

*The
Economic and Social
Research Institute*

AN ANALYSIS OF CROSS-BORDER SHOPPING

J.D. FITZGERALD, T.P. QUINN, B.J. WHELAN
and
J.A. WILLIAMS



AN ANALYSIS OF CROSS-BORDER SHOPPING

*Copies of this paper may be obtained from The Economic and Social Research Institute
(Limited Company No. 18269). Registered Office: 4 Burlington Road, Dublin 4.*

Price IR£8.00

(Special Rate for Students IR£4.00)

J.D. FitzGerald is a Senior Research Officer and B.J. Whelan is a Research Professor with The Economic and Social Research Institute. T.P. Quinn and J.A. Williams are former Research Assistants of the Institute. The Paper has been accepted for publication by the Institute, which is not responsible for either the content or the views expressed therein.

AN ANALYSIS OF CROSS-BORDER SHOPPING

J.D. FITZGERALD, T.P. QUINN, B.J. WHELAN
and J.A. WILLIAMS

© THE ECONOMIC AND SOCIAL RESEARCH INSTITUTE
DUBLIN, 1988

ISBN 0 7070 0096 3

Acknowledgments

The authors would like to thank Mr. T. Baker and Dr. G. Hughes of the ESRI and an anonymous referee for their very helpful comments. They would also like to thank the Revenue Commissioners for their assistance in providing data; Mr. A. Gibbons of Our Lady's Secondary School Castleblayney; Mr. J. Gallagher of McGinley & Co. (Carrick) Ltd.; Mr. Mohan of SKC who supplied data on petrol sales on behalf of the petrol distributors; and a number of other firms who supplied useful information. Finally, the authors would like to thank Ms. M. McElhone of the ESRI for her usual painstaking attention to the production of this publication. The authors remain solely responsible for the views expressed in this paper and for any errors contained therein.

CONTENTS

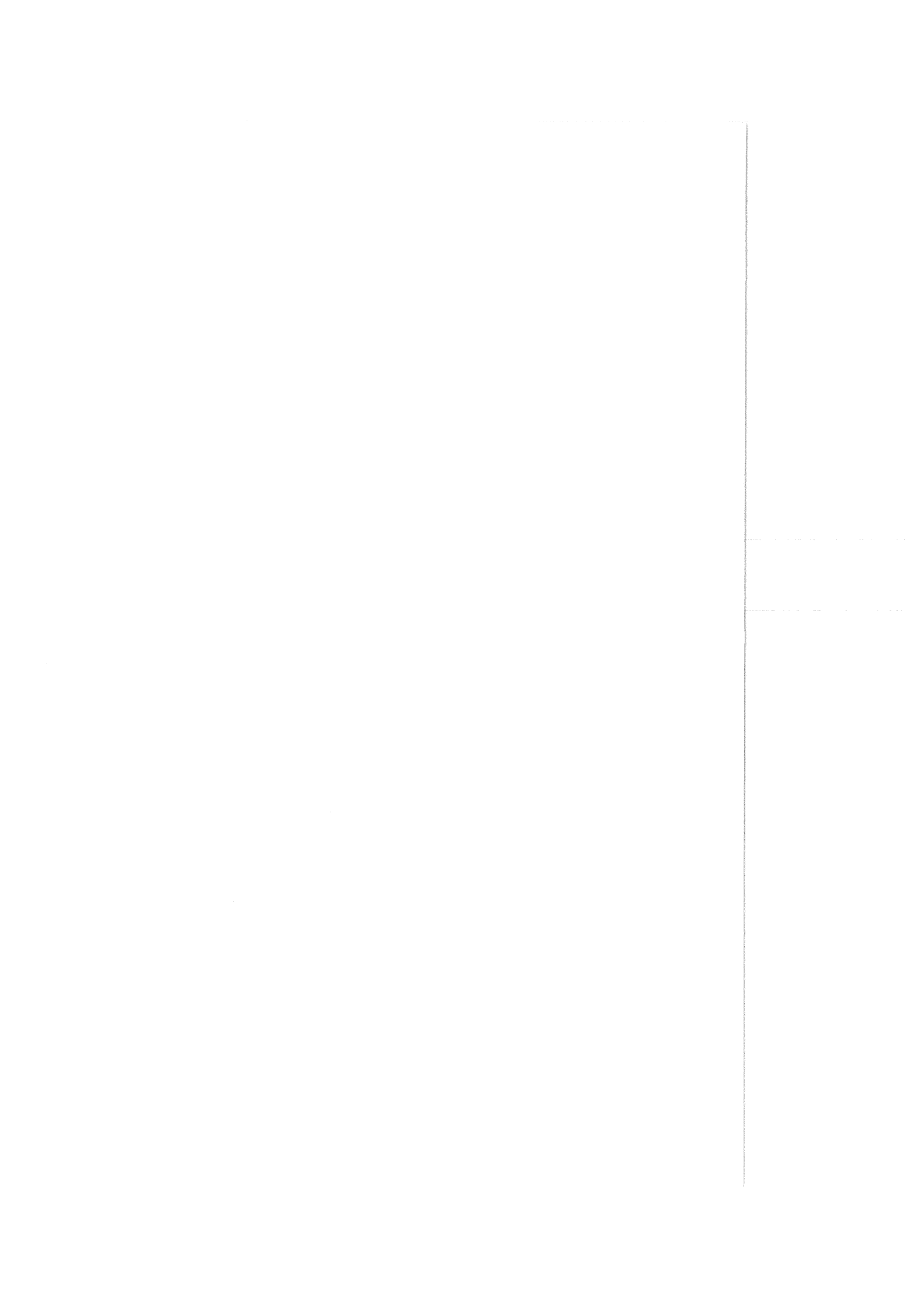
	Page
Acknowledgments	iv
Chapter General Summary	xi
1. INTRODUCTION	1
1.1 Introduction	1
1.2 Background	2
1.3 Methodology	3
2. PRICES IN THE REPUBLIC AND THE NORTH	6
2.1 Introduction	6
2.2 Relative Movements in Consumer Price Indices	6
2.3 The National Prices Commission Surveys	7
2.4 The ESRI Survey	9
2.5 The Restrictive Practices Commission Report	10
2.6 Purchasing Power Parity	11
2.7 Conclusions	13
3. REASONS FOR DIFFERENCE IN PRICES	14
3.1 Introduction	14
3.2 Indirect Taxation and Prices in the Economy	14
3.3 Effects of Taxes on the Price of Key Products	17
3.4 Difference in Net of Tax Prices	20
3.5 Reasons for Difference in Net of Tax Prices	23
3.6 Conclusions	27
4. VOLUME OF CROSS-BORDER SHOPPING — SURVEY EVIDENCE	29
4.1 Introduction	29
4.2 Data Collection and Interpretation	29
4.3 Cross-Border Shopping — National Results	31
4.4 Cross-Border Shopping — Households in Border Counties	35

Chapter		Page
4.5	Characteristics of Most Recent Shopping Trip on Which More Than ST£20 Was Spent	38
4.6	Regression Equations	41
4.7	North to South Shopping Flows	44
4.8	Conclusions	46
5.	REASONS FOR CROSS-BORDER SHOPPING — SURVEY EVIDENCE	47
5.1	Introduction	47
5.2	Knowledge of Exchange Rates and Relative Prices	47
5.3	Motivation for Shopping in Northern Ireland	52
5.4	Conclusions	54
6.	VOLUME OF CROSS-BORDER SHOPPING — TIME-SERIES EVIDENCE	55
6.1	Introduction	55
6.2	Television Sets	56
6.3	Cross-Border Trade in Petrol	59
6.4	Cross-Border Trade in Spirits — Background	59
6.5	Trend in Relative Price of Spirits	60
6.6	Data	62
6.7	The Models	64
6.8	Results	67
6.9	Conclusions	74
7.	CONCLUSION	76
7.1	Introduction	76
7.2	Results	76
7.3	Policy Implications	80
7.4	Further Studies	83
	<i>References</i>	84
APPENDICES		
1.	The Prices Survey	86
2.	Questionnaire Used in National Survey	90
3.	Questionnaire Used in Border Survey	91
4.	Sample Selection and Questionnaire Used in Northern Ireland Survey	99

<i>Table</i>	LIST OF TABLES	<i>Page</i>
2.1	Price of a basket of goods in Dublin compared to Belfast and Liverpool (per cent)	8
2.2	Comparative price levels from EC Purchasing Power Parity data. Price indices for total consumption	12
2.3	Comparative price levels from EC Purchasing Power Parity data — food, drink, and tobacco	12
2.4	Comparative price levels from EC Purchasing Power Parity data — 1985	13
3.1	Indirect taxation as percentage of the GDP (1985)	15
3.2	Comparison of rates of VAT in the Republic of Ireland and Northern Ireland	15
3.3	Comparison of rates of excise tax as on 1-3-1987	16
3.4	Irish whiskey price as a percentage of the UK price (IR£)	19
3.5	Irish petrol prices as a percentage of the UK (IR£)	21
3.6	Prices in the republic relative to the North in IR£ (Republic as % of North)	22
4.1	Number of trips in 6 months ending January 1987 on which shopping was done, classified by type of trip	31
4.2	Estimates of aggregate expenditure in N.Ireland by households from the Republic in 6 month period	32
4.3	Average number of trips per shopping household in 6 border counties classified by type of trip and distance from border	35
4.4	Items purchased in North by border shopping households	36
4.5	Average trip expenditure	37
4.6	Percentage of total expenditure by shopping households in 6 border counties represented by cross-border shopping	37
4.7	Comparison of estimates of cross-border trade	38
4.8	Average numbers of adults and children on most recent shopping trip on which more than ST£20 was spent, classified by shortest distance to the border with Northern Ireland	39

<i>Table</i>	<i>Page</i>	
4.9	Means of transport used on most recent shopping trip on which more than ST£20 was spent, classified by shortest distance to the border with Northern Ireland	40
4.10	Shopping location(s) of most recent shopping trips on which more than ST£20 was spent	41
4.11	Results of multiple regression analysis	43
4.12	Expenditure in the Republic of Ireland by residents of Northern Ireland in the latter 6 months of 1986	45
5.1	Household's perception of exchange rate	47
5.2	Household's perceived prices of various items.	49
5.3	Actual and perceived relative prices	51
5.4	Respondent's perceived advantages of shopping in Northern Ireland classified by distance to the border	52
5.5	Respondents' perceived disadvantages of shopping in Northern Ireland classified by distance to the border	53
6.1	Price of a bottle of whiskey (IR£)	62
6.2	Purchases of spirits in the North, (IR£ million)	68
6.3	Purchases of spirits in Northern Ireland as % of volume of total purchases, (constant 1980 prices)	71
6.4	Purchases of spirits in Northern Ireland as per centage of total purchases by value	71
6.5	Estimates of cross-border trade	73

<i>Figures</i>	FIGURES	<i>Page</i>
2.1	Consumer prices index in Ireland and the UK	7
3.1	Effects of indirect taxes on relative prices	16
3.2	Cost components of a six pack of Harp, IR£	17
3.3	Price of whiskey in Republic as % of North	18
3.4	Cost components of a bottle of whiskey, IR£	20
3.5	Cost components of a litre of petrol, IR£	21
3.6	Consumer price index in Ireland, UK and France	23
4.1	Allocation of cross-border shopping expenditure	34
4.2	Frequency of big shopping trips	39
6.1	Relative tax on TV sets	57
6.2	Sales of television sets	57
6.3	Relative price of whiskey	61



GENERAL SUMMARY

Since the early 1980s the growing problems with the public finances in the Republic have resulted in a rapid rise in rates of indirect tax. Over the same period rates of indirect taxation in the North of Ireland have risen very slowly. The result has been an increasing incentive for residents of the Republic to shop in the North. This paper quantifies the volume of this trade in 1986 and considers the factors which gave rise to it.

Chapters 2 and 3 examine the trend in prices in the Republic and the North since the late 1970s. They consider the role of indirect taxation in the growing price disparity between the two jurisdictions and the extent to which other factors, especially the volatility of the exchange rate, have contributed to it. Two approaches are used to quantify cross-border shopping in 1986. First, as described in Chapters 3 and 4, a series of surveys of households were carried out in the Republic, asking for details of their cross-border shopping behaviour. Second, as set out in Chapter 6, time series data were used to quantify the extent of cross-border trade in certain key commodities which are liable to excise taxes. The results of these two approaches are integrated in Chapter 7 to provide an estimate of the value of cross-border shopping in 1986. Chapter 7 also considers the policy implications of the results of this study and the direction which future research should take.

Chapter 2 documents the rise in consumer prices in the Republic relative to those in the North over the last 10 years. It shows how, for a wide range of goods, prices in the Republic were substantially higher than in the North in 1987. In October 1987 EC purchasing power parity data showed consumer prices in the Republic to be approximately 15 per cent above those in the UK. However, these data also suggest that the UK is the most competitive market in Northern Europe and that prices in the Republic for goods not liable to excise taxes are not greatly out of line with those in other neighbouring members of the EC (excluding the UK). The results of the analysis indicate that the gap between prices in the Republic and the North tended to widen in 1985 and 1986. However, there are some indications that this trend may have been reversed in the second half of 1987.

The reasons for this disparity in prices between the North and the Republic are discussed in Chapter 3. The single most important reason was the rapid

AN ANALYSIS OF CROSS-BORDER SHOPPING

rise in rates of indirect taxation in the Republic over the relevant period. This rise occurred primarily in the 1980 to 1985 period. However, given the specific rather than ad valorem nature of excise taxes and their importance in the tax system, the depreciation of sterling vis-a-vis the Irish pound in the 1985-86 period tended to increase excise taxes in the Republic expressed in sterling terms. It is clear that higher VAT and excise tax rates have been the major reason for prices in the Republic rising well above those in the North in the early 1980s and remaining there today.

However, as shown by the surveys of the National Prices Commission, up to 1985 the tax exclusive price of many goods remained fairly similar in the two jurisdictions. Over the period 1985-87 this situation changed. With the depreciation of sterling, tax exclusive prices in the Republic did not adjust downwards (or upwards in the UK). As a result, tax exclusive prices were, in general, significantly higher in the Republic than in Northern Ireland in 1987. The evidence from a number of sources, described in Chapter 3, indicates that this growing disparity in tax exclusive prices was due to a slow adjustment of prices to changes in the exchange rate. This is not a new phenomenon. The failure of purchasing power parity (prices adjusting to exchange rates) to hold in the short term is the norm rather than the exception in other countries. This slow adjustment of prices has meant that margins of manufacturers or distributors selling in the Republic have increased. The evidence suggests that retail margins have not been greatly affected. In the longer term we would expect that tax exclusive prices would move slowly back into line if there were no further changes in exchange rates. The evidence discussed in Chapter 3 suggests that this process was under way in late 1987.

The fact that prices have been substantially higher in the Republic than in the North over the 1980s has meant that there has been a continuing incentive for residents of the Republic to shop in the North. It has also meant that there has been a strong incentive for commercial smuggling of certain goods, especially those liable to excise taxes on which the biggest price differences exist. As shown in Chapter 5, households interviewed in early 1987 had, if anything, an exaggerated perception of the difference in prices between the two jurisdictions. It is this perceived difference in prices which stimulates the cross-border shopping.

The evidence presented in Chapter 4 suggests that approximately 12 per cent of households in the Republic made a total of 835,000 shopping trips to the North in the last 6 months of 1986. The percentage of households in the counties nearest to the border which made such trips in the 6 months was much higher than for the country as a whole. The survey showed that 46 per cent of these border households made a trip within the study period. The results of the survey of border households indicated that the value of their cross-border shopping in 1986 lay within the range IR£57 million and IR£119 million. For the rest of the country

GENERAL SUMMARY

the national survey suggested that cross-border shopping amounted to at least IR£27 million in 1986. The items most frequently purchased in the North by shopping households were petrol, other groceries and food.

The experience of the interviewers and the internal evidence of the survey suggests that households avoided admitting to any illegal expenditure: this will have affected the reporting of expenditure on substantial durable items, such as television sets. Taken together the results of these two surveys suggest a figure for cross-border shopping by all households in the Republic of around IR£150 million.

The evidence from the analysis of the time series data, discussed in Chapter 6, indicates that there is significant commercial smuggling of certain consumer goods, in particular spirits and television sets. Taken together the value of the purchases of these two items in 1986 was estimated at around IR£60 million. The evidence from the time series data on trade in petrol confirmed the annual estimate of IR£22 million derived from the survey.

Taking the two sets of data together, and making allowances for underestimation by households, our best estimate of the overall magnitude of cross-border trade in consumer goods in 1986 is around IR£200 million (2 per cent of personal consumers' expenditure). However, considerable uncertainty surrounds this estimate and the actual value of trade could lie in a range IR£150 million to IR£250 million. It includes both the expenditure by households on shopping expeditions to the North and the estimate of smuggling on a commercial basis of certain consumer goods obtained from the analysis of time series data. It does not include the legal import of goods by retailers who may be bypassing domestic distribution channels due to higher tax exclusive prices in the Republic.

The survey undertaken in Northern Ireland, described in Chapter 4, indicated that total expenditure in the Republic by shoppers from Northern Ireland was IR£7.0 million in 1986. The bulk of this expenditure went on clothing, the tax on which is currently lower in the Republic than in the North.

The fact that the total estimated expenditure by households in the Republic is slightly lower than might have been expected on the basis of media comment should not detract from the serious implications of this trade for border areas. The bulk of the trade by households is concentrated among those living in border counties of the Republic. While, due to convenience factors, one would expect quite significant cross-border shopping by such households even without price differentials, the magnitudes reported in the study go far beyond this. Two-thirds of all petrol consumed by households living in border counties who shopped in the North (46% of the total) was bought North of the border. For these households almost all alcohol bought for consumption at home was bought in the North. Approximately two-thirds of certain consumer durable items and toys were bought there. In total, the cross-border shopping of households in

AN ANALYSIS OF CROSS-BORDER SHOPPING

border areas in 1986 accounted for nearly 10 per cent of their total expenditure. Clearly, the effects of such a pattern of shopping on the retail sector in these counties is very severe in terms of profits, wages, and employment. It must also have had some effect on certain other sectors of the local economy such as restaurants and hotels.

The substantial volume of cross-border trade also involves a significant loss to the exchequer through reduced tax revenue. If rates of indirect tax are harmonised as part of the preparations for the completion of the internal EC market, the resulting redirection of trade would, clearly, provide a limited offset to the inevitable loss of revenue for the exchequer.

The analysis carried out in this study suggests that, even without the requirements of the completion of the internal Community Market, there is a need for greater harmonisation of the Republic's tax system with that in Northern Ireland. The reform of the indirect tax system must be given higher priority for the future. In the case of spirits and television sets the level of commercial smuggling is sufficiently large that a reduction of tax levels in the Republic to those in the North would be likely to leave total domestic tax revenue relatively unchanged. As such, the immediate implementation of reform in this area would not conflict with the requirements of overall budgetary policy. This is unlikely to be the case for any other commodities. However, the distortions in trade in other commodities in border counties is sufficiently large to give serious cause for concern. This is particularly true in the case of petrol where the distortions arising from the tax system have forced many petrol stations operating close to the border to close down.

In the longer term, the completion of the internal market implying, as it does, the ending of all restrictions on cross-border trade — clearly has major implications for the Irish indirect tax system. The evidence, presented above, suggests that for everyday items and goods, which are difficult to transport or store, quite significant cross-border price differentials are possible without seriously affecting the shopping patterns of private individuals living outside border counties. However, the situation is different for items such as consumer durables. Where there are large savings to be made on a particular item which has a high value (e.g., electric cookers, TV sets, etc.) it may be worthwhile for a private individual to travel long distances to avail of a lower VAT rate.

Chapter 1

INTRODUCTION

1.1 Introduction

Because of the growing problem with the public finances in the Republic of Ireland in the 1980s tax rates generally, and the rates of indirect tax in particular, have risen rapidly. In contrast, there has been very little change in the rates of indirect taxation in Northern Ireland and the rest of the United Kingdom over the same period. When allowance is made for changes in exchange rates, there has been a more rapid rise in prices in the Republic than in Northern Ireland (when expressed in common currency terms). As a result, there was a rapid increase in the incentive for residents of the Republic to shop in Northern Ireland in the early 1980s. This contrasted with the position over the previous 20 years when there were many occasions when the price differential encouraged trade in the opposite direction. The net result of this change has been a substantial increase in the volume of cross-border trade. However, this trade is difficult to measure using conventional methods. In many cases the volume of goods imported by individuals may have exceeded the legal limits and the substantial price difference on certain goods has provided a continuing incentive for large-scale commercial smuggling.

The purpose of this paper is first to examine the difference in prices facing shoppers in Northern Ireland (the North) and the Republic of Ireland (the Republic). In the light of these price differences we examine the current magnitude of cross-border shopping and its likely sensitivity to changes in relative prices¹. Finally, we consider this trade in the context of the planned harmonisation of indirect taxes within the European Community. The study does not examine the distortions in the patterns of trade in agricultural produce induced by the EC (European Community) system of Monetary Compensatory Amounts (MCAs). This latter trade has already been the subject of a study by Norton (1984).

The research presented in this paper was undertaken for the Commission of the European Communities as part of their preparations for the completion of the internal Community market and the necessary harmonisation of taxation. The final report, prepared for the Commission of the EC, was submitted to DGXXI in October 1987 (Fitz Gerald, Quinn, Whelan and Williams, 1987).

1. We have not examined the case of cars as there is no evidence of significant illegal imports in spite of the large tax induced price difference.

This paper differs from the report for the EC Commission in that it contains some additional material on price differences and has a rather different focus.

1.2 *Background*

The growth in the volume of crossborder trade, which is widely assumed to have taken place since 1980, has had important implications for the Irish economy, especially for those living in border regions. The retail sector is likely to have suffered reductions in employment and profitability. While this loss has been primarily felt in border areas it is probable that it has had a marginal effect in other parts of the country. The cross-border trade has also affected government receipts. As tax rates have been increased the additional receipts accruing to the exchequer have been less than might have been expected if such cross-border trade were not possible. The corollary has been an increase in revenue for the UK exchequer arising from higher sales in the North of goods liable to tax. The trade has also affected the balance of payments.

The growth of this cross-border trade has occurred in spite of the fact that there are a range of legal restrictions on the value of goods which may be brought into the Republic without payment of domestic indirect taxes. Prior to the budget of 31 March 1987 shoppers from the Republic living more than 15 kms. from the border could buy up to IR£252 of goods on a shopping trip to the North without payment of duty. No single item could be worth more than IR£55. There were additional restrictions on purchases of certain items (e.g., 1.5 litres of spirits). For those living within 15kms. of the border the import ceiling was only IR£25. However, there is little evidence that this latter restriction was observed or enforced. From the end of March 1987 the allowances for those living more than 15kms from the border were changed; since then the allowances are only available to those who are out of the jurisdiction for more than 48 hours. The onus of proof rests with the shopper. No change was made for those living within 15 kms of the border.

The existence of this cross-border trade has placed an obvious restraint on the possible levels of indirect taxation in the Republic. In late 1984 and early 1985 rates of indirect tax were actually reduced on TV sets and spirits due to the magnitude of the leakage North of the border. The fact that such trade takes place, even with existing restrictions and customs barriers, highlights the importance of tax harmonisation if the objective of "completing the internal market" of the EC by 1992 is to be achieved. This objective was adopted by the Heads of Government meeting at a summit in December 1985 and is embodied in the Single European Act. This market is defined as an area "without internal frontiers in which the free movement of goods, personal services and capital is ensured" (Art. 8A of Commission White Paper). This requires action to remove physical, technical and fiscal barriers. Clearly this has major

implications for the Irish tax system. (See Fitz Gerald, 1986; and O'Hagan, 1986, for a discussion of the potential effects on the Irish economy.)

