, were it not for the time and space limitations imposed on subject research.

As is the case of the usefulness or applicability of any such model, subject methodology is designed to provides a robust 'guide' to assist the thesis process of selecting 'growth centres' for a new NSS. However, such an approach is limited, especially in the widened context of the Irish socio-economic, geographic and political milieu. Accordingly the next chapter widens the selection process so as to accommodate some such additional research considerations.

CHAPTER 6: AN EVALUATION OF CENTRAL PLACES IN IRELAND

6.1 Foreword

Preceding the introduction to ‘Centrality’ related to the growth in Ireland’s towns since 1986 this chapter commences with a review of an important polycentric research study focusing on the Dublin Metropolitan Region (DMR). Following a consideration of centrality, the State’s settlement endowment is introduced. Using aggregated population data for settlements in the censuses 1986-2011, it shows how the residential populations of towns within the SoI of cities, generally, have grown much faster than those of free-standing towns, *vide Towns Analysis.xls*. Yet such towns have largely failed to attract commensurate Central Place activities, as confirmed for the DMR, *vide* Hall and Pain (2006).

6.2 Research Literature on Irish Mono-Polycentricity

In 2006, these authors conducted a major body of research, comparing north-west European Metropolitan City Regions (MCR) which contained a minimum 1.75 million population, for assessing their comparative measure of polycentricity. They also evaluated and reported on the extent to which each region’s spatial planning policy is directed to supporting and implementing a polycentric spatial strategy in line with the EU-ESDP policy framework for cities. In particular, to evaluate the commercial spillover of Advanced Producer Firms (APS) which operate offices in more than one urban centre in the MRC.

For Ireland, this survey area comprises the GDA plus Louth, *i.e.* the Dublin Metropolitan Region (DMR) as the researchers consider these five counties to represent the State’s ‘core’ area. Specifically, they established that towns within Dublin’s SoI have very low counts of Advanced Producer Service (APS) firms. Accordingly Dublin, comparatively, is the most monocentric of the eight North West European Metropolitan City Regions recorded in that literature, (*op. cit.*). From the evidence of an evaluative survey conducted by van Egeraat (2005) of 728 such firms, it was found that Dublin itself contained 645 of the locations, with only eight other towns contributing just 11.40% of the APS-type activity.

In descending order of locations Dundalk recorded 21 locations, Naas 19, Drogheda 13, Bray 8, Navan 8, Wicklow 5, Balbriggan 5 and Maynooth had 4. Furthermore, the survey indicated the APS count as declining, (*op. cit.* P. 189). From this they concluded *...many of these urban centres today, are little more than dormitory towns, rather than economic nodes in their own right.* This led to the conclusion that Dublin is a highly monocentric city, commercially.

The research commentary concluded *...the spatial planning policies need to be better integrated with other more sectoral policies, most notably in the areas of planning, economic development, labour market, education, transport and telecommunication infrastructure, ibid P. 194.*

6.3 Introduction to ‘Centrality’

Part of the essential background analysis to the formulation of a new NSS is the consideration of existing functionality and role of existing ‘important’ settlements. A number of urban economic ‘tools’ are available for such objective, not least of which is the Rank Size Rule and its application. After introducing the additional measure of the net gain/ loss in working population (NGL) the chapter concludes with major findings from Case Studies, for Sligo and Drogheda, as set out in Appendices 14 and 16.

6.4 Centrality in Detail

The definition of centrality is very much to the fore in evaluating the function and role of settlements. Christaller (1933), conceptually, had based its formal evaluation on two concepts: those of *threshold* and *range*, *vide* the Chapter 1 definitions. Quoting Gradman, Christaller notes that *...the characteristic of a town is its functionality as the centre of a region. Central place activity relates to what is most advantageous, economically, op. cit., p. 21.*

Population, threshold size and frequency of occurrence, of goods or services, and their ‘central’ function are vital determinants. When this student worked in the Provincial Bank in Sligo in 1965, there were six branch-banks in the then 12,500-populated town. Whereas neither population nor surface area adequately express the meaning of a town, it is also their diversified economic functionality of a higher order that distinguishes their importance, *vide* Figure 6.1.

Figure 6.1: Comparing Threshold Size with Frequency in Determining Settlement Size and Numbers

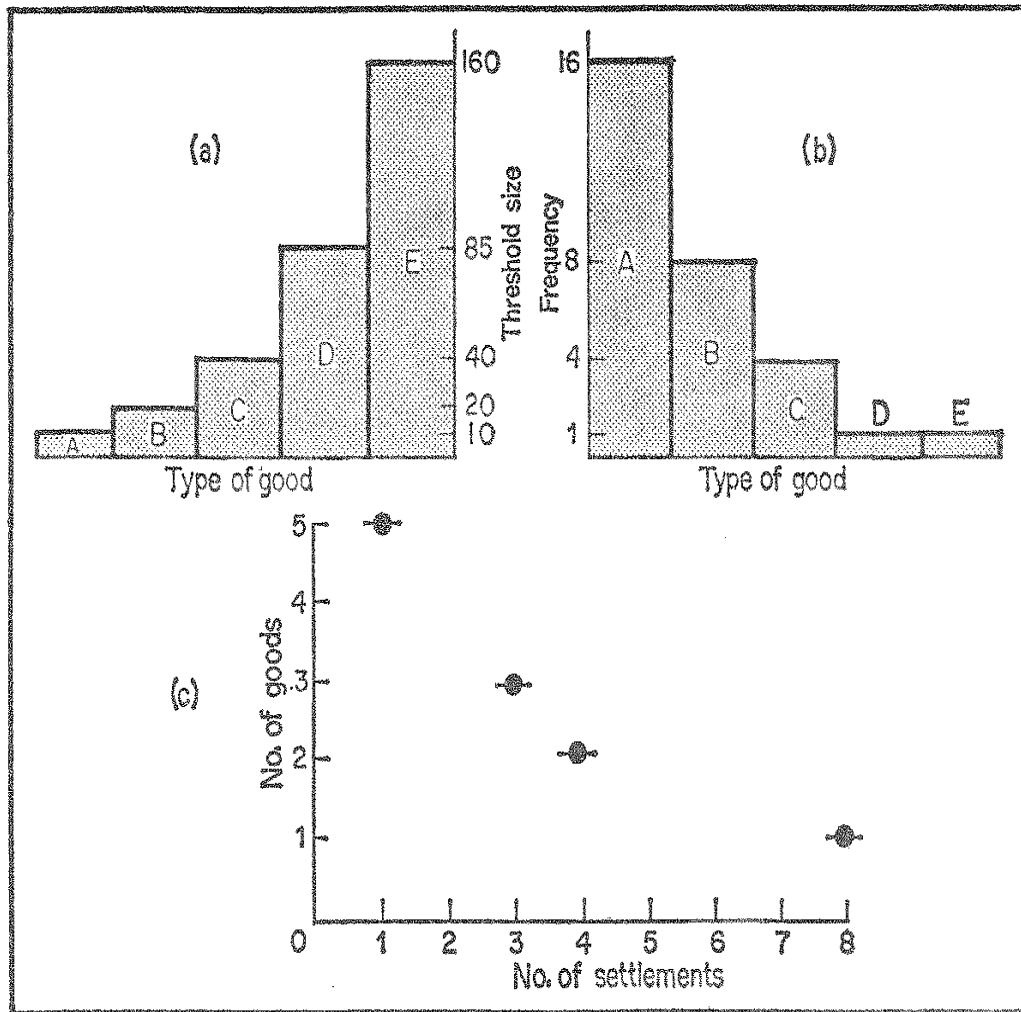


Fig. 18.2. Graphs showing threshold sizes, frequency of services and number of settlements (after B. J. Garner).

The literature reference to above 'Fig. 18.2' is that of Knowles and Wareing (1994). The concept of centrality encompasses both the range in the provision of 'goods' and of 'services'. The specialism of range of goods and services is directly related to the concept of a minimum 'demand', reflective of a supportive threshold level of population and its density, income, and a range of socio-economic attributes.

To demonstrate their applicability to a central place, Christaller utilised two measurable elements in this Doctoral study, *Die Zentralen Orte in Sddeutschland*: i.e. two disparate functions, the measurement of density of telephones as an example of 'central

goods’ and the density of General Practice doctors as ‘central services’, to which he applies his measurements of the spheres-of-influence of central places over large geographical areas.

The provision and availability of telephone technology would have represented a leading edge form of ‘goods’ in the early 1930s and in quantity-terms, reflected a central place of some importance. Likewise, the professional skills and ‘services’ of a doctor also reflected the importance of ‘place’. The general practice doctor, Christaller notes, requires to achieve 2,667 consultations per annum in order to make a living. His computation of the Doctor-Distance relationship is instructive to the locational concepts of distance and ‘distance decay’, thus:

Table 6.1: Medical Practitioner – Distance Relationship; after Christaller (1933)

Location	Population	Consultations/ Per Annum	Number of Consultations
Town Nucleus	250	2.0	500
@ Ring 1	750	1.5	1,125
@ Ring 2	2,500	1.0	2,500
@ Ring 3	500	0.5	250
Totals	4,000		4,375

Source: Christaller, English Translation by Baskin, C.W. (1966:50)

This inputs into a vivid descriptions of the virtuous circle of agglomeration, interfaced with the distance-decay phenomenon. The increased consumption of central goods or services enables greater labour specialisation to function. Production or consumption becomes more centralised and with associated economies of scale the product becomes cheaper. Central places provided higher standards of living because of convenience, reduced journey lengths and wider choices of goods and services, all reflecting in a greater intensity of use relative to the location source.

From this, Christaller defines ‘economic distance as a triple ‘Time – Cost – Distance’ relationship for every good or service, *p. cit.*, p. 54. A number of additional perceptive, important observations flow from this literature:

- people of a higher standing/ income tend to have a higher consumption of central goods.
- A larger region has higher central-goods consumption. Regional size is the sum of central place plus its complementary region.
- Population density will result in quicker and cheaper transportation.
- Goods and services which were offered dispersedly or locally will be centrally offered in a process of rationalisation.

Perhaps Christaller's most instructive message with a pertinent Irish application is: that larger towns and cities help in clarifying the importance of central place with respect to an urban hierarchy. Thus the NSS Spatial planning for Ireland should be strategically and spatially concerned with a moderate level of economic competitiveness which flows from its dispersed geographic tendency combined with the continuing and sustained proliferation of emerging nucleated settlements. Ireland contains far too many former 'market' towns and too few 'specialist', distinctive settlements which have a sufficiency of skilled labour to attract higher order FDI-type employment and have the potential to grow endogenously, *vide* McCafferty, et al. (2013).

Likewise, such concern should focus on the smallness of town size, where Christaller, *ibid* P. 59, quotes Gradman in classifying 'dwarf towns' of under 2,000 in population and 2,000 to 20,000 as 'small towns'. That was his 'scale size' perspective in 1933: thus eighty years later and given the limited size of Irish towns, this represents the type of 'scale and shrinkage' challenges as discussed in the West Regional Authority (2013) Study. Thus in addition to the issue of scale size, a further concern is the excessive rate of settlement formation coupled with moderate levels in the growth rates of existing towns, principally outside of Dublin's SoI. Influencing the modus of measurement as deployed in subject dissertation, is Christaller's classification of central place, based on population size plus the number and distribution of a central place in the range of goods, *op. cit.*, P. 72.

Thus, the introduction for the first time in the census of 2011, of the Daytime Working Population (DWP) concept, reflects the CSO's appreciation of the importance of having a central place measurement criterion. In subject dissertation, settlement population and

their daytime working population (DWP) comprise the combined, deployed, measurable elements of central place.

Undoubtedly influenced by Von Thunen (1826), Christaller, *ibid* P. 77 has been criticised for his overly-rigid interpretation of distance where he categorised the ‘traffic principle’, as ‘Linear’ in contrast to his ‘marketing principle’ as ‘Spatial’. Importantly, Losch (1940) extended the concept of ‘Centrality’ to accommodate transportation corridors. In turn, this enabled a multi-layered ‘k-systems’ to be developed, leading to *superimposed grids*, wherein the measure of central place would include their spheres of influence (SoI). Particularly in the case of Ireland, this provides for a wider and larger population than those comprising CSO’s Table 7 ‘towns and their environs’, *vide* Figure 2.1.

Worryingly, in addition to the accelerated proliferation of small settlements, in the 2011 census, some 1.409 million or 30.71% of the State population still resided in non-nucleated open countryside and a further 0.298 million or 6.50% lived in its 652 villages. Thus, its urban population content is still only 62.05%, with all the attendant economic challenges for land use, transportation, diseconomies-of-scale and the provision/ maintenance of services. From Losch’s theoretical ‘k’ work, it is clear that Ireland is missing a ‘layer’ of settlements immediately below that of Dublin, *vide* Fig. 8.2.

Another reason for including the wider, SoI population for measurement purposes has to be recognised for both geographic and cultural reasons. The British spatial planning deployment of ‘greenbelts’ is able to provide an important regulatory tool in controlling spatial planning settlement and as an ‘anti-sprawl’ control. In Ireland, the spatial planning concept of ‘white-land ‘zonong’ appears to have failed; particularly in northern and western areas of this State with its beautiful scenery, site-setting and the desire for ‘living in the countryside’ reasons. Many of those who work in nearby towns make choices to live in rural settings. Such ‘urban generated’ housing has resulted in a peppering of non-nucleated, ‘Bhaille foireann’-type residential morphologies. It has also encouraged fast-growing nearby ‘Straidbhaile’ town settlements, *e.g.* that of Strandhill in Sligo which has now become a census ‘town’ in its own right. The Sligo Case Study is detailed in Appendix 16.

6.5: The Significance of Working Population (NGL) Movements:

The net Gain/ Loss in Working Population (NGL) is the Daytime Working Population *less* the Total Residents With a Fixed Place of Work. It denotes a ‘centrality-strengthening’ indicator when it is positive and a ‘centrality diluter’ if NGL is negative. As might be anticipated, most fast-growing commuter towns in Dublin’s SoI exhibit a strong, negative NGL count in the 2011 census, attributable to their ‘dormitory town’ commuter-outflow status. In contrast, the specific case of Sligo’s NGL count is 7,433 positive, which is the sixth largest one in the State, being only slightly less than Waterford’s 7,642. Accordingly, this indicator of gain is another ‘centrality’ factor has been used in influencing the selection of this Dissertation’s growth towns. For example, in helping to identify Tralee, Athlone, Castlebar, Wexford and Letterkenny, all of which exhibit robust NGL figures.

It is observed that when the CSO Table 9 for settlements is combined, with their next and similar Table 10 of *Door to Door* at P. 47 (ibid) for counties, a rich set of broader spatial observations can be obtained in assessing the centrality of a county’s principal settlement. In Sligo’s case the town’s 13,176 DWP cnt oucompares with 20,813 for the entire county, being 63.31%. Thus it is not surprising that such data confirms, that Sligo County is the only one in the new Connacht-Ulster Region to have recorded a positive 2011 NGL count, but in doing so, contributes to the assessment of the extent of that Region’s rurality and yet, the weakness of its overall urban-size composition. Puzzlingly, Sligo has the only population decline (2002-2011) of all of the State’s 85 settlements of 5,000 and over (2002-2011).

With detailed county-level analysis, the data for DWP combined with NGL could be aggregated, so as to obtain a Super-regional picture of comparative centrality. A wider contextual understanding for Sligo is obtained in Appendix 16, where Letterkenny and Counties Sligo and Donegal are compared.

6.6 Chapter Conclusions

This chapter has clarified in some detail, both the theoretic principle and application of the concept of ‘central place’. Dublin’s primcy is accentuated by its high level of commercial monocentricity. The applied Irish dilemma for ‘central place’ presents the principal conclusion drawn from its Case Study analysis of the NSS ‘Gateway’, Sligo is

a large town of almost 20,000, stagnant in population growth terms, despite its a designated growth-town status and having a large and growing DWP. It compromise both its NSS designation and likewise, fails the the 2002-2020 NSS objective (2002:50), that *...the new gateways in the NSS will also need to grow substantially if they are to play a similar role.*

Out to 2020 and beyond, the new growth towns such as Drogheda-LBM, will also need to strengthen their commercial APS-type functionality whilst maintaining their recent expansion to emulate the current population levels of cities such as Waterford or Galway, which in turn need to expand rapidly to become central places, contributing to the Christaller-Loschian hierarchial tier; settlements that can implement indigenous growth advantages offered by the Producer Services and ‘knowledge economy’ of the future.

This chapter’s investigation has shown that the overall Irish urban hierarchy is weak and this is independently confirmed in the Qualitative Survey responses, *vide* Appendix 18. It is likewise demonstrated that population size, even when combined with DWP endowment, does not automatically guarantee that a settlement will grow. Thus another Dissertation finding confirms that the economic SoI of large cities is essential to underwrite growth and that stand-alone towns of all sizes are vulnerable to population stagnation, whilst promoting lower densities, settlement proliferation and sprawl inefficiencies, *vide* Appendix 7.

CHAPTER 7: OVERVIEW FINDINGS FROM SETTLEMENT ANALYSIS

7.1 Foreword

The population and DWP analyses for this dissertation have been assembled, in 'palette'-format, in two extensive excel spreadsheets, vis: '*Towns Analysis.xls*' and '*Basepopulation2.xls*'. From these data, a 14-column *scale and Growth Model* Spread sheet is derived, *vide* '*Basepopulation2.xls*'. A third stage in this process summarises the data set out in Table 5.2 *supra* for the 85 settlements under examination.

This chapter now considers the numeric findings for these 85 settlements, resulting from applying the dissertation's methodologies, described in Chapter 5 and as set out in Table 5.2. First addressed are the scale size findings for the identified sectors of State. Then the combined population and weighted DWP growth outcomes are similarly investigated. From these analyses, the dissertation's 'alternative' list of potential G&H settlements begins to emerge. In consultation with one's supervisor, due of size constraints, the detailed Sectoral Analysis is set out in Appendix 21.

7.2 Scale Size Findings

Starting with the Scale Size Findings (SSF) criterion, it is noted that this measure combines population and weighted DWP growth model. Clearly, the five unrivaled cities self-select with Dublin's primacy being particularly evident. Interestingly, Galway's commercial importance contributes to an SSF score that is just behind Limerick's, despite Galway in 2011 having only 84% of Limerick's population. The DWP count for large towns confirm Drogheda's first position ahead of Dundalk's 'gateway' designation, and this despite the inclusion of Dundalk's agglomerated suburb of Blackrock, Co Louth whilst not including LBM with Drogheda. However, as the Case Study for Drogheda confirms, its near-agglomeration with Laytown-Bettystown-Mornington (LBM) gives a much larger, combined population which is just behind that of Waterford City. However, under the SSF criterion, Waterford is still comfortably ahead in its DWP count, mainly due to the extent to which Drogheda plus LBM exhibits extensive outward commuting, *vide Basedocument2* and also Appendix 15.

In numbered order of Scorecard results, other large towns present mixed results which makes the growth-selection task a more difficult one when based on just the SSF criterion. In addition to 1: Drogheda and 2: Dundalk, five large towns in 2011, have +30,000 SSF scores: they are 3: Sligo, 4: Kilkenny, 5: Tralee, 6: Ennis and 7: Letterkenny. Other large towns including Swords, Bray and Navan were individually assessed but, because of their proximity or ‘dormitory’ function for Dublin, they are excluded. Thus an initial, potential list of twelve growth centres – the five cities and these seven aforementioned towns is drawn up for growth-town selection under this Criterion of Scale.

7.3 Growth Criterion

Reverting back to Table 5.2, its third column sets out the combined population and weighted DWP scores. Apart from the above list of twelve settlements already identified under the SSF criterion, there are only a few other towns that make a Growth Criterion (GC) impact. They are 8: Portlaoise, 9: Athlone, and 10: Wexford. Again similar-scoring large towns near-Dublin such as Naas and Balbriggan are excluded from GS consideration. Accordingly, the ‘for consideration’ growth-settlement’ list is now fifteen in number. A further refinement in the methodological research process is to combine the SSF and GC criteria, to see if, as in the fourth column of Table 5.2, what additional settlements might emerge.

7.4 Combining Scale and Growth

This refinement points to other large potential growth-towns such as Carlow, Tullamore, Castlebar, Newbridge and Celbridge. Omitting the settlements that are in proximity to Dublin, the dissertation’s wider methodology now identifies on geographical grounds, both 11: Castlebar and 12: Cavan, in a city and town list of what is now seventeen large settlements that have a combined SSF and GC score of note. However, this dissertation methodology serves to identify other significant observations.

7.5 Other Significant Measurement Observations and Related Spatial Strategies

From Table 5.2, a number of mainly Dublin SoI settlements in the 5,000 to 9,999 size range were noted as having obtained very high combined growth scores of 100% and

over, reflecting the ‘spillover’ effect resulting from their location in Ireland’s sole Metropolitan City Region. The already-noted LBM settlement in proximity to Drogheda is only such town in the 2011 census that has now exceeded 10,000. Category 2 and 3 towns including Ashbourne, Blessington, Portarlinton, Lusk, Ratoath, Kinsealy-Drinan (KD), Sallins, Donabate, Kilcock, and Gorey; all recording between 99.76% and 321.12%, in their combined SSF and GC score.

Kinsealy Drinan showed that highest score and is significant because of its near-agglomeration with Swords, which at 2011 census gave them a combined population of 43,630. Proximity is also a significant factor in developing gravity-mass and such Dublin SoI examples include the further, near agglomeration of Swords with Malahide and Portmarnock. Likewise Rush, Lusk and Donabate are in close proximity as are Balbriggan with Skerries, and the North Kildare cluster of Maynooth, Celbridge and Leixlip and Wicklow’s Greystones with Bray. These clusters all contribute to Dublin plus its near-commuting population, aggregating to over 1.5 million. Accordingly, it is difficult to make a ‘growth town’ judgment call, especially when evidence of near-agglomeration is emerging. Accordingly, the second part of this chapter now discusses other significant and relevant theoretical issues.

7.6 A Theoretical Parallel - Applied to Ireland

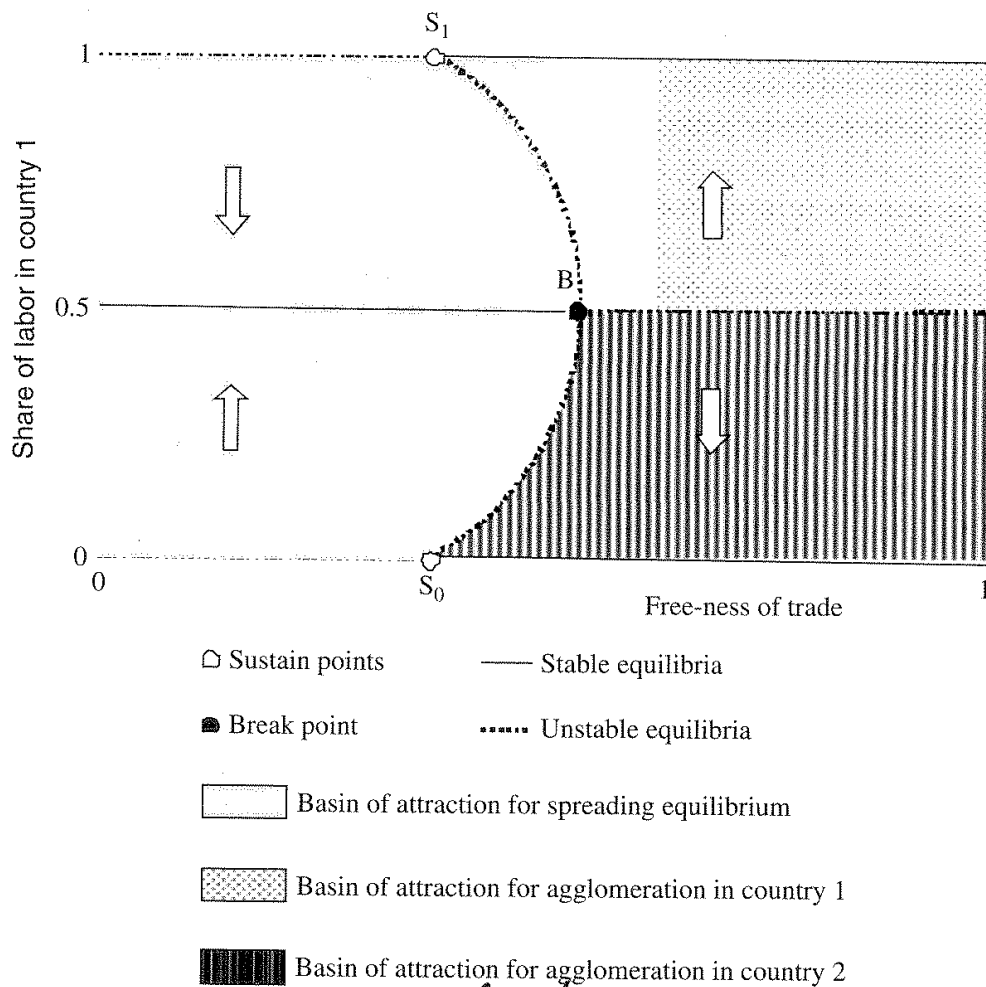
The spatial planning task of settlement selection should considering regional and sub-regional surface areas and densities in the geographical quest to provide as much of Ireland’s surface area with the potential to grow, albeit in a very different and distinct outcome to that as articulated in the ‘balanced regional development’ context of scattergun rural one-off residential morphology, with the idealistic ambition of every settlement, regardless of its size, growing to its full potential, *vide* the second bullet point of BRD, Appendix 5. There is also the need to introduce the emerging field of New Economic Geography (NEG).

The essential difference between Centripetal Agglomeration (CA) or ‘lumpiness’ and Centrifugal Dispersal (CD1) and to its linkage with Complementarity and Sectoral Specialisation, is addressed in the literature of McCafferty, *et al.* (2013). These authors conclude that there is little evidence as yet, of sectoral specialisation, north or south within Ireland. Likewise, CA enhances urban agglomeration in the theoretical Fujita *et*

al. approach to NEG. Krugman identifies ...transport costs as being very important in determining what the spatial equilibrium allocation of firms and worker will look like, vide Brakman and Garretsen (2009).

The spatial determinants of centripetal ‘agglomeration forces’ or alternatively, of centrifugal ‘dispersal forces’ is described as a ‘tug of war’ tension. Krugman views the home market or price index effect as encouraging ‘lumpiness’ or CA. The other side of the tension is represented by the spreading forces of the ‘competition effect’, vide the arrow directions of Figure 7.1, after Krugman (1991). This model is also associated with national or regional growth determinants.

Figure 7.1: Krugman’s Tomahawk (1991)



Bifurcation
Figure 3. The Tomahawk from the Krugman (1991) model.