Because the levels of indirect taxation are generally (though not universally) very much higher in the Republic of Ireland than in Northern Ireland the study has concentrated on the extent of shopping in Northern Ireland, by households resident in the Republic. However, some limited analysis has also been carried out of the likely extent of shopping in the other direction. (The results of this latter analysis indicate that the focus of this study is correct, the extent of shopping in the Republic by residents of Northern Ireland being currently quite limited.)

In undertaking this study The Economic and Social Research Institute has had to take into account certain special factors which relate to the Northern Ireland/Republic of Ireland border which make it different from, for example, the border between the Federal Republic of Germany and Denmark. The first obvious difference involves the effects of terrorism which makes the work of customs authorities controlling the border rather difficult. On the Northern Ireland side of the border checking of traffic by customs officers has largely ceased and customs formalities for commercial traffic are generally not provided at the border. It also means that any attempt to stop cars and interview their occupants at or close to the border is impractical and possibly dangerous for interviewers. Finally, the level of terrorist activity within Northern Ireland has itself had an effect on the magnitude of cross-border trade. It is generally felt that, following major bombing outrages in Northern Ireland, the numbers travelling from the Republic to Northern Ireland to shop fall significantly. This factor must be borne in mind in any purely economic analysis of the data collected on cross-border shopping.

The nature of the physical border itself must also be taken into account in any study of cross-border shopping. The absence of distinctive natural barriers, such as mountain ranges or rivers, and the large number of "unapproved" roads, makes the problems of customs officers in controlling the border extremely difficult. Shoppers, especially those from border areas who know the geography of the area well, regularly use the large number of "unapproved" roads. In many cases this evasion of border controls is done purely because the "unapproved" roads involve significantly shorter travelling time. However, it is probable that these roads make all the easier the task of both commercial smugglers and normal shoppers who cross the border with quantities of goods which exceed the legal limits.

1.3 *Methodology*

Chapter 2 of this study examines the differences in prices North and South of the border. A number of sources of information are used including a special survey of prices in border areas undertaken by the ESRI early in 1987. It

considers how prices have moved over time in the two jurisdictions. In Chapter 3 the reasons for the price differences are considered. In particular, it examines how much of the observed difference in prices in the two jurisdictions is due to differences in the structure and rates of indirect taxation.

The study uses two different approaches to determine the volume of cross-border trade. The first involved carrying out a number of surveys on both sides of the border asking households what their shopping patterns were and how much they spent in the other jurisdiction. The second involved using time series data for goods liable to excise taxes to examine the sensitivity of domestic sales to changing cross-border price differentials. This provides an estimate of the volume of cross-border trade in the relevant products.

For this study three sample surveys were undertaken, two of households, the other of adults. The first and most detailed survey involved a sample of 2,000 households living in border regions of the Republic (defined as Counties Cavan, Donegal, Leitrim, Louth, Monaghan and Sligo). The transport costs of shopping North of the border will be lowest for these households and awareness of cross-border price differentials should be keenest among them. The second survey, based on a more limited questionnaire, involved a sample of over 4,000 households spread throughout the Republic. These data give an indication of the overall magnitude of such trade in the context of the economy of the Republic. The third survey involved a quota sample of 1,100 adults chosen from the population of Northern Ireland. The results of this survey give details of the magnitude of shopping in the Republic by residents of the North.

The results of these surveys, taken together, allow one to estimate the magnitude of cross-border shopping in the second half of 1986 and the beginning of 1987. This period covers the crucial Christmas season when consumers' expenditure reaches a seasonal peak. The results of the surveys also allow one to examine the sensitivity of cross-border shopping to distance (and, therefore, transport costs) from the border. The surveys of households permit a detailed picture to be built up of the extent and nature of the cross-border trade actually taking place and they give a detailed profile of those households engaging in such trade.

Because the surveys were only undertaken at one point in time they can not be used directly to examine the sensitivity of cross-border trade to varying price differentials between Northern Ireland and the Republic. An attempt has been made to deal with this problem by asking certain extra questions of households concerning their views on the price sensitivity of their shopping patterns. However, given their subjective nature, the results obtained from these data must be treated with caution.

The results obtained from the surveys of households in the Republic are presented in Chapter 4. These include estimates of the magnitude of expenditure

in Northern Ireland by residents of the Republic along with the frequency of shopping trips. The results from the survey concerning the knowledge levels among households of exchange rates and price differentials between the two jurisdictions are discussed in Chapter 5. (The results from the survey of shopping patterns of residents of the North indicated that the volume of shopping in the Republic was small and these results are described in Section 7 of Chapter 4)

A second approach was tried in this study which complements the analysis of the survey data. This involved a study of the pattern over time of sales in the Republic of certain key commodities which are thought to be particularly important in the cross-border trade. The examination of these data provides some evidence on the sensitivity of cross-border trade to varying price differentials between Northern Ireland and the Republic. The primary commodity examined in this way was spirits (alcohol). A limited examination was also made of the effect of changing cross-border price differentials on domestic sales of television sets and petrol. The results of this analysis are described in Chapter 6 of the paper.

Chapter 7 draws together the evidence from a range of different sources and presents an estimate of the extent of cross-border shopping in 1986. The implications of these results for the domestic economy are considered. The limited evidence on the price sensitivity of this trade is discussed. Finally, the policy implications are examined in the context of the completion of the EC internal market and proposals for future research are summarised.

Chapter 2

PRICES IN THE REPUBLIC AND THE NORTH

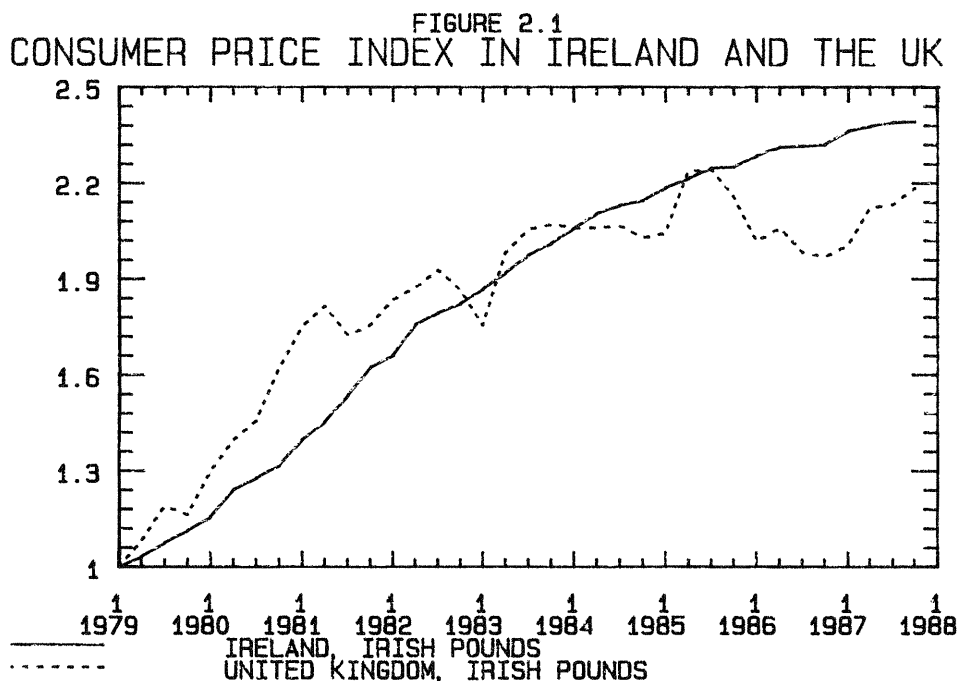
2.1 Introduction

Because of the importance of price as a factor determining patterns of shopping, this chapter considers the evidence on the differences in prices North and South of the border over the last 10 years. A number of different sources are used to examine this issue. Section 2.2 examines the movements in consumer prices in the Republic and the United Kingdom. (Prices in Northern Ireland follow closely those in the rest of Britain.) However, such information on relative movements in prices does not give information on relative price levels at a point in time. To obtain this information comparative surveys of price levels are required. In Section 2.3 we describe the results of various surveys of prices in the North and the Republic carried out by the National Prices Commission between 1976 and 1985. Section 2.4 outlines the methodology and results of the ESRI Price Survey carried out at the end of February 1987. Some additional survey data presented in the report of the Restrictive Practices Commission (1987) are considered in Section 2.5. Section 2.6 considers the evidence from the EC purchasing power parity data and Section 2.7 draws conclusions from the weight of evidence discussed in the chapter. The reasons for the differences in prices North and South of the border are discussed in Chapter 3.

2.2 Relative Movements in Consumer Price Indices

In the 1970s econometric analysis showed that consumer prices in Ireland followed movements in prices in the United Kingdom with a very short timelag (Bradley, 1977). However, with the entry of the Republic into the European Monetary System (EMS) in 1978 the one for one link between the Irish Pound and Sterling was ended. Since then it has become clear that the former close relationship between prices in the Republic and the UK has been broken (see Fitz Gerald, 1982). This change in behaviour is shown in Figure 2.1 which graphs the consumer price indices for the Republic and the UK, both denominated in IR£. In the case of the index for the UK it has been converted to Irish pound terms and both indices have been rebased so that they are 1.0 in the first quarter of 1979.

From the break with Sterling in early 1979, prices in the United Kingdom (expressed in Irish pound terms) rose much more rapidly than did prices in the



Republic. This pattern continued for two years till early 1981. Since then the pattern has been reversed. In the second half of 1983 and again in 1985/86 prices in the United Kingdom actually fell in Irish pound terms.

While these data demonstrate that there has been considerable fluctuation in relative prices over the last 10 years this does not tell us whether and by how much prices in the North were cheaper than those in the Republic. To determine absolute price differences it is necessary to carry out at least one comparative survey of prices in the two jurisdictions.

2.3 *The National Prices Commission Surveys*

In the last 10 years the National Prices Commission (NPC) published the results of a number of surveys comparing grocery prices in the Republic of Ireland with those in Northern Ireland and England. The results of these surveys are summarised below in Table 2.1.

A December 1976 survey comparing prices in Dublin and Belfast showed prices, on average, to be broadly similar, with Dublin 0.53 per cent more expensive than Belfast for a common basket of goods. However, some items were significantly more expensive in Dublin and some more expensive in Belfast. Fresh fruit and vegetables and meat were more expensive in Belfast while Dublin tended to be more expensive for branded products, usually imported, and for

Table 2.1: *Price of a Basket of Goods in Dublin Compared to Belfast and Liverpool (per cent)*

	<i>Belfast</i>	<i>Liverpool</i>
Dec 1976	+0.53	NA
Dec 1977	+0.46	+7.57
Jun 1979	+0.67	+3.45
Dec 1983	+9.7	+10.2
Apr 1985	+2.2	+6.5

Source: National Prices Commission Reports. The 1983 and 1985 data are drawn from surveys which were undertaken in the North and Northern England rather than just Belfast and Liverpool.

spirits and beer. Some exceptional items were pharmaceuticals (Belfast +17.4 per cent), bread and biscuits (Dublin +10.8 per cent) and washing powder (Dublin +27.7 per cent).

A December 1977 survey, which also covered Liverpool, showed a similar picture. Dublin was on average 0.46 per cent more expensive than Belfast and 7.6 per cent more expensive than Liverpool. There were some exceptional items with the largest price differences tending to be on the same products as in the previous year.

In June 1979 the NPC surveyed grocery prices in Dublin, Belfast and Liverpool. Again Dublin was more expensive than Liverpool (3.5 per cent). Prices in Belfast and Dublin were broadly similar, with Dublin slightly more expensive (+0.67 per cent). Items such as biscuits and washing powder were consistently more expensive in Dublin, while Belfast was consistently more expensive for pharmaceuticals and fresh vegetables.

By 1983 the situation had changed quite dramatically. In December of that year the NPC carried out a survey of supermarket prices in Dublin, Northern Ireland and England. Prices were compared including and excluding indirect taxes. Tax inclusive prices in Dublin were 9.7 per cent higher than in Northern Ireland and 10.2 per cent higher than in England. Excluding taxes Dublin prices were, on average, 1.3 per cent above prices in Northern Ireland and 2.5 per cent above English prices. These figures reflect a substantial increase in indirect taxes in the Republic during the early 1980s.

In both the UK and Ireland the VAT base excludes most food items and is confined to a limited range of goods. The 1983 survey showed fresh and unbranded products to be cheaper in the Republic. Excluding fresh and unbranded produce, Dublin prices were 21.8 per cent above those in Northern Ireland and 23.8 per cent above UK prices. The extent of the difference in alcohol prices alone is shown by the fact that, if one excludes alcohol, prices in Dublin were 7 per cent above prices in Northern Ireland and 10.9 per cent above English prices.

In April 1985 the NPC carried out a followup survey to their December 1983 survey. The results were quite different. In the intervening period there were

some substantial changes in excise tax rates in the Republic. In Dublin, tax inclusive prices were, on average, just 2.2 per cent above prices in Northern Ireland, compared with 9.7 per cent above in 1983, and 6.5 per cent above English prices compared with 10.2 per cent above in 1983. Tax exclusive prices were, in fact, 1.8 per cent below prices in Northern Ireland and 2.2 per cent above English prices.

2.4 *The ESRI Survey*

Methodology

A survey of prices facing consumers in border areas was undertaken by the ESRI in the last week of February 1987 when the exchange rate was ST£0.92 per IR£. The survey was carried out in five towns and cities on each side of the border (ten towns in all). Each interviewer surveyed a pair of towns, one on either side of the border. The pairs were: (i) Letterkenny and Derry; (ii) Lifford and Strabane; (iii) Monaghan and Enniskillen; (iv) Dundalk and Newry, and (v) Dublin and Belfast. In each of the first four pairs we selected two outlets in each town in which to carry out the survey. Five outlets were selected in both Dublin and Belfast. Each interviewer was told to price items in each outlet which were identical or, at worst, close substitutes.

A 44-item basket of goods, falling into 6 commodity categories was selected. The categories were as follows: Food/Groceries, Beer/Spirits, Electrical Goods, Clothes, Toys, and Other. The 44 items were selected on the basis that they were generally representative of a household's aggregate expenditure pattern. Full details of the products covered and the research methodology used are given in Appendix 1.

The Results

The survey covered a wider range of goods than the NPC surveys which concentrated on groceries. However, given the limited number of items and outlets surveyed it would not be appropriate to separate out the grocery items in our survey. What the survey gives is a broad indication of prices facing consumers in border areas. Given the focus of this study, the ESRI survey included a substantial number of items liable to excise taxes. The results may, therefore, exaggerate the difference in tax inclusive prices. The results must also be treated with caution as, due to the relatively small number of items covered, it was not felt appropriate to apply a weighting system. Instead we have taken an average of the price differences for each product examined. (It should be noted that, given the consistency of the results, the use of alternative weighting systems would not greatly change the overall results presented below.)

Of all the items surveyed only three were found to be cheaper in the Republic. Two of these were food items, steak and breakfast cereal. Among the items

showing the biggest difference were beer and spirits. The Republic's higher indirect tax rates account for a major part of the difference in prices North and South of the border — the largest price differences were between goods subject to VAT and excise.

Contrary to expectations, clothes, which are liable to 15 per cent VAT in Northern Ireland as compared with only 10 per cent in the Republic, were considerably more expensive in the Republic. However, it should be noted that the quality and price of clothes can vary quite considerably and the sample of four garments examined in this survey may not be fully representative. Most food products are exempt from indirect taxes in both parts of Ireland yet the Republic's food prices were somewhat higher. However, these figures take no account of the effect of Monetary Compensatory Amounts levied under the CAP. According to the Report of the Restrictive Practices Commission (1987) these EC taxes may account for up to 2 per cent of the price difference in the grocery products included in our survey.

Overall the survey found that the unweighted average price difference between the Republic and Northern Ireland for the products examined was +20.7 per cent including taxes. We feel that these figures give a fair idea of relative prices facing consumers in border areas at the time the survey was undertaken. It should be noted that the ESRI survey, while including a smaller number of items, covers a wider range of categories of goods than did the NPC surveys, which restricted themselves to groceries. Taken together these survey results suggest that while prices in the North and the Republic were very similar over the 1970s, tax inclusive prices were significantly higher than in the North in 1983. While the gap had closed somewhat by early 1985, by early 1987 tax inclusive prices in the Republic were over 20 per cent higher than in the North.

2.5 The Restrictive Practices Commission Report

The Restrictive Practices Commission reviewed the results obtained in the ESRI survey and a number of other surveys concerning the price difference in groceries and alcohol (Restrictive Practices Commission, 1987). Their research concerning the effects of MCAs on food prices has already been discussed above. The other studies examined included surveys by the Consumers Association of Ireland (CAI) and Today's Grocer. These two surveys were undertaken when the exchange rate was around ST£0.90 per IR£. When allowance is made for exchange rate changes, the results of these surveys produced a difference in the price of groceries which was slightly higher, though still consistent with, the results of the ESRI survey for this category of goods. However, the CAI and Today's Grocer surveys did not examine the price of other goods which, in the ESRI survey, showed a greater price differential.

The Report also discusses the results of a survey of prices in a wholesale outlet on either side of the border undertaken in December 1986 when the exchange

rate was ST£0.95 per IR£. This survey was undertaken by Mr. J. Gallagher of McGinley & Co. (Carrick) Ltd. The results of this survey showed that, using the then current exchange rate, the prices of the groceries covered were approximately 20 per cent higher in the Republic than in the North (before adjustment for MCAs). The Restrictive Practices Commission's Report points out that the range of groceries covered was rather limited and not representative of consumer expenditure on groceries as a whole. However, the results do confirm that, for certain items, there was a significant price difference between the North and the Republic at the wholesale level at the end of 1986.

Finally, the Commission's Report also discussed the price differences observed in the different surveys with a wide range of manufacturers and importers. These discussions indicated that the price difference narrowed over the course of 1987 as the exchange rate changed (from ST£0.95 per IR£ to ST£0.89), and prices in Sterling in some cases rose more rapidly than prices in the Republic. They also showed that the picture obtained in the ESRI survey was reasonably representative of the prices facing shoppers in border areas at the end of February 1987.

2.6 Purchasing Power Parity

The largest and most comprehensive comparison of consumer prices across members of the EC is undertaken under the auspices of EUROSTAT (the statistical office of the EC) by the national statistics offices in each of the member states. Unfortunately data are not collected on a regional basis in these surveys. However, it may be assumed that movements in the UK price level over time give a reasonable indication of price behaviour in Northern Ireland. The price comparisons have been collected at 5 yearly intervals: 1975, 1980 and 1985. They cover all items of consumer's expenditure and are suitably weighted to take account of consumption patterns. As such they cover a wider range of goods than did any of the other surveys quoted above.

Table 2.2 sets out a comparison of these purchasing power parity figures for Ireland and the UK. A number of other EC countries are also included for illustrative purposes. The data are updated to October 1987 by EUROSTAT using movements in the consumer price index in each country. Ireland is shown as having a price level of 100 in each year and prices in the other countries are expressed as a percentage of the Irish figure. Thus the Purchasing Power Parity (PPP) figure for the UK in 1975 was 103.7 indicating that consumer prices were 3.7 per cent higher in the UK than in the Republic in that year.

These data indicate that Irish prices were slightly lower than UK prices in 1975. The revaluation of Sterling compared to the Irish pound in 1979 and 1980 resulted in prices in the UK rising vis-a-vis those in the Republic so that in 1980 they were 16 per cent higher. However, this pattern was reversed by 1985

Table 2.2: *Comparative Price Levels from EC Purchasing Power Parity Data Price Indices for Total Consumption as percentage of Irish Price*

Country	1975	1980	1985	1987 October
Denmark	152	142	126	137
France	137	129	105	108
Germany	140	135	109	116
Ireland	100	100	100	100
Italy	109	89	88	95
Netherlands	125	123	95	103
Spain	NA	NA	69	75
United Kingdom	104	116	95	87

Source: EUROSTAT and OECD Purchasing Power Parity Publications.

when prices in the UK were 5 per cent lower than in the Republic. By October 1987 prices in the UK were 15 per cent lower than in the Republic.

The development of prices in the Republic has followed a rather different pattern compared to other member states of the EC in Northern Europe. In 1975 Irish prices were lower than those in all other members of the EC. The difference was very pronounced in the case of Germany, France, Belgium and the Netherlands. However, the gap between Ireland and these other countries narrowed in 1980 and again in 1985. Since 1985 prices have risen more slowly than in these EC countries so that the gap has widened slightly (i.e., the overall price level in the Republic is significantly lower than in these Northern European EC members). What these data reflect is the fact that membership of the EC has not resulted in a common price level throughout the member states. It also shows that, in comparing our prices to those in the UK, we are comparing ourselves to the most competitive market in Northern Europe.

Table 2.3 shows the development of the price of food drink and tobacco, taken together, over the period 1975 to 1985. This table shows how, from being the cheapest member of the then 9 member EC, Ireland has become one of the most

Table 2.3: *Comparative Price Levels from EC Purchasing Power Parity Data Food, Drink, and Tobacco As percentage of Irish Price*

Country	1975	1980	1985
Denmark	155	140	113
France	124	115	82
Germany	136	127	83
Ireland	100	100	100
Italy	110	88	76
Netherlands	115	104	78
Spain	NA	NA	67
United Kingdom	107	113	82

Source: EUROSTAT and OECD Purchasing Power Parity Publications.

expensive countries for these commodities taken together. The reason lies primarily in the growth in the price of alcohol and tobacco in Ireland vis-a-vis the other member states. Table 2.4 gives more detailed data for 1985 which illustrates this point. Where Ireland remains one of the cheapest members of the original 9 member Community is in the "rent" and "education, recreation and culture" categories. However, as most of these commodities or services are not readily tradable, the price disparity in these goods does not lead to any reversal of the trade flows engendered by the higher prices of the other commodities.

Table 2.4: *Comparative Price Levels from EC Purchasing Power Parity Data 1985
As percentage of Irish Price*

Country	Denmark	France	Germany	Ireland	Italy	UK
Food	123	101	100	100	93	89
Alcohol	101	59	53	100	51	80
Tobacco	100	41	69	100	51	87
Clothing	124	122	119	100	111	95
Rent	232	211	286	100	114	157
Durables	110	107	97	100	93	97
Recreation etc.	167	140	133	100	131	123
Total	126	105	109	100	88	95

Source: OECD Purchasing Power Parity data.

2.7 Conclusions

Two independent sets of data have been presented which provide a comparison of prices in Ireland and the United Kingdom over time. Both sets of data show that Irish prices in 1985 for a wide range of goods were somewhat more expensive than in the United Kingdom. The two sets of data indicate that the gap between Irish prices and prices in Northern Ireland increased between 1985 and 1987. The difference is particularly marked for goods liable to excise taxes. The trend in these data is also consistent with the trend in the consumer price indices for the United Kingdom and the Republic. These data show that the gap between prices in the Republic and Northern Ireland grew rapidly in the early 1980s and reached a peak in 1986. Since then the gap has narrowed slightly but still remains very large. Clearly, since the early 1980s, there has been a very considerable incentive for shoppers from the Republic to maximise their purchases of a wide range of goods in the North.

However, in considering these data, account should be taken of the fact that prices in the UK, for goods not liable to excise taxes, are generally below those prevailing in other neighbouring EC members. In addition, the prices of some goods and services, which are not readily tradable across frontiers, remain very low in the Republic.

Chapter 3

REASONS FOR DIFFERENCE IN PRICES

3.1 Introduction

In Chapter 2 we established the fact that prices in the Republic are significantly higher than in the North and that this situation has persisted for much of the 1980s. In this chapter we examine the reasons for the difference in price levels. The most obvious factor is the difference in rates of indirect taxation in force North and South of the border. In Section 3.2 we consider the importance of indirect taxation in the Irish and UK economies and the difference in tax rates between the North and the Republic. A detailed examination is made in Section 3.3 of the effects of indirect taxation on the price of certain key products which are thought to figure prominently in cross-border trade. Section 3.4 examines the evidence from the various price surveys on the difference in net of tax prices. The reasons for the differences found in tax exclusive prices are considered in Section 3.5. In particular the role of exchange rate changes is examined. Conclusions are set out in Section 3.6.

3.2 Indirect Taxation and Prices in the Economy

Since the beginning of the 1980s the growing crisis in the public finances in the Republic has resulted in a rapid rise in the tax burden. The growth in the burden of direct taxation, especially income tax, has evoked much public comment. However, the growth in the burden of indirect taxation has been equally marked. Irish indirect tax rates are now very much out of line with those in the UK. Table 3.1 below shows that Irish dependence on VAT and excise duty is well above the EC average. It is also clear that Britain's dependence on excise taxes is also above the Community average. The removal of border controls, given existing rates of excise and VAT, would result in an enormous diversion of trade from the Republic to Northern Ireland. As is shown later in this report, even with existing controls, the diversion is considerable. In order to stop this diversion of trade occurring when customs barriers are eliminated, Irish and British excise rates and VAT rates will have to be brought into line with one another and with those prevailing in the other members of the EC.

Table 3.2 shows how VAT rates have moved in the Republic and the North over the last 15 years. From the introduction of VAT in 1972 the Irish system involved a number of different rates of tax whereas the UK system (introduced

Table 3.1: *Indirect taxation as percentage of the GDP (1985)*

<i>Per cent</i>	<i>VAT</i>	<i>EXCISES</i>		<i>VAT and Excises</i>
		<i>total</i>	<i>Big five (1)</i>	
Belgium	6.7	2.2	2.1	8.9
Denmark	9.9	5.9	2.8	15.7
France	9.0	2.8	2.5	11.7
Germany	6.0	2.6	2.5	8.5
Ireland	8.0	7.6	5.6	15.6
Italy	5.0	2.0	1.8	7.1
Luxembourg	5.5	4.1	4.1	9.6
Netherlands	7.3	2.5	1.7	9.8
United Kingdom	6.0	4.6	4.2	10.7
Weighted EC Average	6.5	NA	NA	NA

(1) Tobacco products, beer, wine, spirits and petrol

Sources: OECD Revenue Statistics 1965-1986.

Department of Finance databank.

in 1973) had only a single rate (both countries zero rate a range of goods including food). In July 1975 clothing, footwear, and fuel were added to the list of zero rated goods in the Republic. The standard UK rate was increased to 15 per cent in 1979. VAT rates in the Republic were increased substantially in the early 1980s. The current rates of VAT in the Republic are 10 per cent and 25 per cent with most goods liable to the 25 per cent rate. In the North the rate applicable to most goods, other than food, has remained at 15 per cent since 1979. As a result, for most goods other than food, one would expect prices to be higher in the Republic due to the higher rate of VAT.

Table 3.3 shows that, in addition to the difference in VAT rates, the rates of excise tax were much higher in the Republic than in Northern Ireland on March 1, 1987. This situation was not new. Expressed in a common currency, excise taxes in Ireland grew rapidly compared to those in the North over the course of the 1980s. As a result, when expressed as a share of GDP, excise taxes

Table 3.2: *Comparison of Rates of VAT in the Republic of Ireland and Northern Ireland*

	<i>Republic of Ireland</i>			<i>UK VAT Rate</i>
	<i>Low Rate</i>	<i>Normal Rate</i>	<i>Luxury Rate</i>	
1972		5.26	16.37	—
1973		6.75	19.5	10
1976		10	20	8
1980		10	25	15
1981		15	25	15
1982		18	30	15
1983	8	23	35	15
1984	8	23	35	15
1985	10	23		15
1986	10	25		15

Table 3.3: *Comparison of Rates of Excise Tax as on 1-3-1987*

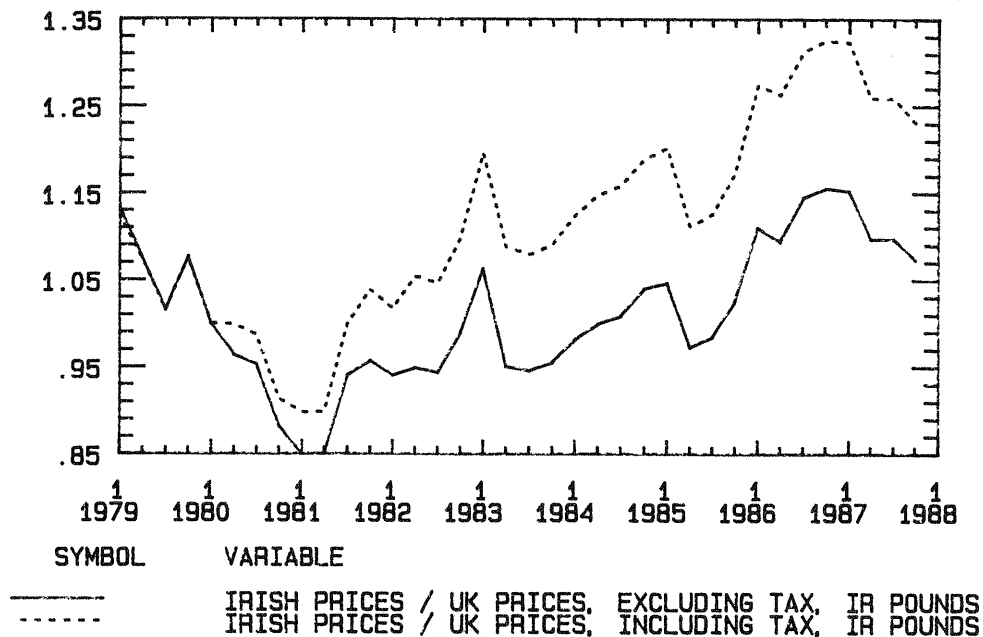
Commodity	Unit	Republic		
		IR£	ST£	IR£
Spirits	£ per Litre	19.522	15.77	17.14
Beer	£ per Hectolitre	149.347	42.22	45.89
Petrol	£ per Hectolitre	27.37	19.38	21.07
TV sets	17 inch to 24 inch	49.00	0.0	0.0

Sources: Department of Finance Databank, Reports of Her Majesty's Commission for Customs and Excise.

in the Republic are today much higher than in the UK and also well above those prevailing in all the other members of the EC (see Table 3.1).

The effects of the rapid rise in indirect taxation in the Republic in the 1980s are shown in Figure 3.1. This graph shows the ratio of the tax exclusive and tax inclusive Irish consumer price indices to the UK index (expressed in Irish pounds). The UK index includes indirect taxes. However, there has been little change in rates of excise duty and no change in the rate of VAT in the UK since 1979. Thus a tax exclusive UK index would not show a very different pattern from that shown here for the 1980s. The movement in the two relative price series in the figure clearly shows how important a role indirect taxes have

FIGURE 3.1
EFFECTS OF INDIRECT TAXES ON RELATIVE PRICES

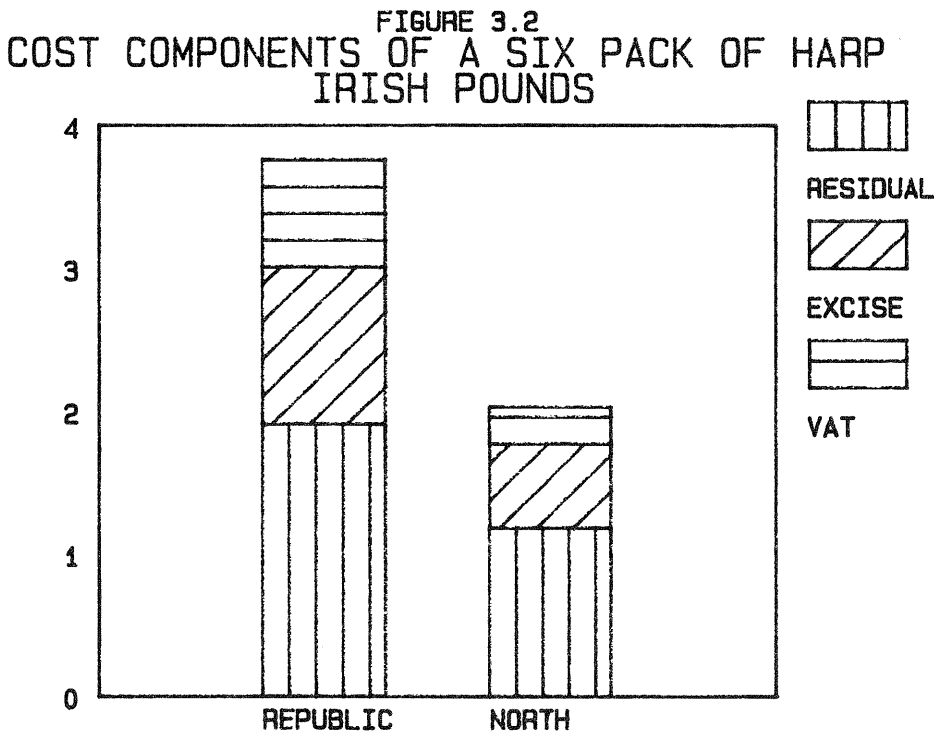


played in the divergence of prices in the Republic from those in the North. From the beginning of 1980 till the end of 1987 consumer prices in the Republic had risen 23 percentage points more than in the UK (and the North). Of this excess, 16 percentage points are directly attributable to the rise in the burden of indirect taxation.

In using the Irish net of tax consumer price index it is assumed that all of the incidence of indirect taxes falls on consumer prices rather than on producers or retailers. The evidence from Keegan (1984) would tend to confirm this. Using the ESRI Medium-Term Model, Bradley (1988) shows that, in the longer term, approximately 80 per cent of a rise in VAT rates is passed through to the consumer in higher prices. Taken together these results indicate that it is safe to assume that the bulk of the incidence of indirect taxes falls on consumers.

3.3 *Effects of Taxes on the Price of Key Products*

Excise duties on beer have traditionally been higher in Ireland than in the UK. But the differential has increased over the years. From being just over twice the British rate in 1960 Irish excise tax rates on beer are now almost four times the rate in Britain (Table 3.3). Using data from the ESRI prices survey, Figure 3.2 shows the cost components of a 6 pack of Harp lager in border areas of the



Republic and the North at the end of February 1987. This shows that IR£1 of the IR£1.73 difference in price was due to the difference in the tax component. However, as shown by the significant difference in the net of tax price (residual), there were other reasons for the overall price difference. While part of this difference in net of tax prices may be due to the elimination of many retail outlets in border areas as a result of cross-border shopping, it is clear from the Restrictive Practices Commission Report that there are other factors involved, in particular, higher ex factory prices charged in the Republic.

Up to the mid-1970s excise taxes on spirits were, in fact, lower in Ireland than in the UK. As shown in Table 3.4, during the early 1980s Irish rates of excise rose at a much faster rate than those in the UK resulting in a large price differential between the Republic and Northern Ireland. In 1978 Irish excise duty on spirits was 96 per cent of the UK rate; by 1982 it was 131 per cent. During that period Irish whiskey prices rose to 131 per cent of the UK price (Figure 3.3, Table 3.4). Excise duties on spirits were reduced in October 1984 and the differential fell accordingly. In 1984 Irish whiskey prices were, on average, 133 per cent of UK prices but the ratio fell to 116 per cent in 1985. Since then the ratio has risen dramatically to 134 per cent in 1986 and 137 per cent at the end of February 1987, as recorded in the ESRI survey. This has happened despite the fact that there were no significant changes in rates of excise tax in either

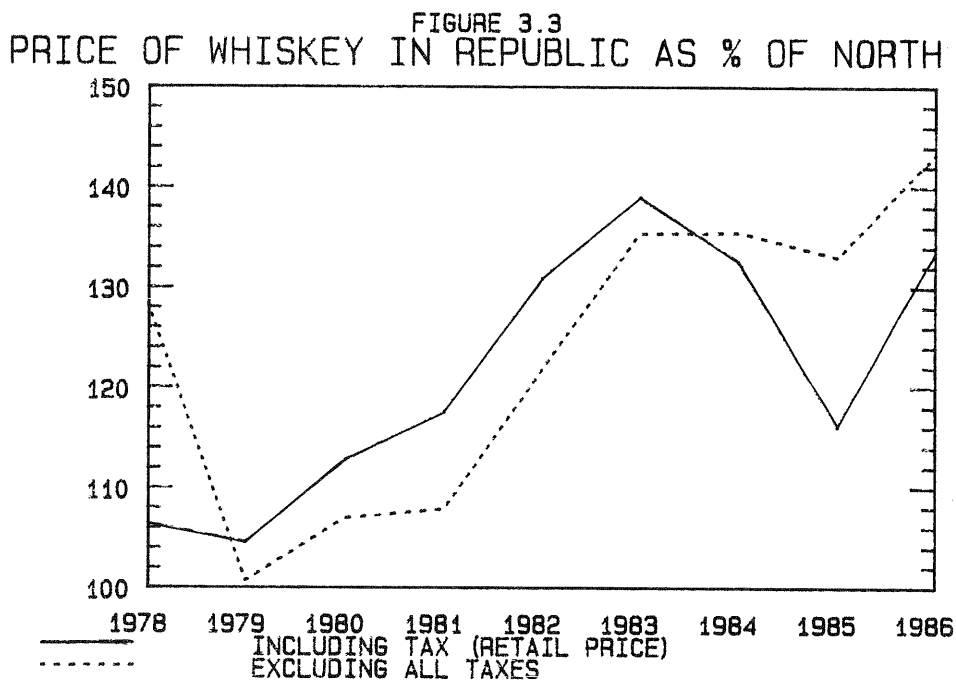


Table 3.4: Irish Whiskey Price as a Percentage of the UK Price (IR£)

Year	Tax inclusive <i>Whiskey Price</i>	Tax Exclusive <i>Whiskey Price</i>	Excise on <i>spirits</i>	Total Tax ¹ <i>on spirits</i>	<i>Exchange rate</i> <i>IR£/£ST</i>
1978	106.4	128.3	96.1	99.5	1.00
1979	104.5	100.7	108.6	105.8	0.9646
1980	112.8	107.0	122.8	115.1	0.8862
1981	117.6	107.9	126.3	120.3	0.8002
1982	130.9	121.8	131.3	133.7	0.8125
1983	139.0	135.4	129.3	139.6	0.8222
1984	132.5	135.5	118.9	131.5	0.8134
1985	116.1	133.0	97.6	109.8	0.8234
1986	133.6	143.3	113.4	129.6	0.9148

¹Excise + VAT.

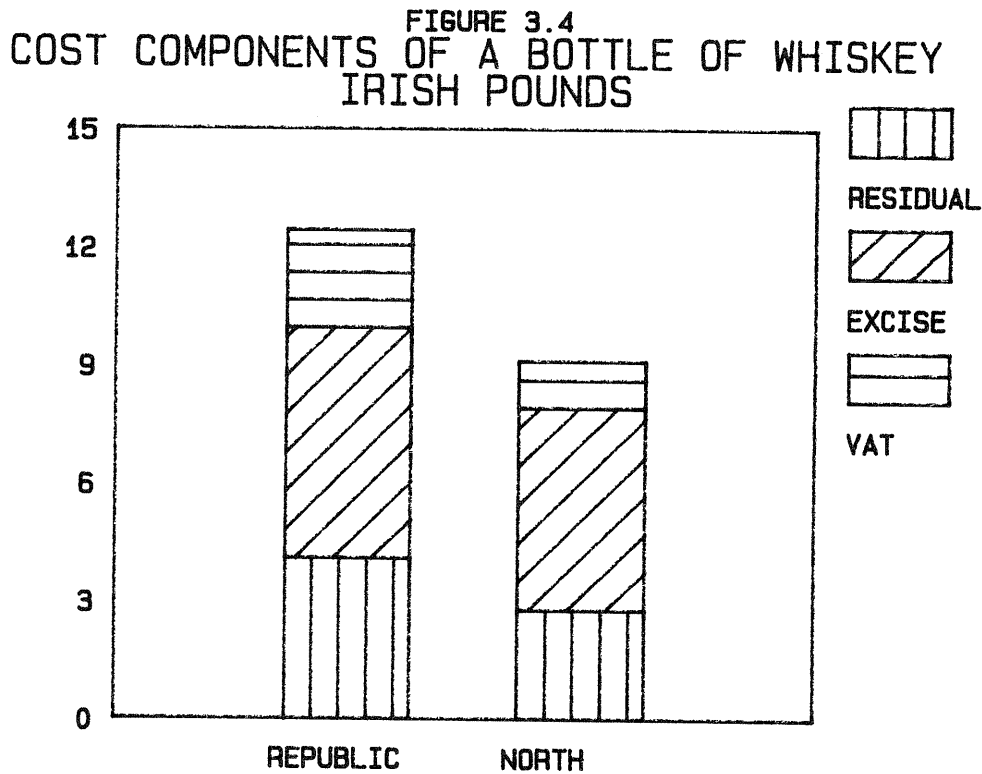
Sources: Department of Finance Databank, Report of Her Majesty's Commissioners on Customs and Excise. Data are averages of quarterly series.

jurisdiction over the period. Part of this increase in relative tax rates arose from changes in exchange rates. As excise duties are fixed in domestic currency terms, the volatility of exchange rates over the period led to frequent changes in the relative excise tax component of a bottle of whiskey. However, the tax exclusive price ratio also tracked the movement in the exchange rate over the period.

Before the Irish pound began to depreciate against sterling in 1979, the Irish tax exclusive price of a bottle of spirits was 30 to 35 per cent above the UK price. When the pound fell towards ST£0.80 per IR£ the ratio fell towards parity. After a period of stability in the exchange rate (at ST£0.80 per IR£), this ratio rose to an historically high level. The appreciation in the exchange rate over 1985 and 1986 caused the ratio to rise still further. In 1986 it was 143 per cent of the UK tax exclusive price compared with 133 per cent in 1985 and 135 per cent in 1983 and 1984.

Using the information obtained from the ESRI price survey, Figure 3.4 shows the breakdown of the cost of a bottle of whiskey at the end of February 1987. Of the IR£3.32 difference in price observed in border towns IR£2.01 was attributable to differences in the tax content. The remainder was due to other costs being higher in the Republic.

The ESRI survey shows that, like spirits, the net of tax price of a colour television set is also considerably higher in the Republic than in Northern Ireland. The survey showed that a 22 inch set with remote control was IR£183 or 51.5 per cent more expensive in the Republic. Most of this difference was due to the higher level of tax on colour televisions South of the border. In Northern Ireland colour TV sets are liable to 15 per cent VAT. This compares with IR£39 to IR£49 excise, plus 25 per cent VAT in the Republic. Of the IR£183 price difference IR£120 was due to tax differences. However, IR£63 was due to the fact that the tax exclusive price was 23 per cent higher in the border areas of the Republic.



The time series data from Table 3.5 shows the tax exclusive price of petrol is also more expensive in the Republic. However, the major reason for the increasing differential between the price of petrol North and South of the border over the last five years is the continuing increase in excise tax on petrol in the Republic. This has been exacerbated by the sharp rise in the Irish pound compared to Sterling in 1985 and 1986. In 1980 Irish tax on petrol was on average 102.9 per cent of the British rate. The ratio has risen ever since 1981 and by the first quarter of 1986 it stood at 143.6 per cent. Over the same period the price ratio rose from 99.8 per cent to 136.5 per cent and the tax exclusive price ratio rose from 94.7 per cent to 127.2 per cent. In short, petrol, like the other excisable goods mentioned above, is more expensive South of the border, mainly because of higher rates of excise and VAT but also due to other factors which lead to a higher net of tax price. Figure 3.5 shows a breakdown of the composition of the price of a litre of petrol at the beginning of March 1987.

3.4 *Difference in Net of Tax Prices*

The analysis set out above shows that the single biggest factor in the growing price differential between the Republic and the North in the 1980s has been

Table 3.5: Irish Petrol Prices as a Percentage of the UK (IR£)

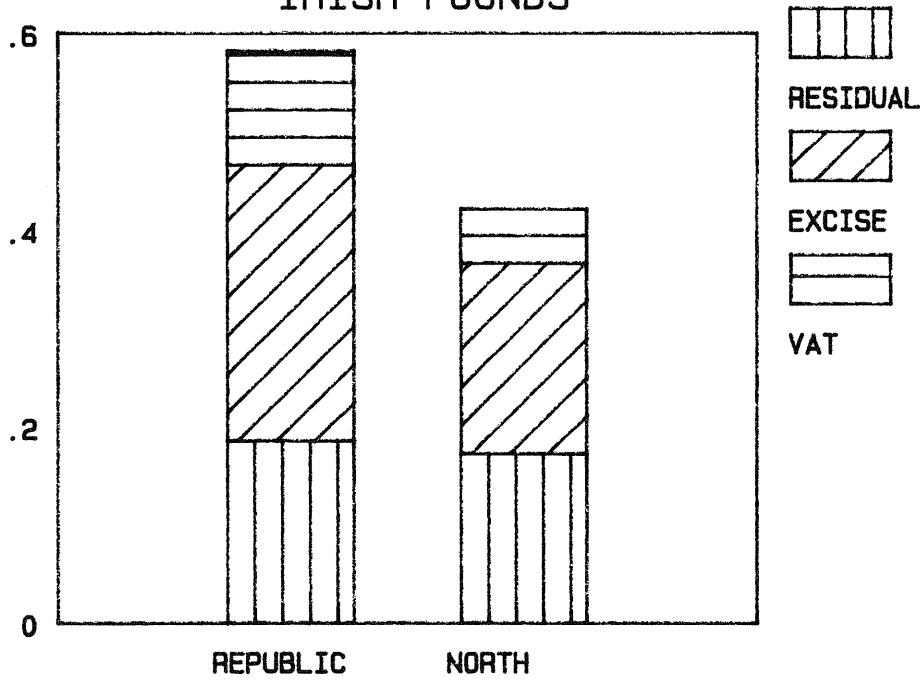
Date	Price of Petrol (Tax Inclusive)	Price of Petrol (Tax Exclusive)	Tax on ¹ Petrol	IR£/Sterling Exchange rate
1980	99.8	94.7	102.9	0.8862
1981	100.5	107.2	94.4	0.8002
1982	114.7	125.8	105.5	0.8125
1983	122.9	122.1	123.9	0.8222
1984	126	122.5	128.9	0.8134
1985	126	119.3	131.8	0.8234
1984 I	124.1	122.5	125.5	0.7951
II	124.1	119.3	128.0	0.8097
III	126.6	123.7	128.9	0.7959
IV	129.2	124.3	133.3	0.8352
1985 I	128.4	122.3	133.6	0.8590
II	120.5	111.8	128.1	0.8075
III	125.2	119.3	130.3	0.7959
IV	129.9	123.8	135.0	0.8324
1986 I	136.5	127.2	143.6	0.8966
Feb 1987 ²	138.3	119.0	149.0	0.9200

¹Excise + VAT.

²ESRI Price Survey.

Source: International Energy Agency, OECD.

FIGURE 3.5
COST COMPONENTS OF A LITRE OF PETROL
IRISH POUNDS



the growing burden of indirect taxation in the Republic. However, since the 1985 NPC survey, the only significant change in indirect tax rates on either side of the border has been an increase in the standard rate of VAT from 23 per cent to 25 per cent in the Republic and an increase in the excise tax on petrol. Despite this, the ESRI survey, although based on a more limited number of items from a wider range of goods than the NPC survey (which concentrated only on grocery products), clearly shows that the price differential between the Republic and the North has widened substantially (See Table 3.6). The growth in the differential has been even more marked in the case of tax exclusive prices, showing that there are a number of factors at work other than increasing taxes.