The Brakman and Garretsen (2009: 19) literature confirms that the way this model works. There are three forces at play: the price index effect, the home market effect and extent of competition effect. The balance between these three forces determines the direction of the arrows. There is not a balanced equilibrium but instead a catastrophic change to either full agglomeration or perfect spreading. These authors conclude *...that Krugman's research has led to the (re)discovery of the importance of location or geography in international economics (op. cit, P. 20).*

This dissertation's acknowledgement of the 'Core-Periphery', conditionality posited by Robert-Nicuod and others, must not only be espoused spatially by the planning strategists, but also need to become politically recognised and accepted. A deep learning process for understanding the power of such urban forces by planners is warranted and responsibility resting 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 not be repeated. Strategies for 'consolidation' must therefore replace the political preference for diffusion.

Brakman and Garretsen (2009) summarise the Nobel prize-winner's 1991 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, 2008). 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 endogenize economic geography in a general equilibrium framework (Ottaviano & Thisse, 2004).

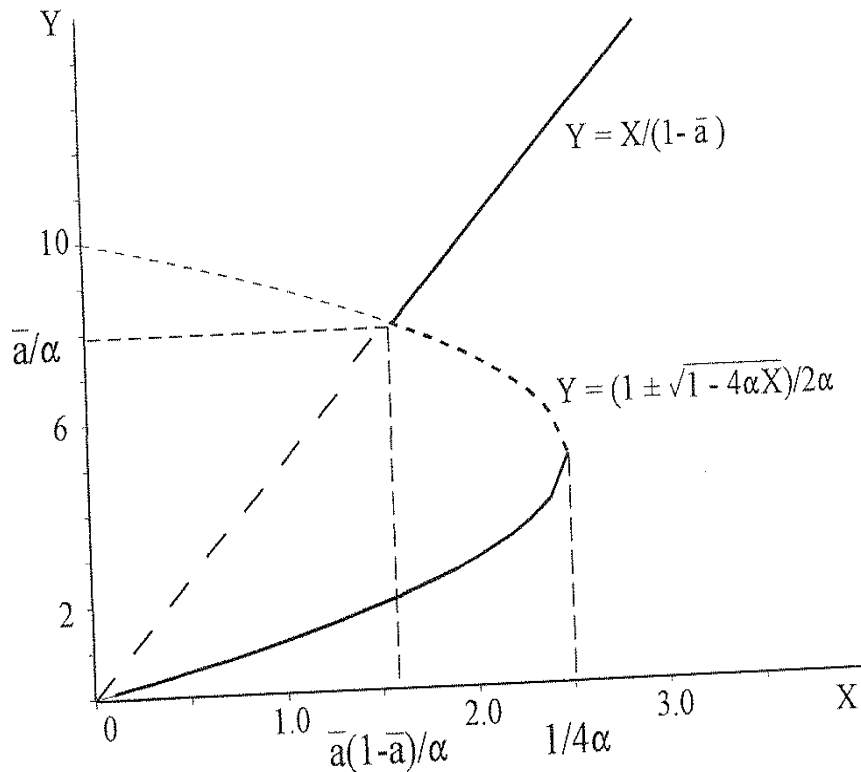
Such potentially exciting, unprecedented economic possibilities flowing from firm, industry and agglomeration economies of scale, opportunises the 'lumpiness' approach to future spatial strategy policy implementation, *i.e.* to focus Ireland's future growth potential in its major urban centres, as is 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 senses. The missing 'ingredient' is scale size but spatial planning policy-

making can resolve this if it is mandated with a ‘lumpiness’ strategy, which will by definition, be focused on developing a few, large centres of population.

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 approach, 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 growth. This sets the platform for the dissertation’s introduction of bifurcations in the evolution of spatial economic systems with population growth.

In 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 benefit of CA, 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, *vide* Figure 7.2, hereunder.

The Fujita, *et al.* Base Multiplier Model is shown as follows:

Figure 7.2: Equilibria in the Base Multiplier Model of Fujita *et al.* (2001: 29)

In this quadratic-based equation model approach to depicting a growth stimulation, it is noted that after the ‘break point’, equating to 1.6 on the ‘X’-axis is reached, then the former sedate slope of the settlement’s growth curve below that point, is followed by a leveraged and sudden ‘jump’ from 2 to 8 on the ‘Y’-axis, its ‘multiplier’ effect. Following that burst of growth, a significantly steeper growth progression ensues; as depicted by the forty-five degree angle of the post-bifurcation event, as shown by the thick black line, occurring after the ‘sustain point’ is reached.

In turn, this adds support to this student’s supposition, that such quick-time ‘pulses’ of strong demographic growth may serve to explain Dublin’s current emergence of economic buoyancy, coming on top of that settlement’s unexpected, near-65,000 population increase (2006-2011). If this is the case, is it then possible to envisage for the future, a replication of such a ‘jump’ outcome for other cities – but most realistically for Cork, in developing Ireland’s ‘missing’ hierarchical tier of 200,000 to 500,000 in settlement size?

In contrast, moving downward in scale-size, for Sligo's shrinking population, albeit with its impressive 2011 DWP count, in the Irish spatial policy context, if 'lumpiness' were to replace 'polycentrism' in future NSS Plans, in line with the longstanding-established Hicks or Kaldor growth-conditionality formats coming to pass, after Robert Nicuod (2006), could some such past growth or contraction outcome patterns change?

Such compelling reason to focus the NSS and its associated economic growth policy on large, strategic settlement locations, is articulated in McCafferty, et al. (2013) in defining the Irish urban system, *...it could be argued that very small centres (towns under 5,000 inhabitants) should be excluded, because they are unlikely to have any significant level of employment or basic activity.* Those authors are even more explicit in recommending an exclusion policy for small-towns, thus *...Given the small scale of employment, the concept of specialisation is problematic for such towns, in the sense that, despite potentially high levels of specialisation, their role in the urban system and contribution to the national economy are relatively insignificant.*

7.7 Conclusions From the Sectoral Analysis Findings

This above-described theoretical New Economic Geography (NEG) approach to the analysis of potential growth centres serves as the platform for this dissertation's core-periphery analysis and a regional evaluation of Ireland's growth 2002-2011. Due to space limitations, this detailed 'Sectoral' analysis is transferred to Appendix 21. Taking into account the results from all of this Chapter's Tables together with those of Appendix 21 and to the evidence adduced, it is clear that the superior growth ambitions of the NSS 2002-2020, for the aggregate Gateways and Hubs were overly-ambitious and for the actual population outturn are mostly disappointing.

In making such observations it has to be noted that the NSS (2002-2011) cautioned on P. 51, *...that it might take considerably longer than its eighteen-year lifespan for some of the selected G&H settlements to reach "critical mass" for at least some of the chosen settlements.*

7.8 Settlement Analysis - Conclusion

In contrast with the NSS (2002-2020), it is imperative that its replacement should give due recognition to *what is* and not *what might be wished*, in pursuit of local political

agendas. Specifically, the demographic evidence points both to the location and spatial distribution of Ireland's population and to its differentiated growth. Accordingly, the policy quest must be to target and concentrate finite capital investment resources to key growth centres.

The Regional Growth Analysis of Appendix 20 shows the eastern portion of State continuing to grow at a much faster rate – eight times stronger than the western half (2011-2013). Accordingly, this results in the conclusion that a new spatial strategy recommendation should designate the same number of additional eastern growth centres, such as 'dynamic' Drogheda and Portlaoise replacing Tullamore and Mullingar. Conversely, with the much lower and slower-growing population of the western and border areas, this requires a radical reduction in the number of smaller NSS growth settlements, with Shannon, Mallow, Tuam, Killarney, Monaghan and Ballina being omitted. Thus growth should then become much more concentrated in the provincial cities and a small number of its larger, fast-growing towns with a minimum population guideline of about 20,000.

The overall conclusion is that many of the chosen NSS 2002-2020 settlements did not perform to their 'growth objective' as was intended. Accordingly, the next chapter examines the individual, proposed growth centres together with other potential growth settlements, in completing this thesis methodological approach to making the final 'growth choices' for a new NSS.

CHAPTER 8: ANALYSIS OF ALTERNATIVE SETTLEMENT POSSIBILITIES

8.1 Foreword

This chapter investigates the application of a similar methodological approaches to the eighty five settlements of 5,000 and over in population, so as to identify a priority list of preferred growth towns for the new NSS. This is done on the assumption that as in the case of the 2002-2011 NSS, the new Plan will likewise indicate its preferred settlements as drivers of regional and national-levels, of strategic economic and spatial planning growth.

Such qualification is necessary because of DoECLG Niall Cussen's commentary at the DT123 Class Meeting of early 2013 ...that any new Plan would likely adopt a 'minimalist' approach, and thus ...might be one of just fifteen pages in length, *vide* Appendix 2. This understanding appears to be consistent with the approach, as suggested in the *Putting People First* report, for its three proposed 'super regional' Assemblies.

Thus once established, these Assemblies are likely to be made responsible for articulating the detailed workings of a new NSS in a new Regional Planning Guidelines (RPG) format. This raises the question: would the new NSS specify the settlement growth centres or would it be left to the RPGs to so do? Will there be a final arbiter, e.g. one of the economic Ministries, the DoECLG or to individual Regional Assemblies to be shortly established?

The deployment of population and DWP data, confirms that the State's five cities will self-select in a new NSS list of growth centres, albeit with concerns as to the performance of Waterford when it is compared with Galway City. Accordingly this chapter concentrates in the task of confirming other 'growth settlements', based on a combination of both population and DWP performance together with geographic location and scale-size criteria. These selection judgments are made, having regard to the scale-size differentiation, of both population and DWP counts for the five cities, and their relative size to each other and to the towns of the State. Both population and DWP

returns for recent censuses confirm not only the extent of Dublin's primacy but in applying Zipf's Law its Gini Coefficient percentage figure confirms the modest size of Ireland's secondary cities and the extent of their population shortfall.

8.2 Zipf's Law Analysis for the Five Cities of State

Commencing with the comparison of cities, Zipf's Law (1949) states that *the population of a city multiplied by its rank in terms of population is a constant.*¹ If considered in reverse as per this definition, there appears to be a far stronger 2011 linear relationship between the populations of Cork at 198,582 and Limerick at 91,454 which is somewhat under half Cork's size, and then Galway with 76,778 and finally Waterford's 51,519. The following Table 8.1 shows, both the populations of the five cities and their respective growth performances over the first half of the NSS lifespan.

¹ Its variant, Davis's Law is perhaps more relevant to larger countries: it postulates that groups of cities within defined size categories should aggregate to the same population – especially when viewed over a time dynamic of, say, every fifty years. Bogart (1998: 17). Another source Pitzl (2004) quotes the economist Mark Jefferson in defining a Primate City as one where the population ratio between it and the second and third largest cities are 100:30:20 based upon empirical observation which for Ireland, produces a somewhat more benign outcome.

Table 8.1: Population Analysis of Irish Cities (2002-2011)

				Increase	
	2002	2006	2011	2002-2011	% growth
Dublin	1,004,614	1,045,769	1,110,627	106,013	10.55%
Cork	186,239	190,384	198,582	12,343	6.63%
Limerick	86,998	90,757	91,454	4,456	5.12%
Galway	66,163	72,729	76,778	10,615	16.04%
<u>Waterford</u>	<u>46,736</u>	<u>49,213</u>	<u>51,519</u>	<u>4,783</u>	<u>10.23%</u>
TOTAL all cities	1,390,750	1,448,852	1,528,960	138,210	<u>9.94%</u>
Provincial Cities aggregate	386,136	403,083	418,333	32,197	
Provincial Cities as % of Dublin's population	38.44%	38.54%	37.67%	30.37%	

Source: Author's analysis of CSO census data

The initial observation is that the all-city (+9.94%) lags the State population increase over this 2002-2011 period, growing from 3,917,203 to 4,588,252 (+17.13%). Significantly, the four provincial cities have lost ground in terms of their aggregate population, when compared to Dublin. Whereas Galway's growth is just over 1% behind that of the State, the other cities achieved only a third to a half of that growth. Due to its scale-size difference, the capital has not just maintained its position of primacy but has increased its absolute difference of both population and DWP terms.

In the context of balanced regional development as espoused in the NSS Plan, this makes the task of counterbalancing the capital's population increasingly futile. The detailed methodological application of the Zipf Law analysis, is set out in Appendix 7, the results for which are summarised, thus:

Figure 8.1: Summary of Percentage Shortfalls in Zipf’s Gini Coefficient Application

- RoI, 5-City ‘Gini Coefficient’ Shortfall = 70.65%, equivalent to a population of 1,007,000, and
- All-Island ‘Gini Coefficient’ Shortfall = 41.95%, equivalent to 742,200

Both are based on Zipf Law’s definitional supposition that a perfect ‘linearity’ would have a ‘nil’ percent shortfall and with no population distortion. The above population equivalents are based on the State and all-island totals, respectively. It is instructive to place the results from the Zipf Analysis in the following Fig. 8.2, in order to confirm based on the 2011 census, that there is a ‘missing tier’ in the hierarchical structure of the State’s settlements, shown thus:

Figure 8.2: City Hierarchical Typology – The Missing Tier

Tier	Size Description (Population) (Nearest ‘fit’)	Min./Max. Range (Population)	Named City
1st Tier	Primate City of 1.11 million	Range = 1 million +	City = Dublin
2nd Tier	Secondary City(ies) of 0.55 m.	Range of 0.25 to 0.50m.	MISSING CITY!
3rd Tier	Tertiary City(ies) of 0.275 m.	Range of 0.12 to 0.25m.	Cork
4th Tier	Quadentary Cities of 0.140	Range of 0.06 to 0.12 m	Limerick and Galway
5th Tier	Quindentary Cities of 0.140	Range of 0.03 to 0.06 m	Waterford, Drogheda-LBM, Dundalk, Swords and Bray.

Source: Author’s analysis of CSO ‘Table 7’, settlement plus environs.

Note: A sixth tier would span Navan down to say Ashbourne at the 10,000 level and the classic ‘Christallerian’ Seventh Tier would accommodate every settlement below that population. It is also noted how so few Irish settlements occupy tiers three through five.

This typology order confirms that, in addition to the missing ‘hierarchical tier’, Irish cities continue to substantially underperform in their population growth: a situation that warrants urgent strategic planning policy redress. Likewise, for the operation of a successful modern

economy, there is a gulf in population size; one that presents a critical mass shortfall between Dublin and *all* other settlements.

This demographic defect also needs to be addressed so that the process of generating some element of endogenous growth can be achieved, outside of Dublin. This requires the capturing of both exogenous and endogenous-generated growth attributes, as next discussed.

8.3 Related Literature on Growth and Population Shortfall

ESRI has noted how agglomeration economics are ... *pervasive in the new economic geography literature and the creation of critical mass of selected urban centres is one of the primary aims of the NSS.* (2006: 84-85).² Apart from Dublin, in 2011 only four other settlements still exceed 50,000 in population. The 2011 census confirms that with few exceptions, the large and fast-growing towns are mainly located within Dublin's SoI. Robust growth has spilled over the GDA boundary and has contributed significantly to the rapid growth of towns such as Mullingar and Carlow.

As yet it is unclear for the first time since the State's foundation, if there could be a willingness to recognise and address the issue of urban agglomeration as a potent force for city growth – an issue that has been conspicuously absent from the manifestos of the major political parties and in Ireland's history of spatial planning implementation. It prompts the question: is there a realistic prospect of the emergence of a meaningful strategy to provide alternatives to Dublin's imperious primacy?

In the European and international context Dublin is the State's only significant settlement, Thornhill, NESCI (2009). Its constituent elements of demographic growth based on the weight of evidence, all point to an absence of strategy alternatives, adduced in the following analysis of concentration. Urban Economic Theorist, Smailes (1944) suggests that in developed industrial countries, the Rank Size analysis should be linear in outcome. This theory is graphically supported in the following Figure as applied to the population of English and Welsh cities, in 1971, thus:

² "The notion of an economy of agglomeration is one of the central concepts in urban economics, and it means that cost reductions occur because economic activities are located in one place. (McDonald and McMillen" (2007:36)

Figure 8.3: Rank Size (log scale) Application for English and Welsh Cities, 1971

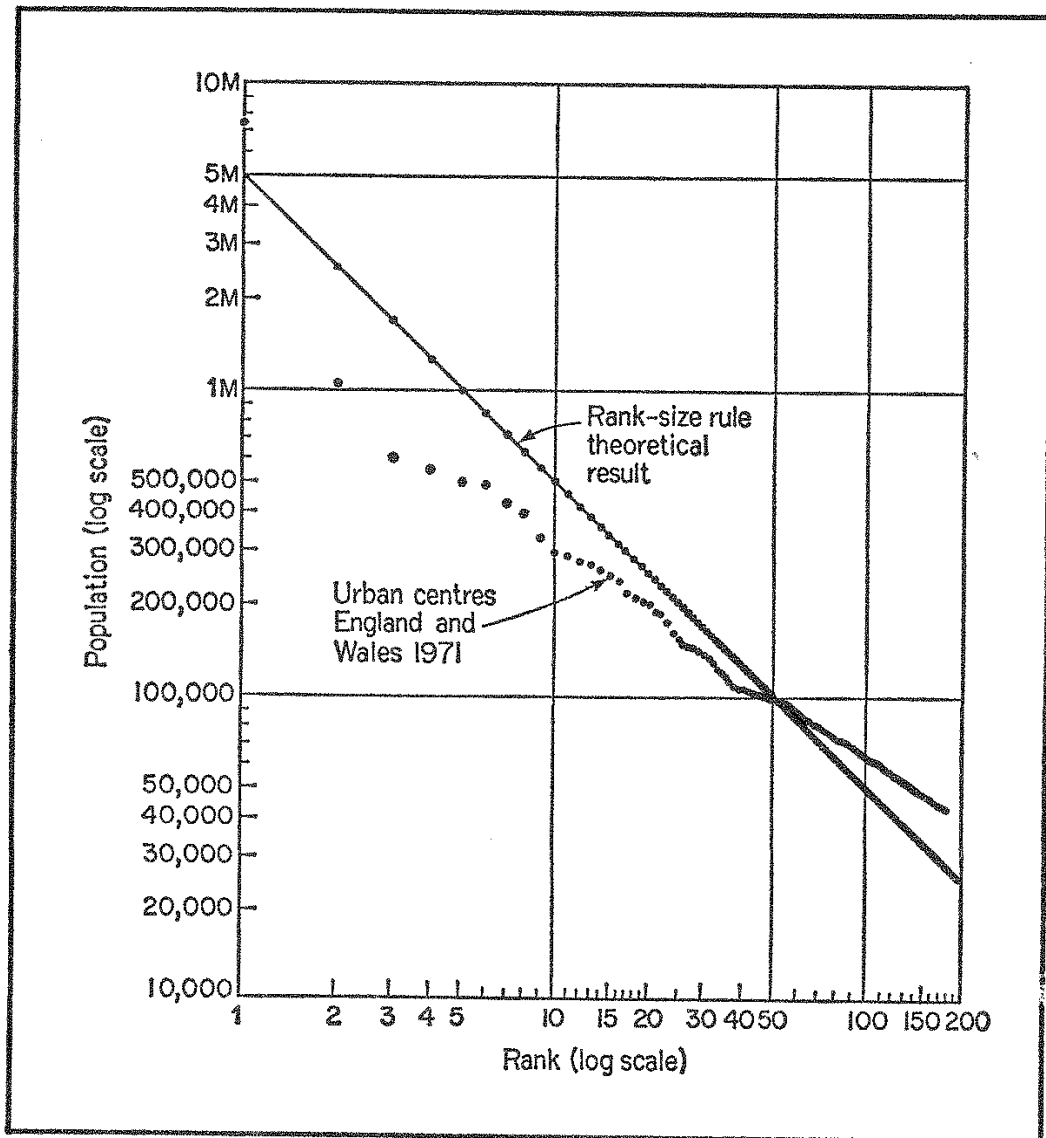


Fig. 18.1. Rank-size graphs. Theoretical result together with the result for England and Wales, 1971.

In contrast, to such linearity, the greater the settlement eccentricity resulting in graphical concavity, the higher is the indication of primacy and the lower in the development potential of a country's remaining urban structure. It is thus instructive to consider larger Irish settlements in the context of primacy and settlement size.

In the case of the Republic for example, Dublin remains at more than five times the size of Cork. Interestingly in the all-Ireland context, there is much less eccentricity, due to Belfast having somewhat under half of Dublin's population size.

8.4 Rank Size Assessment Applied to Ireland's Cities

This thesis argues that in as far as Rank Size order continues to have a modern-day validity for a State of the Republic's size, given the political and economic 'progress' of the past decade - the Belfast Agreement Peace period - it is only legitimate to view settlement size and distribution in the context of the island of Ireland as a whole. This would then more realistically accord with the State's economy as being 'regional' rather than 'national', i.e. in accordance with its NUTS 1 EU regional classification.

In this context, McCann (2001:80-81) points out that ... *the rank-size rule does indeed approximate to the long-run spatial distribution of a mature spatial system ...based on simulation results conducted by Fujita, et al. (1999)*. Furthermore, a variety of rank-size relationships is possible, albeit, ...*in the case of many mature economies such as Ireland, Denmark, France and South Korea, which exhibit highly-skewed urban distributions, [they] do not approximate to any form of rank-size relationships (op. cit.)*. The analysis of subject thesis with the skewed gini coefficient results for Ireland confirm the extent of its highly skewed urban settlement population distribution and confirms the urgent policy need for a spatial policy 'direction' to grow its provincial cities and some larger towns.

With the gradual acceptance of metropolitan-city morphology, today, it is of greater economic relevance to measure settlements in the context of their geographical SoI of employment, specifically including their effective commuter belt. However, because of the disproportionate cost of fuel and the time input of commuting, urban economic and NEG literature places increasing importance on compact cities, *vide* Jenks, et al (1996). The extent of the 'Gini Coefficient' distortion as at the 2011 census confirms that the provincial cities are too small, thereby 'depriving' the regional economies the 'spillover' opportunities to participate in an increasingly services-based world. It is noted that a 'nil' distortion would be recorded as a zero percentage.

Utilising Zipf's Law as a benchmark, it is instructive to contemplate the aggregate of just over one million for the population 'shortfall' of the 'provincial' cities, *vide* Figure 8.1. This finding supports the view that for small countries or provinces, as in the cases of the Republic and of Northern Ireland, primacy is to be expected, simply based on the limited size of entity. This is supported in research by Mansury, Y. and Gulyas, L. (2006). Nevertheless, future governments should be obliged to reduce such shortfall: a policy

initiative that would require them to commit to populating the State's 'provincial' cities, especially having regard to the growing importance of the Services Sector.

Instructively, such data analysis also confirm that the imperious size difference of Dublin, of its population growth 'effect' and of its sphere-of-influence domination exerted over much of the eastern portion of the State; that all of this evidence is such as to warrant a spatial policy strategy that recognises and address 'core' as against 'peripheral' endowment.

In Hughes (2010), prior to the availability of the most recent census (2011) data, it was concluded that when the all-island position is considered, that is, in addition to the effects of Dublin itself, the influence of Belfast's like-primacy for Northern Ireland, means that the eastern gravity-pull factor requires to be strategically highlighted for the entire island rather than ignored or counter-acted, in addressing the task of settlement selection, their size, location and their number. Here, the objective of what is in the State's best interest should always take precedent over sensitivities of one region's superior growth over that of another. 'Lumpiness' should always be expected to result in uneven growth. The next chapter, 9, addresses this issue and specifically, that of its spatial planning policy response at the town settlement rather than at the regional planning level.

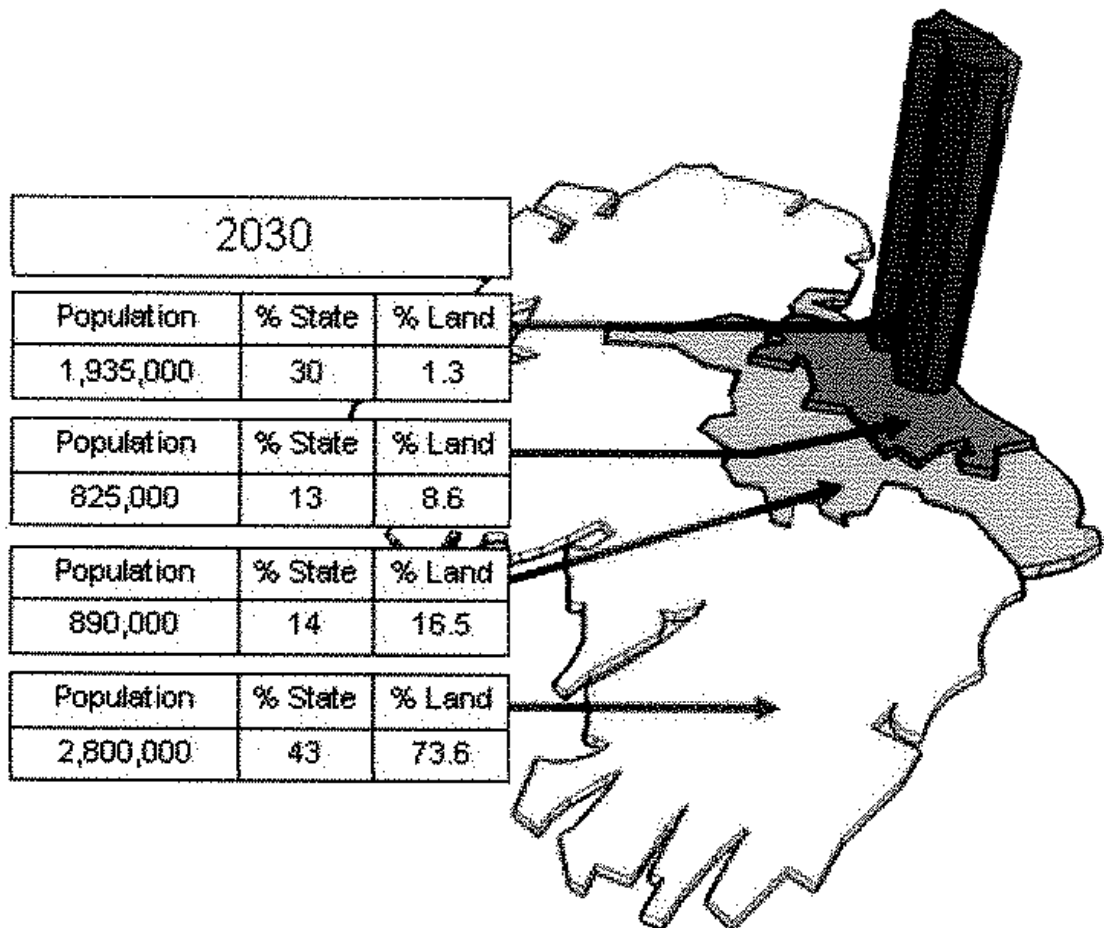
Dividing the Border Region into its respective East (Louth+Cavan+Monaghan) and West (Donegal+Sligo+Leitrim) constituents, between 2002 and 2011 the East is recorded as having a 30.32% higher level of population growth. Similar analysis for the two subsequent years' post 2011 census to April 2013, by deploying the CSO's *Annual Population and Migration Estimates* for the regions, a similar, albeit somewhat reduced growth-rate difference is observed. Appendix 20 shows the detail of this analysis.