Table 3.6: *Prices in the Republic Relative to the North in IR£ (Republic as % of North)*

<i>Date of Survey</i>	<i>Average Tax Exclusive Prices</i>	<i>Average Tax Inclusive Prices</i>	<i>IR£/£St. Exchange Rate</i>
Dec 1983	101.3	109.7	0.78
Apr 1985	98.2	102.2	0.82
Feb 1987	111.7*	120.7*	0.92

*Unweighted

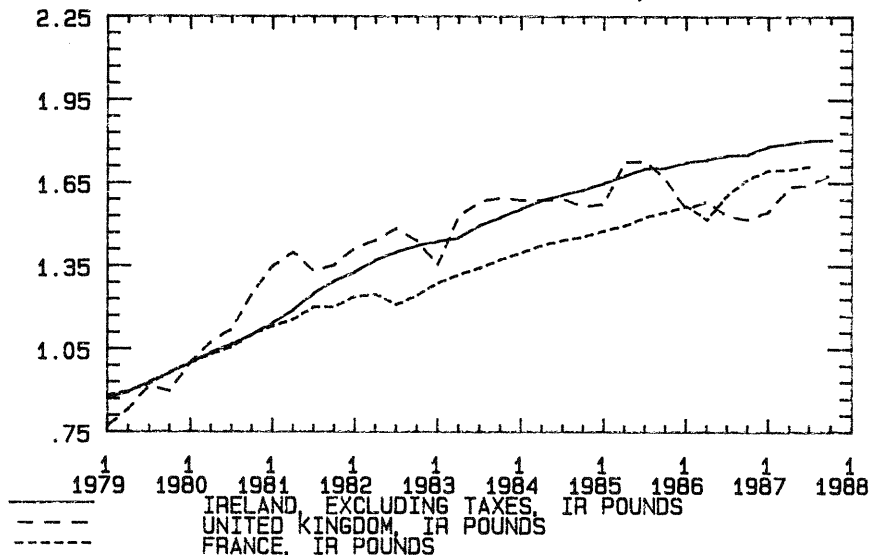
The 1983 and 1985 NPC surveys were carried out during a period of relative exchange rate stability. Prices had adjusted to the lower exchange rate by the time of the 1983 survey and this is reflected in tax exclusive prices which were only 1.2 per cent above Northern Irish prices. In the 1985 survey with the exchange rate at ST£0.82 per IR£ during the week of the survey, prices net of tax were actually 1.8 per cent lower in Dublin than in Northern Ireland. In contrast to the two previous NPC supermarket surveys, the ESRI price survey conducted early in 1987 shows tax exclusive prices to be significantly higher in the Republic than in Northern Ireland. Excluding taxes, but before excluding MCAs they were 11.7 per cent higher in the Republic. Even after adjusting for MCAs they were 10 per cent to 11 per cent higher. During 1986 the Irish pound appreciated significantly against sterling. The exchange rate was ST£0.92 per IR£1.00 at the time of the ESRI survey at the end of February 1987, compared with ST£0.82 in April 1985 when the last NPC survey was carried out.

The Restrictive Practices Commission's Report confirms the fact that in the case of drink there was a big difference in net of tax prices. The responses of the different manufacturers and wholesalers quoted in the Report also make it clear that prices are slow to adjust to exchange rate changes. They show that if the ESRI prices survey had been carried out a month earlier, at the end of January 1987, when the exchange rate was ST£0.95 per IR£1.0, the gap in prices would probably have been 3 per cent higher than actually observed at the end of February/ beginning of March.

3.5 Reasons for Difference in Net of Tax Prices

The ESRI survey suggests that the principal reason for the change in the net of tax differential between Northern and Southern prices since 1985 is that prices have not adjusted to the higher value of the Irish pound vis-a-vis sterling. This pattern is clearly illustrated in Figure 3.6 which shows the movement in the tax exclusive consumer price index in Ireland compared to the price indices for France and the UK. (It should be stressed that the series graphed are indices and do not represent a measure of the absolute difference in price level.) The indices are scaled to be equal to 1.0 in the first quarter of 1980. The graph clearly shows that, in the two years immediately after Ireland joined the EMS, consumer prices excluding taxes rose more slowly in the Republic than in the UK. This was the period when the Irish pound first devalued against sterling (and the rate of VAT was increased in the UK). Between 1982 and early 1985 the relative rate of change in prices in the two countries reversed, returning the net of tax price index in the Republic to a closer relation with prices in the UK (as suggested by the NPC surveys). Since 1985, when Sterling devalued against the Irish pound, the situation has changed again and UK prices actually fell in Irish pound terms while tax exclusive prices continued to rise in the Republic. As documented in the ESRI survey, the result has been a significant gap between net of tax prices in the Republic and the North. However, there are some signs that the gap began to close towards the end of 1987 as the exchange rate stabilised and the higher rate of inflation in the UK began to have an effect.

FIGURE 3.6
CONSUMER PRICE INDEX IN IRELAND, UK AND FRANCE



The movement of Irish prices compared to those in France provides a useful counterpoint to our experience vis-a-vis the United Kingdom. Between 1981 and 1982 Irish prices rose much more rapidly than did prices in France. Between the middle of 1982 and the beginning of 1986 prices in Ireland and France followed a very similar path. However, the devaluations of the Irish pound in 1986 significantly increased French prices in Irish pound terms eliminating much of the disimprovement in relative prices which occurred earlier in the decade. It is interesting that since the devaluations of 1986 the change in relative prices has been sustained. All of this indicates that the experience of the Republic with respect to the North, of a slow adjustment in prices to exchange rate changes, is not unique. It is but one manifestation of the phenomenon, which economists have long recognised, that purchasing power parity does not hold in the short term. The evidence given here suggests that the "short-term" may be quite a number of years.

We sought to model consumer prices in Ireland as a function of consumer prices in the UK and the Sterling — Irish pound exchange rate. Set out below are the results from a simple regression of the net of tax Irish consumer price index on the consumer price index in the UK in Sterling and the £Irish — £Sterling exchange rate. The data are quarterly and the estimation was carried out for the period from the first quarter of 1979 to the third quarter of 1987. A log linear specification is used and between 4 and 8 quarters' lagged values on the dependent variables are tried. If prices in the Republic followed prices in the UK one would expect the sum of the lagged coefficients on UK prices (in Sterling terms) to be unity. One would also expect the same for the coefficients on the exchange rate. This specification is but one example of a number of possible relationships which were tested with rather similar results.

$$\begin{aligned} \text{LOG}(\text{PCI}) &= 5.16 + 0.54 \text{ LOG}(\text{PCUK}) + 0.40 \text{ LOG}(\text{PCUK}_{-1}) + \\ &\quad (157.0) \quad (3.5) \qquad \qquad \qquad (2.4) \\ \\ 0.21 \text{ LOG}(\text{PCUK}_{-2}) &+ 0.06 \text{ LOG}(\text{PCUK}_{-3}) - 0.03 \text{ LOG}(\text{REX}) + \\ (1.2) \qquad \qquad \qquad (0.4) \qquad \qquad \qquad (0.6) \\ \\ 0.04 \text{ LOG}(\text{REX}_{-1}) &+ 0.02 \text{ LOG}(\text{REX}_{-2}) + 0.07 \text{ LOG}(\text{REX}_{-3}) + \\ (0.9) \qquad \qquad \qquad (0.4) \qquad \qquad \qquad (1.8) \\ \\ 0.04 \text{ LOG}(\text{REX}_{-4}) &+ 0.01 \text{ LOG}(\text{REX}_{-5}) + 0.06 \text{ LOG}(\text{REX}_{-6}) + \\ (1.1) \qquad \qquad \qquad (0.2) \qquad \qquad \qquad (1.7) \\ \\ 0.05 \text{ LOG}(\text{REX}_{-7}) &+ 0.0023 \text{ S1} + 0.0001 \text{ S2} + 0.0024 \text{ S3} \quad (3.1) \\ (1.1) \qquad \qquad \qquad (0.6) \qquad \qquad (0.0) \qquad \qquad (0.6) \end{aligned}$$

$$\bar{R}^2 = 0.9994 \quad \text{S.E.} = 0.0077 \quad \text{DW} = 0.75 \quad \text{Rho} = 0.82$$

(34.0)

Where PCI = The net of tax consumer price index for Ireland

PCUK = The consumer price index for the UK in ST£

REX = The IR£ — ST£ exchange rate.

and S1, S2, and S3 are seasonal dummies.

The very poor Durbin Watson statistic, even after this equation has been adjusted for autocorrelation, shows that there is a specification problem. It is clear that, even with two years' lagged values of the exchange rate, this equation does not adequately capture the effects of exchange rate changes on consumer prices in Ireland. The lags in adjustment are longer than shown here. A more complex model of the adjustment process would be needed to adequately explain the Irish experience of the 1980s. A simple Error Correction Model was tried but did not perform satisfactorily.

The fact that the coefficients on the exchange rate sum to only 0.26 would, on the face of it, suggest that only a quarter of the effect of a change in the exchange rate would be translated into a change in consumer prices. If the exchange rate change were to be fully translated into domestic prices these coefficients should sum to 1. However, as indicated by the problems with the specification, this does not rule out the existence of purchasing power parity in the long term (that prices will fully adjust to exchange rate changes). The sum of the coefficients on UK prices, expressed in Sterling terms, is 1.22 suggesting that, for every 1 per cent rise in UK prices (in Sterling terms), Irish prices would rise by a little more than 1 per cent. (Given the statistical significance of the individual coefficients, too much weight should not be put on the fact that they sum to more than 1.) This result seems strange when compared to the results obtained by Bradley (1977) using data for the 1970s. That study suggested that Irish prices adjusted fully and very rapidly to changes in prices in the UK. The reason for the difference clearly lies in the change from a fixed and certain exchange rate link between the IR£ and the ST£ to a floating rate.

This equation shows that when prices in the UK rise in Sterling terms they will rise by a similar percentage in Ireland in Irish pound terms. However, if UK prices rise compared to Irish prices purely due to changes in the exchange rate (remaining unchanged in Sterling terms), the effects on Irish prices will be very slow to materialise. This behaviour fits in with the results obtained from survey data, discussed above. An earlier study of output prices in manufacturing industry in Ireland reached very similar conclusions (Fitz Gerald, 1982).

This price setting behaviour arises from two factors. The transport and customs clearance costs which are involved in carrying on international trade allow

different prices for the same product to coexist on either side of the border. Secondly, because of the uncertainty inherent in forecasting exchange rates, firms are slow to adjust to changes in the exchange rate in the short term. They require a new rate of exchange to persist for many quarters before they believe it is here to stay. Past experience has led industrialists to believe that changes in exchange rates are often reversed in the medium term. Changes in UK prices in Sterling terms, on the other hand, are rarely, if ever, reversed so that Irish prices are adjusted rapidly to what is perceived to be a permanent change in world prices.

This behaviour is reflected in the evidence collected by the Restrictive Practices Commission. In explaining the reason for price differences, nearly all the firms interviewed indicated that it was not correct, or possibly even "fair", to compare prices in the North and the Republic at the end of February 1987 using the then current exchange rate. Instead an exchange rate of ST£0.90 per IR£1.0 was suggested. In the case of one firm they suggested that the appropriate exchange rate to use for comparison purposes was ST£0.85 per IR£1.0. They stated that this was the projected exchange rate on which they had based their price list. This approach to pricing (using forecasts of exchange rates) appears to be common to most firms due to the desirability of maintaining prices constant for reasonable periods in domestic currency terms in both the North and the Republic. It confirms the importance of exchange rate expectations as a factor in determining pricing behaviour. This pricing behaviour is only possible because of the restrictions on parallel importing (retailers dealing directly with wholesalers or manufacturers in the UK rather than with a domestic importer or wholesaler).

The answers received by the Commission also indicated that in a number of cases the gap between the North and the Republic had been somewhat reduced in the 6 months after the ESRI survey as prices in domestic currency terms were raised more rapidly in the UK. This result is in line with the evidence on the relative movement in the consumer price indices in the Republic and the UK over the course of 1987 and shows how prices do adjust slowly to exchange rate changes.

The evidence set out above indicates that, even excluding taxes, prices in the Republic are above those in the North. We have discussed the significance of exchange rate expectations in bringing about this difference. However, the very fact that the same goods are being sold at different net of tax prices in the North and the Republic implies that someone is receiving more from sales of the goods in the Republic. (In the early 1980s the situation may well have been reversed with higher margins occurring in the North.)

The replies of many of the firms questioned by the Restrictive Practices Commission strongly suggested that the benefits of the higher net of tax prices in the Republic are generally not going to the retailer. Instead, the benefits are

being shared between the domestic wholesaler/importer and the manufacturer. In the case of beer and spirits, the North is said to be a more “competitive market” requiring the manufacturer to take a lower margin on certain products there (i.e., sales in the Republic have a higher profit margin). In the case of quite a number of products the price in the Republic is said to be higher because of the costs of transport. This cost is absorbed by the UK producer when selling in the North due to a policy of charging a single price in the UK. This also involves higher profits for UK producers when selling in the Republic (the cost of transport to the North is subsidised by consumers in the rest of the UK).

In a number of cases it is clear that wholesale margins are higher in absolute terms in the Republic. In the case of beer, it was indicated that the cost of distribution in the Republic was higher because of the distribution system. The existence of an additional distribution layer, the importer, between the foreign manufacturer and the domestic retailer or wholesaler is putting up prices. Here the higher prices result not so much from higher profits in the Republic, but rather from a less efficient distribution network. (The corollary is, of course, higher employment in the distribution sector than would otherwise be the case.)

The limited survey of wholesale prices in the North and the Republic quoted by the Commission (carried out by McGinley & Co. (Carrick) Ltd.), confirms the fact that the price difference is present at the wholesale level. Other similar evidence has become available to the ESRI from retailers which strengthens this view.

There is some evidence in the Commission’s Report of higher retail margins in the Republic for goods liable to excise taxes. The tendency to quote margins as a percentage of the buying in price means that, for goods with a much larger excise tax content in the Republic, the absolute margin on sales will be substantially higher than in the North so that the profit per unit of sale is higher. While one would expect that competition would tend to reduce the difference in absolute margin on such products between the North and the Republic, this does not appear to have happened.

3.6 *Conclusions*

The evidence presented in this chapter suggests that the single biggest factor affecting the price differential between the Republic and Northern Ireland over the last 10 years has been the rapid growth in rates of indirect taxation in the Republic. However, there is also evidence of a significant difference in tax exclusive prices between the two jurisdictions. This difference arises from the slow rate of adjustment of prices to changes in the exchange rate. This slow speed of adjustment is, in turn, possibly due to the problems which make parallel importing very difficult for retailers. This slow adjustment of prices to exchange

rate changes is common throughout the world, as is evidenced in the behaviour of Irish prices relative to those in France.

While net of tax prices are adjusting, probably over a period of a number of years, margins differ in the two jurisdictions. Over the past two years the benefits of these higher net of tax prices in the Republic appear to have accrued to manufacturers in the UK and in the Republic and to importers/distributors rather than to retailers. It is likely that, if exchange rates remain stable for a number of years, these net of tax price differentials will tend to disappear. In the context of completing the internal market it would seem that stability of exchange rates will be important if distortions in trade patterns are to be avoided. However, given the level of indirect taxes in the Republic and the North, this reduction in margins would still leave absolute prices in the Republic well above those in the North. Only the implementation of a harmonised system of indirect taxation will get over this problem.

Chapter 4

VOLUME OF CROSS-BORDER SHOPPING – SURVEY EVIDENCE

4.1 Introduction

In the previous chapters we considered differences in price levels between the Republic and Northern Ireland. In the current and subsequent chapter we turn to a consideration of the cross-sectional data collected in the National and Border surveys, mentioned above in Section 1.3. These provide a “snapshot” view of the magnitude and motivation of cross-border trade at one point in time. A series of longitudinal studies would be necessary to directly examine the sensitivity of these flows to price differentials between the two jurisdictions.

In the present chapter we will concentrate on the volume and magnitude of cross border shopping and associated expenditure in Northern Ireland by households from the Republic. In Section 4.2 we discuss data collection and interpretation. Section 4.3 presents information on the number of trips which originated from the 26 counties of the Republic. These estimates are based on the data collected from both the National and Border Surveys. (From the Border Survey we derive an estimate for the 6 border counties and we combine it with a comparable estimate for the other 20 counties derived from the National Survey). In Section 4.4 we consider in depth the cross-border shopping by residents in the six border counties. Section 4.5 examines the characteristics of the most recent major shopping trip made by households in the border counties. Section 4.6 presents results from some single equation OLS regressions which model the factors underlying the cross-border shopping. Section 4.7 considers the flow of shopping in the opposite direction, North to South. Conclusions are set out in Section 4.8.

4.2 Data Collection and Interpretation

The National Survey was carried out on approximately 4,000 households throughout the 26 counties of the Irish Republic over four rounds of the monthly EC Consumer Survey conducted jointly by the ESRI and An Foras Taluntais.² These data were weighted according to the number of adults in the household to give aggregate totals for the estimated 935,000³ households in the country

2. For a copy of the questionnaire used in the National Survey see Appendix 2.

3. This figure was obtained by grossing up the 1981 Census figure for total households (910,679) on a pro-rata basis with population growth between 1981 and 1986 assuming a constant distribution of adults within households throughout this period. The recently published figure from the 1986 Census is somewhat higher at 976,304.

in 1986. The questionnaire used in the National Survey was relatively short. It addressed itself primarily to frequency of shopping in Northern Ireland, an itemised breakdown of amounts spent, and the location(s) of shopping.

The Border Survey⁴ was administered to a random sample of 2,000 households drawn from the 5 border counties of Donegal, Leitrim, Cavan, Monaghan and Louth and the adjacent county of Sligo. This sample was drawn from the Irish Electoral Register using a multistaged clustered design based on the ESRI's computer sampling system-RANSAM⁵. This provides an "epsem" sample which has the analytical convenience of yielding self-weighting estimates from the survey. (An epsem sample is one in which each element of the population, in this case adults on the Electoral Register, has an equal probability of selection.) Given the multistage clustered nature of the RANSAM sampling design, it is possible that one could have drawn a sample which, although random, was concentrated in clusters either away from or close to the border with Northern Ireland. As distance decay considerations seemed, a priori, to be of paramount importance in determining cross-border shopping propensities, it was felt best to minimise the potential for such spatial bias. To this end the sample was prestratified according to distance from the border. Thus, the polling districts (the primary sampling unit used by RANSAM) were classified according to their distance from the border. A cut-off point of a 10 mile straight line distance border was chosen as it was estimated that this approximated to a 15 mile road journey. This subdivision left approximately 43 per cent of the total population within the 10 mile zone, 57 per cent without. Appendix 2 gives details of the questionnaire used for the survey.

The data collected in this survey have been weighted to give aggregate totals for the estimated 111,797 households in the 6 target counties. The questionnaire used in the Border Survey collected information relating not only to the magnitude and pattern of aggregate expenditure over the preceding 6 months but also to various detailed aspects of the most recent shopping trip to Northern Ireland; on attitudes towards shopping in Northern Ireland; on knowledge levels of price differentials between the two jurisdictions and generally on motivation for shopping in the North. It should be stressed that the above two surveys relate to aggregate household shopping activity, not just the activity of the respondent or any single household member.

In interpreting the results a few points need to be borne in mind. First, the information given by the respondents to the surveys related to the 6 months prior to date of interview. In any such retrospective survey work genuine recall problems are always of major importance, this being especially true when

4. For a copy of the questionnaire used in the Border Survey see Appendix 3.

5. For a full description of RANSAM, see Whelan (1979).

expenditure is the topic under consideration. Second, we found that respondents seemed prone to framing their information on expenditure within the limits set by the legal restrictions then in force. A further subgroup of those who understated their level of expenditure in Northern Ireland are those who denied involvement in any such shopping at all given its potential illegality. Third, the data collected will not include the purchases made in Northern Ireland by the “commercial” smuggler who is smuggling goods for resale and would clearly deny involvement in any cross-border shopping whatsoever. This aspect of cross-border trade is not readily quantifiable, but much anecdotal information would suggest that it may (at least in the past) have been of substantial proportions. The estimates of expenditure level must be interpreted in the light of these observations. There would seem to be no reason for any household, either intentionally or unintentionally, to inflate its level of spending in Northern Ireland. The estimates presented here are, therefore, of a highly conservative nature in that they are likely to understate the magnitude of cross-border shopping. Nevertheless they provide us with the most reliable information currently available.

4.3 Cross Border Shopping – National Results

Throughout the 6 months up to the period ending in January 1987 an estimated total of approximately 835,000 separate trips, on which some consumer shopping was done, were made by parties of various size to Northern Ireland. As shown in Table 4.1, 89 per cent of these were made solely or mainly for shopping, 3 per cent were mainly business trips which had a shopping component, while the remaining 7 per cent were mainly holiday trips to Northern Ireland on which some shopping was done. Of the estimated total of 935,000 households in the country, almost 115,000 (12 per cent) did some consumer shopping in Northern Ireland in this period. Distance from the border was obviously a major determinant of the household's propensity to participate in cross-border shopping activity. For example, of the 112,000 households in the 6 border counties considered in the Border Survey, 51,000 (46 per cent) shopped in Northern Ireland at least once in the period in question. This compares to a figure of

Table 4.1: *Number of trips in 6 months ending January 1987 on which shopping was done, classified by type of trip.**

<i>Type of Trip</i>	<i>Total Trips (26 counties)</i>	
	000s	(Per cent)
Solely or mainly for shopping	747	(89%)
Mainly business with a shopping component	29	(3%)
Mainly holiday/passing through with a shopping component	59	(7%)
Total	835	(100%)

*This table is based on a combination of data from both the National and the Border Surveys.

63,000 (8 per cent) of the remaining 823,000 households in the other 20 counties of the country.

Table 4.2 presents information on aggregate expenditure patterns broken down by items purchased for all households in the State which did some shopping in the North. The first two columns show the percentage of households purchasing various items. From this we can see that the most frequently purchased items were food (by 7.7 per cent of all households in the State and 62.4 per cent of all households which did some shopping in Northern Ireland). The next most frequently purchased item (bought by 7.5 per cent of all households in the State and 61.5 per cent of households which did some shopping in Northern Ireland) was other groceries. This category consists largely of household and personal non-durable goods such as detergents, washing up liquid, toiletries, etc. The third most purchased item was petrol which was bought by just under 59 per cent of households which shopped in Northern Ireland and by 7 per cent of all households in the State. Although lagging some considerable distance behind these three main purchasing groups, other items to be bought by large percentages

Table 4.2: *Estimates of aggregate expenditure in N. Ireland by households from the Republic in 6 months period¹*

Item	Percentage Purchasing Item		Total spent ² in N.I. by households in Republic in last 6 months	Estimated percentage of total expenditure ³ by households in Republic in last 6 months
	All Households	Shopping Households		
	Per Cent		IR£000	Per Cent
Food	7.7	62.4	11,212	0.7
Other Groceries	7.5	61.5	4,732	4.4
Petrol	7.2	58.6	11,097	3.8
Beer	5.6	45.5	1,868	1.1
Spirits	5.6	45.8	1,833	3.4
Wine	2.5	20.4	531	3.4
Tob/Cigarettes	0.9	8.0	678	0.4
Ladies' Clothes	2.3	19.2	1,914	0.8
Gents' Clothes	1.5	11.9	848	0.5
Children's Clothes	1.8	14.4	1,045	1.2
Toys	4.9	39.9	2,684	9.2
TV/Video	0.2	1.5	271	0.9
Kitchen Electric	0.1	0.9	312	
Other Electric	2.1	17.3	1,168	3.4
Non-electric h/ware	1.0	8.3	599	2.6
Other	1.8	14.8	1,289	—
Total	(n) (935,267)	(n) (114,718)	42,081	

1. This table is based on a combination of data from both the National and Border Surveys.

2. Correction for missing data on level of expenditure among households stating to have purchased the various items was made on the basis of the appropriate mean level.