Accordingly, from a spatial planning perspective, in formulating the new NSS for growth-town selection, due recognition must be placed on both population scale and population and DWP growth dynamics so that the appropriate, proportionate, number of growth centres are selected in the East of State. This produces notably different results to the western bias of G&H selection in the last NSS. It is noted that in 2011, Leinster contained over 54% of the State's total population.

In summarising the recent NSS phase (2002-2013) for regional population growth – where the CSO report in thousands as per the annual *Population & Migration Estimates*, the East of State added 455.3 thousand to reach a population of 2,851.4 thousand. This compares with the West of State’s 221.2 thousand growth to reach 1,742.8 thousand.

The East’s growth rate is an impressive 18.95% compared with the West of State’s 14.54%. This outturn represents an instructive update to the *Twice the Size* Report (2009) commentary. That study had shown, in a somewhat dramatic futuristic pictorial, the inevitable massing of Ireland’s population on the east coast, thus:

Figure 8.4: Distribution of Ireland’s Population by 2030, *Twice the Size* Report (2009)



Source: Demographic Projections in 2030 for Dublin City and County, The Mid-East Region, Selected Leinster plus Cavan Counties and the Residual areas of State, data prepared by Brian Hughes and pictorial by Conor Skehan, DIT.

8.5 Chapter Conclusions

The quantitative research of this and the preceding chapter has compared City Size, the Core-Periphery and Regional Methodological analyses of Ireland's population dynamics in order to be better appraised as to its performance and the thrust of its growth dynamic since the commencement of the 2002-2020 NSS. Accordingly the research is better placed to be able to inform with confidence, the selection of growth centre towns in the concluding chapters of this thesis.

CHAPTER 9: FINAL SELECTION AND CONFIRMATION OF GROWTH SETTLEMENTS FOR A NEW NSS

9.1 Foreword

As of now, Ireland comprises two NUTS 2 Regions: the South and East (SE) and the Border, Midlands and Western Region (BMW). The locations and shapes of three replacement ‘super regions’, as shown on the accompanying Figure 9.1, the New NUTS2 Regions as described in *Putting People First* document, have served as a geographic template reinforcing the *Thesis Scorecard* outcomes for selecting the growth centres for the new NSS. Specific strategic objectives have also informed the chosen settlements. At this point it is instructive to show in that Figure 9.1, which sets out the three proposed ‘replacement’ NUTS 2 Regional Authority areas together with this dissertation’s selected seventeen ‘growth centres, thus:

Figure 9.1: The 17 Selected Growth Settlements in the Dissertation



The following explanation of the settlement selection for the three Regional Assembly Areas commences with the Eastern and Midland Region.

9.2 The Eastern and Midlands Region

In addition to Dublin's role as the largest settlement and nation's capital city, the primary economic objective under the new NSS should be to reinforce the Dublin-Belfast Corridor as the State's principal regional asset. As criticised in the *Twice the Size Study*, under the 2002-2020 NSS, apart from the capital, Dundalk was the only Gateway nominated in the 'Consolidating' band, *vide* 3.6.1 *supra*.

Accordingly, in addition to the existing Gateway of Dundalk, Drogheda with Laytown-Bettystown-Mornington (LBM) is selected on the following basis. It has been Ireland's largest town for the last two censuses and it is in the process of agglomerating with, LBM itself a Band 1 town. This agglomeration evidenced from the directional growth of both towns 'creeping' towards each other assisted by the east-west expansion of Donacarney village, the commencement of a number of nearby large estates – some of whose construction having been interrupted by the economic downturn. Also noted is the recent completion of the major waste-water treatment plant on the Marsh Road which serves both Drogheda and LBM, together with the new District Shopping Centre at Colp East.

Perversly, under the current Regional Planning Guidelines for the Border Region, Drogheda's current growth status is no different from that of Carrick-on-Shannon, a Band 3 settlement which has less than a tenth of Drogheda's population. Perhaps the most compelling justification for recognition of Drogheda + LBM as a 'growth centre' of significance is that in the first 9-year life of the NSS (2002-2011), their combined population growth of $7,558 + 5,292 = 12,850$, is exceeded only by Dublin's $+ 106,013$. It was ahead of Cork's $+12,343$ or Galway's $+10,615$, being the only two other settlements to achieve a 'five-figure' growth in population over that period. Confirmation of East Meath and Fingal as the area of the State exhibiting the fastest growth is evidenced by Swords = $+ 9,749$ and Balbriggan's $+ 9,666$ increase in population. In contrast, the Dundalk NSS Gateway's growth = $+ 5,311$ as compared with Drogheda = $7,558 + 5,292 = + 12,850$. All 85 settlement population growth data (2002-2011) may be viewed in **'TOWN ANALYSIS.xls Cells A774..E865, on the CD.**

Portlaoise's selection reflects both its size as a plus-20,000 populated town and to its growth potential. In the 2006-2011 census its growth was similar to the aggregate

growth of the ATM tri-Gateway. Furthermore, it occupies a strategic location just north of the M&M8 Motorway bifurcation and is close to the strategic Rail junction at Portarlinton, another fast growing settlement. Furthermore, Portlaoise's centrality is enhanced because of its important employment base for Government Departments, Jail, Hospital and its County Council offices. It is also an an important centre in the national electricity grid infrastructure and has a training function in this regard.

Athlone, having a population of just over twenty thousand and because of its central location with strategic road and rail connections, is selected as the largest Midland's town. Both Mullingar and Tullamore are de-selected as it is felt that to some extent, their population sizes and distance from Athlone are serious impediment to growth concentration and to the fact that the concept of the linked ATM Gateway idea of the 2002-2020 NSS has not worked. Furthermore, in an EIS study of Tullamore in 2008 Skehan found that its salmonoid Tullamore River does not have the flow/volume capacity to support its proposed wast water treatment plant nor its NSS-envisaged population growth. In summary: as depicted in Figure 9.1, The Eastern & Midlands Region region has five growth settlements for a 2.21 million population: Dublin, Drogheda+LBM, Dundalk, Portlaoise and Athlone.

9.3 The Southern Region

Cork, Limerick and Waterford are the three city settlements of this region. Ennis is the largest town and its inclusion as a growth centre is also justified because of its proximity to Shannon Airport. It is an important settlement of the Atlantic Corridor routes, for both Road and Rail. Towards the east is Kilkenny, the largest town in this part of the region.

Wexford in the south-east of this region is also selected, principally because of its strategic location beside Rosslare Harbour and its sea connections to Britain and the Continental ports. Its 2011 population was 20,000. Finally there is Tralee, another large town in the south-west of this region. In all, there are seven selected settlements in this region of 1.54 million people. As shown in Figure 9.1, they are Cork, Limerick, Waterford, Ennis, Tralee, Kilkenny and Wexford.

9.4 The Border and Western Region

Because of its relatively large surface area combined with a sparse population, this third super region presents difficult choices, both on settlement size and growth grounds. The city of Galway has shown robust population growth since the 1960s, being by far the largest settlement in this region. Letterkenny in the north-west has surpassed Sligo as respectively the second and third chosen settlements of the region. Solely on the population criterion, all of the above towns having about 20,000 populations, are the only growth towns that are obvious selection choices.

On geographic grounds and having regard to the physical geographic shape of the region, it is noted to comprise two crab-like claws. Complementing Letterkenny's location in the northern 'claw', Cavan the only large town is selected for its location in the eastern 'claw' of this region. Finally, on a combined tourism and religious basis, Castlebar which is close to both Knock and Croagh Patrick, is chosen as the last of seven 'growth settlements' in this region. Both Castlebar and Cavan's selection represent important compromises as their respective 2011 populations are just 60% of the 20,000 minimum. Likewise, the economic viability of this region, having just 0.84 million people, remains questionable. A critical issue is whether the EU is prepared to recognise it as a NUTS 2 one? As set out in Figure 9.1, The Border and Western Region has five Growth Centres: Galway, Letterkenny, Sligo, Castlebar and Cavan.

Accordingly, within the State, seventeen 'growth' settlements, comprising the five cities and twelve of the largest towns – apart from those within the immediate SoI of Dublin – are chosen for the new NSS. It is noted that as at the 2002 census, some twenty-three G&H locations were chosen for the 2002-2020 NSS, which represented one settlement per 170,000 of population at that time. In comparison, the seventeen growth centres proposed for the new NSS represents a 2011 census average size of 270,000. It is recognised that if Dublin is discounted, the average settlement size is still a very fragile one in the context of a minimum 20,000 threshold size that is well below the inflection point 'A' in the Alonso (1971) *Regional Studies* Paper, *vide* Figure 0.1 above.

Accordingly, the new NSS should be formulated on the basis that these 'growth centres' and especially the smaller ones, must be shown on 'review', to justify their continuing 'growth' status.

Interim reviews of future NSS Plans would be expected to de-select non-performing growth settlements, thereby helping to achieve the objective of enhancing average population size whilst reducing the risk of ‘growth dilution’. Hopefully, at such point in the future, the distributive effect of Hicks or Kaldor-like ‘spillovers’ from the State’s ‘Core’ region will have demonstrated the benefits of ‘lumpiness’ of population density, scale and, above all, the attributes of urban agglomeration.

9.5 Scorecard Model Confirmations for Each Region

Applying the weighted combined Population and DWP model scores, the following outcomes are recorded in Table 9.1 for this dissertation-selected growth centres in their descending score order, thus:

Table 9.1: The 17 Selected Growth Settlements – Points Scorecard

		Scorecard results
		Summation
Dublin city and suburbs	(1)	1,332,768
Cork city and suburbs	(2)	278,060
Galway city and suburbs	(4)	114,925
Limerick city and suburbs	(3)	117,659
Waterford city and suburbs	(5)	71,640
<i>Drogheda Legal Town and its Environs</i>	<i>(6)</i>	<i>44,875</i>
Dundalk Legal Town and its Environs	(7)	44,685
Sligo Legal Town and its Environs	(24)	32,259
<i>Tralee Legal Town and its Environs</i>	<i>(13)</i>	<i>31,314</i>
<i>Kilkenny Legal Town and its Environs</i>	<i>(12)</i>	<i>31,312</i>
<i>Ennis Legal Town and its Environs</i>	<i>(11)</i>	<i>30,695</i>
Letterkenny Legal Town and its Environs	(22)	30,270
<i>Wexford Legal Town and its Environs</i>	<i>(20)</i>	<i>26,814</i>
Athlone Legal Town and its Environs	(17)	26,341
<i>Portlaoise Legal Town and its Environs</i>	<i>(18)</i>	<i>24,858</i>
<i>Castlebar Legal Town and its Environs</i>	<i>(34)</i>	<i>20,137</i>
<i>Cavan Legal Town and its Environs</i>	<i>(44)</i>	<i>14,779</i>
Brackets show the 2011 Census Population Rank order	Total	2,273,390
Total excluding Dublin		940,623
Dublin percentage:		58.62%

Source: Author's applied Scorecard from *Basedocument2* Spreadsheet

Note: The Bold settlements are NSS designated ‘Gateways’ and the Italics ones are ‘Hubs’

It is likewise instructive to show separately hereunder, the scorecard outcomes for the NSS Gateways and Hubs that are excluded from this dissertation’s selection, thus:

Table 9.2: Omitted NSS Settlements - Scorecard

		Model
		Summation
Mullingar	(19)	24,065
Tullamore	(30)	21,435
<i>Killarney</i>	(31)	18,823
<i>Ballina</i>	(39)	13,944
<i>Mallow</i>	(37)	12,378
Shannon	(46)	10,294
<i>Monaghan</i>	(62)	11,719
<i>Tuam</i>	(56)	8,879
Total (Brackets show the 2011 Census Population Rank order)	Total	121,537

Source: Author's applied Scorecard from *Basedocument2* Spreadsheet

Note: The Bold settlements are NSS designated 'Gateways' and the Italics ones are 'Hubs'

9.6 Selected Growth Settlement Scorecard

Both Castlebar and Cavan significantly lag the Scorecard minimum criterion of c. 25,000 points and in the case of Cavan, its selection is based solely on the spatial-geography criterion in the absence of any viable alternative settlement of convenient location within this sub-Regional area.

It is salutary to note that on this author's combined Population and DWP Scorecard model, incorporating both scale and growth criteria, the aggregate points for all sixteen other 'growth centres' amounts to only 70.58% of Dublin's figure. Furthermore, the total points for the entire Scorecard for the 85 settlements, amounts to 3,076,128 points and thus Dublin accounts for some 43.33% of this total points. If an apportionment is made of the number and distribution of the 85 settlements within the three 'super region', the following Table 9.3 emerges:

Table 9.3: Aggregate of All Other Growth Centres Compared with Dublin

Aggregate of All 17 Growth Settlements:	2,273,390
Total - excluding Dublin	940,623
16 Growth Centres as a percentage of Dublin	70.58%

Source: Author's applied Scorecard from Basedocument2 File

9.7 The State's Five Cities

Despite the extent of the Gini Coefficient shortfall confirmation of the 'provincial cities' deviation from Zipf's Law, *vide* Appendix 7, both on population and DWP counts, the State's cities are self-selecting as NSS 'growth centres'. However as already discussed, the provincial cities will require 'Buchanan-like' growth concentration if they are to be able to grow indigenously, to the extent required to become regional 'economic powerhouses' and to create the missing economically-critical tier of 200,000 to 500,000-populated settlements, *vide* Figure 8.2.

In recent censuses since 1996, with the exception of Galway, no other city has come close to matching the State percentage population growth for any inter-censal period, albeit Dublin's creditable near-65,000 'scale-size' increase in the five years to 2011. The policy decision to withdraw the Gateway Development Fund was short-sighted, albeit enforced by the State's loss of economic sovereignty. As soon as possible, it should be reinstated as a much larger fund, as soon as possible after the Troika leaves and financial sovereignty is restored, to serve as an initial city-focused capital investment fund. The fact itself, that that Fund was established shows that there was some official appreciation of its need, to economically kick-start the smaller cities. However, at just €300 million in size, and also intended to be applied to all G&H locations, such dilution would have called into question its potential effectiveness, as originally envisaged.

As the *Town Analysis Spreadsheet* results confirms, the aggregate city percentage share of total State population has continued to drop at every census since 1996, specifically from 36.22% to 33.32% share in 2011. In an earlier conversation, in 2008, between this student and Niall Cussen of DoECLG, he confirmed that successive governments are concerned with the identified aggregate infrastructure shortfall required for cities rather

than their below par population growth. Specifically, the cost of flood defences and remedial attenuation measures for named cities, are estimated at a multiple times that of the aforementioned Gateway Development Fund. This was held to be amongst the reasons why previous governments were antipathetic towards promoting and growing Ireland's cities. Yet the superior DWP counts for cities serves to confirm their indispensable economic role in serving the national interest.

9.8 Literature on Applied Growth Factors for the Four Provincial Cities

Spatial geo-demographic factors are pertinent to leverage concentrated economic initiatives, applicable to all four locations. The literature sources are based on criteria identified in Poleze (2009) and Edwards (2005), *vide* Appendix 15.

9.9 The State's Large Towns – Growth Selection

The data output of the Dissertation's Model of Table 5.2 confirms eight towns that show considerably stronger combined population and DWP Scale-size than other settlements. Importantly, most are strategically located to serve their geographic area.

The *Basedocument2* spreadsheet evidence is also applied to bringing the large town count to twelve, augmented by geographical and the Net Gain/Loss in working population criteria.

9.10 Chapter Conclusions: Scorecard Points for Selected Regional Settlements

This chapter concludes by summarising the selected growth centres for the three NUTS 2 Regions in descending Scorecard points order, thus:

Eastern and Midlands Region (5): Dublin, Drogheda, Dundalk, Athlone and Portlaoise.

Southern Region (7): Cork, Limerick, Waterford, Ennis, Kilkenny, Tralee and Wexford.

Western and Border Region (5): Galway, Sligo, Letterkenny, Castlebar* and Cavan*.

*Both Castlebar and Cavan's selection reflect regional geographic need rather than their points attribute.

CHAPTER 10: THESIS CONCLUSIONS:

10.1 Introduction

In nominating the selected growth settlements for a new NSS, it is instructive to consider how many should there be? If the primary task of the new plan is to contribute to Ireland's potential economic wellbeing by enhancing its competitiveness, then the focus must rest on enhancing its fragile economies of scale. Accordingly, the objective should be for the selected growth centres to be self-generating and growing at levels considerably above the commensurate State growth average, both for population and employment criteria.

From the literature review it is widely accepted that the 'failed' NSS Plan provided for too many growth centres and influential commentators questioned the wisdom of having the 'Hub' tier of centres at all. This student believes that on urban economic and NEG grounds, there should be no more 'growth centres' than one for every 270,000 of overall population, ideally in a single 'tier' category. Accordingly, the selected settlements must be potentially 'viable' in being able to self-grow, organically. In the Alonso (1971) paper on minimum thresholds of population viability, a settlement minimum population level of 100,000 was envisaged as being critical for such economies of scale to be attained.

By the census of 2011 the State's population had grown by 17.13% over that of 2002, which growth provides additional scope to be able to increase the number of nominated 'growth centres' for the State to seventeen, representing just over the one-per-270,000 population mark. However for this to happen under a new NSS, a spatial strategy policy of State-level concentration rather than dispersal will be required. It is recognised that this represents a difficult political 'ask'. In the first instance, it requires the recognition and acceptance of the benefits of urban agglomeration, combined with eventual 'core' to 'periphery' spillover rather than diluted distribution of scarce investment and capital resourcing to be appreciated, politically, as being in the national rather than local interest, as was advocated in 2003 by the Chief Executive of IDA Ireland, *vide* Appendix 1.

Perhaps the main impediment is the recognition of the State's absence of a settlement tier of intermediate-sized cities in the 200,000 to 500,000 range; from which such 'spillover' might then occur. Another difficulty from a political perspective, is that the necessary 'mind-set' required to accommodate such spatial strategic re-direction will require broad-based party-political 'buy in'; one that might even require a succession of 5-year Dail-terms to implement. What is not in the country's interest is the prospect that with a change from one to the other main political parties being in power, that this would result in frequent replacement of a NSS in favour of another one, that is unless this results in the implementation of evidence-based spatial policies.

And what are the spatial strategy alternatives? As posited in Hughes (2010), the 'do nothing' option will inevitably lead to an eventual Dublin 'citystate' with further increases in the population gap between it and the next tier of settlements, further accentuating the 'settlement-size hierarchical void'. Economic efficiencies, competitiveness and economies of scale will be impossible to achieve at the very time that Ireland regains its economic sovereignty and needs to be self-reliant. Furthermore, opportunities to expand Producer Services-type activity will be confined largely to the capital, as is evidenced in sparse IDA 'viewings' for counties without cities, *vide Irish Times*, P 3, 24.09.2013.

10.2 Recurring Conclusions on Ireland's Settlement Patterns

Throughout this research, evidence supporting two specific conclusions re-emerges in several instances. First, that almost all of Ireland's large settlements except Galway are displaying weak population growth, inimical to the economic need to rapidly increase their size to a minimum 'threshold level' whereby their leadership role in boosting their own region's growth can become effective. This is related to but is quite different from the issue of 'balance' in the critical need, to grow the State's provincial cities, so that the critical deficiency in having settlements within the 200,000 to 500,000 size-range can be reversed. Likewise, it is recognising other instances where urban agglomeration is happening and encouraging such growth; whereby emerging centres can be earmarked for potential-city status, is led by the compelling case for Drogheda's emerging city recognition.

The second conclusion that follows from the first one, relates to the proliferation and rapid expansion in the numbers of nucleated villages and smaller towns of up to 4,999 in population. Each successive recent census has shown the extent to which such proliferation is taking place, thereby diluting the potential to redirect and concentrate urban expansion into the NSS-nominated growth centres. Over 150 additional nucleated villages, from populations of 200 and upward have emerged since the failed NSS commenced. Since 2002 the number of towns of 1,500 and upward has increased by 35% and the count of one-off houses has continued to grow steadily. In 1966 there were just 33 settlements of 5,000 and over, compared with the 85 in 2011. The problem of settlement proliferation needs to be addressed.

Such findings are having adverse economic effects, blunting Ireland's competitiveness potential, increasing servicing and infrastructural capital costs whilst incurring additional diseconomies-of-scale and retarding economic recovery. Likewise, they have contributed to the volume of fast-growing medium and long-distance commuter journeys. Yet such findings are not unexpected, especially as the State is still only 62% urbanised. The need for governance reform and its implementation must serve to further rebalance an overbearing political influence that strives for short-term and local interests: thereby enhancing a more robust spatial planning regime whereby long-term public planning policy in the national interest can supersede the quest for short-term political gain. Stronger local government at the regional level is a pre-requisite.

10.3 An Invigorated and Strengthened Role for the Planning Profession

It is important that the Spatial Planning profession and especially their professional institutes continue to possess an independent, strong leadership role, in ensuring that the academic and theoretical advances, such as in urban economics and the new economic geography, can be incorporated into updated research for a new, reconfigured NSS. Specifically, the profession must not leave itself open to accusation of pandering to the political realm in limiting its role solely to the 'advisory' or 'technical' realm of spatial planning. This is a difficult area, especially as such a high proportion of this profession are employed in the public sector and so their institutes must take this lead role.

In this way, the old and repeated mistakes of previous plans can be eschewed whilst ensuring that a 'minimalist', skimpy, indicated replacement NSS does not emerge. It

must not avoid the hard settlement locational decisions that are necessary for such Plan to be both effective and enduring. Implementing the Regional Planning Guidelines under the Planning Legislation's 'core policy' framework requires strong NSS 'leadership'. The profession's role in contributing to such an objective must also encompass that of 'watch guard', to prevent the forthcoming Plan seeking to reduce the past, 'dilutionary' effect of the new NSS having had far too many growth centres.

10.4 Outcome of Dissertation's Methodological Approach

This dissertation has nominated just seventeen rather than the twenty-three growth centres of the failed NSS. The five cities of the State self-select on the population and DWP model of measurement (MM). Twelve other centres are chosen on their record for growth, on MM criteria, on regional-geographical grounds on the necessary task, to make choices for growth centres in the 'core' area.

In this regard, it is not in the national interest to continue to underplay the economic potential of the Dublin-Belfast Corridor (DBC) or likewise, of the fast growing Outer Leinster area. In all, there are five chosen growth centres nominated in the 'core' area and twelve centres are selected in the 'periphery' area. The process of regular NSS monitoring and re-evaluation should be scorecard-evidence based and be undertaken continuously. In this way, the 'justification' list of seventeen 'growth centres' can be further reduced on the basis of an NSS revision report of settlement population and DWP growth under-performance. It has to be recognised that some of the smaller nominated growth towns of the list of seventeen, may not attain a minimum threshold size to be of much economic assistance to their SoI and that more remote, yet larger and more dynamic cities or growth towns will have greater potential to create 'spillover' effects to laggard regions. The following two maps, shown side-by-side, allow the growth centres as proposed in this dissertation to be compared with those of the 2002-2020 NSS, thus:

10.5 Summary of the Twelve Nominated Non-City Growth Centres

- Within the 'core' area, the emergence of Drogheda as both Ireland's largest town and because of its continuing agglomeration with LBM, make it the first choice for the DBC growth centre, which in 2011 is just 3.4% less than the population of Waterford City.

- Kilkenny is the obvious sub-regional large-town choice for the inland, south outer-Leinster area,
- Wexford is chosen because of its proximity to the Rosslare Port Gateway as the south-east's growth centre.
- Dundalk as the State's second-largest town, with its cross-border potential will also reinforce the DBC. Eventually, the combined centrality of both Drogheda-LBM and Dundalk is likely to obviate the need to retain Cavan in the north-east area of State. For the 'periphery' area, the four 'provincial' cities are self-selecting.
- Despite their weak growth over the past thirty years, both Athlone and Sligo are deemed to have pivotal regional geographic roles to play.
- Ennis remains the largest town in the 'periphery' area.
- Portlaoise score is ahead of either Mullingar or Tullamore and its recent interdenial growth has brought it above the 20,000 population level.
- Wexford, also over the 20,000 mark is beside its UK and Continental port gateway Rosslare, is strategically important to the South East Region
- Castlebar's proximity to Westport with the important tourism and religious centres of Knock and Croagh Patrick forms the basis for its choice on geographic grounds. Its NGL count is also positive. Over the medium time frame, Castlebar's growth performance will determine its retention-justification as a growth centre.
- Because of its population size, Tralee merits the list of 'Periphery' growth settlements for the new NSS.
- Letterkenny's demonstrated growth and its proximity to Derry likewise, are selected.
- It appears logical to select Cavan as the 'growth centre' covering the geographic area of for one of its 'claws' despite its moderate 'scorecard' result complementing the other 'crab-like shape of the West-Border Region and Letterkenny's location, but subject to abovementioned reservations.

10.6 Evidence-Based Justification for the Hard-Choice Omissions as Growth Centre

Avoiding the specific political quest to find 'one for everyone in the audience'-syndrome, means the inevitability of disappointment for the towns omitted from the

previous G&H settlement list. This thesis methodological approach included the formulation of descending size order arrays of the three Administrative Region ‘scorecards’ and undertaking further evaluative ‘inclusions’ and ‘exclusions’. Hard-choice assessments were inevitable, especially in the Eastern-Midlands Region, where so many settlements achieved scores of 20,000 and over. Likewise, Swords, Navan, Bray and Newbridge all had impressive scores but on geographic grounds because of their relative proximity to Dublin, they were not selected.

In relation to the Southern Region, far fewer ‘hard choices’ were encountered. Wexford’s selection in preference to Carlow or Clonmel is done because of the geographic significance of the nearby strategically-important Rosslare Harbour. It might be argued that County Cork with ten per cent of the State’s surface area ought to have another growth centre. However, with this region having three of the State’s five cities, it was considered that the addition of four large towns would result in a total of seven growth centres.

For the Border and Western Region, its settlement-size limitations enforced the selection of modestly-populated Cavan as the only viable possibility for its eastern ‘claw’. This is reluctantly concluded on geographic grounds for the present, despite its relative proximity to the Dublin-Belfast Corridor’s Drogheda and Dundalk locations.

It is important that the spatial planning and economic competitiveness tests must prevail over that of any political ‘wish list’-pressure, subject to geographic spread. The objective is to *reduce* the ‘size dilution’ effect, in creating as few as possible centres; ones that possess scale-size *with* proven growth records and their capacity for delivering regional spillover. They need to be capable of quickly doubling in population *cum* DWP, replicating the same argument as were previously deployed, *vide* NSS (2002:50) and *Twice the Size* (2008).