3. Estimates of total expenditure in Republic in last 6 months derived from Household Budget Survey, 1980, Vol. 1

of households shopping in Northern Ireland were spirits and beer (each bought by approximately 45 per cent of households which shopped there), and toys (by almost 40 per cent). Wine, clothing, and some electrical goods (though notably not kitchen white electrics) were also purchased by a large proportion of shopping households.

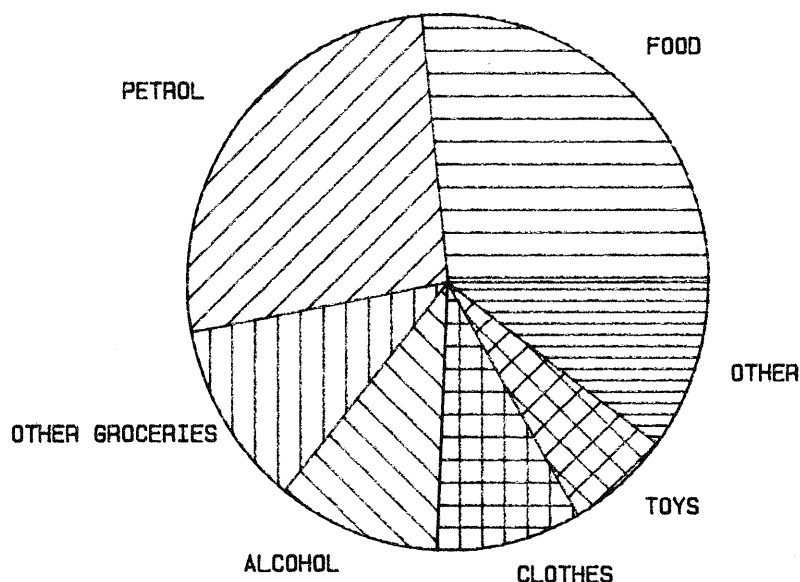
The third column of the table shows the estimated amount spent by households on the various commodity groups over the 6 months. We can see that an estimated total of IR£42 million were spent across the border over this period, giving a tentative estimate of annual national expenditure in Northern Ireland of approximately IR£84 million. The itemised expenditure figures show that just over IR£11 million was spent on each of Food and Petrol, nearly IR£5 million on Other Groceries, almost IR£4 million on Clothes and around IR£3 million on Toys.

It is possible to crosscheck the figure on petrol sales from the data supplied by the petrol distribution companies in the Republic. These data are discussed in more detail in Chapter 6. They indicate that petrol consumption, within a strip of approximately 15 miles of the border with Northern Ireland, fell from 81 million litres in 1982 to 29.1 million litres in 1986. This represents a decline in the order of 52 million litres. At the average price in the North in 1986 this yields around IR£23 million. This figure reconciles well with our annual estimate of IR£22 million derived from the survey data and presented in Table 4.2.

Figure 4.1 shows the percentage of this total expenditure accounted for by each of the individual commodity groups. On this basis, we can see that Food and Petrol each accounted for approximately 27 per cent of total expenditure in Northern Ireland by households from the Republic, this being followed by purchases of Other Groceries (11 per cent) and Alcohol (10 per cent). The items with the next biggest percentage of expenditure in Northern Ireland were Clothes (nearly 7 per cent) and Toys (just over 6 per cent).

The final column of Table 4.2 gives the estimated percentage of total expenditure on each of the commodities in the Republic in the 6 months in question accounted for by purchases in Northern Ireland. The national estimates of total expenditure on each of the commodity groups were derived from the 1980 Household Budget Survey figures on average weekly household expenditure. These figures were adjusted for inflation between 1980 and 1986 and used to provide estimates of national aggregate household expenditure for a 6 month period for each of the groups itemised in the table. Although there may be some definitional and comparability problems, the figures presented in the table provide some quite interesting information. About 4.5 per cent of the total value of expenditure on Other Groceries was accounted for by purchases made in

FIGURE 4.1
ALLOCATION OF CROSS-BORDER SHOPPING EXPENDITURE



Northern Ireland in the period in question. Similarly, just under 4 per cent of national expenditure on Petrol, and approximately 3.5 per cent of expenditure on Spirits, Wine and Electrical Goods were spent in Northern Ireland in the 6 month period in question.

Some comments should be made on the difficulties of estimating expenditure on Spirits and Beer from surveys. Expenditure on these two items is notoriously difficult to estimate in survey work and we must presume this to be the case in our study. From the most recent Household Budget Survey (1980) figures for average weekly household expenditure on spirits (IR£1.19) one can derive an estimate of aggregate annual expenditure for this item in 1980 of approximately IR£56 million. This amounts to only 23 per cent of the independently derived 1980 National Accounts figure of IR£244 million spent on spirits. Similarly, on the basis of the Household Budget Survey (1980) figures for expenditure on Ale, Beer and Stout, we can derive an estimate of national expenditure in 1980 of approximately IR£177 million. This represents only 44 per cent of the comparable 1980 National Accounts figure of IR£405 million. These Household Budget Survey data were collected in the same way (by personally administered questionnaire enquiring about household expenditure patterns) as the cross-sectional data collected for this study. As a result, the survey based estimates of cross-border alcohol purchases must be especially open to question.

4.4 Cross-Border Shopping – Households in Border Counties

Number of Trips Made

We now turn from the national situation to that of the 6 counties adjacent to the border with Northern Ireland. A total of 51,000 (46 per cent) of the 112,000 households in these counties did some shopping in Northern Ireland in the 6 months prior to our survey in January and early February 1987. Table 4.3 presents information on the average number of trips made by these households. In the 6 months in question 689,000 trips on which shopping was done were made across the border, an average of 13.48 per household. Of these 13.48 trips, 8.62 were “big” trips solely for shopping on which more than ST£20 was spent, 4.05 trips were smaller shopping excursions on which less than ST£20 was spent, 0.24 trips were mainly business with a shopping component and the remaining 0.56 trips were mainly for a holiday, visit or trips simply passing through Northern Ireland. A strong distance decay effect is evident in each of these trip categories.

Table 4.3: *Average number of trips per shopping household in 6 border counties classified by type of trip and distance from border*

Type of Trip	Distance to Border with N. Ireland				Total
	0-5 miles	6-15 miles	16-30 miles	31+ miles	
	Average number per shopping household				
Solely for shopping (more than ST£20 spent)	12.45	10.03	5.54	3.15	8.62
Solely for shopping (less than ST£20 spent)	7.23	4.50	2.04	0.84	4.05
Business trip with shopping component	0.51	0.24	0.05	0.02	0.24
Mainly holiday/passing through with shopping component	1.12	0.34	0.44	0.08	0.56
All trips	21.51	15.11	8.07	4.09	13.48
Average number of trips per week	0.82	0.58	0.31	0.13	0.52

Expenditure by Shopping Households from the Border Counties

Table 4.4 presents information on expenditure levels by the 51,000 shopping households in the border counties broken into 16 commodity groups. The first column shows the percentage of these households which purchased items in each group. Thus, for example, we can see that the most frequently purchased items came from the Petrol, Other Grocery and Food categories – purchased by 73, 70 and 67 per cent of the shopping households respectively. Other items purchased by a substantial proportion of the shopping households include Spirits (45 per cent), Toys (37 per cent), Beer (33 per cent) and Ladies’ Clothes (23 per cent). From the second column in the table we can see that this expenditure accounted for just under IR£29 million out of the total 6 month cross-border shopping

expenditure of IR£42 million estimated for the country as a whole. This represents approximately 68 per cent of the national total. The percentage of total expenditure in Northern Ireland by border households accounted for by items in each of the commodity groups is shown in column three of the table. The biggest single item of expenditure is Petrol (accounting for 32 per cent of total) followed by Food (30 per cent) and other groceries (11 per cent). Ladies' Clothes and Toys (each at approximately 4.5 per cent), followed by Spirits (2.6 per cent) are also major expenditure items.

Table 4.4: *Items Purchased in North by Border Shopping Households.*

<i>Item</i>	<i>Purchased in N.I. Per cent of house- holds</i>	<i>Total expenditure in 6 counties over the 6 month period</i>	<i>Percentage of total expend. by border county households in N.I. in last 6 months</i>
	Per cent	IR£000s	Per cent
Food	66.6	8,573	29.99
Other Groceries	69.8	3,073	10.75
Petrol	73.3	9,151	32.01
Beer	33.0	487	1.70
Spirits	44.8	743	2.60
Wine	19.4	169	0.59
Tob./Cigarettes	8.9	480	1.68
Ladies' Clothes	23.5	1,295	4.53
Gents' Clothes	14.6	518	1.81
Children's Clothes	17.2	578	2.02
Toys	37.3	1,243	4.35
TV/Video	1.1	146	0.51
Kit. Electric	1.2	277	0.97
Other Electric	16.1	639	2.23
Non-electric Hardware	7.8	407	1.42
Other	8.9	805	2.82
Total	—	28,586	100.00

The role of number of trips and distance decay is of paramount importance in determining the average amount spent. From Table 4.5 we can see that the average expenditure per trip was IR£41.50. In general, there was a strong positive relationship between average trip expenditure and distance from the border. These figures reflect the higher opportunity and transport costs faced by those living furthest from the border with Northern Ireland. Higher expenditure (and savings) is necessary to warrant a trip the further the distance to be travelled.

Table 4.6 gives the respondents' estimates of the percentages of their total expenditure on items in each commodity category accounted for by purchases made in Northern Ireland. Obviously this is an extremely subjective measure but it does give an indication of, at least, the perceived level of expenditure in each category accounted for by expenditure in the North. On this basis, we can

Table 4.5: *Average Trip Expenditure*

<i>Distance to Border</i>	<i>IRE</i>
0-5 miles	35.30
6-15 miles	39.83
16-30 miles	51.23
31+ miles	98.84
Total	41.50

see that shopping households in the border counties which purchased Wine and Spirits in Northern Ireland felt that their purchases in the North accounted for over 90 per cent of their total expenditure on these items. This is followed closely by Beer, with households saying that such purchases accounted for 89 per cent of their total expenditure on this commodity. (However, in the survey, households were only asked about off-license sales of beer and spirits.) Northern Ireland purchases of Toys, Petrol, Kitchen Electrics, Other Groceries and all categories of clothes accounted for major elements of total expenditure on these commodities. In the case of Toys, for example, it accounted for almost 80 per cent. As one would expect, the effect of distance from the border on the proportion of total expenditure accounted for by cross-border shopping is particularly marked.

Table 4.6: *Percentage of total expenditure by shopping households in 6 border counties represented by cross-border shopping.*

<i>Item</i>	<i>Distance from border in miles</i>				<i>Total</i>
	<i>0-5</i>	<i>6-15</i>	<i>16-30</i>	<i>31+</i>	
Food	40	32	21	11	28
Other Groceries	62	61	44	27	52
Petrol	91	75	47	15	66
Beer	97	91	80	83	89
Spirits	97	93	84	83	90
Wine	96	94	90	79	92
Tobacco/Cigarettes	64	39	29	8	40
Ladies Clothes	61	55	50	41	52
Gents Clothes	64	53	54	33	54
Children's Clothes	57	51	44	36	47
Toys	87	83	76	72	79
TV/Video	—	—	—	—	62
Kitchen Electric	—	—	—	—	61
Other Electric	85	87	85	80	85
Non-Elec. Hardware	72	66	52	52	64
Other	—	—	—	—	—

Given the various estimation difficulties attaching to survey work of the kind undertaken, it would obviously be a major advantage to provide as independent a benchmark as possible against which to compare the direct estimates of expenditure derived from the survey. To this end we derived alternative estimates from a combination of (a) the weights based on the Household Budget

Survey (i.e., total expenditure on each commodity type) and (b) the responses, set out in Table 4.6, concerning the percentage of total expenditure accounted for by cross-border shopping. Table 4.7 shows that the figures derived directly from the expenditure questions are generally highly conservative when compared with the alternative indirect estimates. Although the level of underestimation varies as between one category and another, the direct survey method yields an aggregate estimate which is approximately half that derived from the alternative approach. We can see that the figures for expenditure on Petrol from both sources are very similar. The explanation for this may lie in the fact that petrol is bought on a regular basis, the amount purchased usually being measured in value rather than volume terms. Thus, it is relatively easy to work out a fairly accurate, and probably consistent, estimate of the amount spent on this item over a 6 month period.

Table 4.7: *Comparison of estimates of cross-border trade*

<i>Category</i>	<i>(i)</i> <i>Direct Estimate</i> <i>(Table 4.4)</i>	<i>(ii)</i> <i>Indirect Estimate using</i> <i>the Household Budget Survey</i> <i>(Table 4.6)</i>
Food	17.1	39.4
Other groceries	6.1	4.9
Petrol	18.3	21.5
Beer	1.0	3.1
Spirits	1.5	1.4
Wine	0.3	0.8
Tob./Cigarettes	1.0	10.7
Ladies Clothes	2.6	9.4
Gents' Clothes	1.0	8.1
Children's Clothes	1.2	3.4
Toys	2.5	1.3
TV/Video	0.3	1.5
Kitchen Electric	0.6	2.0
Other Electric/Non Electric	3.7	11.1
Total	57.2	118.6

4.5 *Characteristics of Most Recent Shopping Trip on Which More than ST£20 was Spent*

To present an intensive characterisation of a standardised trip made by households in these border counties we asked respondents to give detailed information on their most recent trip to N.Ireland on which more than ST£20 was spent. We found that just under 41,600 (79 per cent) of the 51,000 households which shopped in Northern Ireland had engaged in this type of "major" shopping trip. Figure 4.2 gives the frequency with which "big" shopping trips were made showing that just over half of shopping households made more than five such trips. In the remainder of this chapter we will consider some of the characteristics

of the households' most recent "big" shopping trip on which more than ST£20 was spent.

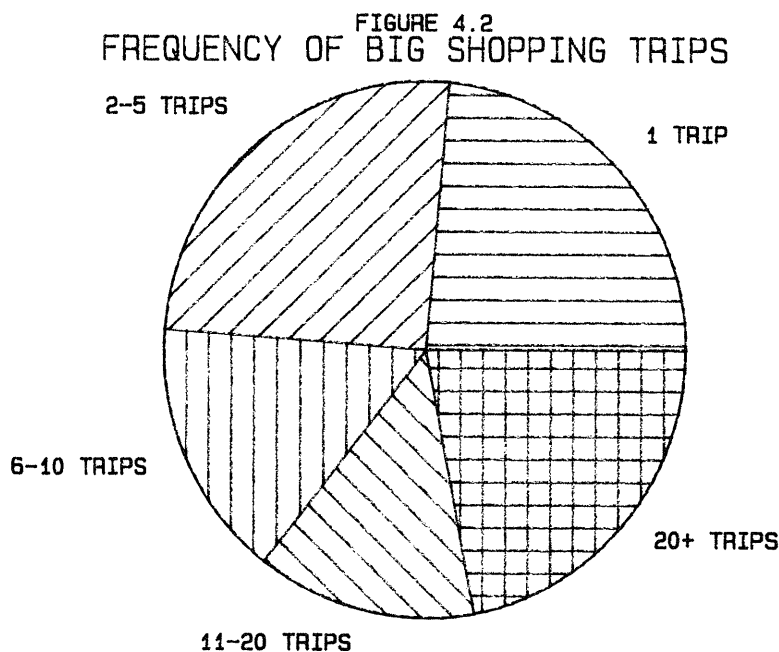


Table 4.8 presents information on the number of members of shopping parties to Northern Ireland on the most recent shopping trip on which more than ST£20 was spent. The average number of persons on the larger shopping trips is 2.25 of which 1.89 (84 per cent) are adults. One should note that the proportion of children on the trips from households closest to the border is substantially smaller than that for households in the other three distance categories. Only 9 per cent of shopping party members from households less than 5 miles from the border are children. This compares with 20 per cent for households in the 615 miles group and 16 per cent in each of the other two distance categories. This perhaps reflects the greater role of convenience shopping in trips across the border originating from households closest to it.

Table 4.8: *Average numbers of adults and children on most recent shopping trip on which more than ST£20 was spent, classified by shortest distance to the border with Northern Ireland*

	Shortest Distance to Border with Northern Ireland				Total
	0-5 miles	6-15 miles	16-30 miles	31+ miles	
	Average number per trip				
Adults	1.78	1.86	2.02	1.92	1.89
Children	0.18	0.46	0.40	0.37	0.36
Total Persons	1.96	2.31	2.42	2.29	2.25

We found that 79 per cent of shopping households used their own car on cross-border shopping trips, a further 12 per cent travelling by a private car belonging to another household (Table 4.9). Furthermore we found that 5 per cent of these households' most recent cross-border shopping excursions were on an organised shopping trip on a bus. This percentage obviously increased with distance to the border. It should be noted that, although much media coverage was given to the numerous and large fleets of shopping buses travelling through the main border crossing points, especially in the Christmas peak period, such buses came from much further afield than the 6 border counties under consideration here. Thus the figure of only 5 per cent should not be interpreted as inconsistent with press coverage of the situation in late 1986.

Table 4.9: *Means of transport used on most recent shopping trip on which more than ST£20 was spent, classified by shortest distance to the border with Northern Ireland*

Transport	Distance to Border with Northern Ireland				Total
	0-5 miles	6-15 miles	16-30 miles	31+ miles	
			Per cent		
Household's own car	83.5	86.1	70.5	70.9	78.7
Other private car	13.0	7.0	12.9	17.4	11.7
Public transport	2.3	4.3	5.2	3.2	3.9
Organised shopping trip on bus	1.2	1.6	10.9	8.6	5.2
Other	0.0	1.0	0.6	0.0	0.5
Total	100.0	100.0	100.0	100.0	100.0
(n000s)	(10.4)	(12.7)	(11.9)	(5.9)	(40.9)

Table 4.10 outlines the locations of the most recent "big" shopping trip across the border. From this we can see that the most important centres were Strabane, Derry and Enniskillen (each being mentioned by approximately 17 per cent of the shopping households in the border counties) followed by Newry (11 per cent). These four towns took up 63 per cent of all "big" shopping trips emanating from the border counties. A further 24 per cent were spread over 7 other centres, the remaining 14 per cent being to various scattered locations throughout the North. Perhaps it is most noteworthy that only 3.7 per cent of trips were to Belfast. One should, however, note that these data relate to the households in the 6 border counties only. When viewed from a national perspective, the impact of Belfast and Newry, especially for those coming from greater distances, increases substantially.

A noteworthy feature of cross-border shopping activity was the extremely low level of multiple location shopping trips undertaken. Approximately 300 households went on to a second shopping location from their first on the same

Table 4.10: Shopping location(s) of most recent shopping trips on which more than ST£20 was spent

Location	H'hold Base	Expenditure	Per cent total N.I. expend.
	Per cent	IR£000s	Per cent
Strabane	17.8	628	17.9
Derry	17.2	705	18.4
Enniskillen	17.1	523	14.9
Newry	11.2	94	2.7
Culleville	4.3	184	5.2
Belfast	3.7	70	2.0
Beleek	3.6	70	2.0
Forkhill	3.4	102	2.9
Legakelly	3.2	63	1.8
Aughnacloy	2.9	48	1.4
Armagh Town	2.8	131	3.7
Other	13.6	311	8.9
Total	100.8	3,503	100.0

trip. This extremely low level of multiple shopping locations is reflected in the figure of 100.8 per cent in Table 4.10. Thus the trip and household bases are virtually synonymous in this respect. Also shown in Table 4.10 is the amount spent at each of the locations named. From this we can see that Derry and Strabane take the biggest percentage (approximately 18 per cent each) of the IR£3.5 million accounted for by these trips followed by Enniskillen (15 per cent).

Overall, we found that the average amount spent on the most recent “big” shopping trip was IR£88, there being a fairly strong positive relationship between this and the distance from the border. The average cost of making a trip was IR£6.48. This latter figure is split between return transport costs, which account for IR£4.02 (62 per cent of total), and other incidental expenses on snacks, coffee, etc., accounting for the remaining IR£2.47. For obvious reasons these costs increased substantially with distance from the border. In general, 96 per cent of households felt that they saved money by shopping in Northern Ireland, the respondents’ subjective estimate of the average amount saved being IR£20.92. The level of perceived savings is mixed across distance categories, there being no simple or direct relationship between savings and distance from the border.

4.6 Regression Equations

The tables presented above each give a more or less unidimensional analysis of the characteristics of cross-border shopping patterns. Obviously a household’s propensity to indulge in such activity is subject to a wide variety of simultaneous influences. In an attempt to explain some of the variance in cross-border shopping patterns we present the results of three single equation OLS regressions. The dependent variables are number of shopping trips, average expenditure per

shopping trip and the household's perceived level of saving necessary to make a typical shopping trip to Northern Ireland worthwhile.

$$\text{Log(NOSH)} = 1.32 - 0.72 \text{ Log(DIS)} + 0.30 \text{ CAR} \quad (4.1)$$

(-19.4)
(6.9)

$$\bar{R}^2 = 0.36; F = 211.56; n = 748$$

Where NOSH = Number of shopping trips.

DIS = Distance to border with the North.

CAR = Household car ownership.

Equation 4.1 models the number of shopping trips as a function of two variables, viz., whether or not the household owns a car and the shortest distance (measured in miles) to the border with Northern Ireland. The double log functional form accommodates diminishing costs to the marginal mile and is, therefore, obviously preferable to a simple linear relationship. From the equation one can see that distance from the border with Northern Ireland and car ownership together explain approximately 36 per cent of the variance in the number of trips made. The overall equation and both variables are highly significant. The elasticity of number of trips made with respect to distance is -0.72 . Thus a 1 percent change in distance leads to a 0.72 percent fall in number of trips made across the border to shop in Northern Ireland. The coefficient on car ownership implies that possession of a car adds an extra 2 shopping trips to Northern Ireland in the 6 month period over and above the number for non-car-owning households. Distance exercises such a dominant influence in determining number of shopping trips made that only these two variables were found to be significant in terms of variance explanation. Household characteristics, such as numbers of adults and children, net disposable income, and socioeconomic status of head of the household were found to be insignificant in the equation.