The following Table sets out the Scorecard for the three-region list of proposed growth settlements, thus:

Table 10.1: Summary of the Dissertation's Three-Region Proposed Growth Settlements

	<u>Scorecard</u>	<u>% Share</u>	Growth Centres: Settlement Scorecard Share (SSS)	Growth Centre % of SSS
Total - Eastern and Midland Region: (5)	1,949,482	63.37%	1,227,319	62.96%
Total - Southern Region: (7)	841,466	27.35%	435,103	51.71%
<u>Total - Border and Western Region: (5)</u>	<u>285,180</u>	<u>9.27%</u>	<u>138,341</u>	<u>48.51%</u>
Total - Nominated Growth Centres: (17)	3,076,128	100.00%	1,800,763	58.54%

Source: Author's analysis of *Basedocument2* Spreadsheet

The most interesting evidence from Table 10.1 is the contrast between the three relatively evenly-matched surface areas and yet their widely diverging endowment, both in their numbers of settlements and in the already discussed average size of settlement. The '*Basedocument2*' spread sheet confirms that even after excluding the cities from such calculations, the average Scorecard of the Eastern and Midland growth towns is almost twice that of the Border and Western Region (BWR). Also noted is the aggregate population of BWR's four other nominated growth towns which is equal to just 80.18% of Galway City's population

In this regard, there is greater consistency between this numbers of growth centres with that of the Buchanan Plan (1968), when a pro-rata adjustment is made for the 1.7 million population growth of State that has occurred since the census of 1966. Specifically this dissertation, in taking account of the State population growth since 2002, is proposing one growth centre for almost every 270,000 of population compared with the 2002-2020 NSS which had one G&H centre for just 170,000 of population in 2002.

The spatial distribution of the nominated growth centres shows the Southern Region with seven centres, with the other two regions having five each.

This means that the Eastern and Midlands Region has 11.90% of its 42 settlements nominated as ‘growth centres’, the Southern Region with seven growth centres equates to having 27.35% of its thirty settlements as ‘growth centres’ and the Border and Western Region with five out of thirteen settlements means that 38.46% of its settlements are so nominated. Also computed are the average sizes of centres. Excluding cities, the average population of the other four Eastern and Midlands Region growth towns in 2011 is 29,173; excluding its three cities, the average of the four growth towns in the Southern Region is 23,387 and omitting Galway, the average for the four Border and Western Region is just 15,391, diluted by the smaller populations of Castlebar and Cavan. Aggravating these statistics is the fact that the urban to rural share of population is more pronounced, especially in the Border and Western Region

Nevertheless, the right-hand column data from this Table confirms the overall ‘coverage’, wherein the aggregate Scores from the seventeen selected growth centres equates to 58.54% of the aggregate score for all 85 settlements. Furthermore, all three regions are well represented: their respective scores are 62.96%, 51.71% and 48.51%, thereby confirming a balanced overall selection. This adds confidence to the process and importantly, to the policy strategy likely to resulting from its implementation.

10.7 Avoiding the Inappropriate Spatial Planning Policies of the Past

How can evidence-based planning help to avoid past mistakes in settlement selection? The census evidence on nucleated settlement formation 2002-2011 clearly points to the Irish settlement patterns becoming increasingly diffuse, the total numbers having increased from 675 to 849 over this nine-year period, *i.e.* by 25.78%. This ‘measles-like’ proliferation of towns of 1,500 and over is evidenced in their increase in number, from 144 to 197, or by 36.81%. These data confirm the settlement ‘diffusion’ findings of Meredith and van Egeraat (2013). Aggravating this picture, the non-nucleated population with significant one-off housing morphologies had continued to grow at levels that appear to this student to be far in excess of the rational criterion of what is necessary to meeting ‘local needs’; those that are associated with agriculture and extractive industries such as forestry, mining, fishing and other rural-based economic activities.

Instead, the economic imperative in improving the State's competitiveness must focus on the urgent spatial planning need, to arrest settlement proliferation with the creation of critical mass in the designated growth centres. For both urban economic and NEG theory espousal of *core-to-periphery* overspill growth which is difficult to create, without such critical mass of settlement consolidation being already present.

10.8: The Evidence as to the Extent of Past NSS Failures

There are many instances that demonstrate the overall ineffectiveness of the NSS during its first half-life, in which a diffuse pattern of 'scattergun development' has been significantly at variance, even with the intended concentration of growth into the G&H locations as that Plan had intended. Specifically, during the life of the NSS, its prescribed population targets had proposed that 55% of State population growth would take place in the G&Hs, with 45% assigned to the remainder of the State, *vide* Table 1, Daly and Kitchin (2013: 165).

In contrast to this, the G&H demographic outturn achieved during the first half-life of the plan was just 8.68% of State growth or just 58,248 out of 671,049, *vide* Table 6.1 (*op cit.*). Compare these poor outcomes with the selected growth centres of this dissertation. The 'Scorecard' outcome for all 85 settlements is 3,076,128, Dublin is 1,332,768, the 16 other nominated settlements is 940,623. Thus, all 17 growth settlements comprise 73.90% of the 85 settlement total 'Scorecard' and omitting Dublin, the 16 other growth centres comprise 53.95% of the other 84 centres.

This overwhelmingly poor NSS population growth outcome provides empirical evidence that the local political representatives over-ruled the planners, insofar as determining where unoccupied residential development took place. This was earlier confirmed in this student's conversations with the Implementing Officer for the Border Region. In the 2011 census there was a near six-fold difference in vacancy rates between south Dublin and Leitrim. The outcomes have resulted in a State aggregate of 100,000 or more, unwanted housing units in remote, provincial settings with no demonstrable demand, in contrast with a contemporaneous increasing housing stock shortage in parts of Dublin. However, such conclusive empiricism from the evidence adduced in this research would not have been possible without the cross-check analysis from CSO data on DWP having also been available.

This resultant divergence, as between what was needed and what was implemented, remains one of the greatest legacy failures of the credibility of the NSS process. In financial terms, as measured by this student's valuation background and taking a conservative average cost of say €200,000 per unit to also include infrastructure capital costs, this 'poor location' outcome is quantifiable at €20 Billion, which coincidentally is close to recent estimates of the additional sum that the taxpayer will have to find to recapitalise the Irish Banks in respect of Negative Equity Mortgage defaults!

Much more research needs to be undertaken. Given Ireland's fragile population and DWP statistics, it is therefore appropriate to reach the final stages of this thesis with urgings for further, focused research on settlement centrality whilst also noting McCafferty, *et al.*'s (2013) call for *Complementarity linked to sectoral specialisation*, which those authors together with Meijers (2007) note ... *have replaced the hierarchical relationship between centres envisaged by classical central place theory*. To date, the evidence on the benefits for G&H' clusters is unproven, where McCafferty (*op. cit*) ... *finds little evidence of complementary patterns of specialisation*.

In summary 'complementarity and urban specialisation' is intended to reinforce BRD whereas the central place hierarchy of functions is the key to 'lumpiness'. Which growth policy strategy is right, given the small size of Irish settlements? Whichever policy direction is followed will determine not only the betterment of Ireland's spatial planning future, of its competitiveness and its built environment, but also its sovereignty prospects for economic recovery.

10.9 Final Thesis Conclusions

This dissertation has conducted an evidence-based research relating to its primary objective in addressing the pivotal question of its hypothesis. The initial question posed: was the 2002-2020 Plan's settlement selection sub-optimal, informed by this mid-term analysis of the choices made for its Gateways and Hubs, as measured against their comparable population and economic performances, half way through the operational period of the plan? Subsequently, it was refined to ask positively: how may population and Employment Data inform the spatial selection of Gateway and Hub settlements?

Having synthesised the qualitative and quantitative evidence, the following summarised conclusions result from this dissertation:

- Ireland has a weak urban hierarchy with a missing second tier.
- It has one ESDP-defined city, Dublin.
- Its city hierarchy is very weak, confirmed by a State Gini Coefficient of 70.65%.
- The choice of growth centres is constrained due to the small size of its towns.
- Only fifteen settlements had more than 10,000 DWP, thus limiting FDI location choices.
- In 2011, the four provincial cities aggregate to just 37.67% of Dublin's population.
- The two distinct regions are: the GDA+Louth 'core' and a tundra-density 'periphery'.
- Recent strong population growth has contributed to small-settlement proliferation.
- Rural one-off housing is not necessarily confined to rural 'needs'.
- Political pressures often outweigh professional planners' quest for urban consolidation.
- Furthermore, one-off housing further slows down the rural-to-urban momentum
- The City population growth rate is only 58.03% of the State's 2002-2011 growth.
- Strongly-growing dormitory towns form somewhat-distant 'coronas' surrounding the cities.
- Services-sector employment opportunities are quite limited in such towns.
- This has resulted in growing medium and long-distance commuting.
- The towns are denser than the provincial cities.
- The density of the provincial cities is just over one-third that of Dublin.
- The urban weakness of the western region severely limits its growth-settlement choice.
- The BRD-polycentric growth strategy needs to be replaced with 'lumpiness'.
- Stand-alone towns of all sizes, outside the SoI of cities are vulnerable to population stagnation.

The empirical and literature research conducted herein, of utilising population plus DWP data, has resulted in a curtailed, simplified but strengthened methodological approach to the selection of growth centres, some of which have yet to justify their selection, on both scale size and population plus DWP growth performance criteria.

10.10 Suggested Areas for Related Research

The above findings and conclusions confirm that the NSS was particularly defective in its settlement selection and as a consequence, the optimal outcome was one of significant spatial underperformance, in economic, social, demographic and ultimately, in the State's poor and unsustainable spatial planning outcomes. Furthermore, there is little evidence that the 'hub' tier has so far benefited the surrounding rural areas as was intended.

This dissertation has displayed a range of qualitative and quantitative techniques, deployed in both deductive and inductive research formats, in addressing the key research question as well as pointing to other inter-related inquiries. Both time and space constraints have somewhat confined a pursuit of more detailed investigations. Accordingly, this research leaves a number of other issues unresolved and hence the following complementary subject areas are recommended for further research.

- Deployment of a more comprehensive and wider set of criteria for assessing 'centrality', to include socio-economic, human capital and skills measurements.
- Specific settlement investigations to determine why settlements such as Sligo, despite its high DWP count, are failing to keep pace with State population growth
- Use of in-depth international evidence in support of recent core-periphery outcomes, on the lines as indicated in the Robert-Nicuod NEG literature.
- Demonstration of practical measures using evidence-based analysis to obtain a healthier working relationship and balance between spatial planning and political objectives, in the best interests of the common good.
- Deployment of sharper statistical/ mathematical skills for NEG application in further refining the subject research area, so as to more extensive use of the rich DWP data that was kindly provided by the CSO.

- Investigating the appropriateness of contrasting policy direction: of settlement complementarity or of central place hierarchy.

From consultation with academic colleagues in DIT and in other Irish universities and colleges, there is no awareness of similar completed research to date in using Population *cum* DWT data.

10.11 Primary Recommendation

The primary recommendation flowing from this body of research is that the new NSS should significantly limit the number of growth centres from 23 to 17. This would reduce the risk of undue settlement proliferation, increase their potential to grow, enable critical mass to be achieved and thereby capture the benefits of urban agglomeration. The objective is to concentrate job creation and residential locations into a limited number of cities and the largest towns, thereby enhancing the land-use: transportation interface whilst achieving the necessary economies of scale. ‘Core Planning Strategy’ objectives should be deployed to channel future growth into the nominated centres.

Competitiveness and scale economies associated with concentrated investment in infrastructure, in turn, would encourage energy efficiencies including reduced home-to-work commuting, better urban design and the recycling of brown-field sites. Such policy direction would also improve the urban-to-rural population ratio which is still low at just 62% in 2011.

Likewise, the proposed new growth ‘city’ of Drogheda and its impending agglomeration with LBM would strengthen the Dublin-Belfast Corridor, taking advantage of the island’s primary growth ‘lozenge’ area which contains over half of its total population. The next figure shows the island’s population core and its north-eastern clustering of cities and large towns is clearly evident from this student’s Ministerial Presentation of May 2012, the content of its Page 2 shown thus:

Figure 10.1: Settlement Clustering of Ireland in 2001/2002

2. Urban Clustering:

It is instructive to commence with this brief review of the case for economic growth and employment creation afforded by urban agglomeration and clustering. The following figure focuses on the clusters of settlements within the Dublin-Belfast Corridor, comprising about half of the island's 6.3 million people. It shows this writer's bordered lozenge of East-North East concentration of the island's settlements. As is the case of the Republic's GDA, the population density of the eastern portion of Northern Ireland is several times that of the area mainly west of the River Bann.

Figure 1: Spatial Distribution of all-Ireland Settlements of 5,000 and over – 2001/2002

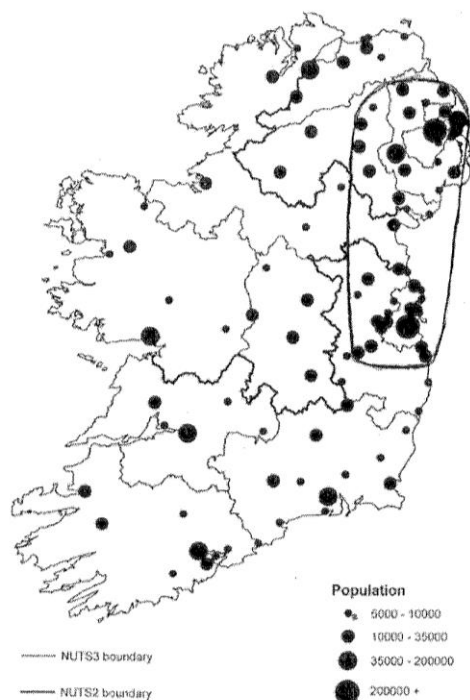


Figure 4.1 Urban centres over 5,000 population in Ireland and Northern Ireland, 2001/02

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

Figure 1: Spatial Distribution of all-Ireland Settlements of 5,000 and over – 2001/2002 – Lozenge inserted by Dr Brian Hughes, Dublin Institute of Technology

This Figure confirms the need to strengthen the central section of the Dublin-Belfast Corridor. Whereas the National Spatial Strategy (NSS) has interpreted this need as that of concentrating on the Dundalk-Newry section, as the Figure shows there is also a strong case for reinforcing the Drogheda area as was set out in Strategic Modelling proposals contained in Chapter 7 of the original regional planning research of 1999.

Likewise, the independence of the planning profession, its standing and reputation needs further strengthening, not least in the area of strategic spatial policy formulation.

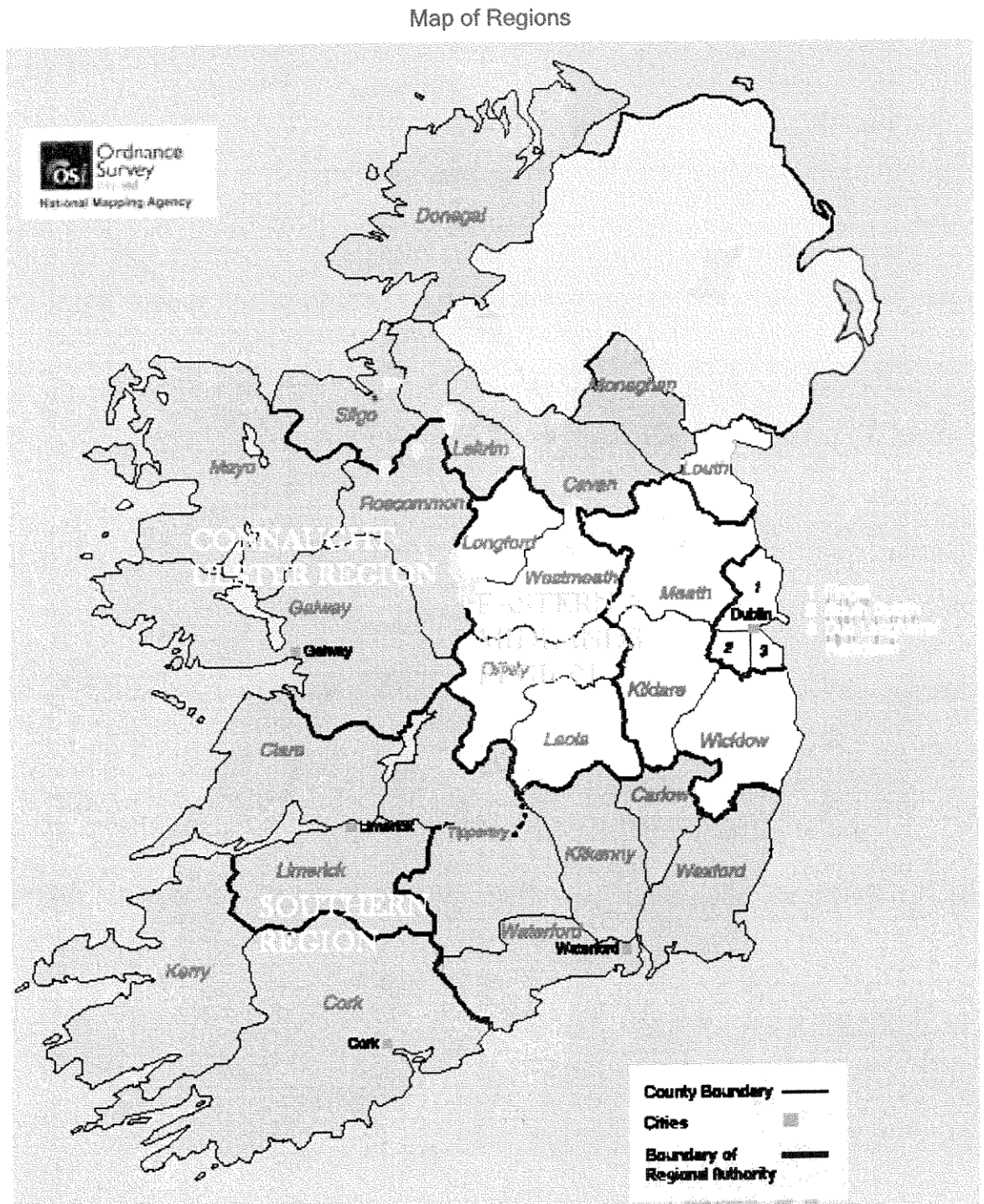
It also needs to develop an economic focus, particularly in view of the advances being made in the NEG area. It demonstrably must be resistant to localism and short-term political pressures. The profession also has a pivotal role to play in pursuing the overall national interest in a spatial planning strategy aligned to long-term growth initiatives for the restoration of Ireland's economic sovereignty. In avoiding further inappropriate housing development, it should support the establishment of a national development land agency, perhaps under the aegis of NAMA, which would have overall responsibility for residential development zoning.

This student was present at an 'heated' Autumn 2013 discussion between officials from the Department of Finance, the CSO and the DoECLG, when it was pointed out to the DoECLG that it was then far too late, *i.e.* post the EU's May 2013 deadline, in which to make the necessary submission by Ireland on these lines to Brussels for promulgating the *Putting People First* NUTS2 Regions proposal with the intention of obtaining the necessary EU approvals for the Map of the proposed Regions, as shown in the following Figure 10.4.

A final unresolved critical issue, observed by this student, is whether the EU belatedly, would still be prepared to recognise and replace the existing two NUTS2 Regions with the *Putting People First* Regional Assembly Areas, especially having regard to the fragile populations of both the Southern but particularly of the Border and Western Region? Resolving this uncertainty is a vital first step in the tasks of obtaining both EU approval and external funding for a new NSS set-up.

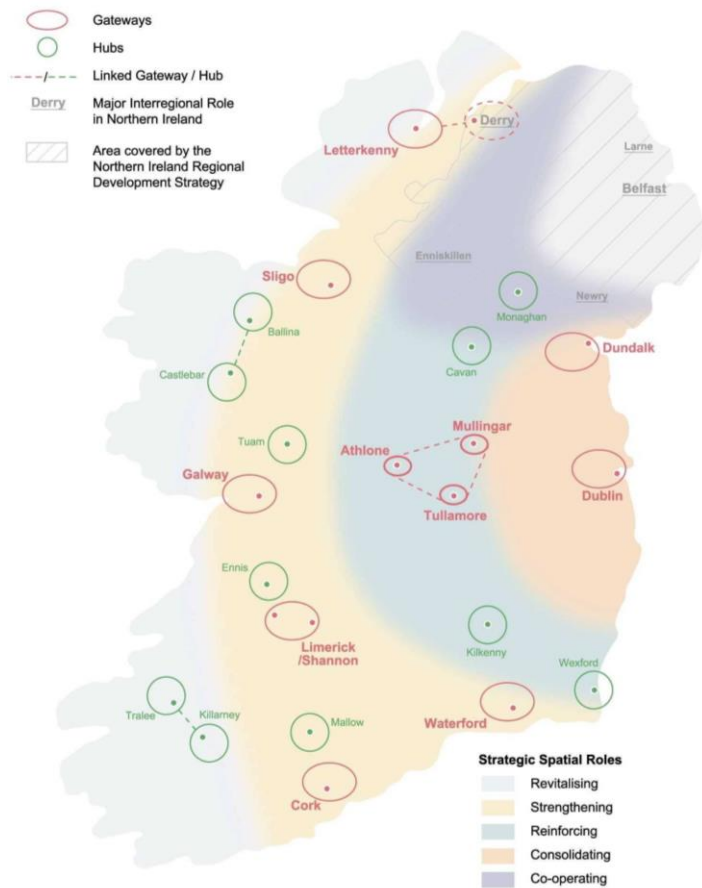
Note: Additional observations were made throughout the course of the thesis research and are set down in the final Appendix, 22.

Figure 10.4: *Putting People First* - three proposed regions



In concluding this thesis the final Figure 10.5 shows side-by-side, on the left the 23 settlements of the old NSS and on the right the 17 proposed growth settlements of this dissertation.

Figure 10.5: Showing side-by-side the contrast in selected growth settlements – the gateways and hubs of the 2002-2020 NSS and the 17 settlements of subject dissertation



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ELECTRONIC COMMUNICATIONS:

CSO eMail of 15th July 2013 to this student: Clarification of DWP workers; this excludes both 'mobile' and 'not stated' workers.

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APPENDICES

Appendix 1: Oireachtas Joint Committee on Enterprise and Small Business:

Extract from p. 16, The Irish Times on Thursday, July 3rd, 2003

“Sparsely populated provincial towns will struggle to win “high-value” multinational investment in the short term because they cannot compete with larger urban centres, both in the Republic and abroad, IDA Ireland chief executive Mr Sean Dorgan told an Oireachtas committee yesterday.

He said foreign direct investment was likely to be concentrated on those towns identified as gateways under the National Spatial Strategy as they developed.

In a frank assessment of the outlook, Mr Dorgan said it was unrealistic to expect regions disadvantaged by their remoteness to attract significant research and development projects, which will become vital as manufacturing industries abandon the State in favour of low-wage economies in increasing numbers over the coming decade.

Because many major global players will locate only in large cities, Dublin is increasingly competing for investment not against other Irish population centres but against European capitals such as Amsterdam and Geneva, Mr Dorgan told the Joint Committee on Enterprise and Small Business.

His comments will dishearten the Government, which has prioritised encouraging inward investment to locate outside Dublin, particularly in the BMW region encompassing parts of the west, midlands and north-west.

Labour finance spokesman, Mr Brendan Howlin, whose Wexford constituency suffers one of the Republic’s highest employment rates, said he was depressed by Mr Dorgan’s conclusions.

The IDA chief said that the development of regional gateways, as set out in the national spatial strategy, was crucial if areas outside the major population centres were to win substantial projects.

It may have been wiser for Government to focus on nurturing gateway towns rather than “compromising” by concentrating on developing smaller “hub” centres, he suggested.

Focusing exclusively on local needs while ignoring wider trends would “condemn the regions to long-term decline,” Mr Dorgan added.

With the Republic’s competitiveness severely eroded, the watchword for investment must be “quality rather than quantity,” he told the committee.

Multinationals will be wooed by a flexible and innovative workforce, not by the rapidly diminished potential for cheap labour.”

Dissertation Author’s Note:

In the intervening decade, an increasing share of multinational FDI activity has focused on Dublin and in the provincial cities, confirmed by Jodi Corcoran on P. 26 of the Sunday Independent, 3rd November 2013. It is noted that Dorgan’s opening statement to the Oireachtas Joint Committee had a time qualification “in the short-term” which left open the possibility that other such-like ‘hub’ locations might eventually attract FDI activity. In contrast, the location trend has been the opposite, thus reinforcing Skehan’s thesis of minimum threshold size, *vide* Appendix 6.

Appendix 2: Case Study 1 – Mitchelstown, Co. Cork and Selected Tipperary Towns

This writer's early memories of this Group 3 town, of dodging cattle and sheep slurry, splattered on the wet street pavements and on the Square of Mitchelstown, North Cork in the early 1950s, reflected its pre-mart era, with livestock tethered to the lamp-posts of The New Square and Upper Cork Street, the latter being part of the main Dublin to Cork throughway! That street was conveniently located to the train station, from which live cattle were transported, mainly to Britain. Some years later, a specialist 'mart' was built off George's Street which served that purpose for forty years or thereabouts.

At one point of time in the 1990s when Mitchelstown Creameries became Dairygold plc, this town had seven different but linked food-related agri-industrial and retail activities. As with many other 'rationalised' services provided in towns of less than 5,000 in population, its mart and most of those linked industries were relocated - simultaneously with other smaller-town marts - to the larger nearby Second Group town of Fermoy. Ominously, the industries and headquarter functions of Dairygold were transferred, first to First Group Mallow and subsequently in part, to Cork City.

This 'filtering-up' processes of economic and functional 'rationalisation' have resulted in further economic and industrial concentration and in some de-concentration, resulting in comparative higher or lower population growth outcomes for some larger settlements, throughout Ireland, *vide* McCafferty (2013). Waterford and Sligo present interesting Case Studies in this regard. Following on from this Mitchelstown case, it is instructive to focus on Irish rural counties, some twelve or so of which occupy midland and western locations. The south midland county of Tipperary is first investigated.

The population of all Tipperary County increased from 135,261 in 1981 to 158,754 in 2011, a modest increase of 17.37%, compared with the State increase of 33.25% over the same time. That so many Irish towns of limited population and located outside of the 'sphere of influence' (SoI) of cities, have been unable to achieve much demographic or economic growth, is confirmed in the population analysis of a selection of Tipperary towns, taken over a thirty year period, thus:

Table A2.1: A Demographic-Time Analysis of Selected Tipperary Group 2 Towns

<u>Tipperary Towns:</u>	1981 Pop.	2011 pop.	Pop. growth	% Change
Thurles	7,644	7,933	289	3.78%
Carrick-on-Suir	5,566	5,931	365	6.56%
<u>Tipperary</u>	<u>5,169</u>	<u>5,310</u>	<u>141</u>	<u>2.73%</u>
Average Size and Growth%	6,126	6,391	265	4.33%
State	3,443,405	4,588,252	1,144,847	33.25%
Size Order 1981 and 2011				
Thurles	34	59		
Carrick-on-Suir	54	94		
Tipperary	<u>57</u>	<u>102</u>		
Average Size Order	48	85		

Source: CSO censuses of population: Area Vols., Table 7.