Equation 4.2 takes average expenditure on shopping trips to Northern Ireland as the dependent variable. The independent variables used include number of adults and children in the household, shortest distance to the border and 6 dummies for net disposable household income. A final variable SPECISH, is a dummy which identifies a household as being a "specific" shopping household in the sense that its shopping trips to the North were largely made with a view to purchasing a small number of specific items. The alternative type of shopping household is the "general" shopper whose purchasing plans are not so highly formulated in advance of the trip. Overall we can see the equation is highly significant, providing 19 per cent of variance explanation. The "specific" shopping variable is significant, its coefficient showing that this household characteristic

results in average spending being IR£8.40 less than its “general” shopper counterpart. The number of children in the household is highly significant, each child resulting in an increased average expenditure per trip of IR£5.46. The number of adults in the household seems to have a perverse sign but is not significant. Once again the role of distance from the border is highly significant

Table 4.11: *Results of multiple regression analysis*

<i>Equation 4.2: DEPENDENT VAR: AVEEXP (Average expenditure per shopping trip)</i>			
<i>VAR</i>	<i>COEFF</i>	<i>t</i>	<i>SIG t</i>
SPECSHP	-8.40	(-2.01)	{0.04}
CHILD	5.46	(4.28)	{0.00}
ADULT	-0.05	(-0.03)	{0.97}
DIST	1.63	(10.72)	{0.00}
INC2	1.70	(0.23)	{0.82}
INC3	8.87	(1.28)	{0.20}
INC4	7.52	(1.10)	{0.27}
INC5	11.28	(1.58)	{0.11}
INC6	17.09	(2.19)	{0.03}
INC7	25.77	(3.31)	{0.00}
CONSTANT	22.91		

$\bar{R}^2 = 0.19$; $F = 18.56$; $n = 729$

Equation 4.3: DEPENDENT VAR: SAVENEC (savings necessary to make a typical trip worthwhile)

<i>VAR</i>	<i>COEFF</i>	<i>t</i>	<i>SIG t</i>
DIST	0.42	(16.39)	{0.00}
CAR	-2.20	(-2.11)	{0.03}
CHILD	0.41	(1.83)	{0.07}
ADULT	0.13	(0.51)	{0.61}
INC2	0.18	(0.09)	{0.92}
INC3	2.33	(1.92)	{0.06}
INC4	2.60	(2.18)	{0.03}
INC5	0.66	(0.53)	{0.60}
INC6	2.97	(2.18)	{0.03}
INC7	5.29	(3.86)	{0.00}
CONSTANT	5.56		

$\bar{R}^2 = 0.32$; $F = 33.76$; $n = 707$

Variables Used

Income Dummies

INC1 £<4160 (reference category)	INC2 £4160-<5200
INC3 £5200-<6240	INC4 £6240-<7280
INC5 £7280-<9360	INC6 £9360-<12,480
INC7 £12,480 +	
ADULT Number of adults in household	
CAR Household car ownership	
AVEEXP Average expenditure per shopping trip	
SPECSHIP Household is a “specific” shopper (see text)	
CHILD Number of children in household	
DIST Shortest distance to border with NI	
SAVENEC Level of savings necessary to make a typical trip	

with each mile adding IR£1.63 to average expenditure per trip. The reference category for the income dummies is IR£0–4,160 (INC1). Although the four lowest income dummies are not significant at the 0.05 level we can see that the signs of the coefficients conform to expectations and that the relationship between average level of expenditure and household income is largely linear.

Equation 4.3 takes as its dependent variable the level of savings necessary to make a typical trip to Northern Ireland worthwhile. In some respects this variable can be taken as a composite surrogate for the subjective evaluation of the households' opportunity cost of time and the effort involved in making the trip. The explanatory variables used are the shortest distance from the border, car ownership, numbers of children and adults in the household and the 6 income dummies. The equation provides 32 per cent variance explanation. The important role of distance decay is once again evident with the average household requiring a saving of IR£0.42 per mile from the border on a typical trip. The coefficient on car ownership is negatively signed suggesting that households owning a car need to make less of a saving (to the value of IR£2.20) to make a trip worthwhile than their non-car-owning counterparts. This is obviously due to the increased time, effort and transport costs facing non-car-owning households. The number of children in the household is just outside the 5 per cent level of significance, each child adding an extra IR£0.41 to the necessary level of savings to make a trip worthwhile. The number of adults is not significant. As might be expected, there seems to be a roughly positive linear relationship between level of necessary savings and household net income, even though INC2 and INC5 are not significant. The higher the income the higher the opportunity cost of time and the less the marginal utility of an increment in real disposable income.

4.7 North to South Shopping Flows

So far in this chapter we have considered various aspects of shopping in Northern Ireland by residents of the Republic. One aspect not yet considered is the extent to which this leakage is redressed by injections into the Republic's economy by shopping traffic originating in Northern Ireland. Given the data presented in Chapters 2 and 3 above on the indirect tax and price regimes in the two jurisdictions we were sure at the outset that the level of North to South flows would be small. Nevertheless we felt it was important to quantify this hitherto neglected aspect of consumer trade between the two regions. To this end we carried out a survey of the adult population in Northern Ireland in February 1987 to assess the magnitude of North to South shopping activity. Details of the survey's methodology together with the questionnaire are given in Appendix 4.

This survey revealed that approximately 5 per cent of the adult population of Northern Ireland had made trips to the Republic on which shopping was

done in the preceding 6 months. The 58,000 adults represented by this figure made approximately 136,000 trips which had a shopping component. It is noteworthy that, although only 43 per cent of the adults who made one or more such trips were male, a total of 60 per cent of these trips were made by men. This is largely explained by the multiple trip activity of males making business trips on which they did some shopping. Overall these business trips with a shopping component accounted for 14 per cent of the total. The majority of trips (56 per cent) were holiday/visits on which shopping was done, the remaining 30 per cent being “mainly shopping”. Not surprisingly most trips originated in areas closest to the Republic.

Total expenditure in the Republic by Northern Irish shoppers in the latter 6 months of 1986 amounted to IR£3.58 million, giving an average figure of IR£75.75 per shopping adult. Table 4.12 gives a breakdown of this expenditure. From this we can see that the bulk of the purchases were clothes (almost 72 per cent). A total of 38 per cent was spent on ladies’ clothes, 24 per cent on men’s clothes and 10 per cent on children’s clothes.

Table 4.12: *Expenditure in the Republic of Ireland by residents of Northern Ireland in the latter 6 months of 1986*

Item	Amount Spent IR£000s	(Per cent) (%)
Food/Grocery	153	4.3
Beer/Spirits	106	3.0
Cigarettes/Tobacco	86	2.4
Ladies Clothes	1,362	38.1
Men’s Clothes	846	23.6
Children’s Clothes	355	9.9
Toys	92	2.6
Household Durables/Hardware	255	6.3
Other	354	9.9
Total	3,580	100.0

When the data were disaggregated by sex it was found that 62 per cent of male expenditure was accounted for by purchases of clothes, the comparable figure for females being 79 per cent. It is perhaps somewhat counterintuitive that as much as 30 per cent of male expenditure in the Republic was on female clothes. One explanation for this which emerged from the data was that such purchases were made as gifts for their wives by men travelling to the Republic on business. Overall it seems clear that these North-to-South flows represent only a small proportion of their South-to-North counterparts in terms of number of trips and levels of expenditure. In no way can they be considered as a counterbalance to the South-to-North flows discussed above.

4.8 *Conclusions*

The evidence presented in this chapter suggests that approximately 12 per cent of households in the Republic made a total of 835,000 shopping trips to the North in the last 6 months of 1986. The percentage of households in the counties nearest to the border which made such a trip in the 6 months was much higher than for the country as a whole. The survey showed that 46 per cent of such households made a trip within the study period. The results of the survey of border households indicated that the value of their cross-border shopping in 1986 lay within the range IR£57 million and IR£119 million. For the rest of the country, the national survey suggested that cross-border shopping amounted to at least IR£27 million in 1986. The items most frequently purchased in the North by shopping households were petrol, other groceries and food.

The prime importance of distance from the border in determining shopping patterns was a recurring theme throughout the chapter. When modelling the data we found that distance and the ownership of a car explained 36 per cent of the variation in the number of trips made. The number of shopping trips made per household fell by about 0.72 per cent for every additional mile from the border. Ownership of a car resulted in the typical shopping household making an additional 2 shopping trips in the relevant 6 month period. Distance from the border was also important in determining the average expenditure on shopping trips and the perceived level of savings necessary to justify a trip; the further the shopping household was from the border the higher the expenditure or savings per trip. These findings reflect the opportunity cost of time and effort associated with cross-border shopping activity.

Chapter 5

REASONS FOR CROSS-BORDER SHOPPING – SURVEY EVIDENCE

5.1 *Introduction*

In the previous chapter we examined the volume of cross-border shopping activity, with special reference to the level of expenditure, over a 6 month period. In this chapter we will discuss some broader aspects of the motivation for making cross-border shopping trips. We will concentrate first on the knowledge levels among those who shopped in Northern Ireland of the IR£ – ST£ exchange rate and the variation between the perceived and the actual price differential of a number of items in the two jurisdictions. Secondly, we shall examine households' motivation for shopping in Northern Ireland and the perceived advantages and disadvantages of shopping there.

5.2 *Knowledge of Exchange Rates and Relative Prices*

Since joining the EMS and breaking the link with sterling in 1979 the IR£ has fluctuated quite markedly with respect to the ST£. Thus one would expect shoppers to be extremely conscious of the rate of exchange as this will affect the level of savings resulting from shopping in Northern Ireland. To assess the extent to which shoppers were acquainted with the then current exchange rate, they were asked to give an estimate of it in the course of the questionnaire. Over the period of the survey in January and the first two weeks of February 1987 the exchange rate ranged between ST£0.947 and ST£0.962 per IR£.

Table 5.1 presents information on respondent's perceptions concerning the exchange rate at the time of the survey. Some 95 per cent of shoppers interviewed

Table 5.1: *Household's Perception of Exchange Rate*

<i>ST£ per IR£</i>	<i>Per cent</i>
0.85-0.90	5.9
0.91	0.5
0.92	7.2
0.93	11.1
0.94	15.6
0.95	30.6
0.96	20.4
0.97	7.4
0.98	1.3
TOTAL	100.0
Number (000)	48.4

gave an answer to this question. About two-thirds of those responding gave answers which fell within the actual range of the exchange rate during the course of the survey (ST£0.94 to ST£0.96 per IR£). The percentage of households within this band decreased with increasing distance from the border with the North. On the whole, shoppers were fairly well informed as to the exchange rate.

In forming their view as to the potential benefits from shopping in the North, consumers' perceptions of prices in the shops (in Sterling in the North and Irish pounds in the Republic) are as important as knowledge of the exchange rate. Even if shoppers are not aware of the exchange rates per se they may have a fairly accurate notional system of relative prices and it is these perceptions which will, in large part, determine their cross-border shopping behaviour. To address the issue of perceived price variations between the two jurisdictions we asked respondents for an estimate of the price of 11 items in both Northern Ireland and the Republic.

In Table 5.2 we present data on the perceived level of prices of the items. The most important point to note from the table is that the percentage of households giving an estimate of prices varies greatly between one item and another. Also we found that, not unexpectedly, a much higher percentage of respondents were able to make an estimate of the price of items in the Republic than in Northern Ireland. Thus, for example, we can see from the table that approximately 80 per cent of respondents made an estimate of the price of basic grocery items such as milk, bread, and butter in the Republic. The percentage of respondents who were willing to estimate the price of these items in Northern Ireland was 23, 50 and 46 per cent respectively. At the other end of the scale 37 per cent of households were able to estimate the price of a TV and packet of cigarettes in the Republic. Comparable figures for estimation of prices in Northern Ireland were 36 and 30 per cent respectively. Also given in the table is the actual price of each item as derived from the prices survey discussed above in Chapter 2.

This table shows that the prices in the Republic of 5 items were estimated to within a few pence accuracy. These were cigarettes, coffee, butter, bread and milk. The estimate of the price of a TV set was also relatively close to the true price. In spite of comparability problems of selecting a type and make of TV, this appears to suggest a high level of price awareness for this good. The prices in the Republic of the remaining 5 items were overestimated. These items were whiskey, Harp lager, washing powder, toilet rolls and petrol. The extent of overestimation (as a percentage of actual price) was highest for washing powder (43 per cent overestimation) and whiskey (15 per cent).

It is, perhaps, initially surprising that there was evidence of substantial overestimation of the price of a gallon of petrol — a perceived price of IR£2.84 compared to an actual price of IR£2.64 representing an overestimation of

Table 5.2: *Household's perceived prices of various items*

<i>Item</i>	<i>Perceived Price</i>		<i>Actual Price</i>	
	<i>Rep.</i> <i>IR£.p</i>	<i>N.Ire.</i> <i>ST£.p</i>	<i>Rep.</i> <i>IR£.p</i>	<i>N. Ire.</i> <i>ST£.p</i>
A Bottle (750mls) of Paddy Whiskey	14.29 (51.7)	8.97 (54.4)	12.45	8.32
Six pack of Harp lager	3.9 (39.6)	2.17 (43.0)	3.76	1.86
Pack of 20 cigarettes	1.82 (37.4)	1.50 (29.6)	1.86	1.49
22 inch colour TV	520.00 (37.2)	346.00 (36.1)	540.00	328.00
930gm box of washing powder	1.84 (59.3)	1.31 (53.9)	1.29	1.00
100gm jar of coffee	1.85 (55.2)	1.36 (44.8)	1.89	1.59
Six pack of toilet rolls	1.43 (61.7)	1.05 (49.6)	1.34	1.06
1lb butter	1.17 (80.4)	1.03 (46.5)	1.19	0.99
A sliced pan (bread)	0.69 (83.2)	0.52 (49.9)	0.68	0.52
A litre of milk	0.47 (78.0)	0.45 (22.6)	0.48	0.43
1 gallon of petrol	2.84 (68.1)	1.79 (68.8)	2.64	1.76
Total (n000s)	(51.1)			

Figures in parentheses throughout the table give the percentages of respondents making an estimate of the price of the relevant item.

approximately 8 per cent. This may be attributed to, at least in part, the relative infrequency with which petrol purchases were made in the Republic by this subgroup of the population. The estimated price of 7 of the items in Northern Ireland was accurate to within a few pence of the true price. These were cigarettes, toilet rolls, butter, bread, milk, petrol and also TVs. The Northern Ireland price of all other goods, with the exception of coffee, was an overestimation.

In interpreting the trends in this table it is important to keep a few points in mind. First, the table is based on a fairly special subset of the shoppers — viz those who were able to give an estimation of the price of the items. Those who did not make an estimate had to be excluded and thus we are, to some extent, dealing with a self-selected group of the most informed members of the shopping population. The relatively high degree of accuracy suggested may, therefore, be somewhat misleading. The figures on levels of prices must be

interpreted in the context of the number of respondents who were able to give an estimate.

Secondly, there may have been a slight problem of comparability in respect of some items. In designing the prices survey we tried to choose those items which were as unique as possible. For some, a six pack of Harp lager or a litre of milk, this was relatively easy. For others, a colour TV or a particular size and brand of washing powder, it was more difficult. Nevertheless, in view of the amount of media coverage on cross-border trade in these items, their inclusion was felt to be desirable. The importance of forcing the respondents to give an estimated price of a specific brand and size was stressed to the interviewers.

To overcome any potential problems raised by issues of comparability we present, in Table 5.3, information on households' perceptions of relative prices in both the North and the Republic and on actual relative prices. Each cell of the table presents three pieces of information. First is a mean ratio. These ratios are based on the Republic to Northern Ireland relative prices, the latter being converted to IR£ equivalents. Secondly, the variance of ratios in each cell is presented to give a measure of their distribution. Thirdly, the percentage of respondents in each cell on which the ratio is based is also given. It is important to note that each entry in the table is the mean of perceived price ratios and not the ratio of perceived price means. Thus, for inclusion in any cell of the table the household must have given the price of the item in question in both Northern Ireland and the Republic. The actual relative price ratio for each item was derived from the Prices Survey (detailed in Chapter 2 above).

The first point to note from the table is that we have a price ratio for petrol from 65 per cent of the shopping population. This is the only item for which more than half of households could give an estimate of prices on both sides of the border. Estimates of the prices in both jurisdictions for 6 of the items were given by 40 – 50 per cent of the population. It may initially appear strange that less than 30 per cent of households could give an estimate for the price of cigarettes and milk on both sides of the border. It must be remembered, however, that these are not items which are seen as prime motivators of cross-border shopping activity. The perceived price ratio for whiskey, washing powder, coffee, toilet rolls, bread and petrol are substantially higher than their corresponding actual ratios. This implies that respondents thought the price differentials for these items were greater than they actually were. The greatest disparity between the perceived and actual price ratio was for coffee, the perceived being 29 per cent higher than the actual. This was followed by toilet rolls (21 per cent) and washing powder (16 per cent).

In general, underestimation of relative prices was much less substantial than overestimation. The items with the greatest underestimation were a six pack of Harp lager, the perceived ratio being a 4.2 per cent underestimation of the

Table 5.3: *Actual and Perceived Relative Prices*

<i>Item</i>	<i>n(000s)</i>	<i>Total ratio IR£</i>	<i>Actual relative price</i>
750 mls of Paddy Whiskey	Mean	1.55	1.38
	Var.	0.07	
	%	49.30	
Six-pack of Harp lager	Mean	1.79	1.87
	Var.	0.11	
	%	37.40	
Pack of 20 cigarettes	Mean	1.17	1.16
	Var.	0.03	
	%	29.30	
22 inch colour TV	Mean	1.47	1.52
	Var.	0.06	
	%	34.20	
950gm. box of washing powder	Mean	1.38	1.19
	Var.	0.04	
	%	49.20	
100gm. jar of coffee	Mean	1.42	1.10
	Var.	0.19	
	%	41.60	
A six-pack of toilet rolls	Mean	1.17	1.11
	Var.	0.17	
	%	44.50	
1lb butter	Mean	1.09	1.11
	Var.	0.02	
	%	45.40	
A sliced pan (bread)	Mean	1.31	1.21
	Var.	0.06	
	%	48.90	
A litre of milk	Mean	1.02	1.03
	Var.	0.01	
	%	22.50	
1 gallon of petrol	Mean	1.52	1.39
	Var.	0.01	
	%	65.50	
Total		(51,103)	

Note: The ratios given were derived by dividing the household's perceived price of each item in the Republic by the respective price in Northern Ireland. The latter was converted to IR£ prior to taking the ratio (an exchange rate of ST£1.00 = IR£1.05 was used). The actual price ratio was derived from the Prices Survey (carried out at end February 1987) and is based on all items in a common currency (IR£). The exchange rate in this latter was taken to be ST£1.00 = IR£1.08.

actual, and a TV (the perceived ratio being a 3.2 per cent underestimation of the actual). We found that there was little systematic pattern to the variation in the level of perceived price relativities with distance from the border.

5.3 *Motivation for Shopping in Northern Ireland*

In Table 5.4 we present the results of questions put to households concerning the main advantages of shopping in Northern Ireland. From the table we can see that as many of 92 per cent of respondents cited the lower level of prices in Northern Ireland among the advantages of shopping there. The next most frequently recurring response was the variety/selection of goods in Northern Ireland. This reason was given by exactly one-third of the shoppers. After these two advantages the others are given only on a very infrequent basis.

Table 5.4: *Respondent's perceived advantages of shopping in Northern Ireland Classified by distance to the border. **

<i>Advantage</i>	<i>Shortest distance to border with N. Ireland</i>				<i>Total (n000s)</i>
	<i>0-5 miles</i>	<i>6-15 miles</i>	<i>16-30 miles</i>	<i>31+ miles</i>	
	Per cent				
None	3.8	2.7	3.8	4.0	3.5
Prices are lower	93.6	92.9	89.6	88.6	91.6
Variety/selection better	18.9	29.6	40.4	55.2	32.8
Day out	1.6	3.2	6.2	8.2	4.2
Convenience/shops so close to border	7.7	4.0	2.1	1.0	4.2
Friendly/efficient service in shops	2.1	1.9	0.9	3.8	1.9
Better quality of goods	1.4	1.6	0.8	4.0	1.6
Narrow punt-sterling differential	0.0	0.4	0.9	0.9	0.5
VAT rates are lower	0.4	0.0	0.5	1.0	0.4
Other	0.5	0.4	2.7	2.1	1.3
Total (n000s)	130.0 (14.6)	136.7 (15.8)	147.9 (14.2)	168.8 (6.4)	142.0 (51.0)

*Table based on respondents, not responses so that totals may sum to more than 100 per cent.

The overriding importance of lower prices in Northern Ireland deserves some additional comment. An attempt can be made to disaggregate this response into its component parts and examine the percentage of times individually named items were mentioned by respondents as being cheaper in Northern Ireland. When this is done we find that 24 per cent of households said that a main advantage of shopping in the North was that petrol was cheaper. There was a strong negative relationship between the frequency of this response and distance from the border. We found that it was given by approximately 30 per cent in each of the 0-5 and 6-15 miles categories, by 20 per cent of households in the 16-30 miles group and by only 7 per cent of those living 31 or more miles from the Northern Irish border. Petrol was the only individually named item to occur on a frequent basis in this lower prices response category. Food/grocery items

were mentioned specifically as being cheaper in Northern Ireland by just under 5 per cent of respondents and toys by almost 3 per cent. No other single item was specifically mentioned by any more than 2 per cent of the respondent households.

When broken down by distance, we can see from Table 5.4 that there is some evidence to suggest that a distance decay effect is in operation in determining shoppers perceived advantages of purchasing in Northern Ireland. Thus we can see that the percentages mentioning lower prices as an advantage decreases slightly with distance from the border. This suggests a lessening of price sensitivity with increased distance. As one would expect the percentages mentioning variety/selection in Northern Ireland (which would interact with the change of environment) increases markedly with distance from the border. Similarly recurrence of a “Day-Out” increases with distance from the border.

When asked about the disadvantages of shopping in Northern Ireland 39 per cent of households said that there was no disadvantage to shopping there (see Table 5.5). Not unexpectedly, the next most frequently occurring response was the problem posed by the security situation in Northern Ireland (mentioned by 29 per cent) followed by the problems/distance of making the journey to the North (22 per cent). Problems with customs (mentioned by 14 per cent of respondents) and changing currency (11 per cent) were also seen as relatively major disadvantages by shoppers.

Table 5.5: *Respondents' perceived disadvantages of shopping in Northern Ireland classified by distance to the border.**

Disadvantage	Shortest distance to border with N. Ireland				Total (n000s)
	0-5 miles	6-15 miles	16-30 miles	31+ miles	
	Per cent				
None	50.8	45.9	29.6	14.8	39.0
Security situation	29.0	22.7	33.5	37.8	29.3
Hassle/distance of journey	10.7	15.3	28.1	57.0	22.5
Money changing problems/IR£ Sterling differential	4.7	8.8	15.4	23.6	11.2
Customs	11.4	17.0	12.9	17.5	14.3
Detrimental effect on economy in Republic	1.8	6.2	3.3	0.0	3.3
Crowds/People	0.5	0.8	5.1	1.0	1.9
Car stolen, damaged	0.5	1.5	1.8	2.2	1.4
Other	4.3	1.7	9.6	6.1	5.2
Total (n000s)	113.7 (14.5)	119.9 (15.7)	139.3 (14.0)	160.0 (6.0)	128.1 (50.4)

*Table based on respondents, not responses so that totals can sum to more than 100 per cent.

The proportion who saw no disadvantage to shopping in the North was negatively related to distance from the border. The percentages perceiving the security situation as a major disadvantage increased with distance from the border. A similar and more directly positive relationship with distance is apparent among the percentages mentioning the hassle/distance of the journey and problems associated with changing currency.

5.4 Conclusions

The results in this chapter suggest that households who shopped in the North were well informed as to level of the IR£ST£ exchange rate. About two-thirds of those responding gave answers which fell within the actual range of the exchange rate during the course of the survey. We saw that households tended to overestimate the savings to be obtained from shopping North of the border. When asked about the advantages of shopping North of the border the responses of households surveyed indicated that lower prices and the variety of goods in the North were the most important factors. In terms of disadvantages, the main problems identified included the security situation and the hassle/distance associated with making the trip.