It is noted that apart from their very sluggish population growth over the thirty years, this analysis of some important Tipperary towns, confirms a sharp ‘regression’ in their descending size-order positions within the league-tables of Irish settlements, is empirically instructive. Of local concern to small and medium-sized towns, is the severity of their functional ‘demotion’ in the locational sense over time, especially as such settlements are usually outside the sphere of influence (SoI) of cities. McCafferty (2013) refers to their inability to achieve economic differentiated specialisations.

This confirms a ‘finding’ of subject dissertation: that in the longer-term absence of SoI cities, rural settlements, counties and even regions can be expected, to experience significant long run demographic ‘lag’.

Appendix 3: Case Study 2 – Comparing Galway with Waterford

At the ‘city’ level, Galway’s impressive demographic growth over the past sixty years is attributable to tourism, its attractive setting and location. Furthermore, because it has succeeded in developing clearly defined economic clusters, as confirmed in a paper delivered at the RSA Leuven Conference (2008). Its clustering specialisms are in Medical Devices, Information Technology and a third one, relating to facets of research and development, facilitated by the relevant research output of its Institute of Technology and University. By way of comparison, the GDA hosts some twenty-five identified clusters, *vide* Figure 10, p. 70, RPPGDA (2010-2022).

Nevertheless, it is instructive to contrast Galway’s transformation from ‘town’ to ‘embryo-city’ and in doing so, it has left Waterford’s population size in its wake since 1981, wherein by 2011 it was over 49% greater and that 30-year growth differential was 2.78 times Waterford’s comparative performance, thus:

Table A3.1: Comparing Waterford with Galway’s Demographic Growth (1981-2011):

	1981 Pop.	2011Pop.	Pop. growth	% Change
Galway	41,861	76,778	34,917	83.41%
Waterford	39,636	51,519	11,883	29.98%

Source: CSO Censuses 1981 and 2011, Vols. 1.

In addition to its own growth, Galway epitomises the ‘spillover effect’ at work. Its Sol has resulted in impressive population growth for a number of nearby towns including Athenry, Moycullen, Gort, Oughterard and not least, Tuam which is Galway’s NSS Hub town. Furthermore, with the ongoing development of Ardawn, Oranmore will eventually agglomerate with Galway. At official government level, Galway’s industrial growth is often contrasted with that of ‘disappointing’ Shannon town, where so much industrial investment has been concentrated.

Given the urban research knowledge that is now known about the benefits flowing from *airport-led development*, the Galway versus Shannon growth contrast remains

unexplained. It does however present a spatial planning lesson in that complementarity between the land-use and transportation interface; it cannot be ignored in the context of scarce Capital Budget resourcing and expenditure, *vide* Cooney (2006).

Waterford is vulnerable to ‘slippage’ from the list of cities. A recent anecdotal financial services example is the re-organisation and rationalisation of one of the ‘continental’ banks where it is retaining offices in all the cities except for Waterford.

Appendix 4: Record of DT123/2 Meeting arranged by Ciaran Cuffe, at DoECLG, for talk by Niall Cussen, Senior Planner of the National Spatial Strategy (NSS), on Wednesday, 27th February 2013.

These 'notes' were shown to Ciaran Cuffe and he believes they are an accurate reflection of the meeting

The background for this meeting as part of SSPL9008 National and Regional Planning is the recent announcement by Minister Phil Hogan of his intention to replace the 2002-2020 NSS. This written record is made for reference to this student's proposed Dissertation area, on the subject of growth settlement selection for the new NSS.

Niall Cussen commenced by noting that future spatial planning will be increasingly informed by evidence-based Core Strategy and by the EU resurgence of interest in Spatial and Territorial Development. The 2002-2020 NSS is based on balanced regional development as espoused by the European Spatial Development Perspective (ESDP). Cussen noted however, that the ESDP is not statutory-based but that it serves as a high-level EU guideline for spatial planning implementation. In the Irish context, this is written into the current NSS, stressing the quest for all areas to maximise their potential to the full whilst playing to their strengths, and in recognising that territories are different and varied.

Cussen noted that after the EU's publication of the ESDP in 1999, this was quickly followed by the publication of the Culliton Report, two NESC studies and ESRI 59, which had outlined three contrasting scenarios of population and settlement Concentration, of Balance and Scatter-Gun approaches and a framework for a new spatial strategy with focus on developing the centres of larger populations. That latter Report, authored by John Fitzgerald of the ESRI, had identified Ireland's housing and infrastructure deficits, typified by individual, serious incidences such as the Knockrockery rail line timber sleeper 'spread' and Dublin's sewage-treatment problem at the millennium. These were all addressed in the 2000-2006 National Development

Plan (NDP) which set out an ambitious multi-annual capital programme for wide-ranging investment.

Cussen then explained how spatial planning at the national and regional level is such an emotive issue, especially for local politics and how the DoECLG had approached the scoping stage for that 2002-2020 NSS. In late 1999, the process got underway. He noted three distinct phases for NSS introduction and implementation, thus:

Phase 1: The Process of ‘buy in’ by Government Departments:

Cussen noted the difference in task/responsibility and philosophical approach for ‘Line’ as contrasted with ‘Central’ government departments (Environment, Health, Education and Social Welfare as contrasted with Finance, DEBRA, and Foreign Affairs. Gradually, varying levels of acceptance were achieved based on the following understandings:

- The key impact of the IDA in marketing Ireland abroad, where its FDI jobs are sourced.
- The role of transport in connecting gateways, regions, main cities. Transport policies for Dublin and Cork.
- Historic difficulties in getting cross-departmental agreement on policy alignment and progress in resolving such difficulties.
- For example: the Department of Education on innovation and skills base and the territorial divide (The Hunt Report.)
- The Department of Health’s focus on a single HSE.
- Northern Ireland and the Gateway linkage of Letterkenny with Derry in the co-ordination of the NSS with the Northern Ireland Regional Strategy Plan.
- The 2007-2013 NDP period lead-in.
- The ‘disastrous’ government Decentralisation programme proposing 53 locations for 10,300 jobs together with the subsequent addition of the semi-state companies, did heavy damage to the NSS, so soon after its launch.
- This was, to some extent, offset with the launch of the 2007-2013 Gateway Development Fund with €300 million, planned to be set aside on a competitive bid system. In the processing of this Cork, Limerick, Waterford and Sligo were

to have benefited but subsequently and with the Troika onset, the whole Fund was put on ice, not cancelled, he stressed.

Phase 2: The lead into the Property Crash:

Cussen mentioned that he has a staff of only 14 to link into the Local Authorities. Likewise they had to operate against the background of inadequate legislation and loose practice. This included land-price inflation, the role of Councillors, dysfunctional local spend – everywhere, incongruity with sustainable development. He cited the case of County Laoise, which was the first use of the Ministerial Directive for plan enforcement, under the 2000 Act. This resulted in fierce local opposition (with the culling of 29 village extensions and redirecting housing, etc. into the main county towns). This was followed by Monaghan, Mayo, Waterford and Dublin-related Directives to comply with NSS and its RPGs. DoECLG wrote the arguments informing the content of these Directives, Cussen noted.

Then came the McEvoy Case decision which showed up the limitations of the 2000 Act “Having regard to” In terms of consistency, the legislation was not working. The law had to be changed and (unidentified) formidable forces addressed. Re-zoning had to be reformed and the Loughrea (€10 million) example was cited. Then the 2010 Planning Act was introduced.

Likewise, by 2010 there was a dramatic reduction in land zoning with a substantial improvement to the supply/demand imbalance. The ‘grain’ of direction and habitable flood plains: The Mountmellick, Middleton and Quin, Co Clare examples were mentioned. Aggregate zoning and S. 28 Guidelines were referred to by Cussen.

Phase 3: Now commencing: A new NSS?

This process of NSS implementation and the 2010 legislation are showing some early successes of aligning planning with national investment and development – in this quiet phase with little development activity. NAMA’s role and the extent of unemployment were mentioned.

Encouragingly, there are some early signs at the national level of a general willingness to think through public policy alignment. His analogy to a post car crash scenario:

housing shortages are beginning to appear in Dublin. Regional regeneration is emerging from the city and the DoECLG ‘radar’ is looking out! There is a need to get back to long-term; 10-year planning, in the context of economic survival, when strictly, some local authorities are technically bankrupt. After this carnage, the quest is how to demonstrate the value of regional planning. Four line ministers have been asked to revisit the NSS.

All politicians recognise that the game has changed. That there are too many gateways and hubs is appreciated at the high, if not the local level. The 2010 Update and Outlook Report as background, has pushed the case to have the NSS revised. Cussen was careful to point out that the Plan is still there and that it is a question of interpreting what the minister said as distinct from what was reported!

The last NSS was prepared at a cost of €2 million; it took some 2.5 years and involved 10/12 staff. The strategic resources and finances are currently ‘stretched’. ‘Putting People First’ has been published but a Plan review won’t mean an ‘NSS 2’. There are 3 new assemblies and there will be a strong Spatial and Economic link. There will be 2016 Economic and Regional spatial strategy guidelines. The new Regional Assemblies will be formed in late 2014 or 2015 with new strategies in 2016. So, what reference points are there to the preparation of a plan as the successor to the NSS?

Commencing in the 2014-2015 period, there will be new Scoping Reports prepared. Groups of experts will be assembled with a road map for preparing for the new plan will be prepared by the year-end. Considerations will include the EU Directive, the economic landscape, our nearest neighbours N.I. and Britain. Cussen used the car-design model – of a number of years in advance of production. The NSS and NDP will have 2 RPG iterations, the 2010 and 2016 regional models. The FORFAS input was also mentioned. The combination of economic development and spatial planning is becoming a reality.

Cussen sees the Danish National Statement of 1999 as an excellent role model for Ireland to follow. The new NSS plan could be like it: much shorter, much more cerebral and containing appropriate powers of compellability. It will contain high-level investment content and will have Departmental co-ordination, e.g. the Department of

Education's 3rd level strategy. The Planning Regulator idea can free up the Policy Direction. They hope to use the ESDP and NDP as tool-kits. Coordination of Departments will see strategy formulation at cross-department levels with Health, Education buy-in.

There is a question as to who will steer the new plan. There will be an inter-departmental steering group. Whose plan is it and who will drive it is a big issue? The Regional-level concept is now on 'probation', Cussen noted. At the same time, we will move from the ESDP-focus to a 'Territorial' dimension and in (greater) compliance with the environmental dimension. The recommendation of the Mahon-Flood tribunal will also have to be heeded. High-level accountability will include the 'Gateway Index' data (including population and employment data).

Despite the Regional Authority proposals as incorporated in the 'Putting People First' report, Cussen reminded us that we are still a GAA country with strong county allegiances and thus the need for a 'mind-set' change has to be recognised.

At the conclusion of the meeting and following questions from the class we were taken on a conducted tour of the building.

Appendix 5: The NSS: Eight Key Concepts of Balanced Regional Development

The eight Key Concepts of the National Spatial Strategy (2002-2020) are:

- The key concepts (of the NSS) are potential, critical mass, gateways, hubs, complementary roles and linkages.
- Potential is the capacity that an area possesses, or could in future possess, for development, arising from its endowment of natural resources, population, labour, its economic and social capital, infrastructure and its location relative to markets.
- Critical mass relates to size and concentration of population that enables a range of services and facilities to be supported. This in turn can attract and support higher levels of economic activity and improved quality of life.
- Gateways have a strategic location, nationally and relative to their surrounding areas, and provide national scale social, economic infrastructure and support services. Further development of the five existing gateways at Dublin, Cork, Limerick/ Shannon, Galway and Waterford is a key component of the NSS.
- In addition, a small number of other large towns, which have the potential capacity to become gateways and lead development in their regions, will play a key role in achieving a more balanced role in regional development.
- Hubs: A number of towns will act as hubs, supporting the national and international role of the gateways and in turn energising smaller towns and rural areas within their sphere of influence.
- Complementary roles for other towns, villages and rural areas; various medium-sized towns in each region will act as ‘local capitals’ providing a range of services and opportunities for employment. Within the spatial framework provided by the NSS, rural potential will draw upon local economic strengths, supported by a stronger structure of smaller towns and villages as a focus for economic and social activity and residential development.
- Linkages in terms of good transport, communications and energy networks are vitally important to enable places and areas to play to their strengths.

Source: The National Spatial Strategy (2002-2020: 12)

Appendix 6: Skehan's FDI Computation of Minimum Population Thresholds

Skehan, C. (2007), Computation of a minimum population equivalent to service a specified FDI Labour force Requirement, to be located within a maximum 45-minute commute time.

Firm = 5,000 specified employees, including contract employment

Staff Turnover multiplier of 3 = 15,000, where the skillset level is 1:5

Giving a first-base requirement of 75,000, further refined at a 2:1 ratio of population to workforce

Resulting in a required minimum population of 150,000, within the said commute time.

Source: These assessments are based on a basket of FDI clients. Skehan, C. (2008)

Appendix 7: Distortion of Ireland's Settlement Size and Demographic Fragility

Two notable extremes are observed in both population and DWP counts for the State's settlements. First, the conspicuous absence of intermediate size cities in the 200,000-500,000 range resulting in Dublin being almost six times Cork and over twelve times the size of Limerick, the third largest city. The second observation is that no town in the 2011 census exceeds 40,000 in population; a level that makes self-generating urban agglomeration growth very difficult to achieve. It is noted that the 40,000 figure was cited as the population target for the 'hub' tier in the NSS 2002-2020 document.

The following application of Zipf's Law (*vide* Chapter 1 Definitions), results in a Gini Coefficient measure of the extent of Ireland's settlement size distortion, both from the all-island and State perspectives, based on the last census. The UK settlement statistics for Northern Ireland are based on 2008 estimates as their data for 2011 were not available at the time of writing.

The first sets of data, for the seven largest cities are thus:

Table A7.1: All-Island City Populations in 2011 (thousands)

City ('000)	Rank	2011 Population (a)	Where Dublin = 100.00%	Zipf's Law Population (b)	Zipf Target Shortfall/ [Surplus.] (b)- (a)	Zipf % extent of Shortfall [(b)-(a)/ (b)]
Dublin	1	1,110.6	100.00	1,110.6	0.0	N/A
Belfast	2	515.00	46.37	555.3	40.3	7.26
Cork	3	198.6	17.88	370.2	171.6	46.35
Derry	4	93.6	8.43	277.7	184.1	66.29
Limerick	5	91.4	8.26	222.1	130.7	58.86
Galway	6	76.8	6.92	185.1	108.3	58.51
Waterford	7	51.5	4.64	158.7	107.2	67.55
Aggregate city population shortfall in relation to Dublin:					742.2	41.95

Source: CSO Principal Demographic Results, Censuses of 2011: Table 7, Areas data, together with 2008 estimates for Belfast and Derry are sourced from NISRA, whilst assuming that Waterford is the next largest settlement after Galway (to the exclusion to any other settlement north of the border). Belfast's population includes that of contiguous Lisburn, Glengormley, Castlereagh, Carrigfergus, Newtownabbey, Bangor together with seven smaller settlements, based on NISRA 2008 estimates, *vide*, <http://ninis2.nisra.gov.uk/public/pivotgrid.aspx?dataSetVars=ds-1931-lh-69-yn-1971,1981,1991,...> Derry's includes New Buildings, Strathfoyle and Culmore.

Analysis: Thesis Author.

Note: This aggregate shortfall in population represents 11.60% of the 2011 estimated all-Ireland population of 6.4 million.

The Gini Coefficient shortfall for above Table A is calculated at 41.95% which reflects a considerable level of distortion, mitigated somewhat by Belfast's 'relative normality' and Derry's (2008) inclusion on the basis of the stated size-difference with Limerick (2011). The measure of distortion is compatible with a 'basket' of Western European cities, *vide* Eurostat populations, 2011. This however, notes that smaller countries have a greater size variance in comparison with larger ones, due to their 'primate settlement' effect.

This finding supports the view that for small countries or provinces, as in the cases of the Republic and of Northern Ireland, primacy is to be expected, simply based on the limited size of entity. This is supported in research by Mansury, Y. and Gulyas, L. (2006).

Nevertheless, future governments should be obliged to reduce such shortfall: a policy initiative that would require them to commit to seriously growing the State's 'embryo' cities, especially having regard to the increasing importance of the Producer Services sector and in particular, of the economic dynamics of the 'knowledge economy'. Next the analysis for the State excludes the Northern Ireland cities, Belfast and Derry in Table A7.2, thus:

Table A7.2: State City Populations in 2011 (thousands)

City ('000)	Rank	2011 Population (a)	Where Dublin = 100.00	Zipf's Law Population (b)	Zipf Target: Shortfall (b)-(a)	Zipf % extent of Shortfall [(b)-(a)/ (b)]
Dublin	1	1,110.6	100.00	1,110.6	0.0	N/A
Cork	2	198.6	17.88	555.3	356.7	64.24
Limerick	3	91.4	8.23	370.2	278.8	75.31
Galway	4	76.8	6.92	277.7	200.9	72.34
Waterford	5	51.5	4.64	222.1	170.6	76.81
Aggregate 'embryo' city population shortfall in relation to Dublin:					1,007.0	70.65

Source: CSO *Principal Demographic Results*, Censuses of 2006: Table B.

Analysis: Thesis Author.

This second stage in this analysis is undertaken for the five State cities, the 'gini' distortion level from the same methodological analysis being markedly worse, at 70.65%. Such result can be viewed as reflecting successive government's 'legacy of neglect' and lack of concern for the growth of the State's provincial cities which, in turn, portrays a considerable level of antipathy towards cities and importantly, little understanding of the benefits of urban agglomeration. The aggregate shortfall of over one million in population has to be viewed in the context that this figure is nearly 22% of the entire State population in 2011.

Such findings beg the question: how could the spatial policy foundation of the 2002-2011 NSS ever hope to achieve balanced regional development if that same policy foundation is based on the European Spatial Development Perspective, whose definition of a 'city' is a settlement of a minimum population of 200,000?

In turn, the second chapter observation, that of the demographic fragility of the State's towns, represents an equally serious predicament for spatial strategy policymaking. In terms of rectifying Ireland's economic and competitiveness shortfalls, such policy must be much more responsive to the need to enhance urban specialisation through the enhanced growth of 'successful' settlements.

In summary, such focus on rewarding ‘population and DWP growth has informed the methodological background and construction of the second set of measures in the thesis model for settlement measurement.

Appendix 8: Summary findings on the ‘Core’ versus ‘Periphery’ analysis over the first half-life of the NSS, (2002-2011)

Table A8.1: Core/Periphery Pop. Growth (2002-2011)

	<u>2002 Pop.</u>	<u>N.G</u>	<u>Migration</u>	<u>Total Growth</u>	<u>% Growth</u>	<u>2011 Pop.</u>
Core	1,637,267	76,868	12,918	289,786	17.70%	1,927,053
Periphery	<u>2,279,936</u>	<u>180,558</u>	<u>200,705</u>	<u>381,263</u>	<u>16.72%</u>	<u>2,661,199</u>
State	3,917,203	357,426	313,623	671,049	17.13%	4,588,252

Source: Author’s analysis of 2002-2011 census data.

Matching data for aggregate settlement population and growth is as follows:

Table A8.2: Aggregate Settlement Population and Growth

Totals - Periphery	828,773	964,962	136,189	16.43%
Totals - Core	<u>1,365,749</u>	<u>1,591,587</u>	<u>225,838</u>	<u>16.54%</u>
Sum of Totals	2,194,522	2,556,549	<u>362,027</u>	<u>16.50%</u>

Source: Author's analysis of 2002 and 2011 census settlements.

Whereas the overall State population grew by 17.13% over that period, the performance of the cities and larger towns of the State was only 16.50%. This means that the non-nucleated and smaller settlement population, calculated as a residual, achieved a growth of 17.94%. This is some 8.73% above the city and town growth; a pattern that has significant spatial planning implications for longer travel times, services provision and for Ireland’s economic competitiveness.

These patterns of dispersal have been discussed between this author and the Implementing Officer who co-ordinates the Regional Planning Guidelines for the Border Region. Pdraig Maguire’s regional spatial planning experiences are informed by the feedback obtained from his senior planning officers drawn from these six, mainly rural counties that make up this region.

Maguire is also conscious of the pressures often exerted by the local representatives, to seek permissions for dispersed, mainly one-off housing permissions and for the local politicians to resist spatial planners who are perceived as seeking... *to herd more of the population into larger or growth-designated towns*. Thus an important task remains in the re-education of political representatives to the spatial planning objectives of urban agglomeration.

Appendix 9: Demographic History Section - the Greater Dublin Area and the Rest of State 1966-2011

Here, the State is divided into its two principal components.

The CSO Census of 1966 is selected as the base year for the State's historic spatial-demographic analysis because:

- It marked the urban/rural turning point, from rural: urban (49.20% urban in 1966)
- It was the first census following the commencement of mandatory town planning The 1963 Planning and Development Act, which came into force on 1st October 1964.
- That census had formed the evidence base for the Buchanan Plan (1968).

Additional short-term indicators are addressed towards the end of this Appendix, in support of the thrust of the long-term findings. In turn, they contribute to a research platform from which evidence-based spatial planning might be practically implemented and not politically deployed, vide Gleeson (2010). The research commences with an appreciation of the rural to urban shift-share of State population since 1966.

The following Table A9.1 shows the 1966 urban-rural composition for the two principal areas of State, the Greater Dublin Area (GDA) and Rest of State (RoS).

Table A9.1: Sate, GDA and RoS: Urban and Rural Population Composition: 1966 Census:

Year 1966	GDA	%	Rest of State	%	State	%
Urban	814,976	82.39	604,088	31.88	1,419,064	49.20
Rural	<u>174,226</u>	<u>17.61</u>	<u>1,290,712</u>	<u>68.12</u>	<u>1,464,938</u>	<u>50.80</u>
Total	989,202	100.00	1,894,800	100.00	2,884,002	100.00

Source: Author’s analysis of CSO 1966 Census of Population, Vol. 1.

Forty-five years later, in the Census of 2011, the State’s overall population had grown by 59.09% or by 1,704,250, and its urban content had increased to 62.05%, thus:

Table A9.2: State, GDA and RoS: Urban and Rural Composition: 2011 census:

	GDA	%	Rest of State	%	State	%
Urban	1,580,662	87.61	1,266,220	45.48	2,846,882	62.05
Rural	<u>223,494</u>	<u>12.39</u>	<u>1,517,876</u>	<u>54.52</u>	<u>1,741,370</u>	<u>37.95</u>
Total	1,804,156	100.00	2,784,096	100.00	4,588,252	100.00

Source: Author’s analysis of CSO 2011, Area Volume, Table 3.

The following highlights mark the 45 years of change, thus:

- The State’s urban population more than doubled, by 100.62%, in adding 1,427,818. Thus the ‘urban’ content accounted for 83.78% of the growth share of the State’s total population increase of 1,704,250.
- Over the period, the percentage share of urbanization rose from 49.20% to 62.05% of State population represents an average annual increase of 0.29% or 31,729 people.

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- The rural population growth of 276,432 equates to 6,143 in its annual average growth.
 - The fact that there is this steady ‘rural’ growth might appear counter-intuitive, given the reduction in the number of farms by about two-thirds. However, rural-generated growth includes the increased employment related to the food sector, an increase in the area of land under forestry, etc.
 - Nevertheless, spatial planning has to address the extent of urban-generated rural housing, often reflecting a wish to live in a rural ‘idyll’ but with little regard for commuting and isolation issues.

The GDA population grew by 814,945, an 82.80% increase since 1966. Its urban population increased by 93.95% or by 765,686 and its rural population grew by 28.28% or by 49,268.

The RoS area added 46.93%, up by 889,296 above its 1966 base. Significantly, its urban population increased by 109.61% or by 662,132 in contrast to a 17.60% increase in its rural population which grew by 227,164.

In summary, these data confirms the historic long-term increase in the GDA’s share of State population, thus:

- In April 1966 it comprised 989,202 out of 2,884,002, being 34.30%
- In April 2011 it comprised 1,804,156 out of 4,588.252, being 39.32%

Thus over this 45-year period, the GDA gained just over 5% in its share of State population. Extending this spacial-demographic analysis forward in time, in relation to Table 7: *Actual and projected population of Regional Authority areas, 2011 and 2031*, the CSO’s Expert Group on *Population, Migration and Labour Force Projection*, at its meeting on 24th October 2013, *inter alia*, addressed nine projection scenarios for future regional population in 2031. Whereas the workings of the Government Expert Group are confidential as to the outcomes of individual projections, permission was obtained by this member to summarise these nine scenarios for subject thesis. This took the form of averaging out the ‘high’ and ‘low’ projections for the GDA’s 2031 share of State population.

Based on Migration, Fertility and other conventional demographic inputs, the following GDA percentage average shares of State population, projected to 2031 show:

- Low Average = 40.65%, based on equal weighting of five scenarios.
- High Average = 44.22%, ditto, four scenarios

The nine growth scenarios on average projected population indicate a 2031 GDA share of 42.25%. It is noted that the CSO Regional Projections for 2013 are not scheduled for publication until some weeks after the hand-up of this thesis. Accordingly, it is stressed that the Group are imputing the product of further deliberations into the document, prior to its publication.

Nevertheless, the overall expected share of State population is in an upward direction over the long-term. This is unrelated to, but is consistent with this student's published PhD findings (2010: 78) for the GDA in year 2031:

- Low Projection = 42.09%
- High Projection = 43.08%

The overall conclusion from the Appendix analysis is that the GDA will continue to gain in its future share of State population, whichever scenarios are selected. Accordingly, spatial policy formulation should seek to respect this reality. The task is not to curtail Dublin's propensity to grow, but for the Rest of State, to formulate future spatial policy so that its largest settlements can 'fill' the missing hierarchical tier as the only realistic way of obtaining the necessary economies of scale and gravity mass to counterbalance Dublin.

Some short term indicators that confirm the above longer GDA trend are:

- Two-year post 2011 census Natural Growth trend: GDA = 50.47% State share versus 49.53% for the RoS area for Q2, 2013. This is the first time since the mid noughties that the GDA share has exceeded that of the RoS area. However, in recent years the GDA share has been creeping back towards the half-way mark. It confirms earlier 2000 observations that the RoS area's Birth rate shows faster

decline than that of the GDA which is still buoyant. However, due to an older population age profile, RoS area Deaths play a significant roll in depressing that area's Natural Growth.

- If County Louth is added to the GDA outturn for this Quarter, then the State's 'Core' area Natural Growth share rises to 53.66% as against just 46.34% for RoS less Louth.
- Parallel tracking of migration since the 2011 census indicates that the RoS area's in-migration direction has reversed sharply since 2009. That area's population growth had been significantly dependent on in-Migration. Accordingly, this in turn points to a population-loss scenario, which won't be confirmed until the 2016 census results are available.
- Examination of CSO Quarterly QNHS data following the 25th November 2013 Release confirms that at the NUTS2 level, in comparing the South and East Region (S&E) Region with the Border, Midlands and Western Region (BMW), their contrasting 'in-employment' growth performance again mirrors the geographic 'eastward' trends as set out above. In comparing QNHS 'in-employment' growth data for Quarter 3 2013 with the same Quarter in 2011, the S&E Regional growth is some 31.91% ahead of the BMW Region. Specifically, the S&E Region recorded a 42,700 growth to reach 1,420,700 in comparison with the BMW's growth of just 11,000 to have 478,600 'in employment'.

In conclusion, these differing economic and spatial yardsticks point to an earlier economic and demographic recovery, focusing on Dublin and the east of the country areas.

Appendix 10: Factors Essential for the Development of Modern, Moderate-sized Cities

This Appendix investigates the relevant literature for attributes, identified as being of particular relevance to the growth of smaller cities and large towns, as might be anticipated as being both central and essential to the formulation of the new economic-based NSS for Ireland. Although those factors adduced herein, are based on North American research experiences, nonetheless, they tend to follow into European spatial practice.

In terms of modern economic activity it is noted that ...the decline in manufacturing is in part deceptive as tasks in the past, that physically were part of the production process are now distinct tasks, provided by separate firms. Many producer service occupations did not even exist a few decades ago, Poleze (2009:54). Therein, he relates the numerate facets of a medium-city's economy to his-described *Seven Pillars of Agglomeration*.³ Such seminal urban economic and geographic exposition, drawing extensively from Poleze (2009:53 *et sec.*), is summarised thus:

- The critical conditions that must exist in developing settlements, relate to the nature and change of work: specifically those that can foster *the growth of Tradeable, Producer Services*.
- In industrialised economies, tradable services are in the process of replacing manufacturing, as the chief source of “productive” employment. *Op.cit.*, P. 53.
- Due to technology, more services are traded that provide an economic base and source of wealth.
- Modern services provide inputs into production, and hence are referred to as producer services, *ibid.*

³ Note also: A recent, 12.08.2013, BBC 1 T.V. Programme featured the smaller German city of Nuremberg and the life of a swapping British family who were sampling the life style of their German industrial counterparts, citing the husbands temporary shopfloor experiences, in the factory of pencil-making Faber Castell, who in the 1970-1980 decades had a manufacturing plant in Fermoy, Co. Cork.

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- Poleze contrasts the USB key as a manufactured good; yet its functions as a store and conveyor of vast information.
 - Poleze's description of small and medium-sized cities, might relevantly describe Limerick, the city for this student's class in National and Regional Planning SSPL9010 hands-on study trip in the Spring of 2013.
 - The modern emphasis is on such cities as being centres for lower-order services, where the consumption of services requires a physical presence and less travel distance and still be closer to the land, *e.g.* the nearby Golden Vale, as the source for first class farm-food produce.
 - In higher-income societies, leisure time otherwise spent in medium and long-distance commuting, now receives greater emphasis in the time-use of alternatives: this is of relevance to the given surface-area of say, Limerick as compared with Dublin.
 - Thus, the focus on producer and non-tradable services, where proximity is vital, Poleze, *ibid*, cites the presence of land uses including food stores, pharmaceuticals, tailors, eating and drinking places, education, health care, giving rise to diversity of uses in numerous small centres.
 - For larger service centres, less-frequent central-services reflect a reduced number of service visits, entailing larger household expenditure, Agglomeration Pillar 6, *ibid*.
 - Medium-sized central places are essential for the consumption of services that require a physical presence.

Thus subject literature coupled with that of Henderson and Wang (2005, 2007) confirms the fixed rank order of city size, over a forty-year time span (1960-2000), and provides compelling evidence of both practice and theoretical research on rank size, settlement order and function, that is both invaluable and indispensable to subject dissertation.

Appendix 11: Agglomeration and the Dynamics of Population Growth

In the most recent intercensal period, the following Table 2.1 confirms a strong correlation of 2006-2011 population growth with in-migration, when this is expressed as a percentage of natural growth in descending order, thus:

Table A11.1: County Migration as Percentage of Natural Growth (2006-11)

County	2006 Pop.	In-migration	Natural Growth	Mig.as % of NG	2011 Pop
Roscommon	58,768	3,513	1,784	196.92%	64,065
Laois	67,059	8,797	4,703	187.05%	80,559
Cavan	64,003	5,809	3,371	172.32%	73,183
Longford	34,391	2,758	1,751	157.51%	38,900
Leitrim	28,950	1,731	1,117	154.97%	31,798
Donegal	147,264	8,218	5,655	145.32%	161,137
Louth	111,267	5,810	5,820	99.83%	122,897
Kilkenny	87,558	3,895	3,966	98.21%	95,419
Sligo	60,894	2,074	2,425	85.53%	65,393
Mayo	123,839	3,104	3,695	84.01%	130,638
Wexford	131,749	6,502	7,869	82.63%	146,120
Tipperary Sth.	<u>83,221</u>	<u>2,175</u>	<u>3,036</u>	<u>71.64%</u>	<u>88,432</u>
State	4,239,848	122,292	226,112	54.08%	4,588,252

Source: Author' analysis of CSO Table 1, Town and Country, 2011 Census

Stripping out Laois and Louth as being two counties which possess strong or emerging large-town urbanisation (*e.g.* Drogheda+LBM, Dundalk and Portlaoise), the remaining counties are mainly characterised as being ‘weak’ in urban content, most of which are outside the SoI of a city. Such counties are likely to have had an excessive dependency on net in-migration for their population growth performance up to 2009.

Given the 2008 demographic ‘flip’ from inward to outward migration, it is expected that with lagging urbanisation, many ‘Periphery’ counties will struggle to maintain their 2011 populations. In NESc (1997), four counties in particular were singled out to such vulnerability, namely Leitrim, Mayo, Roscommon and Cavan (*ibid*).

When compared with the State figure of 54.08% migration to natural growth, these county data outcomes confirm what is likely to have been short-term boosts to their populations, which is likely to have been sharply reversed post 2008 or thereabouts, in the absence of an urban agglomeration ‘anchor’, *vide* Table 2.3 *supra* and Population & Migration Estimates (2013), as published by the CSO on 29th August. This confirms a modest rate of two-year State population growth of 0.40% since the last census.

However, in undertaking the dissertation’s regional population growth research, this analysis confirms that the *east-State* group of regions has been about five times that of the *west-State*’s rate of population growth; *i.e.*, the methodology having first apportioned the Border Region into its two constituent parts and pro-rata’ed its negative growth. The West Region was also noted to have experienced negative growth. For that two-year period to April 2013, the apportioned growth (in thousands) were: East Regions (ERs) = +16.3 thousand versus West Regions (WRs) = +2.0 thousand. Their respective growth rates were: +0.57% for ERs and just +0.11% for WRs.

Again this research confirms the continuation in the ‘tilting’ of Ireland’s population towards the East and in particular, towards the East Coast, *vide Twice the Size* (2007). Within the WRs, it is noted that the South West Region, benefiting from the urban agglomeration effect of Cork City also grew, by 1.25%. These findings reinforce the case for city-based agglomeration, as being crucial to population retention and to enhanced population growth.

Appendix 12: Growth Dynamics in the ‘Core’ and ‘Periphery’ Areas of State

The evidence from the 2011 census provides the foundation for comparing and contrasting the State’s ‘Core’ versus ‘Periphery’ population performance over the thirty years since 1981. This confirms the emerging, gradual ‘gap’ shift in percentage balance in favour of its ‘core’ region comprising the GDA *plus* County Louth, thus:

Table A12.1: 'Core' v's 'Periphery' Population - 1981-2011

	'Core'	'Periphery'	State	Comparative Populations:		
Census	GDA +	Rest of	Total	Core	Periphery	
Year	Louth Pop.	State	Population	Index	Index	'Gap'
1981	1,378,668	2,064,737	3,443,405	100.00%	100.00%	0.00%
1986	1,427,929	2,112,714	3,540,643	100.73%	99.51%	1.22%
1991	1,441,319	2,084,400	3,525,719	102.10%	98.60%	3.51%
1996	1,497,837	2,128,250	3,626,087	103.17%	97.88%	5.29%
2002	1,637,267	2,279,936	3,917,203	104.39%	97.07%	7.33%
2006	1,773,803	2,466,045	4,239,848	104.49%	97.00%	7.49%
2011	1,927,268	2,660,984	4,588,252	104.91%	96.72%	8.19%

Source: Author’s Analysis of CSO Population data, Vols. 1, (1981-2011)

Furthermore, the next Table shows in a component, core-periphery analysis of the State population over the first NSS half-life from 2002 to 2011, wherein the Periphery area has been twice as dependent on the in-migration component for its population growth as compared with the population growth pertaining to the Core area, thus:

Table A12.2: Components of State Population Growth (2002-2011)

	<u>Natural growth</u>	<u>%Share</u>	<u>In-Migration</u>	<u>%Share</u>
Core Area	176,868	49.48%	112,918	36.00%
Periphery	<u>180,558</u>	<u>50.52%</u>	<u>200,705</u>	<u>64.00%</u>
State	357,426	100.00%	313,623	100.00%

Source: Table 1, Town & Country, 2011 and Table 2, Vol.4, 2006, CSO Census

Over the first nine year, half period of the NSS to 2011, Ireland's population grew by 671,049 or by 17.13% to nearly 4.6 million. Of that increase, natural growth accounted for 357,426 being a 53.26% share. The net in-migration of 313,623 accounted for 46.74% of that growth.

Whereas the population growth contributions are balanced with an even share distribution of the natural growth component as between the Core and Periphery areas, the migration component has been much more volatile in terms of its volumetric contribution and historically inconsistent and variable; one that has quickly switching direction from an inward to outward momentum and *vice versa*. Demographic analysis provides conclusive evidence that the western half of the State, with its much lower urban-based content, is particularly volatile in its growth behaviour.

Appendix 13: Cohort Analysis: State Population Growth, April 2007-2012

Vital Statistics, 2nd Quarter 2012

[Confirming that the focused ages of net out-migration are largely confined to just three out of the eighteen 5-year cohorts: the 15-29 ones]

Populations '000 (April):

Cohorts:	2007 Aggregates	2012 Aggregates	5-year growth	% growth
(a) 0-14	884.2	994.8	110.6	12.92%
(b) 15-29	1,062.9	894.6	-168.3	-15.83%
(c) 30-85+	<u>2,428.7</u>	<u>2,696.0</u>	<u>267.3</u>	<u>11.01%</u>
State Population:	4,375.8	4,585.4	209.6	4.79%

Cohort Gain/ Loss Analysis:

(a) 0-14	884.2	994.8	110.6	12.92%
(c) 30-85+	<u>2,428.7</u>	<u>2,696.0</u>	<u>267.3</u>	<u>11.01%</u>
Growth: (a)+(c)	3,312.9	3,690.8	377.9	11.41%
Loss: (b)	1,062.9	894.6	-168.3	-15.83%

Commentary

If (b) cohorts had grown at the average rate of (a)+(c), then the State's April 2012 population total would have been 4,874 (thousand). Likewise, had (b) grown at that +11.41% rate, its size would have been 1,184.2 (thousand), representing a 'swing' difference of 289.6 (thousand).

Analysis: Brian Hughes, DIT.

Source: CSO Vital Statistics, 2nd Quarter 2012, Table A.

Note: Data based on 'usual residence' concept.

Appendix 14: Case Study 3: Drogheda Compared with Sligo

Rural locational-lifestyle choice preferences are so commonplace; they present major political challenges to the practice of spatial planning in the implementation of settlement consolidation, impeding the prevention of sprawl, perpetuating medium to long-distance commuting and to the much higher attendant costs of service-provision. Significantly, such choices, likewise contribute to major diseconomies-of-scale and to statistical distortions. For example, comparing the two major settlements, Drogheda in the east and Sligo to the west of the island, their respective Daytime Working Populations as recorded in the 2011 census as being in inverse proportion to their respective town plus environs populations, thus:

Table A14.1: A Comparison of Populations and DWP for Drogheda with Sligo:

<u>Town</u>	<u>2011 pop.</u>	<u>2011 DWP</u>	<u>DWP as % of</u>	
			<u>Population</u>	<u>Swing %</u>
Drogheda	38,578	11,368	29.47%	129.87%
Sligo	19,452	13,176	67.74%	

Source: Author's analysis of 2011 CSO census data

This Table serves to contrast two large Irish towns, as between their populations and DWP proportionalities. This comparison highlights the fact that unlike Sligo, Drogheda is not a 'stand-alone settlement, both due to its commuter function for Dublin and because of its own growth and its near-agglomeration with LBM, the latter having mushroomed into a large plus-10,000 populated town.

In contrast, Sligo's very slow long-term growth and its modest 19,452 population in 2011, proportionately might be some 129.87% greater than it is? In other words, for it to be 44,714, as a direct quotient-population percentage comparison with Drogheda DWP one? If this were so, then perhaps Sligo would be the State's largest town instead of it having dramatically 'slipped' in the population league table order, from fifth to nineteenth-largest town over the past twenty-five years.

Significantly, the Sligo ‘Gateway’ was the only one of Ireland’s largest 85 settlements to have lost population during the first 9-year half-life of the NSS. To what extent is this attributable to Sligo’s singular geographic isolation, despite its significant DWP count as a measure of its ‘centrality’ function? The answer to this extreme case is partially explained in perusing the right-hand column of the CSO Table 9 *Net Gain/ Loss in Working Population* (NGL) data.

Appendix 15: Spatial Geo-demographic Factors that Apply to Provincial Cities

- Provincial cities exhibit some evidence of emerging, identifiable industrial clusters.
- All have recognised CBDs, albeit generally of modest scale.
- Most have nearby Port and Airport infrastructure.
- They benefit from recent completions of Motorway-standard accessibility to Dublin and in Derry's earlier case, to Belfast.
- They already have or are in the process of achieving 'regional scale' retail infrastructures for major outlets.
- To varying extents, their SoI 'satellite towns' are also growing. In Cork's case, it has four such 'large towns' of 10,000-plus in population.
- Some have infrastructural weaknesses such as Cork's up and downstream flood-defence shortfalls, as confirmed to this student by Niall Cussen.
- With the exception of the Galway 'settlement', demographic performances over recent censuses have been modest.
- All have regional-scale hospital and healthcare facilities.
- Arts and cultural assets and infrastructure-venues are evident.
- Considerable urban renewal projects have or are being implemented.
- Major hotel and multiple sports stadia exist. Derry still has some way to go.
- In Henderson and Wang (2004) or Beaverstock (1999a), contexts of world city-classifications, these four Irish settlements would rank between 3,000 and 15,000 in size order: only Cork is likely to achieve the ESDP-minimum City-threshold size of 200,000 by the next census in 2016.
- Notwithstanding their modest sizes, there is no Irish alternative way to achieve minimum critical mass, *i.e.* except for the fast-growing and agglomerating settlements within the Dublin-Belfast corridor.
- Plentiful serviced land supply and modest real estate costs prevail.
- Public infrastructure including energy, power and waste-water infrastructure is available.
- Skilled labour surpluses are available for all but the larger-scale activities

In summary, the above-listed attributes for Ireland's provincial cities must be intensively used as demographic leverage to fill the missing Irish settlement hierarchical gap of 200,000-500,000 size.

Source: Poleze, M. (2001).

Appendix 16: Wider Contextual Comparison for Sligo

It is noted, that whereas Sligo is a ‘stand alone’ settlement, Letterkenny to some extent, is within Derry’s SoI. Over the 1981-2011 period, in the economic transformation of ‘work’, from ‘smokestack industry’ (SI) to one of ‘advance producer services’ (APS), Letterkenny’s population caught up with and outpassed Sligo’s population, as shown in the next Table, thus:

Table A16.1: Comparison of Population Growth (1981-2011), Sligo and Letterkenny Towns:

Sligo Vs. Letterkenny towns (rank size order)	1981 Pop.	2011 pop.	Pop. growth	% Change
Sligo (5 th in 1981)	18,002	19,452	1,450	8.05%
Letterkenny (22 nd in 1981)	7,992	19,588	11,596	145.10%

Source: CSO Censuses, 1981 and 2011, Vols. 1.

Not alone had Letterkenny outpassed Sligo’s population by 2011 but the Table confirms, that over the preceding thirty years, its growth rate was over eighteen times that of Sligo. In 1981, Letterkenny had just 44.40% the population of Sligo. What explains their large population growth differences? Has it to do with their comparative county populations, surface area/ sizes, population densities or with Derry’s SoI? Does it relate to differential FDI endowment?

Sligo, with one of the State’s largest DWP-to-Population ratios, is proportionately matched in this measurement by those of nearby Ballina and Longford? This appears to indicate that significant areas of the north-west of State suffer from an unusually high anti-urban and anti-agglomeration bias? Space limitation prevents a deeper analysis of similar county-level data, which could be undertaken using of the CSO’s *Profile 10*, Table 10 data from the 2011 census. Instead, the next Table’s investigation extends to one nearby county level of comparison.

Table A16.2: Comparing Counties Sligo and Donegal (1981-2001):

Sligo Vs. Donegal	1981 Pop.	2011 pop.	Pop. growth	% Change
Co Sligo	55,474	65,393	9,919	17.88%
Co Donegal	125,112	161,137	36,025	28.79%

Source: Table 2, Area Vol. CSO 2011 Census

The Donegal county's population growth was some 61% greater than Sligo's over that thirty years and their respective rates of urbanisation were:

Table A16.3: A Comparison of Urbanisation Rates for Sligo and Donegal (1981-2011)

Urbanisation Rates	1981 Urban	2011 Urban	Urban % growth
Co Sligo	32.45%	37.23%	14.73%
Co Donegal	19.68%	27.48%	39.63%

Source: Table 2 Area Vol.

Sligo town was the only 'urban' settlement in its county in 1981, whereas Letterkenny comprised one of a number of 1,500 and over towns in Donegal at that census. Town surface areas and urban densities were, earlier, investigated and compared, *vide* Hughes (2009). Sligo town's surface area is considerably more compact than that of Letterkenny. One counter-intuitive possibility is that of 'connectivity', enhancing the propensity for outward movement: Sligo is connected by Mainline Rail to Dublin, whereas Donegal is the only county in the State that is has no rail infrastructure, emphasising its insularity and physical distance from the 'core' region.

A significant NSS status justification of Sligo as the State's seventh largest employment base (DWP count) in 2011, as compared with Letterkenny's thirteenth position. Further investigation reveals that in that 2011 census, Sligo's DWP was 13,176 or 23.73% greater than Letterkenny's 10,649. In 2011, Sligo's DWP was surpassed only by the five cities and Swords. Yet it was only ranked as the State's twenty-fourth largest settlement in 2011, compared with Letterkenny's twenty-second position.

There was only a small daily difference in those leaving these towns to work elsewhere, with 1,212 leaving Sligo as against 1,577 leaving Letterkenny; which is perhaps surprising, given Letterkenny's relative proximity to Derry.

Yet, from the regional geographical perspective, Sligo is a particularly important NSS Gateway, as it is the only settlement of its size between Galway and Letterkenny. Even by east-coast standards it is noted that Sligo's DWP exceeds both that of the State's two largest towns Dundalk and Drogheda, despite each of these having settlement populations approximately twice the size of Sligo. All of these considerations do not adequately explain Sligo's 1981-2011 population growth of just 8% is in sharp contrast with Letterkenny's increase of 145%, which is discouraging to those responsible for formulation of spatial policy. It presents an interesting research challenge for the spatial planning fraternity.

Appendix 17: A Case Study of Drogheda – Reinforcing the Dublin-Belfast Corridor

In contrast to Sligo, Drogheda is somewhat compromised in its ‘centrality’ status because of the extent to which it serves as a ‘dormitory town to Dublin; in the census of 2011 some 6,203 of its resident-workers are employed elsewhere compared with just 1,212 in Sligo’s case. In addition to its ‘centrality’ measure of Central Place activity, a town’s own-based DWP employment is an important consideration for both FDI and SME location, vide Skehan (2009). Within the State as at 2011, there are only the five cities together with ten of its large towns having DWPs of greater than ten-thousand.

One risk for policymakers is that an undue concentration of individual settlement performance can ‘camouflage’ the wider picture urban agglomeration momentum. The Sword’s case is not considered because of its ‘regional’ proximity to Dublin, albeit its combined 2011 population with Kinsealy-Drinan was 43,630. However, given the progress of recent years, in Drogheda’s physical agglomeration with LBM and their location within the Dublin-Belfast Corridor, and having an aggregate population of 49,450 thus fast-approaching that of Waterford City, it is difficult to justify how their combined size and growth has been ignored or downplayed, in the respective Regional Planning Guidelines literature for the GDA and Border.

These and other compelling facts were set out by this student, to Minister Hogan and Junior Minister O’Dowd, in a May 2012 Oral and Documentary Submission on behalf of the Drogheda City Status Group.

As part of that Presentation, the striking increases in the area’s population at the ED level, is set out in its ‘Table 2’, as follows:

Table 2: The Greater Drogheda Area – Areas and Electoral Districts (with 2006-2011 growth %)

<u>Ref.</u>	<u>Drogheda Areas</u>	2002	2006	% Growth	2011	% Growth
(A).	<u>Meath Rural</u>	19,039	27,939	+46.7%	32,695	+17.0%
043	Ardcath	1,907	1,873	- 1.8	1,911	2.0
044	Duleek	2,941	4,366	+48.5	5,177	18.6
045	Julianstown	5,806	8,289	+42.8	9,588	15.7
046	Mellifont	599	523	-12.7	564	7.8
047	St. Mary's (Part)	5,457	9,044	+65.7	10,772	19.1
048	Stamullen	2,329	3,844	+65.1	4,683	21.8
(B).	<u>Drogheda Borough</u>	28,333	28,973	+ 2.3%	30,435	+5.0%
001	Fair Green	10,852	9,783	- 9.9	9,769	- 0.1
002	St Laurence Gate	3,566	3,801	+6.6	4,006	5.4
003	West Gate	6,412	5,899	-8.0	6,100	3.4
041	St Peter's (Part)	2,765	3,460	+25.1	4,000	15.6
047	St. Mary's (Part)	4,738	6,030	+27.3	6,560	8.8
(C).	<u>Louth Rural</u>	9,515	12,560	+32.0%	15,451	+23.0%
037	Clogher	1,814	2,494	- 1.8	3,026	21.3
038	Dysart	649	777	+48.5	917	18.0
039	Monasterboice	1,130	1,164	+42.8	1,333	14.5
040	Mullary	1,248	1,528	-12.7	1,726	13.0
041	St. Peter's (Part)	2,641	4,022	+65.7	5,157	28.2
042	Termonfeckin	2,033	2,575	+65.1	2,211	-14.1
TOTAL	(A) to (C)	56,887	69,472	+22.1%	78,581	+13.1%

Source: Analysis by Dr Brian Hughes, DIT from CSO Volume 1, 2006 census.

Drogheda's growth has led to several historic county border adjustments in favour of Louth since the 1950s, distorting the centre-of-Boyne original demarcation and expanding Louth south of the river into what was Meath. Due to its rate of expansion to the south and east, much of the town's growth is in process of agglomerating with LBM. Accordingly, this case study serves to demonstrate that urban growth can go

unrecognised because of local governance, boundary and constituency issues, thereby masking Drogheda's on-the-ground reality of this agglomerating, emergent city.

There are physical manifestations of that agglomeration, not least in the recent completion of a major waste-water plant on Marsh Road, the dual-serving District Shopping Centre at Colp East, the start made to some new housing estates between Colp East and Donacarney and to the south of that village, all contributing to the Drogheda-LBM agglomerative process.

The Sligo-Drogheda comparison 'contrast', followed by its wider contextual research content, could be replicated for other interesting Irish settlement comparisons, were it not for the size constraints for subject dissertation. Nevertheless, a common spatial lesson suggests that sprawl and settlement proliferation with the resulting dilution effect, compromises the quest to consolidate and enhance 'centrality of settlement' within the State. Again, this raises the wider issue of the influence and effectiveness of the spatial planning profession in Ireland and its understanding of the economic imperatives of agglomeration and competitiveness.

From the Northern Ireland perspective, both Lisburn and Newry have recently been designated city status, not only in recognising them as growth centres but likewise demonstrating a Northern spatial commitment to the economic potential of these locations within the Dublin-Belfast (DB) Economic Corridor. To summarise this Case Study: as some 60% of the corridor's length is located in the Republic it is appropriate that Drogheda's inclusion as that corridor's sixth growth centre should reflect the State's recognition of the fact that over half of the island's population is concentrated within the greater DB Corridor area, *vide* Figure 10.1.

Appendix 18: Extract from Paper on Density of Irish Urban Settlements

A summation of the contrasting densities of Irish Settlements based on surface areas, kindly provided by the CSO to this student, can be appreciated from the following table:

Table A18.1: Urban Area Densities in Ireland (Republic)

Settlement	Number	Surface Area (sq. km)	Population	Average Density (sq. km)
Dublin	1	300	1,045.8	3,485
“Embryo” Cities	4	322	403.1	1,252
[All cities	5	622	1,448.9	2,329]
10,000 plus towns	34	396	616.0	1,556
5,000-10,000 towns	39	245	272.7	1,109
3,000-5,000 towns	29	113	108.6	961
1,500-3,000 towns	63	141	128.3	910
Total	170	1,517	2,574.3	1,697

Source: CSO Census of Population 2006 and their Geography Section

Analysis: Hughes, B (2009) *The Density of Irish Urban Settlements*, A DIT Research Paper. See also Lutz (2001)

Appendix 19: Survey Methodology – Using Strategic Qualitative Conversations

Following consultation with student's supervisor, it was concluded that the quality of the dissertations evidence base, in providing a superior strategic spatial planning research, would be strengthened if its quantitative format were to be augmented. This is done by using the methodology of conducting a series of strategic qualitative conversations (SQC) with some of the leading practitioners and academics in this field.

It was also concluded that a more balanced research outcome would emerge, augmenting this student's recording and vetting of the accuracy of the earlier class meeting with Niall Cussen, *vide* Appendix 2. Accordingly, the following list of interviewees was drawn up:

- Frank Corcoran, Senior Environmental and Planning Lecturer, DIT
- Dermot Corcoran, Research Officer, CSO
- Professor Edgar Morgenroth, Economic and Social Research Institute
- Professor Rob Kitchin, NISRA, NUIM Maynooth
- Dr Chris van Egeraat, NUIM
- Dr Lorcan Sirr, Urban Economics Lecturer, DIT

Nature of Topics Adduced

The SQC approach is to obtain the considered views of the experts in order to determine the commonality of answer or alternatively, to discern any significant divergence resulting from these one-to-one conversations with this student. A principal objective was to preserve the anonymity of the individual contributors.