Chapter 6

VOLUME OF CROSS-BORDER SHOPPING – TIME-SERIES EVIDENCE

6.1 Introduction

There is a range of consumer goods which is liable to excise taxes in the Republic which may, as a result, be substantially different in price from similar goods on sale in Northern Ireland. The effects of the differences in tax on the prices of some of these goods has already been analysed. This analysis confirmed that over the last 10 years there has, at times, been a significant difference in the price of the same commodity on sale on either side of the border. For goods which are liable to excise tax there is detailed information available, both from the National Accounts and the Revenue Commissioners, on the volume of sales, both on a quarterly and an annual basis. This is not necessarily the case for other goods which were found in Chapter 4 to be significant in shoppers' cross-border purchases. This chapter examines the evidence available from these and other sources on the changing volume of cross-border trade in certain consumer goods liable to excise tax in the Republic. The goods examined are spirits (alcohol), television sets and petrol. Attempts to analyse the trade in beer in the same manner proved unsatisfactory. The evidence is analysed to attempt to quantify the magnitude of the cross-border trade in these commodities and the sensitivity of this trade to changes in price differentials between Northern Ireland and the Republic.

Because of the general absence of time series data on the volume of sales of consumer goods in regions of the Republic, in particular in border areas, it is difficult to carry out a study along the lines of that undertaken for the border regions of the state of Tennessee in the US (Fox, 1986). The volume of cross-border trade in most consumer goods is likely to be relatively small compared to the national sales of such commodities. As a result, given the limited number of observations available, it is generally very difficult to identify the magnitude of cross-border trade using econometric methods. The exceptions are sales of spirits and television sets, where the evidence from the earlier chapters (in the case of spirits) and from informed media speculation suggests that the volume of cross-border trade could account for a significant percentage of national sales. One other commodity for which very limited regional sales data exist is petrol. The time series data for these three commodities, television sets, petrol, and spirits are analysed and the results are presented below. Attempts to apply a

similar methodology to sales of beer produced inconclusive results. (This does not mean that there was no cross-border trade in beer but rather that the econometric methodology was not sufficiently sensitive to pick up any such trade.) In the case of video tape recorders the volume of sales grew so rapidly in the 1980s that there are not sufficient observations to sustain the type of econometric analysis used in this chapter.

Section 6.2 examines the data on television sets. Section 6.3 considers sales of petrol in border areas. Sections 6.4 to 6.8 examine the cross-border trade in spirits and conclusions are set out in Section 6.9 of this chapter.

6.2 *Television Sets*

Quarterly data on sales of television sets in the Republic were obtained from the Revenue Commissioners for the period beginning the second quarter of 1979 and ending with the second quarter of 1986. The data only begin in 1979 as that was the year when excise taxes were first imposed. The data are available broken down into black and white sets and colour sets, cross-classified by size of screen. (This breakdown is due to the differing rates of duty on the different categories.) However, in this study we have used total sales of colour sets and the rate of tax on the most common category of colour sets (17 inch to 24 inch screens).

The tax on television sets in the Republic consisted of a special high VAT rate up to 1979. In that year the VAT rate was reduced to the normal rate and an excise tax imposed. Unfortunately, proper price series for television sets are not available for either the UK or the Republic for the relevant period. Benchmark data for the actual price of television sets in Northern Ireland and the Republic were obtained from the prices survey for early 1987. Using these observations as a benchmark, and the consumer price index for acoustic appliances from both countries, an estimate was obtained of the movement of the price over time. In turn, this was used to estimate the VAT payable on television sets in the two jurisdictions. However, it should be stressed that this is a very crude estimate.

The movement in the tax content of a television in the Republic relative to Northern Ireland is shown in Figure 6.1 (data on relative prices are not available). As can be seen from this figure the tax content in the Republic, which was already more than twice that in the North in 1980, rose steadily from 1981 to the third quarter of 1984. By then it was more than four times the level in the North. The reduction in the rate of excise duty on television sets in the Republic early in 1985 substantially reduced the ratio. However, because of subsequent changes in exchange rates, the ratio has tended to climb back up towards its previous peak.

The inverse of the tax ratio, the tax content in Northern Ireland relative to the Republic, is shown together with sales of colour television sets in the Republic

FIGURE 6.1
RELATIVE TAX ON TV SETS

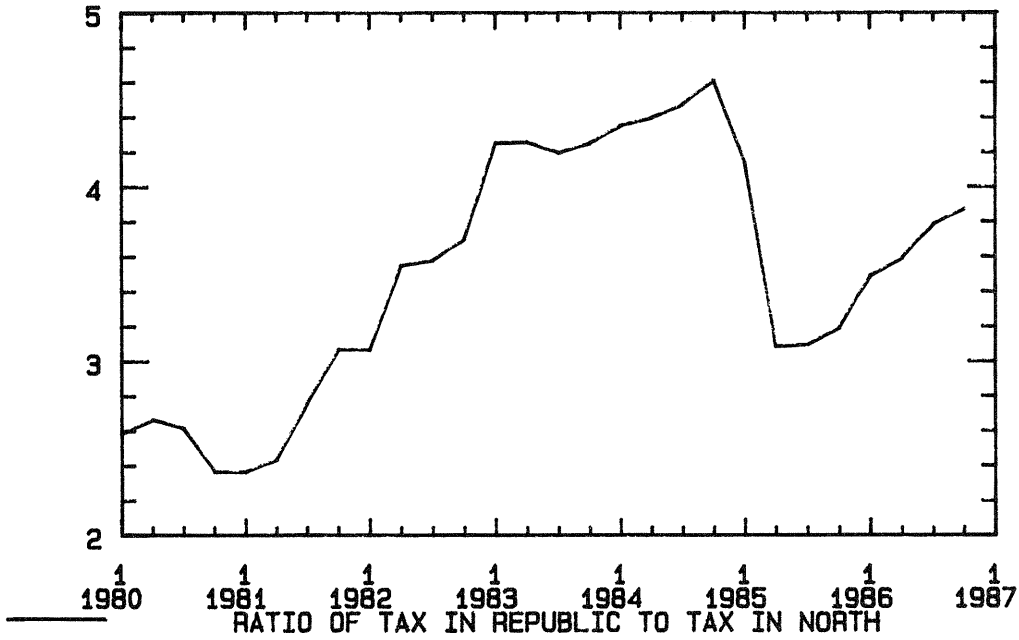
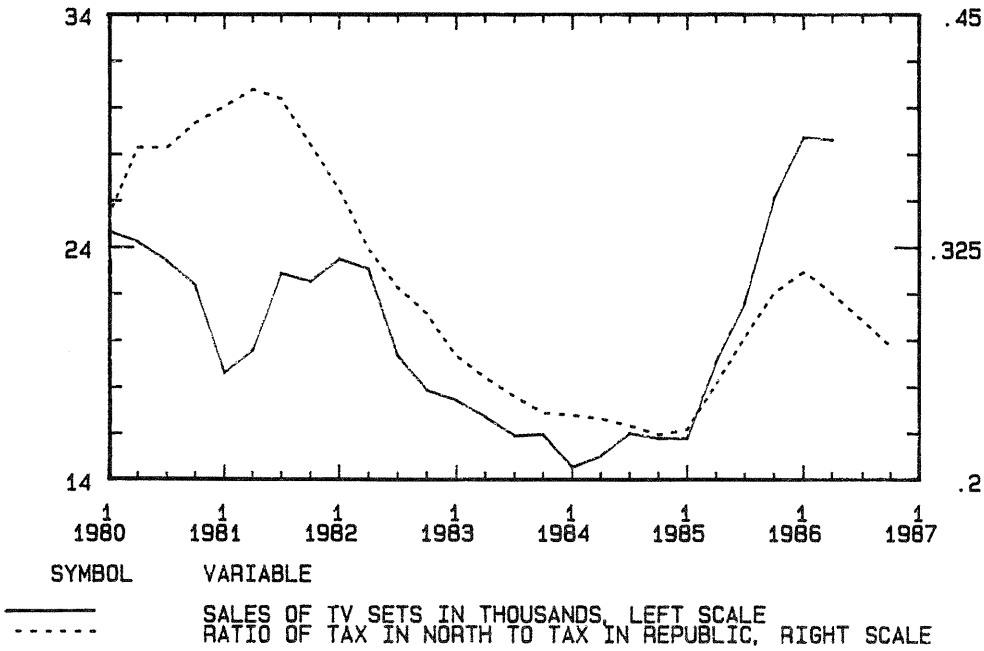


FIGURE 6.2
SALES OF TELEVISION SETS



in Figure 6.2. The data used in this graph are four quarter moving averages. Crude observation of these data would suggest that there is a relationship between the two series. The sales of television sets in the Republic fell as the relative tax content (North/Republic) fell. The reduction in the tax rate in the Republic at the end of 1984 coincided with a recovery in sales. To model the demand for television sets properly would require more satisfactory data for a much longer period (see McCarthy and Ryan, 1976). In principle any such model should take account of the fact that television sets are a durable household item. However, this was not possible in the case of this study due to the absence of satisfactory data. The results of applying a crude model to these data, for the limited period for which they are available, are shown below.

$$\begin{aligned} \text{Log(TV)} = & 34.50 - 2.80 \text{ log(C)} + 0.54 \text{ log(TAXTVUK)} - \\ & (1.8) \quad (1.2) \quad (1.2) \\ & 1.18 \text{ log(TAXTVRI)} \\ & (2.4) \\ & -0.33 \text{ D1} - 0.90 \text{ D2} - 0.86 \text{ D3} \quad (6.1) \\ & (1.8) \quad (4.4) \quad (4.6) \end{aligned}$$

$$\bar{R}^2 = 0.57 \text{ S.E.} = 0.30 \text{ DW} = 1.71 \text{ DFFITS} = 2.34$$

Where TV = Number of television sets sold.
 C = Consumer expenditure at constant 1980 prices,
 IR£M
 TAXTVUK = The tax on TV sets in the UK IR£.
 TAXTVRI = The tax on TV sets in the Republic IR£.
 D1,D2,D3 = Seasonal dummies.

The results of this equation are unsatisfactory as the sign on total consumers' expenditure is negative. It is quite implausible that increases in real purchasing power should reduce television sales. However, the signs on the two tax variables are correct and the coefficient on the domestic tax is significant. The results from this equation cannot be construed as firm evidence of the volume of cross-border trade in television sets. However, they are consistent with the existence of a significant tax induced trade.

The sales of television sets in the year ended the fourth quarter of 1985 were approximately 40,000 higher than in the previous 12 month period. The average tax chargeable on a television set in the Republic had fallen from 4.5 times the Northern level in 1984 to only 3.3 times it in 1985. If all of this increase had

been attributable to cross-border trade the total expenditure in Northern Ireland in 1984 would have amounted to approximately IR£10 million. By contrast the evidence presented in Chapter 4 suggests that the total expenditure on TV sets in Northern Ireland by residents of the Republic was only IR£0.5 million. However, as all such purchases were illegal, one would expect substantial underreporting from survey data. However, it is probable, that given the price differential, there was a substantial incentive for shops in the Republic to smuggle sets, sets which would not have appeared in domestic sales figures (or in the responses of households surveyed). As a result, it is probable that the survey data are a substantial underestimate, and the true volume of trade is closer to the level suggested by the time series data.

6.3 *Cross-Border Trade in Petrol*

Unfortunately detailed time series data on the volume of sales of petrol in border counties are not readily available for a reasonable period. We have obtained details from the petrol distributors of sales on an annual basis in border areas for the years 1982-6. They show that sales of petrol were as follows:

<i>Million Litres</i>				
1982	1983	1984	1985	1986
81.0	53.6	50.2	35.0	29.1

Over the same period there was no evidence of a significant drop in national sales while the price of petrol in the Republic rose from 115 per cent of the Northern price in 1982 to 137 per cent in early 1986. It seems highly probable that the bulk of this fall in sales was mirrored by increased purchases by residents of the Republic from Northern petrol stations in border areas. At the price current in Northern Ireland in 1986 this fall in sales would represent around IR£23 million. Given that the price in 1982 was above the Northern price, implying some cross-border sales in that year, this figure could be considered to be on the low side. However, as discussed in Chapter 4, the figure for sales of IR£23 million is almost identical to the figure of IR£22 million derived from the survey data. This figure would, as a result, appear to be a reasonable estimate of the cross-border trade in petrol in 1986.

6.4 *Cross-Border Trade in Spirits – Background*

For some time it has been known that a considerable cross-border trade has existed in spirits. The Government, recognising this problem, made a substantial reduction in the rate of excise duty chargeable on spirits in October 1984. However, in spite of this change, the tax content of a bottle of spirits sold in the Republic is substantially higher than in Northern Ireland (See Chapter 3

Table 3.3). Because of the high value for a given weight or volume of spirits, transport costs are low and it remains an attractive purchase North of the border for all those living in the Republic. However, restrictions on the quantity which can be imported legally by any one individual, without paying additional duty, mean that the potential savings from legal imports of spirits would not, on their own, warrant travelling long distances, due to the opportunity cost of shoppers' time. Taken together with potential savings from other goods the situation is rather different and spirits are likely to form an important component of all goods purchased in Northern Ireland by shoppers from the Republic. In addition, given the problems controlling illegal traffic, referred to in Chapter 1, the potential profit from smuggling such a high value item is considerable. Evidence from customs seizures reported in the media indicates that there is a significant level of such illegal trade.

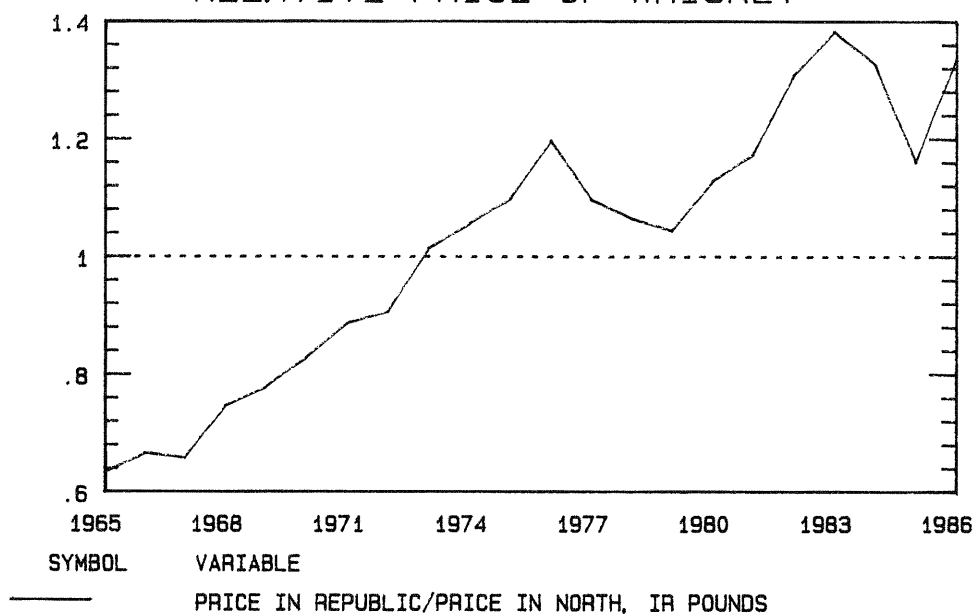
In the light of these considerations, the magnitude of cross-border trade in spirits can be expected to be quite large and should show up as a perceptible fall in domestic sales of spirits below the level they would otherwise have attained. The approach taken to such problems of cross-border trade in other studies has been to estimate the share of total sales on either side of the relevant border as a function of relative prices and incomes in the two jurisdictions. In the case of this study good data on sales of spirits are only readily available for the Republic. However, as discussed in Section 6.8 of this chapter, exports of bottled spirits to Northern Ireland have mirrored the growth in cross-border shopping and appear to have been induced by a preference by shoppers from the Republic for the brands of spirits which they normally buy in the Republic, generally spirits distilled in the Republic. This additional source of information is explored to improve estimates of the volume and sensitivity of cross-border trade.

Section 6.5 describes the trend in prices and tax rates North and South of the border over the past 25 years. The data used in the study are described in Section 6.6. The models used in the study are set out in Section 6.7 and the results obtained when they are applied to the available data are analysed in Section 6.8. Finally, these results are used to provide an independent estimate of the magnitude of cross-border trade in spirits and of the sensitivity of that trade to changes in relative prices.

6.5 *Trend in Relative Price of Spirits*

As can be seen from Figure 6.3, the price of a bottle of spirits in Northern Ireland was generally higher than in the Republic in the 1960s. This situation was changed in the mid – 1970s when the price in the Republic rose above that in the North. However, by 1979 the price in the two jurisdictions was very similar. As reviewed in Chapters 2 and 3, with the rapid increase in rates of indirect taxation in the Republic in the early 1980s, the price difference between

FIGURE 6.3
RELATIVE PRICE OF WHISKEY



the North and the Republic reached a new peak in 1983. While the cut in the rate of excise tax in the Republic in October 1984 reduced the discrepancy, this reduction was only temporary. The change in the rate of exchange between the United Kingdom and the Republic since that date, together with limited further increases in the rate of indirect taxation in the Republic, have restored the big price advantage of Northern shops. Table 6.1 shows the quarterly trend in prices in the two jurisdictions. As discussed in Chapter 3, only part of the discrepancy is accounted for by differences in tax rates. A significant factor has been the generally higher margins on spirit sales in the Republic.

These data show that, for the period from 1973 to the present, all the incentive for cross-border trade in spirits has been in favour of purchases in the North by residents of the Republic. Generally, in the period up to 1973, the incentive was in the other direction. Because of differences in the numbers, average incomes and possible differences in the tastes of the potential shopping populations in the two jurisdictions, the sensitivity of sales in the Republic to changes in relative prices is likely to differ depending on whether the advantage is in favour of shopping by residents of the Republic in the North or vice versa. This argues for modelling the 1973 to 1986 period separately from the earlier period.

Table 6.1: *Price of a Bottle of Whiskey (IR£)*

		REPUBLIC OF IRELAND	NORTHERN IRELAND
1979	Q1	5.2	4.9
	Q2	5.5	5.2
	Q3	5.7	5.7
	Q4	5.8	5.5
1980	Q1	6.5	5.9
	Q2	7.7	6.6
	Q3	7.8	6.7
	Q4	7.9	7.3
1981	Q1	8.8	7.9
	Q2	9.2	8.4
	Q3	9.6	7.9
	Q4	10.0	7.9
1982	Q1	10.3	8.2
	Q2	11.0	8.4
	Q3	11.2	8.7
	Q4	11.6	8.4
1983	Q1	12.4	7.9
	Q2	12.3	9.1
	Q3	12.3	9.3
	Q4	12.4	9.4
1984	Q1	12.5	9.3
	Q2	12.6	9.3
	Q3	12.7	9.3
	Q4	11.3	9.1
1985	Q1	11.0	9.1
	Q2	11.1	9.8
	Q3	11.1	9.8
	Q4	11.2	9.5
1986	Q1	11.5	8.9
	Q2	11.8	9.0
	Q3	11.9	8.8
	Q4	12.0	8.7

6.6 Data

The effects of price differences on cross-border trade in spirits was tested using two different sets of data: annual data derived from the National Accounts and quarterly data derived from a range of different sources. These two sets of data are not totally independent of one another. In particular, the quarterly and annual data on the price of a bottle of spirits in Northern Ireland come from the same source. However, the fact that much of the other data come from different sources and are prepared on different bases means that it is valuable to consider the quarterly and annual data independently and to model them accordingly.

The annual series for consumption of spirits in the Republic is taken from the National Accounts database in the Department of Finance databank. This series includes both consumption of spirits bought in off licence shops and

consumption of spirits consumed in pubs, bars, etc. No data are available on a time series basis which would allow a breakdown into sales in shops (off licences) and sales in pubs and bars. To the extent that there is a shift over time in the proportion of sales through these two types of outlets there may be a change in the recorded volume of sales. (This is due to the fact that the pubs have a substantially higher distribution and retail margin than sales through shops.) Two series were used for the price of spirits consumed in the Republic. The first of these series is derived from the Department of Finance databank by dividing the current price series for total consumption of spirits by the series at constant 1980 prices. The alternative series involved using an average of the quarterly price of a bottle of whiskey, the derivation of which is described below. (However, the estimation results indicated that the former series performed best.) The prices of beer and of all other consumer goods were derived from the Department of Finance databank of National Accounts series in a similar manner to that for spirits. The price of a bottle of spirits in Northern Ireland was obtained from the UK Report of Her Majesty's Commissioners for Customs and Excise (various issues). That publication gives the price of a bottle of whiskey whenever there was a change in the tax regime affecting sales of spirits. The implied net of tax price was interpolated and added to the tax content to give a monthly series for the price of a bottle of whiskey. (Because the tax content accounts for such a large part of the cost of a bottle, the errors involved in this derivation were felt to be relatively small.) This monthly series was averaged to give the quarterly and annual series used in estimating the different models. The use of a price per bottle of whiskey is more appropriate in the case of Northern sales than the aggregate price including bar sales. This is because of the fact that, for consumers in the Republic, the price of spirits sold in shops which can be transported to the Republic is obviously a closer competitor than sales of spirits drunk in pubs and bars in Northern Ireland.

The price of domestic consumption of spirits derived from the Irish National Accounts includes both the price of sales in shops and that of sales in bars. As sales in shops may be the closest alternative to sales in Northern Ireland, better results might be obtained by replacing this price deflator by the price of a bottle of spirits in shops in the Republic. However, no such series is readily available for the full period 1960 – 1984. Instead the tax content of a bottle of spirits in the Republic is used as an alternative indicator of the price in the Republic and a similar variable is used for Northern Ireland. These variables are derived using the data on excise taxes and VAT rates in both jurisdictions. (A crude estimate of the trend in the net of tax price was obtained using the National Accounts deflator. This was needed to calculate the VAT payable on the margin. As the net of tax price accounts for only 20 to 30 per cent of the total price, any errors in estimating this margin will have little effect on the derivation of

the tax content per bottle.) The price series and tax content series for Northern Ireland were adjusted using the exchange rate series obtained from the Department of Finance databank.

Unlike the annual data, there is no single major source of consistent quarterly data for consumption in the Republic. As a result, quarterly indicators on sales of spirits, the volume of total consumption and the prices of spirits and other goods are used from a range of sources. Data on sales of spirits were supplied by the Revenue Commissioners. These data cover clearances from bond and they generally give a good indication of domestic sales. However, care must be used employing these data due to the effects of expectations concerning future tax increases on such clearances. The variable date of the budget, together with changes in administrative arrangements concerning clearances from bond in the run up to a budget, means that this problem cannot be handled simply by seasonal adjustment. Instead the data have been aggregated to give quarterly consumption figures. This gets over some, but not all, of these problems. (For example, there were huge clearances from bond in the month immediately preceding the 1980 Budget which resulted in a significant reduction in clearances in the second quarter.)

These quarterly data were scaled so that the value of total sales in 1980 was equal to the National Accounts figure for domestic consumption of spirits. The price of a bottle of whiskey in the Republic was obtained from a range of sources. The National Prices Commission published the results of price surveys approximately once a year over the period 1975 to 1984. The figure obtained in the ESRI prices survey of February 1987 was used as a benchmark for the end of 1986. The source of the data on the price of a bottle of whiskey in Northern Ireland has already been described. The price of beer for the period 1975 to 1982 was obtained from the National Prices Commission surveys. From 1982 onwards the data were obtained from the file in the CSO databank on the consumer price index. The price of total consumption was proxied by the consumer price index. The volume index of retail sales was used as an indicator of the volume of total consumption. These last two series were taken directly from the CSO databank.

In addition to the above information, data are available on exports of bottled spirits to Northern Ireland from the detailed trade statistics. As discussed later, there is reason to believe that much of these exports went to supply the purchases by shoppers from the Republic in shops in Northern Ireland.

6.7 *The Models*

The basic tenets of consumer theory indicate that the volume of consumption of any individual commodity is a function of tastes, the price of the relevant commodity, the prices of all competing commodities and the level of income

(volume of total consumption). Obviously there are a vast range of goods competing for a share of each consumer's budget so that it is not feasible to incorporate the prices of all competing goods into the demand function for each individual commodity. Instead it is necessary to omit the prices of a range of different commodities or to aggregate the competing commodities into groups or subgroups. In the case of spirits, because of the potential importance of cross-border trade in recent years, we include the price of spirits in Northern Ireland as the most obvious competitor for domestic consumption of spirits. In addition we experimented with the inclusion of the domestic price of beer, the domestic price of other alcohol (wine) and the price of all other domestic consumption treated as an aggregate.