Six specific (underlined) theme areas were addressed, requesting the respondents to use their 'best-way of doing things' approach rather than 'on a 'what to expect' basis:

-
- a) Growth Centres: Will the new NSS provide for named individual settlement growth centres? Alternatively, will there continue to be bi and tri-locations in format?
 - b) Governance: Will they be selected by DoECLG or by the new Regional Assemblies? *i.e.* as pre-specified in the new NSS or in the Regional Planning Guidelines?
 - c) Measurement: Will these be based on Population, Daytime Working Population or on 'other' criteria?
 - d) Geography: Will the number of growth settlements reflect the pro-rata populations of the new (3) super regions or will they reflect the need for geographical cover ?
 - e) Numbers of Growth Centres: Will there be more growth centres in Dublin and the East Region or in Connacht and the Border area, based either on population or on geographical surface area?
 - f) Urban - Rural Reflection: Will the number of growth centres reflect the urban or rural population profiles of the three super regions?

These queries were formulated on the basis that the learned SQC respondents would be familiar and up to date with this subject area. A summation of these responses is tabulated hereunder and their interface with the dissertation's numeric findings is synthesised in section 9.14

SQC Findings:

- a) Growth Centres: The SQC responses were unanimous in that the selection should be single-located growth centres based on contiguous density: agglomerated, large centres is the desired objective. Given the poor urban hierarchy in Ireland, the most important decision is where to draw the line as to the total number of centres. There was general agreement that only a small number of centres should be chosen. The five existing cities will self-select. After that, Athlone, Sligo and possibly Letterkenny. The West is the problem area. There was also unanimity that the twenty-three locations of the last NSS, particularly the proliferation of 'hubs' was a serious error of judgment, aggravated by the Government Decentralisation Policy implementation

coming so soon after the NSS launch. Independent of each other, the interviewees questioned the need for the second tier ‘Hubs’ and some of the responses felt that the numbers of ‘Gateways’ should be reduced from the present twelve settlements.

- b) Governance: DoECLG needs to select a maximum number of GSs – otherwise the Regional Assemblies (RA) would select many towns in their region. For ‘local democracy empowerment’ some flexibility would be left to the RAs but with a DoECLG Ministerial ‘veto’ if too many GSs were chosen.
- c) Measurement: Given the small relative differences between population and DWP, (*i.e.* the strong correlation that exists), in the size order of Irish settlements, the main concern is to ensure that SoI towns (e.g. Swords) is not selected as a GS! This does however raise the issue of nearness – for instance Dundalk is relatively ‘near’ to Dublin. Surprisingly, there was not an awareness of Drogheda’s impending agglomeration with LBM. Two respondents questioned the need to have both Limerick and Cork in the Southern Region. Yet Limerick should be included for political reasons and also because it is larger than Galway.
- d) Geography: The fact that Dublin is a ‘super pole’ tends to place a minimum distance between it and other centres. Accordingly, Portlaoise, the same distance as Dundalk is probably at a minimum distance, albeit the Dublin-Belfast Corridor presents a special case, in the linear-corridor morphology. This links in with the ‘overall population’ density issue. There are opportunities to strengthen sustainable urban-rural linkages. There was also general agreement that there should be one growth centre for the Midlands, preferably Athlone. The biggest problem is the West and Border areas. Sligo and Letterkenny are obvious choices, albeit a growth centre needs to have a wider range of services than is to be found in such towns, or in Athlone. Thus a minimum population criterion of 20,000 is an issue. Sub-centres are contradictory of the consensus to remove the ‘Hub’ category.
- e) Regional Distribution of GSs: The primary issue here has always been ‘spatial coverage’ and the dilemmas it imposes. This will present the greatest ‘tensions’ between politicians and planners and their differing objectives and agendas. The pressure to add to the list of proposed nominated growth

centres, came at the Cabinet consideration stage in the case of the last NSS, the resulted of which was the addition of many of the smaller settlements. In one such case it was felt that a modest-size hub was included because of a voting bias in favour of a particular political party ‘active’ in that part of the country!

- f) Urban/ Rural GS Representation: What can overcome this similar dilemma is for the new NSS to place emphasis on the need to scale up, reducing the Gini Coefficient and striving to eliminate the missing ‘urban tier’. There was a view that Cork could ‘take off’ with sustained growth, if local conditions are favourable. Its external connectivity is noted (airport and new port). Noting that large sub-regions are not served by a growth centre and the need to consider towns such as Castlebar and Cavan was suggested, as a short-term expedient, *i.e.* until such time as the main regional growth centre can demonstrate spill-over capability.

In conclusion, these significant qualitative insights are complemented by the quantitative analysis and outcome, which found that the ‘Scorecard’ results confirming a decisive selection of growth centres. The dissertation’s synthesised quantitative and qualitative methodologies provide a conclusive set of results. Accordingly the principal contribution resulting from this decisive thesis research in the NSS growth centre nomination process, should expect that its very clarity can be emphasised to the body politic, with the expectation that future political interference to settlement growth centre selection can be minimised, if not altogether eliminated.

Appendix 20: A Regional Analysis for Ireland

Introduction

In order to obtain a deeper understanding of the State's population spatial trend and to assist the central thesis objective of selecting growth centres, the following Regional Analysis comprises an examination of the spatial decomposition of the State population over the longer term 1981-2011. The NSS Spatial Planning regions are set out in the following Table A20.1, together with their respective census populations for 1981 and 2011, thus:

Table A20.1: 30 Year Regional Population Growth 1981-2011

				% Growth
	<u>1981</u>	<u>2011</u>	<u>Growth</u>	<u>1981-2011</u>
Border	401,756	514,891	113,135	28.16%
Dublin	1,003,164	1,273,069	269,905	26.91%
Mid-East	286,990	531,087	244,097	85.05%
Midlands	202,146	282,410	80,264	39.71%
Mid-West	308,212	379,327	71,115	23.07%
South-East	374,575	497,578	123,003	32.84%
South-West	525,235	664,534	139,299	26.52%
West	<u>341,327</u>	<u>445,356</u>	<u>104,029</u>	<u>30.48%</u>
State	3,443,405	4,588,252	1,144,847	33.25%

Source: Thesis Author's Analysis of CSO Population data.

The State's population has increased by just under one-third and the Mid-East's growth is approximately three-times as robust as the other regions, due to the demographic overspill from Dublin. Significant differences pertain to the two 15-year sub-divisions of time in contrasting the 1981-1996 period with that of 1996-2011. First, the 1981-1996 data, thus:

Table A20.2: 15 Year Regional Population Growth, 1981-1996

				% Growth
	1981	1996	Growth	1981-1996
Border	401,756	407,295	5,539	1.38%
Dublin	1,003,164	1,058,264	55,100	5.49%
Mid-East	286,990	347,407	60,417	21.05%
Midlands	202,146	205,542	3,396	1.68%
Mid-West	308,212	317,069	8,857	2.87%
South-East	374,575	391,517	16,942	4.52%
South-West	525,235	546,640	21,405	4.08%
West	341,327	352,353	11,026	3.23%
State	3,443,405	3,626,087	182,682	5.31%

Source: Author's analysis of CSO Censuses

The State population growth of just 5.31% reflected a period of weak economic growth and of poor planning foresight. Housing affordability and inadequate house building output in Dublin resulted in a marked population deflection with a rapid, earlier growth in the Mid-East region.

Next, the more robust 1996-2011 period is examined, assisted by the first significant wave of net inward, non-indigenous migration into Ireland, thus:

Table A20.3: 15 Year Regional Population Growth, 1996-2011

				% Growth
	<u>1996</u>	<u>2011</u>	<u>Growth</u>	<u>2002-2011</u>
Border	407,295	514,891	107,596	26.42%
Dublin	1,058,264	1,273,069	214,805	20.30%
Mid-East	347,407	531,087	183,680	52.87%
Midlands	205,542	282,410	76,868	37.40%
Mid-West	317,069	379,327	62,258	19.64%
South-East	391,517	497,578	106,061	27.09%
South-West	546,640	664,534	117,894	21.57%
West	<u>352,353</u>	<u>445,356</u>	<u>93,003</u>	<u>26.39%</u>
State	3,626,087	4,588,252	962,165	26.53%

Source: Author's analysis of CSO Censuses

This second period outcome is a State population growth rate being some five times more robust than for the first 15-years. Again, the Mid East's growth is outstanding, being twice that of the State growth rate.

An emerging picture of growth difference is evident as between the east and west of the State, together with their widening population size difference. Examining the eight Spatial Planning regions, it is possible with one exception to divide the State into its east-west constituents. This is achieved by splitting the six counties of the Border Region into two groups. Louth, Cavan and Monaghan form an eastern sub-region and likewise Donegal, Sligo and Leitrim comprising the Border western sub-region.

Accordingly, the eastern portion of the State now comprises the Spatial Planning Regions of Dublin, Mid East, South East, Midlands and the aforementioned east-Border sub region. The western portion includes the South West, Mid-West, West and the west-Border sub region. Again, the same two time periods are set out, thus:

Table A20.4: East-West Population Growth, 1981-1996

<u>East Regions (Dublin SoI)</u>				% Growth
	<u>1981</u>	<u>1996</u>	<u>Growth</u>	<u>1981- 1996</u>
Dublin	1,003,164	1,058,264	55,100	5.49%
Mid-East	286,990	347,407	60,417	21.05%
Midlands	202,146	205,542	3,396	1.68%
South-East	374,575	391,517	16,942	4.52%
East Border	<u>193,561</u>	<u>196,423</u>	<u>2,862</u>	<u>1.48%</u>
Total - East Regions	2,060,436	2,199,153	138,717	6.73%
<u>West Regions (non-Dublin SoI)</u>				
Mid-West	308,212	317,069	8,857	2.87%
South-West	525,235	546,640	21,405	4.08%
West	341,327	352,353	11,026	3.23%
West Border	<u>208,195</u>	<u>211,872</u>	<u>3,677</u>	<u>1.77%</u>
Total - West Regions	1,382,969	1,427,934	44,965	3.25%

Source: Author's analysis of CSO Censuses

In that fifteen years to 1996, the eastern part of the State was growing at more than twice that of the western portion (+107.07%), much of that due to the west's quantum of outward migration. Specific examination of CSO Vital Statistics data at the county level confirms that, generally, the east of the country also enjoyed much stronger Natural Growth at a time of a relatively low, predominantly outward migration direction. Further investigations along these lines confirm that the lower age-profiles and birth-mother counts were much more robust for the eastern half. Over that 15 years from 1981, the approximate figures for the State's Natural Growth of 380,000 was counter-

balanced by its net out-migration of -197,300, resulting in an overall population increase of 182,682 being 5.31% on its 1981 total of 3,443,405.

For the second fifteen-year period to 2011, net inward migration became the most significant factor of population growth throughout the State, but surprisingly so in rural counties. This reflected a policy of widespread migrant-dispersion to such counties. All regions experienced an unprecedented level of growth, thus:

Table A20.5: East-West 1996-2011 Population Growth

East Regions (Dublin SoI)				% Growth
	<u>1996</u>	<u>2011</u>	<u>Growth</u>	<u>1996-2011</u>
Dublin	1,058,264	1,273,069	214,805	20.30%
Mid-East	347,407	531,087	183,680	52.87%
Midlands	205,542	282,410	76,868	37.40%
South-East	391,517	497,578	106,061	27.09%
East Border	<u>196,423</u>	<u>256,563</u>	<u>60,140</u>	<u>30.62%</u>
Total - East Regions	2,199,153	2,840,707	641,554	29.17%
Source: Author's analysis of CSO Censuses				
West Regions (non-Dublin SoI)				
Mid-West	317,069	379,327	62,258	19.64%
South-West	546,640	664,534	117,894	21.57%
West	352,353	445,356	93,003	26.39%
West Border	<u>210,872</u>	<u>258,328</u>	<u>47,456</u>	<u>22.50%</u>
Total - West Regions	1,426,934	1,747,545	320,611	22.47%

Source: Author's analysis of CSO Censuses

In this recent 15-year period Natural Growth (NG) amounted to 495,608 with net in-Migration of 466,557 resulting in the State’s population growing by 962,165 or by 26.53% above its 1996 total of 3,626,087.. Thus Natural Growth accounted for 51.51% and in-Migration for 48.49% of that increase.

Despite the aforementioned contribution of net-inward migration to most counties throughout the State 1996-2011, its eastern portion still enjoyed almost 30% greater overall population growth than did the western section, driven by the urban agglomeration effect of the capital’s sphere of influence (SoI).

Table A20.6(a): Summary Table – Populations			
	<u>1981</u>	<u>1996</u>	<u>2011</u>
Populations			
East Regions	2,060,436	2,199,153	2,840,707
<u>West Regions</u>	<u>1,382,969</u>	<u>1,426,934</u>	<u>1,747,545</u>
State Totals	3,443,405	3,626,087	4,588,252
Table A20.6(b): Summary Table – (b) Growth			
	<u>1981-1996</u>	<u>1996-2011</u>	<u>1981-2011</u>
Growth			
East Regions	138,717	641,554	780,271
<u>West Regions</u>	<u>43,965</u>	<u>320,611</u>	<u>364,576</u>
State Totals	182,682	962,165	1,144,847
Table A20.6(c): Summary Table – (c) Share of Growth			
East Regions	17.78%	82.22%	
<u>West Regions</u>	<u>12.06%</u>	<u>87.94%</u>	
State Totals	15.96%	84.04%	

Source: Author’s analysis of CSO Regional population Data (1981-2011)

Summary of Regional Analysis

That summary tables clarification of the population growth differences between the eastern and western regions of State over the two fifteen-year periods and for the entire thirty years up to 2011. For the State itself, five-sixth of its population growth occurred in the second period. For the western Regions, seven-eighths of their growth also took place in that second period, during which time over two thirds of population growth was attributable to inward migration rather than to natural growth of births less deaths.

Consequently, with the continuation of the reversal from sharp in-migration to sharp out-migration growth that took place between 2006-2011, vide CSOs National Growth Projections, Table (Appendix), and with the census evidence that this is much more pronounced in rural areas, the CSO Expert Group's Population Projections are weighted in favour of future growth taking place in the eastern Regions and particularly so due to Dublin's Urban Agglomeration effect.

These last set of data confirm that when these two 15-year terms are compared, the second period of growth was some 5.27 times that of the first 15-year growth for the State. However, the 'west' area's growth difference was some 7.29 times whereas the 'east' area grew by just 4.62 times during the second period as compared with the first 15 years.

Thus for the 2016-2031 period, and subject to the contents of the soon-to-be-published Regional Population Projections (2016-2031), it is reasonable to expect that the east growth differential over the west area will be more in line with that first period. Then the east grew by 3.16 times the west as compared with exactly twice the west's growth for the second period. The Expert Group has given consideration to such earlier data.

Appendix 20 addendum to Brian Hughes dissertation: (Not for Assessment Purposes)

Three days after submission of Dissertation for assessment on Thursday 12th December 2013 the CSO published the 2016-2031 Regional Population Projections. This provides an opportunity for this Dissertation Author to write the following Addendum 3(b) to Appendix 20, based on the central *M2F2 Projection*, thus:

Table A20.3(a): 20 Year Regional Population Growth, 2011-2031 based on the CSO M2F2 Projection

		(‘000)		% Growth
	<u>2011 Census</u>	<u>2031</u>	<u>Growth</u>	<u>2002-2011</u>
Border	514,891	533,000	18,109	3.51%
Dublin	1,273,069	1,519,000	245,931	19.32%
Mid-East	531,087	678,000	146,913	27.66%
Midlands	282,410	309,000	26,590	9.42%
Mid-West	379,327	410,000	30,673	8.09%
South-East	497,578	550,000	52,422	10.54%
South-West	664,534	733,000	68,466	10.30%
West	<u>445,356</u>	<u>456,000</u>	<u>10,644</u>	<u>2.39%</u>
State	4,588,252	5,188,000	599,748	13.07%

Source: CSO Regional Population Projections (2016-2031) and Author's analysis

Note: Based on the ‘Usual Residence’ estimation – as distinct from the ‘De Facto’ basis for the 2011 Census; this results in a slight under-projection of the 2031 figures to the extent of about 0.29%.

The 2016-2031 CSO Projections were published later in the week of the DT123 Dissertation hand-up and therefore were not available for inclusion and commentary as originally intended. It is noted that there are many possible projections resulting from variations to each component and to combinations of such growth-projection influencers.

The above Table sets out the CSO's central M2F2 Regional Population Projection, for the year 2031. Should this particular projection eventuate and in the absence of effective spatial planning policy intervention in favour of centripetal agglomeration applied to Ireland's provincial cities, then as interpreted by the Expert Group, it would result in the following outcomes:

- Dublin plus the Mid-East (the GDA) would obtain 65.50% of State population growth over the twenty years to 2031
- The GDA's growth rate of 21.77% would be nearly three times that of the Rest of State's (RoS) 7.43% growth: *i.e.* 2.93 times
- The GDA's share of State population would increase from 39.32% in 2011 to 42.35% in 2031: the RoS area would decline to a 57.65% share.
- The RoS population growth of just 206,904 would provide little opportunity for any of its new NSS settlement growth centres to achieve significant increases in population, a pre-requisite for urban agglomeration conditionality based on attaining a minimum-threshold size.

On that basis, other probable spatial outcomes would see:

- Dublin's comparative growth and its population size difference with other NSS settlements would be likely to further diverge, *e.g.* to seven or more times greater than Cork. During 2006-2011 this was the measure of their respective growths.
- Persistence with the current residential pattern of one-off housing and small-settlement proliferation will further reduce the opportunities for meaningful urban growth to occur in the RoS area. Competing with Dublin for FDI-type jobs and other central place activities will prove even more difficult.
- A Strategy-Plan **to accelerate the growth of Ireland's Provincial cities and a few of its major RoS Area towns** is identified as the most important initiative.
- The graph in Hughes (2010: 187) and elsewhere in that text, notes that should the GDA share of population reach about 43%, the urban agglomeration effect accelerates, automatically creating a 'tipping point' analogous to the Krugman Bifurcation Model (1991), whereby its eventual majority share of the State's population becomes inevitable.

-
- The State's intermediate M2F2 'traditional' population (thousands) estimates for census years 2016, 2021, 2026 and 2031 are as follows: 4,687, 4,876, 5,044 and 5,188, with respective 5-year percentage growths of: 2.45%, 4.03%, 3.44% and 2.85%.
 - This model of demographic behaviour is likewise confirmed in the Second Edition literature of Fujita and Thisse (2013), which was received (on order from the UCD Bookshop) the day following the Dissertation hand-in.

In summary, this CSO Regional Projection data confirms similar findings to those of this Hughes (2013) Dissertation and with no significant deviation therefrom.

Dated: 19th December, 2013

Appendix 21: A Sectoral Analysis for Ireland

Introduction

This dissertation's core-periphery analysis is broadened to encompass sectors, including observations on all eighty-five settlements involved separate evaluations of the list of Gateways, then the Hub towns, the remaining sixty-two larger settlements and the residual rural areas that includes the smaller towns up to 4,999 in population. This analysis commences with the 2002-2011 population performance for the State set out in this five-sector format.

The objective for displaying the population performance in this manner is to facilitate an evaluation of their differentiated growth performances over the first half-life of the NSS. An important 'scale observation' is that the aggregate 2002 G&H population growth for the twenty-two other designated settlements is noted to be just 90% that of Dublin's and with little to differentiate the Gateway percentage growth with that of Dublin.

The following Table A21.1 summarises the 2002-2011 Population Growth for these sectors, thus:

Table A21.1: Sectoral Population Growth, 2002-2011

Sector	2002	2011	9-yr growth	% growth
Dublin	1,004,614	1,110,627	106,013	10.55%
Totals 62 setts.	542,004	717,768	175,764	32.43%
Total Gateways	504,823	559,479	54,656	10.83%
Totals Hubs	143,081	168,675	25,594	17.89%
<u>Remaining sm.towns+rural</u>	<u>1,722,681</u>	<u>2,031,703</u>	<u>309,022</u>	<u>17.94%</u>
State	3,917,203	4,588,252	671,049	17.13%

Source: Author's analysis of 2002-2011 census data

Note: The 62 settlements represent the 85 largest ones less the Gateways and Hubs. In its right-hand column Table 7.1 confirms the percentage population growth. In contrast to one of the principal objectives of the NSS, this Table shows that as with Dublin, the Gateways have very much underperformed the State population growth ‘datum’ of 17.13%. Such findings raise doubts at least, as to some the selected choices made under the NSS 2002-2020.

It is interesting to note the small town and ‘rural’ population sector growth ahead of the State average, including the ‘one-off’ house . While it is acknowledged that such trends reflect other factors such as lifestyle choices – to experience rural life *in proximo* to cities, Hughes, et al. (2012) posits that most such deflections were ‘enforced’; that was attributable to greater housing affordability, available away from the capital. The most impressive sectoral performance accounts for a very high population growth of the residual 62 settlements, many of which are located in the fast-growing ‘coronas’ of the city commuter-belts which in addition to Dublin have benefited from the overspill from the other cities, *e.g.* Carrigaline, Oranmore, Newcastle West and Tramore. Resulting from Dublin’s overspill, most of the towns within its SoI exhibited superior levels of growth over 2002-2011, as is shown in the next Table, comprising a selection of eighteen such towns, thus:

Table A21.2: Population Growth of Dublin SoI Towns of 5,000 and over, 2002-2011:

[With some overspill from Dublin towns]	2,002	2,011	9-yr growth	% growth
Swords	27,175	36,924	9,749	32.01%
Balbriggan	10,294	19,960	9,666	93.90%
Celbridge	16,016	19,537	3,521	21.98%
Greystones	11,913	17,468	5,555	46.63%
Malahide	13,826	15,846	2,020	14.61%
Leixlip	15,016	15,452	436	1.93%
Maynooth	10,151	12,510	2,359	23.24%

Ashbourne	6,362	11,355	4,993	78.48%
Skerries	9,149	9,671	522	5.71%
Portmarnock	8,376	9,285	909	10.85%
Rush	6,769	9,231	2,462	36.37%
Ratoath	3,794	9,043	5,249	138.35%
Lusk	2,456	7,022	4,566	185.91%
Dunboyne	5,363	6,959	1,596	29.76%
Donabate	3,854	6,778	2,924	75.87%
Kinsealy-Drinan	2,110	5,814	3,704	175.55%
Sallins	2,922	5,283	2,361	80.80%
Blessington	<u>2,509</u>	<u>5,010</u>	<u>2,501</u>	<u>99.68%</u>
Total -18 'overspill' towns	158,055	223,148	65,093	<u>41.18%</u>

Source: Author's towns analysis 2002-2011

This is not a comprehensive list as there are other towns within Dublin's SoI, some of which are further out and whose population growth undoubtedly has been enhanced by Dublin 'deflections' .⁴ Clearly, it is easier to achieve high levels of growth where settlements have a modest base population at the start date of any such comparison. However, some of these 'overspill' Dublin towns are now amongst the largest settlements in the State and appear on the 'list' of highest growing towns. Such population 'deflection' from the capital to this town growth impact of Dublin's overspill, in scale, is approaching the 106,113 increase for the 'Dublin' settlement growth between 2002 and 2011.

Measures of Population Deflection

The most direct approach to the quantification of population 'deflection' is to ascertain an average population or DWP 'growth' rate for a region and to measure the extent of deviation from that average when perusing the settlement under examination. In

⁴ Bray, which is the State's fourth largest town, is one such example, although as an exception, it has not exhibited any population growth.

adopting this approach to Dublin it is noted that its own 2002-2011 population growth was 10.55% as against the State average of 17.13%. Some of these growth rates differences comprises the ‘deflected’ population movements out of Dublin to other SoI settlements, to smaller towns and rural areas which have grown because of urban-generated inward movements, as well as a further ‘overspill’ to the Periphery area.

Examining the 34 large-town settlements including Dublin that comprise the ‘Core’ region list set out in Table A21.5, these data confirm that the average of the aggregate growth (2002-2011) for the remaining 33 settlements was 33.18% as compared with just 10.55% for Dublin and 16.54% for all 34 locations. If Dublin had managed to achieve the same growth rate as the other 33 settlements, this would indicate a ‘deflected’ population movement of just over 60,000 occurred, from the capital to these 33 settlements, over that period. However, that represents only part of the ‘deflection’ momentum out of Dublin.

The second aspect of its population ‘loss’ relates to the movement to the ‘Core’ area’s rural and smaller towns’ category. From the following Table A21.3, *Disaggregation of the ‘Core’ area growth*, the ineffectiveness of spatial planning policy implementation is reflected in the fact that the Rural plus Small Town growth (2002-2011) was 23.55% as against the total ‘Core’ area’s 17.70%. Applying the same ‘residualising’ methodology as before, this would indicate that ‘deflection’ from Dublin to the Rural and small towns sector represented a further 15,900. On-site inspections of the freshness of their housing stock and other anecdotal evidence of the extent of one-off rural housing, in areas such as Ballybough, The Naul and Lackan is thus reinforced in this ‘pro-rata’-type methodological analysis.

Accordingly, this combined population ‘deflection’ from Dublin is marginally under 76,000. However, as confirmed in the extension in recent years, of commuter train timetables to locations including Kilkenny, the extent of Dublin’s SoI extends beyond the ‘core’ region itself and into parts of the ‘periphery’ areas that are served by road and rail corridors. Thus, some of the demographic growth that has occurred in the outer Leinster and south-east Ulster counties represents the Robert-Nicoud (2006)-explained overspill effect; based on the older core-periphery in the referred-to literature of Hicks (1940) and Kaldor (1945). Thus, it is instructive to summarise this student’s analysis

relating to both ‘core’ and ‘periphery’, the Ireland-area population growth during the currency of the NSS. The object of this is to be able to compare the growth rate of the larger urban settlements with that of the rural and small town areas, as shown in the next Table A21.3.

Table A21.3: Disaggregation of 'Core' Area Population Growth, 2002-2011

Sectors	2002	2011	pop. growth.	% growth
Total 'Core' area	1,637,267	1,927,053	289,786	17.70%
Dublin+33 lge. Towns	<u>1,365,749</u>	<u>1,591,587</u>	<u>225,838</u>	<u>16.54%</u>
Rural + sm. Towns	271,518	335,466	63,948	23.55%

Source: Author's analysis of 2002-2011 census data

This analysis confirms a strong population growth in the rural and small towns, ahead of Dublin although behind its fast-growing SoI large towns. This result has serious implications for economies of scale, demonstrating the extent of ‘sprawl’, the costs of services provision and for economic competitiveness. Likewise, it serves to question the thrust, direction and effectiveness of spatial planning implementation in the ‘core’ area. Although many of Dublin city’s inner wards now show encouraging signs of reversing longstanding patterns of population decline, the capital still exhibits many other electoral districts which are either static or in the case of many mature suburbs, where there is considerable evidence of the ‘empty-nest’ syndrome. In summary this Table confirms that the rural area and small town category outperformed the city and large town population growth by 33.05%.

In conducting a similar research for the ‘periphery’ area, the following Table A21.4 analysis results in its rural area and small town category achieving a modest 1.02% higher population growth rate than that of its cities and larger town category.

Table A21.4: Disaggregation of 'Periphery' Population Growth (2002-2011)

Sectors	2002	2011	pop. growth	% growth
Total Periphery. area	2,279,936	2,661,199	381,263	16.72%
Cities+47 large towns.	<u>828,773</u>	<u>964,962</u>	<u>136,189</u>	<u>16.43%</u>
Rural + small towns	1,451,163	1,696,237	245,074	16.89%

Source: Author's analysis of 2002-2011 census data

Thus in overall terms, whereas the 'core' area has population grown of 5.86% faster than the 'periphery' area, it is clear that the quantum of Dublin's population deflection to both areas – including outer Leinster and south-east Ulster, confirms an extensive 'spillover' effect which also acts as a considerable 'drag' on the capital's own population growth performance. Another comparison difference is the fact that the 'core' area rural and small town population growth is 39.43% stronger than is its growth in the 'periphery' area. Such a large difference adds weight to this student's contention that extensive parts of rural areas in the 'periphery' region of the State are failing to grow and many of them are in decline because of their remoteness from strong and large urban settlements, *vide* Western Regional Authority Report (2013).

It is perhaps unsurprising that this, same similarity in the pattern of disaggregated percentage growth, favouring a higher percentage growth rate for rural and small town over that of the 'Periphery' area's cities and larger towns, mirrors that of the 'Core' area's performance over the first half-life of the 2002-2020 NSS. Likewise, such outcome confirms an unsustainable pattern of growth resulting from a discernable, albeit much lower 'deflection' of population from the Periphery area's cities, as confirmed in Meredith and van Egeraat (2013).

Likewise, such analysis reflects unfavourably on NSS spatial planning policy outcomes; ones that have contributed to the proliferation of one-off housing, to urban-generated rural development and contemporaneously, to the sharp increase in long and medium-distance commuting, *vide CSO, Door to Door* (2012).

Having completed the 2002-2011 population growth analysis for Ireland’s two core and periphery regions, this Appendix next line of research focuses on examining and comparing population growth for its larger settlements. First up is the investigation of the ‘core’ area larger settlements, where the population growths of each of the 34 settlements, commencing with Dublin, are displayed in descending order, of actual population growth as distinct from percentage growth. The right-hand column compares in percentage terms the individual town growth compared to that of Dublin.

Table A21.5: A Listing of ‘Core’ Area Settlements and their 2002-2011 Population Growth

34 Core settlements	2,002	2,011	9-yr growth	% growth	% of Dublin growth
Dublin	1,004,614	1,110,627	106,013	10.55%	100.00%
Swords	27,175	36,924	9,749	35.87%	9.20%
Balbriggan	10,294	19,960	9,666	93.90%	9.12%
Navan	19,417	28,559	9,142	47.08%	8.62%
Drogheda	31,020	38,578	7,558	24.36%	7.13%
Greystones	11,913	17,468	5,555	46.63%	5.24%
Dundalk	32,505	37,816	5,311	16.34%	5.01%
Laytown/B/M	5,597	10,889	5,292	94.55%	4.99%
Ratoath	3,794	9,043	5,249	138.35%	4.95%
Ashbourne	6,362	11,355	4,993	78.48%	4.71%
Newbridge	16,739	21,561	4,822	28.81%	4.55%
Lusk	2,456	7,022	4,566	185.91%	4.31%
Athy	6,049	9,926	3,877	64.09%	3.66%
Kinsealy-Drinan	2,110	5,814	3,704	175.55%	3.49%
Celbridge	16,016	19,537	3,521	21.98%	3.32%

Arklow	9,993	13,009	3,016	30.18%	2.84%
Donabate	3,854	6,778	2,924	75.87%	2.76%
Kilcock	2,740	5,533	2,793	101.93%	2.63%
Blessington	2,509	5,010	2,501	99.68%	2.36%
Rush	6,769	9,231	2,462	36.37%	2.32%
Kildare	5,694	8,142	2,448	42.99%	2.31%
Naas	18,288	20,713	2,425	13.26%	2.29%
Trim	5,894	8,268	2,374	40.28%	2.24%
Sallins	2,922	5,283	2,361	80.80%	2.23%
Maynooth	10,151	12,510	2,359	23.24%	2.23%
Clane	4,417	6,702	2,285	51.73%	2.16%
Malahide	13,826	15,846	2,020	14.61%	1.91%
Dunboyne	5,363	6,959	1,596	29.76%	1.51%
Kells	4,421	5,888	1,467	33.18%	1.38%
Wicklow	9,355	10,356	1,001	10.70%	0.94%
Bray	30,951	31,872	921	2.98%	0.87%
Portmarnock	8,376	9,285	909	10.85%	0.86%
Skerries	9,149	9,671	522	5.71%	0.49%
<u>Leixlip</u>	<u>15,016</u>	<u>15,452</u>	<u>436</u>	<u>2.90%</u>	<u>0.41%</u>
Totals (34)	1,365,749	1,591,587	225,838	16.54%	

Source: Author's analysis of 2002 and 2011 census Table 7, Area Vols.

The first observation of note is that Dublin's population growth is similar to that of the next Eighteen-listed settlements. This affords an appreciation of its scale size and growth, despite that modest level of 10.55% in its population growth achievement over the first half-life of the NSS. If Dublin is excluded, the remaining thirty three settlements enjoyed an average growth of 33.18% during that timeframe. Such growth difference compared with Dublin's modest growth, reflects not just the extent of population deflection from the capital but also, the inevitable growth in long-distance

commuting as a consequence of such spatial planning strategy and housing-affordability pressures which result in distributing nearly half of the Capital's population growth elsewhere in the mistaken quest for BRD. The resultant commuting to Dublin is aggravated by the limited employment opportunities in these towns.

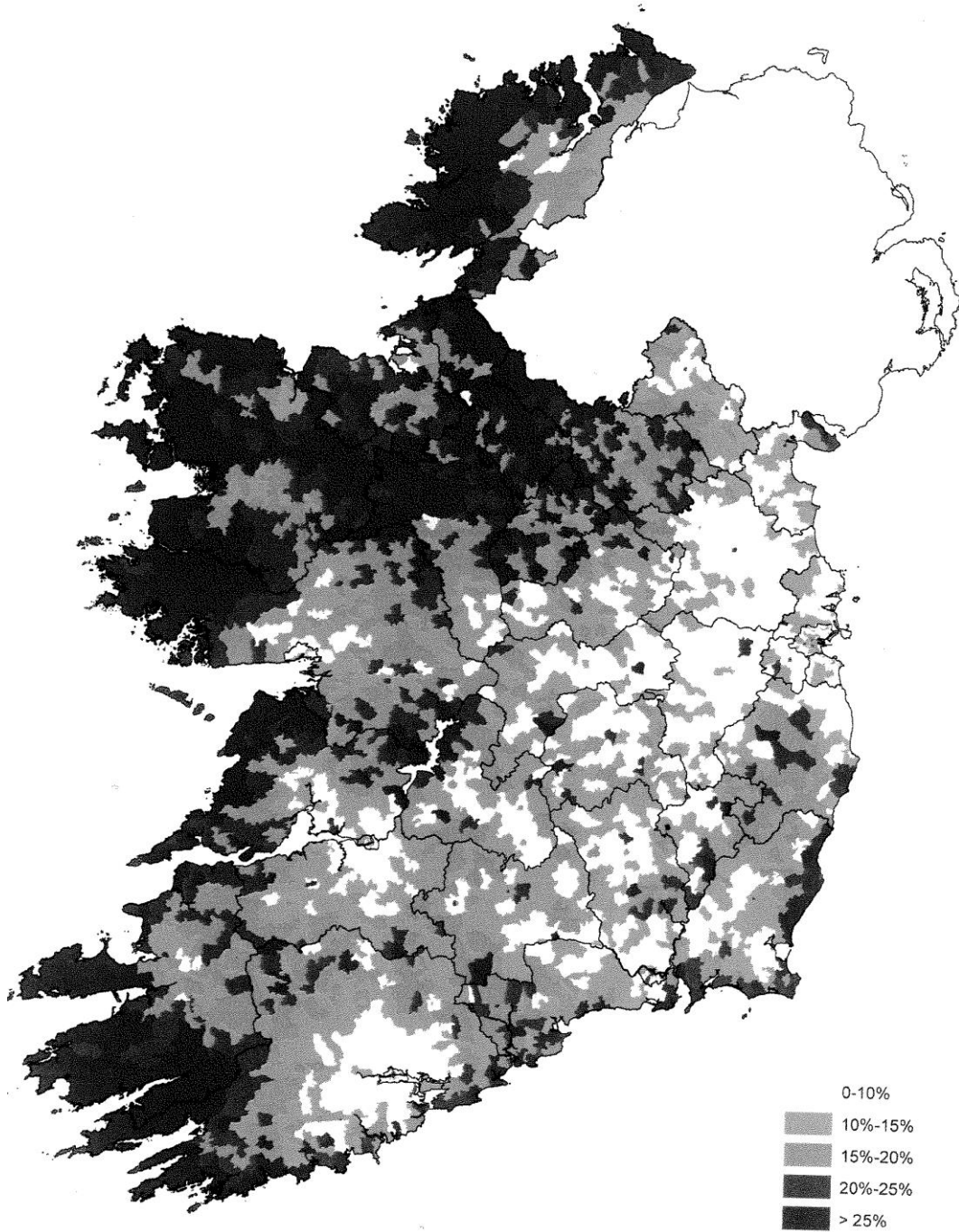
The censuses since 2002 have confirmed successive, large increases in medium and long distance home-to-work commuting numbers, *vide Travel to Work* census data (2002 to 2011). Thus, another thesis finding relates to the Spatial Planning awareness of sustainability issues arising from such findings. This places greater focus on the counter-need, for densification, particularly for central areas of Dublin, reflecting one of the principal findings of two Class Projects: *ref. SSPL9014 Transport and Urban Development* lecture notes and handouts and the *SSPL9012 Urban Design, (2012-2013)* Project.

The third observation from Table A21.5 *supra*, is the range in the percentage growth rates between the thirty three large towns of the 'core' area. Many have experienced substantial growth over the nine-year period to the extent that such towns have risen sharply in the overall size and rank-order of Irish provincial towns.

Accordingly, the new NSS will need to address this Thesis Finding, insofar as it reinforces the Hall and Pain (2006) conclusion that Dublin alone exhibits excessive mono-centricity, within their study and comparison of eight North West European Metropolitan City Regions. Again, this highlights the fact that the 2002-2020 NSS selected only one other G&H in the State's 'core' area, Dundalk. Other related and emerging issues are the housing supply-demand contrasts between emerging housing shortages in south and south-east Dublin in contrast with documented evidence of ghost estates, even evident in some of these commuting towns. but particularly so in western and north-western areas of the State, as confirmed in the following Map showing the 2011 percentages of Dwellings Vacant in Each Electoral Division , thus:

Figure A21.1:

Map 7 – Percentage of dwellings vacant in each Electoral Division, 2011



Source: 2011 Census Preliminary Report, CSO

This ‘oversupply’ mismatching of the rural housing stock is paralleled by contemporaneous ‘demand’ pressures exerted on residential ‘undersupply’ in the capital. The resulting population ‘deflection’ from Dublin also supports urban economic and NEG research findings. Within the APS milieu: centres cannot achieve a polycentric-type CBD role until they can reach a critical ‘break’ threshold population, *vide* Fujita *et al* (2001).

Towns are unlikely to have a specialised commercial quarter with knowledge-based activities until they have a workforce size that matches Skehan (2007) levels of settlement-population threshold guidelines, *vide* Appendix 6 and Alonso growth-dynamics as shown in Figure 0.1. *vide* Thesis Introduction.

The other principal finding from this demographic analysis, is that the largest sector, being the residual population comprising the small towns of under 5,000 together with the ‘rural’ population residual, is the one that exhibiting the highest growth rate 2002-2011, although this requires deeper investigation for variations within that sector. However, such finding appears to reinforce the observation of Cussen (2013) on ‘scattergun’ morphologies and on policy strategy supporting same ...*we are a GAA country*, *vide* Appendix 3.

The same methodological approach and sectoral compositions as applied to population above, are again used in the approach adopted to the DWP analysis. Applying a similar format as computed and displayed, are the DWP Sectoral Analysis for 2002-2011 growth, set out in the next Table.

Table A21.6: Sectoral Analysis of DWP Size and Growth, 2002-2011.

Sector	2,002 DWP	2,011 DWP	9-yr growth	% growth
Dublin	428,360	469,987	41,627	9.72%
Totals 62 setts.	159,357	194,509	35,152	22.06%
Total Gateways	195,382	266,048	70,666	36.17%
Totals Hubs	69,952	81,508	11,556	16.52%
Rural + sm. Towns	<u>451,129</u>	<u>454,803</u>	<u>3,674</u>	<u>0.81%</u>
State	1,304,180	1,466,855	162,675	12.47%

Source: Author's analysis of CSO data on DWP 2002-2011

The contrasts, between population and DWP are noted. Again there are observed to be wide variations as between the respective DWP sector sizes and likewise for growth rates. Negligible growth is shown for the Rural plus Small Town residual. As already referred, such data for the 2002 census needs to be treated with caution, especially given the CSO explanations for its 'experimental' six by 5% sample-compositions in that census and to their expressed caution over inter-census consistency relating to home-commuter effects that may for example, explain the impressive Cork DWP growth between 2002-2011.

Notwithstanding these caveats, Table A21.6 shows that the DWP sectoral growth has been particularly strong for the NSS-selected Gateways and also for the 62-settlements and Hubs. In contrast, Dublin's growth was modest and the Rural and Small Town sector was virtually static. The State's DWP growth of 12.47% is noted to be just 72.79% of its population growth of 17.13% over 2002-2011, reflecting the severity of the economic downturn. It is thus instructive to consider the reasons behind this difference.

Discussion on the Differences between Population and DWP Growth

Comparing the sector sizes and growth outcome differences as between the data of Tables A21.1 and A21.6, the State population growth ‘datum’ is noted to be 37.37% stronger than for DWP, reflecting the deep economic downturn post-2008 and the resultant employment losses, particularly noted in the NACE sectors of ‘manufacturing’ and ‘construction’. Variations from the respective ‘datums’ confirm strong negative growth for both G&H sectors in contrast with positive growth for DWP. This presents a particularly challenging issue for the implementation of future Spatial Planning policy, as shall be noted in comparing population with DWP ratios for individual towns, *e.g.* as in the Sligo Case Study, *vide* Appendices 14 and 16.

Combining 2002-2011 Population and DWP Growth Data

Accordingly, it is instructive to reflect on settlement performance from a more holistic perspective, in order to assess a truer measure of what constitutes ‘growth’. This dissertation’s methodology approach *combines* both population and DWP growth performances. The DWP and population figures are added; first without any allowance being made for a DWP weighting. The next Table A21.7 shows the results from such combination, thus:

Table A21.7: Combined, Population and Unweighted DWP Growth, 2002-2011

Sector	2,002	2,011	9-yr growth	% growth
Dublin	1,432,974	1,580,614	147,640	10.30%
Totals 62 setts.	752,656	912,277	159,621	21.21%
Total Gateways	711,039	825,527	114,488	16.10%
Totals Hubs	224,201	250,183	25,982	11.59%
<u>Remaining smt+ru</u>	<u>2,100,513</u>	<u>2,486,506</u>	<u>385,993</u>	<u>18.38%</u>
State	5,221,383	6,055,107	833,724	15.97%

Source: Author's analysis of CSO data on population and DWP 2002-2011

The observation from these data confirms a much more robust results emanating for the ‘62-town’ sector as compared with those of both of the G&W sectors. The Dublin outturn for this nine-year period appears unimpressive but again, this needs to be taken in context with both its scale size and the contribution made from its nearby eighteen towns as listed in Table 6.2. From this analysis of *Population plus DWP*, it is shown that both Dublin and the NSS Hubs have underperformed the State ‘datum’ by just under one-third, whereas under this criterion, the 62-Settlement sector is noted to have performed well above that datum.

Given the reduction in the differences in sectoral growth resulting from the above combination, it could be argued that perhaps DWP should be placed on the same numeric footing as population. This objective is achieved by obtaining the respective State Population (divided by) DWP for 2002 and 2011 and by using the resultant quotient as a DWP multiplier.

This multiplier is then applied to the DWP Table A21.3 sectoral counts, to achieve the same numeric ‘footing’ as for Table A21.1 State Population. It is noted that both Population quotients result in multipliers of just over three, both for 2002 (3.00) and 2011 (3.13). Applying these multipliers to the DWP counts, this result is set out in Table A21.8, thus:

Table A21.8: Growth of Weighted DWP Sectors 2002-2011:

Sector	2,002	2,011	9-yr growth	% growth
Dublin	1,286,612	1,470,097	183,485	14.26%
Totals 62 setts.	478,641	608,415	129,774	27.11%
Total Gateways	586,845	832,185	245,341	41.81%
Totals Hubs	210,106	254,953	44,847	21.35%
<u>Remaining smt+ru</u>	<u>1,355,000</u>	<u>1,422,602</u>	<u>67,602</u>	<u>4.99%</u>
State	3,917,203	4,588,252	671,049	17.13%

Source: Author's analysis of CSO data on DWP 2002-2011

It is noted that verification of data weightings is confirmed by the respective State population totals, in the population growth figure of 17.13%. The outcome from this weighted-DWP approach shows the Gateways in excellent light and the 62-Settlement sector again performing above the State ‘datum’. The Hubs also do well whereas Dublin is underperforming. The Small town plus rural sector is again shown as poorly performing.

From these DWP analyses, both ‘unweighted’ and ‘weighted’, it is concluded that DWP growth generally, provides a much more favourable set of results for the G&H sector, in support of the NSS strategy, when compared with those for Population growth 2002-2011. In turn, the extent of such variations in outcome suggests that the methodology analysis approach of Table A21.4, *i.e* to apply a combined, unweighted DWP with Population measure to the Dissertation Model is the most rational approach.

The final task is to add together the Population A21.1 and weighted DWP A21.8 data to produce the final data in this exercise for Table A21.9, thus:

Table A21.9: Population and Weighted DWP Growth, 2002-2011:

Sector	2,002	2,011	9-yr growth	% growth
Dublin	2,291,226	2,580,724	289,498	12.64%
Totals 62 setts.	1,071,940	1,326,183	254,243	23.72%
Total Gateways	1,102,502	1,391,664	289,163	26.23%
Totals Hubs	364,355	423,628	59,273	16.27%
<u>Remaining smt+ru</u>	3,004,384	3,454,305	<u>449,921</u>	<u>14.98%</u>
State	7,834,406	9,176,504	1,342,098	17.13%

Source: Author's analysis of CSO data on DWP 2002-2011

Both the Gateways and the 62 residual Town sectors exhibit superior growth as compared with the State figure. The residual rural and small town sector, the Hubs and

Dublin's growth all slightly underperform. It might therefore be argued that these multiplier weighting, of just over three, as have been applied to the DWT figures, are excessive.

This can be mitigated, for example by reducing the multipliers so that they are directly proportionate to the DWP-to-State 'in employment' counts as per the respective Quarterly National Household Survey (QNHS) returns for Mid March-Mid May 2002 and 2011 Quarters, respectively. As at March/May 2002, there were 1,749.9 (thousands) in employment, giving a DWP-adjusted multiplier of 1.34176. The corresponding figure for 2011 was 1,821.3 generating a multiplier of 1.24164, *vide* CSO QNHS series.

In conclusion, Appendix 21 confirms the sectoral growth analysis which indicates a similar albeit more nuanced growth in favour of the residual 62-settlements of 5,000 populations and over, that are separate from the Gateways and Hubs of the 2002-2011 NSS. Accordingly, this research methodology provides results to question the effectiveness of that Plan.

Appendix 22: Additional observations noted during the writing of this dissertation

Thus, another thesis finding relates to the Spatial Planning awareness of sustainability issues arising from such findings. This places greater focus on the counter-need, for densification, particularly for central areas of Dublin, reflecting one of the principal findings of two Class Projects: *ref. SSPL9014 Transport and Urban Development* lecture notes and handouts and the SSPL9012 *Urban Design, (2012-2013) Project*.

In conclusion, the following Figure 10.5 shows, side by side the old NSS Gateway and Hub settlements on the left and the seventeen dissertation-selected growth settlements on the right.

A Chapter 6 finding confirms that the economic SoI of cities is essential to underwrite growth and that geographic isolation appears to have a negative influence on population growth prospects, whilst promoting lower densities, settlement proliferation and sprawl inefficiencies, *vide* Appendix 6.

A Chapter 9 finding: The policy decision to withdraw the Gateway Development Fund was short-sighted, albeit enforced by the State's loss of economic sovereignty: it should be reinstated as soon as the Troika leaves and financial sovereignty is restored as an initial city-focused capital investment fund.

A Chapter 8 finding: Such typology confirms that, in addition to the missing 'hierarchical tier', Irish cities continue to substantially underperform in their population growth: a situation that warrants urgent strategic planning policy redress.

Likewise, such 'deflection' also supports urban economic and NEG research findings, whereby within the APS milieu: centres cannot achieve a polycentric-type CBD structures until they can reach a critical 'break' threshold population, *vide* Fujita *et al* (2001). Towns are unlikely to obtain and 'grow' knowledge-based activities until they have a workforce size that matches Skehan (2007) levels of settlement-population threshold guidelines, *vide* Appendix 6.

The other principal finding from this demographic analysis, is that the largest sector, being the residual population comprising the small towns of under 5,000 together with the 'rural' population residual, is the one that exhibiting the highest growth rate 2002-2011, although this requires deeper investigation for variations within that sector. However, such finding appears to reinforce the observation of Cussen (2013) on 'scattergun' morphologies and on policy strategy supporting same ...we are a GAA country, *vide* Appendix 3.

Such a large difference adds weight to this student's contention that extensive parts of rural areas in the 'periphery' region of the State are failing to grow and many of them are in decline because of their remoteness from strong and large urban settlements, *vide* Western Regional Authority (2013).

Accordingly, the new NSS will need to address this Thesis Finding, insofar as it reinforces the Hall and Pain (2006) conclusion that Dublin alone exhibits excessive mono-centricity, within their study and comparison of eight North West European Metropolitan City Regions.

A deep learning process for understanding urban forces by politicians is warranted and here, responsibility resting 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 not be repeated. Strategies for 'consolidation' must therefore replace the political preference for diffusion.

Finally, the independence of the planning profession, its standing and reputation needs to be investigated in the area of strategic spatial policy formulation. It also needs to include an economic focus, particularly with the advances being made in the NEG area, also being more resistant to the political pressures of localism and short-termism in pursuit of the overall national interest for long-term growth and restoration of economic sovereignty. It should strengthen the idea of establishing a national development agency, perhaps under the aegis of NAMA which would have overall responsibility for concentrated development zoning.

For word-count reasons, the related analysis of Core and Periphery growth performance over the half-life of the NSS is set out in Appendix 10.

To assist this approach, an analytical methodology of subject dissertation, divides the State into its two geographically-distinctive constituents: the ‘Core region’ being the Greater Dublin Area extended to include County Louth, in recognition of that county’s high urban content, population density and because of its strategic placement within the Dublin-Belfast Corridor, *vide* Map 1. The Rest of State’s 22 residual county area is designated the ‘Periphery’ region, where it is noted that all but two of the 23 Gateway and Hub settlements are located.

In surface area terms, the apportionment is 11:89. Significantly however, in the economic, GDV-per-capita terms, the split is approximately 50:50, *vide* CSO Socio-Economic Statistics (2013) and, demographically, just over half of the State’s natural growth (county-address: births less deaths) is attributed to the ‘core’ area.]

McCann (2001: 72) posits that Christaller (1933) was the first general theorist on the urban system, recognising and being influenced by Von Thunen’s (1826) pioneering contribution to the market place as the determinant of concentric land values in an agricultural setting. Christaller’s work was largely inductive, based on his observation of central places in southern Germany. Earlier theoretical work by Weber (1909) had presented an understanding of the principles of industrial location and the benefits of clustering.

It was not until 1960 that Alonso applied the Von Thunen principles (Fig. 2.2) to an urban setting, in his identification of the ‘bid rent’ model, focused on the central business district (CBD). Further inductive work combined with average and marginal economic cost and value curves, served to identify in his 1972 *Regional Science Paper*, the five Alonso inflection points of city growth, thus providing an urban economic explanation of population size benefits and disbenefits.

Subsequently, the land-value patterns of the monocentric city were modified in recognition of the emergence of Multiple-Nuclei business districts, after Harris and Ullman (1945) and in a demographic *cum* real estate sense, which some thirty-five years

later had ‘leap-frogged’ discontinuously, to the identification of ‘edge city, Garreau (1991).

Meanwhile, from the 1930s in the USA and by the mid-1950s in the UK, real estate was being championed as the Asset Class (AC) that was inflation-proofed: the exciting AC for Pension Funds and the Life Assurance Industry, Marriot (1968). Meanwhile, with the development of the Finance, Insurance and Real Estate (FIRE) sector of the national and international economy, property development added a market-led impetus to the intensification of city redevelopment throughout the First World.

Dublin did not escape from this commercial development momentum, as documented in MacDonald (2000). Within four decades from the early 1960’s some 3.5 million square metres of office space, many of the modern shopping centres and a chain of peripheral industrial estates had been developed, mainly in Dublin and gradually so, albeit on a much smaller scale, in other Irish cities. In summary, much of the pre-Celtic Tiger wealth creation had been market-force driven, re-shaping Ireland’s cities, accelerating urban growth and finally, through the process of densification, confirming Dublin’s new-found centripetal agglomeration momentum, assisted by technological spillovers.]

Specifically, as analysed and discussed elsewhere herein, Galway City, Sligo and Letterkenny self-select. Its after that that large swathes of this ‘super region’ are bereft of settlements that are obvious for selection on the basis of having a critical mass capability to achieve organic, economic growth.

This student has observed on travelling on major inter-city motorways in the USA, the extent of low-loader deployment in the numbers of homes transported, usually half a home per load, thereby reflecting a much healthier extent of prevailing labour mobility, predominantly towards the ‘sun-belt’ states. Housing just needs a new site! Workers are more adept to moving location in response to employment change and this, the research suggests, employment mobility is positively related to Gross Domestic Product.