The fact that reliable data on the magnitude of cross-border trade are not available requires a slightly different approach in this study than that taken in many other studies of consumer demand in Ireland. It means that we cannot estimate the domestic demand for alcohol as part of a full consumer demand system. It also means that, to the extent that the measures of domestic income or consumption do not take account of the volume of cross-border purchases, the estimated coefficients may be biased. This is a particularly important consideration if it is desired to model consumption as a two stage decision making process where consumers first decide on their consumption of alcohol and then decide on how they allocate their expenditure across the different categories of alcohol (see Keegan, 1984 and Thom, 1985). In such a case the measure of domestic consumption of alcohol is likely to be seriously biased in the presence of significant cross-border trade.

A second potential problem with the presence of cross-border trade in spirits is that it is a potentially two way process. In the 1960s and the early 1970s there were times when the price differential would have favoured purchases of spirits in the Republic by residents of Northern Ireland. The measured domestic consumption of spirits would have included this trade. As a result, the measured domestic consumption of spirits would have to be modelled as a function of prices, income levels and populations North and South of the border. An example of such an approach is given in Fox (1986) where the share of consumption taking place on either side of a border is a function of relative prices and relative incomes in the two tax jurisdictions. In the case of this study, the problem has been overcome by confining the estimation of the relevant models to the period when the incentives were uniquely in favour of purchases in Northern Ireland, that is from 1973 onwards. (There was one quarter in 1979 when the price in the Republic fell below that in the North. However, the difference was small and the situation only lasted for a short period.)

Two models were used in this study. The first of these makes the volume of consumption of spirits a log linear function of prices and total consumption.

The second is based on the Almost Ideal Demand System (AIDS) of Deaton and Muellbauer (1980). Both models were applied to annual and quarterly data. However, for the reasons explained below, the log linear specification proved superior and the results from the AIDS model are only presented for a special case using quarterly data.

The log linear model took the form:

$$\begin{aligned} \text{LOG(CSP)} = & A1 + A2*\text{LOG(PCSP)} + A3*\text{LOG(PCSPNI)} + \\ & A4*\text{LOG(PCB)} + A5*\text{LOG(PCO)} + A6*\text{LOG(C)} + \\ & S1*D1 + S2*D2 + S3*D3 \end{aligned} \quad (6.2)$$

where:

CSP = consumption of spirits, constant 1980 prices, IR£ million.

PCSP = price index for domestic consumption of spirits.

PCSPNI = price index for sales of whiskey in shops in Northern Ireland in IR£.

PCB = price index for domestic consumption of beer.

PCO = price index for the rest of personal consumption. (When using quarterly data this is the overall consumer price index.)

C = total personal consumption at constant 1980 prices, IR£ million.

D1,D2,D3= seasonal dummies used when using quarterly data.

A1..A6 and S1..S3 = coefficients to be estimated.

Because of the potential problems with bias due to the omission of cross-border trade from the relevant budget variable, the AIDS model was only used in conjunction with the data on exports of bottled spirits to Northern Ireland. This approach assumes that all these exports are reimported into the Republic and that they constitute the bulk of such trade. This assumption is clearly very strong and the results from this exercise should only be used as a rough check on the results obtained from model 6.2. The AIDS model was applied to the allocation of domestic consumers expenditure between sales of spirits in the Republic and sales in Northern Ireland. The resulting elasticities are conditional on the total sales of alcohol and, as a result, do not take account of the substitution and income effects resulting from the change in the aggregate price of spirits facing domestic consumers. The resulting model is:

$$\begin{aligned} \text{CSPV/CSPTV} = & A1 + A2*\text{LOG(PCSP=PCSPNI)} + A3*\text{LOG(CSPT)} + \\ & S1*D1 + S2*D2 + S3*D3 \end{aligned} \quad (6.3)$$

where the variables are the same as in equation 6.2 with the exception of:

- CSPV = the value of domestic consumption of spirits at current prices, IR£ million.
- CSPTV = the value of total consumption of spirits including cross-border sales at current prices, IR£ million.
- CSPT = total sales of spirits, including cross — border trade, at constant 1980 prices, IR£ million.

Unlike the case of the loglinear specification of 6.2, the elasticity of domestic sales of spirits with respect to the price North and South of the border can not be read directly from the estimated results. The formulae for these elasticities are given in Fitz Gerald (1987).

While Thom (1985), has suggested that a dynamic specification is more appropriate to modelling the demand for alcohol, problems with the data rule out such an approach in the case of this study. In the case of the model using annual data, the restriction imposed by the need to exclude shopping by residents of Northern Ireland limits the number of observations to 12. In the case of the quarterly data there are additional problems, adverted to in the previous section, due to the effects of budgetary changes and varying administrative regulations.

6.8 Results

When the annual model was estimated for the full period 1960 — 1984 the results were unsatisfactory. This was to be expected given the fact that the data sample spans two very different peri-ods; in the period up to 1973 the incentive was for residents of Northern Ireland to shop in the Republic and in the latter period the incentive was in the opposite direction. The best results were obtained from using the tax content per bottle North and South rather than the relevant price deflators. Set out below are the results obtained when the loglinear model was applied to the re-stricted data sample. In this case homogeneity has been imposed so that a 1 per cent rise in all prices and tax rates, holding the volume of total consumption constant, will leave consumption of spirits unchanged.

$$\begin{aligned} \text{LOG}(\text{CS}) = & -1.35 - 1.31 \text{ LOG}(\text{TSP}/\text{PCO}) + 1.06 \text{ LOG}(\text{TSPNI}/\text{PCO}) + \\ & (1.3) \quad (3.3) \quad (2.1) \\ & 0.34 \text{ LOG}(\text{PCB}/\text{PCO}) + 1.08 \text{ LOG}(\text{C}) \quad (6.4) \\ & (0.7) \quad (4.0) \end{aligned}$$

$$\bar{R}^2 = 0.824 \quad \text{S.E.} = .055 \quad \text{DW} = 1.66 \quad \text{DFFITS} = 1.88$$

Where TSP = The tax content of a bottle of spirits sold in the Republic, IR£.

TSPNI = The tax content of a bottle of spirits sold in Northern Ireland IR£.

The fit of this equation is reasonably satisfactory, though the small number of degrees of freedom means that too much weight cannot be put on the regression statistics. The coefficient on the own tax content and on the Northern Ireland tax contents are significant. The coefficient on the volume of total consumption is also significant. The elasticities are reasonably plausible. In the case of a change in the own tax content of domestic consumption a 1 per cent rise would lead to a 1.3 per cent fall in the consumption of spirits. In the case of the Northern tax content, the elasticity is also high at 1.1 indicating a strong substitution effect. Given that the tax content of a bottle of spirits ranges between 70 and 80 per cent of the total cost of a bottle this result suggests that domestic sales of spirits are very sensitive to cross-border tax (and price) differentials.

This equation was used to examine the effects of the cross-border tax differential on the volume of trade in spirits. The equation's estimate of domestic spirits consumption in each year using the historical data was compared with its estimate when the Northern tax content per bottle was replaced by that in the Republic (i.e., no price incentive to shop in the North). Table 6.2 shows the result. Column 1 of the table shows the estimate of cross-border trade valued at the price paid in the North (in Irish pounds) by shoppers from the Republic. As can be seen from the table this equation suggests that the volume of trade peaked in 1983 at approximately IR£ 67 Million. This figure is very much larger than that suggested by the surveys discussed in the last two chapters.

Table 6.2: *Purchases of Spirits in the North, (IR£ million)*

	<i>PURCHASES IN NORTHERN IRELAND</i>	<i>TAX CHANGE FROM REDUCING TAX TO NI LEVELS</i>
1975.....	2.7	.0
1976.....	8.6	.0
1977.....	2.0	.1
1978.....	.6	.0
1979.....	8.3	.5
1980.....	24.1	.6
1981.....	38.3	1.8
1982.....	56.0	.7
1983.....	66.8	6.3
1984.....	59.1	4.2

In calculating the effects of a reduction in the rate of tax on spirits in the Republic a number of different factors must be taken into account. First, any cut in tax rates would lead to a loss of revenue from existing sales of spirits. Secondly, to the extent that such a tax reduction resulted in a substitution of

domestic sales of spirits for Northern sales the loss of revenue on existing sales would be partly offset by a rise in revenue from new domestic sales. Thirdly, because domestic spirits sales are directly competing against domestic sales of other goods, such as beer, any change in relative prices would result in some switching of domestic consumption to spirits with a consequential loss of revenue from sales of these other goods. Fourthly, it would also affect domestic purchasing power through its effects on the overall consumer price index. Finally, if tax exclusive prices remained different in the two jurisdictions it would clearly result in a smaller increase in domestic sales than this model implies. To take account of all these factors would require a much more comprehensive model of consumer behaviour and the indirect tax system than is contained in the single equation shown here.

Column 2 of Table 6.2 gives a very partial estimate of the effect on tax revenue of reducing the Irish tax content of a bottle of spirits to that prevailing in the UK. This estimate ignores the effects on revenue of increased real incomes and substitution away from domestic consumption of other goods liable to tax. (This estimate also assumes that the increased domestic consumption of spirits is all purchased from shops rather than pubs or bars.) As can be seen from the table, on the basis of Equation 6.4, the potential revenue loss from reducing the rate of tax would be more than offset by the additional revenue from trade diverted from Northern shops. (Given the statistical properties of the estimated equation, this must be seen as a “best” estimate. On the basis of these results it is possible, though less likely, that there would be a small revenue loss.) As the effect of reducing the price of spirits would be to divert expenditure from other domestic goods which generally have lower tax contents than spirits, it is likely that the revenue savings would be greater than shown in the table. (See Keegan, 1984). As against this, account must be taken of the possibility that tax exclusive prices would fail to come into line requiring lower tax levels in the Republic than in the North to equate tax inclusive prices.

Using the same basic specification as Equation 6.4, an equation for domestic demand for spirits was estimated using quarterly data. The time period chosen was the first quarter of 1978 to the fourth quarter of 1986, omitting the first and second quarters of 1980. As discussed earlier these two quarters were omitted due to the effects on them of anticipatory purchases of spirits prior to the 1980 budget. This time period still includes some quarters when domestic consumption was significantly affected by changing administrative regulations. (To avoid these problems the equation was tested using a truncated sample beginning in the first quarter of 1982. This did not significantly alter the results.)

Data sample: 1978 1 to 1979 4 and 1980 2 to 1986 4.

$$\begin{aligned} \text{LOG}(\text{CS}) = & -3.63 - 1.28 \text{ LOG}(\text{PCSP}/\text{PCB}) + 0.98 \text{ LOG}(\text{PCSPNI}/\text{PCB}) + \\ & (0.7) \quad (4.4) \qquad\qquad\qquad (3.4) \\ & 1.20 \text{ LOG}(\text{C}) - 0.64 \text{ D1} - 0.57 \text{ D2} - 0.39 \text{ D3} \qquad\qquad (6.5) \\ & (1.5) \qquad\qquad (9.5) \qquad (8.0) \qquad (6.1) \end{aligned}$$

$$\bar{R}^2 = 0.882 \quad \text{S.E.} = .117 \quad \text{DW} = 2.42 \quad \text{DFFITS} = 1.41$$

While the adjusted R square for this equation is better than for Equation 6.4, which uses annual data, the standard error is somewhat higher. However, in the case of this equation the number of observations is substantially greater and, as a result, the results are likely to prove more stable. (In fact testing with different subsamples of the data did not significantly alter the coefficients.) The Durbin Watson statistic is in the inconclusive region and one would have preferred a dynamic specification. However, experimentation with different lag structures proved unsatisfactory. Attempts to model the demand for spirits using different models of expected prices were also less satisfactory than the model using actual prices.

The estimate of the own elasticity of demand for domestic sales of alcohol is very close to that obtained using annual data. The cross elasticity is also very similar. In both cases the coefficients (elasticities) are significantly different from zero. The income elasticity (the elasticity with respect to the consumer's budget or total consumption) is not significant and the income elasticity is substantially higher than that obtained using annual data. The cross — elasticity with respect to beer is 0.30 indicating that beer and spirits are substitutes. (When the consumer price index was included in the equation as a proxy for the price of all other goods, all the coefficients, barring the seasonal dummies, were insignificant. As a result, it was omitted in the chosen specification discussed here.) The seasonal dummies, which are highly significant, indicate that, as might be expected, sales of spirits peak in the last quarter of the year.

Using the same approach as that adopted for the annual data, this equation was used to estimate the volume of cross-border trade in spirits. When the price of a bottle of spirits in the Republic was substituted for the Northern price in the equation (assuming that the two prices were equal) the resulting estimate of domestic consumption was increased and the difference between these two figures was taken to be an estimate of the volume of cross-border trade. In Table 6.3 the resulting estimate is compared to the figure for domestic consumption, all at constant 1980 prices. This shows that in 1983 and again in 1986 approximately a quarter, by volume, of spirits drunk in the Republic are likely

Table 6.3: *Purchases of Spirits in Northern Ireland as % of Volume of Total Purchases, (constant 1980 prices)*

	REPUBLIC	PURCHASES IN NORTH. IRL.	TOTAL	NORTH AS % OF TOTAL
	IR£ M	IR£ M	IR£ M	
1978.....	254.5	13.1	267.7	4.9
1979.....	268.4	11.4	279.9	4.1
1980.....	239.2	27.6	266.8	10.3
1981.....	221.4	40.6	262.1	15.5
1982.....	191.5	59.3	250.8	23.6
1983.....	180.4	64.7	245.1	26.4
1984.....	189.5	56.9	246.4	23.1
1985.....	225.8	35.3	261.0	13.5
1986.....	192.5	64.3	256.9	25.0

to have originated in Northern Ireland. Table 6.4 gives the estimated actual expenditure on spirits in Northern Ireland by residents of the Republic. In this case the volume of trade, derived from the equation, has been converted to current prices and valued at the price of a bottle of spirits in Northern Ireland (i.e., the price paid by the shopper from the Republic.) To the extent that the cross-border trade is accounted for by smuggling in large quantities, bought at wholesale prices, this would overestimate the value of the trade. As can be seen from the table, for the period covered, the value of cross-border trade in spirits peaked in 1983 at £56 million. In October 1984 the tax on spirits was reduced to counter this trade and the effects, on a full year basis, can be seen in the decline in the estimated value of the trade to £33 million in 1985. However, chiefly because of changes in the Sterling-Irish Pound exchange rate, the price differential opened up again in 1985. On the basis of the equation, the value of cross-border trade climbed again in 1986 to nearly £55 million, almost equal to its peak 1983 value. This total would represent approximately 20 per cent of the total expenditure on spirits by residents of the Republic.

Table 6.4: *Purchases of Spirits in Northern Ireland as percentage of Total Purchases by Value*

	PURCHASES IN NORTH. IRL.	AS % OF TOTAL
	IR£ M	
1978.....	5.9	3.5
1979.....	5.8	3.1
1980.....	17.6	7.8
1981.....	31.4	12.3
1982.....	48.1	19.5
1983.....	55.6	24.6
1984.....	50.8	19.6
1985.....	32.5	11.2
1986.....	54.7	20.2

Column 2 of table 6.5 shows exports of bottled spirits to Northern Ireland over the period 1979 to 1986 valued at the retail price of a bottle of spirits in Northern Ireland. As can be seen from these data there appears to be a reasonably close relationship between this series and the model's (Equation 6.5) estimates of cross-border trade. The seasonal pattern in the export data is rather different with evidence of restocking in the first quarter, possibly due to unexpected sales in the previous quarter. This relationship tends to bear out the hypothesis that the bulk of these exports of bottled spirits are purchased in Northern Ireland by shoppers from the Republic.

If it is assumed that these export data provide an adequate measure of cross-border trade they can be used to estimate an AIDS model of such trade. However, the results obtained from such a model will obviously be highly dependent on the data and should only be used to supplement the results described above. Set out below are the results from estimating such a model where consumption of spirits in the Republic, whether purchased North or South of the border, is assumed to be a weakly separable subgroup. The results from this model are not strictly comparable to those shown above in that they do not allow for the effects of substitution between the alcohol subgroup and all other goods which compete for a share of the consumer's budget.

The data period used was: 1979 1 to 1986 2.

$$\begin{aligned} \text{CSP/CSPTV} = & 0.81 - 0.21 \text{ LOG(PSP/PSPNI)} + 0.027 \text{ LOG(CSPT)} - \\ & (6.5) \quad (2.4) \qquad \qquad \qquad (1.0) \\ & 0.21 \text{ D1} + 0.12 \text{ D2} + 0.13 \text{ D3} \qquad \qquad \qquad (6.6) \\ & (2.0) \qquad \quad (0.6) \qquad \quad (0.8) \end{aligned}$$

$$\bar{R}^2 = 0.69 \quad \text{S.E.} = 0.027 \quad \text{DW} = 1.86 \quad \text{Rho} = 0.50 \quad \text{DFFITS} = 1.08 \\ (2.8)$$

Where CSPTV = The estimated value of total spirits consumption in the Republic, IR£ Million.

CSPT = The estimated value of total spirits consumption in the Republic at constant 1980 IR£ Million.

While the coefficient on the relative price term is significant the equation is not as satisfactory as Equation 6.5. The presence of autocorrelation in such an equation may indicate misspecification. Given the value of the T statistic on the third term in the equation, the income elasticity is not significantly different from one. Unlike the log linear specification, the elasticities cannot be read directly from this equation. While they are also variable over time, the variation is, in

Table 6.5: *Estimates of Cross-Border Trade*

	<i>IR £ Million Using Equation 6.5</i>	<i>IR £ Million Export of Bottled Spirits</i>
1978 Q1.....	1.9	NA
Q2.....	1.8	NA
Q3.....	1.4	NA
Q4.....	0.7	NA
1978 Total.....	5.8	NA
1979 Q1.....	1.3	3.2
Q2.....	1.6	3.5
Q3.....	-0.2	1.1
Q4.....	3.0	1.6
1979 Total.....	5.7	9.4
1980 Q1.....	2.6	4.6
Q2.....	4.9	1.7
Q3.....	5.6	2.8
Q4.....	4.6	2.0
1980 Total.....	17.5	11.1
1981 Q1.....	3.8	5.5
Q2.....	3.6	2.7
Q3.....	8.7	3.1
Q4.....	15.0	8.0
1981 Total.....	31.1	19.3
1982 Q1.....	7.6	10.7
Q2.....	9.3	4.3
Q3.....	10.8	6.1
Q4.....	20.3	11.4
1982 Total.....	48.0	32.5
1983 Q1.....	12.8	10.6
Q2.....	10.6	8.2
Q3.....	12.4	10.0
Q4.....	19.9	17.1
1983 Total.....	55.7	45.9
1984 Q1.....	10.1	13.7
Q2.....	11.2	6.2
Q3.....	13.4	10.9
Q4.....	15.9	16.6
1984 Total.....	50.6	47.4
1985 Q1.....	6.9	10.1
Q2.....	5.4	8.2
Q3.....	6.6	8.5
Q4.....	13.3	13.3
1985 Total.....	32.2	40.1
1986 Q1.....	9.1	8.8
Q2.....	10.2	9.7
Q3.....	13.5	NA
Q4.....	21.7	NA
1986 Total.....	54.5	NA

this case, relatively small. Finally, they are conditional on the total value of spirits consumption remaining unchanged in the face of a change in relative prices, an unrealistic assumption. On this basis the elasticities for the second quarter of 1986 are as follows:

Own elasticity	-1.27
Cross elasticity with respect to	
Northern Ireland	0.24
Budget elasticity	1.03

Even allowing for the restrictive nature of this model, which results in an underestimate of the price elasticities compared to Equation 6.5, the elasticity with respect to the Northern price seems low. This may be due to defects in the data or the bias inherent in using such unsatisfactory data to estimate such a specification. Clearly, if the estimate of cross-border trade is incorrect it will affect both the dependent variable and the measure of total spirits consumption used in the equation. As a result, the estimate of the price elasticities obtained from Equation 6.5 are to be preferred to the results from this equation, in spite of this equation's superior theoretical basis.

6.9 *Conclusions*

The results presented in this chapter for the sensitivity of domestic consumption of spirits to domestic price and volume changes are not directly comparable to earlier studies because of the explicit treatment of the potential for cross-border trade. However, the elasticity with respect to total expenditure derived from the preferred equation (6.5) is comparable and close to that of Thom (1984). The estimated own price elasticity is also close to the lower bound estimate of Thom and the estimate of Keegan (1984). Thus even given the rather different basis of the model used in Equation 6.5, its results are in line with those of earlier studies. Unfortunately there are no previous studies of the demand for TV sets or petrol in border areas which can be compared to the results presented in this chapter.

This chapter found that there was no evidence in the time series data of a substantial cross-border trade in beer. This does not mean that such a trade does not exist but, rather, that it is not detectable using the methodology outlined in this chapter. Given the unsatisfactory nature of survey based evidence on the pattern of private consumption of alcohol, including beer, the case on beer must be "not proven" rather than "not guilty".

The analysis of the time series data on television sets suggested that there may be a substantial cross-border trade in this commodity. Sales in the Republic rose by IR£10 million following on the reduction in the rate of tax in 1984.

However, there may have been other factors affecting this increase. The evidence from the surveys is rather different, indicating that trade in TV sets amounted to significantly less than IR£1 million in 1986. However, as outlined in Chapter 4, there is reason to believe that the surveys should underestimate the trade in this commodity as households are reluctant to admit to illegal trade. In addition, a significant part of this smuggling trade may have been carried out on a commercial basis which would not appear in a survey of households. On balance, it would appear that the cross-border trade in TV sets amounts to at least IR£5 million.

In the case of petrol the evidence from the limited time series data analysed in this chapter tends to confirm the survey based estimate of cross-border trade amounting to IR£22 Million.

For spirits the time series evidence is quite strong and suggests that there is a very large illegal cross-border trade. This conflicts with the survey results. However, as with TV sets, these two estimates may be reconcilable if the illegal trade is assumed to be undertaken on a commercial rather than a household basis. Given the magnitude of the estimates based on the time series data, it is clear that the bulk of the trade would have to be on such a commercial basis with professional smugglers selling to trade outlets. On this basis we would estimate that the value of the cross-border trade in spirits in 1986 amounted to around IR£55 million Irish.

Because of the limited nature of the data available it was not possible to estimate the sensitivity of cross-border trade to price differentials of varying sizes. In each case the models used would suggest that the trade would decline in line with the price differential. However, one may surmise that as the domestic price approaches the Northern price the trade may fall off more than proportionately and that a long-term price difference of a few percentage points might not result in substantial cross-border shopping.

These results would indicate that the significant cut in the rate of tax on TV sets and spirits in the Republic in late 1984 resulted in a substantial increase in domestic sales over the level they would otherwise have been, which went a long way to offsetting the loss in revenue arising from the lower tax rates. Given the changes in exchange rates in 1985/86, without this reduction in taxes, the cross-border trade in spirits and TV sets would have risen to new heights in 1985. The results would also suggest that a further substantial cut today in the tax on spirits would be close to self-financing. The situation is less clear for TV sets though it is probable from the 1984 experience that a cut in tax here would also be close to self-financing. The volume of cross-border trade in petrol is small compared to total sales in the Republic. As a result, the loss of revenue from a reduction in the rate of tax would receive little offset through a fall in such cross-border trade.

Chapter 7

CONCLUSION

7.1 Introduction

This chapter presents the conclusions of the paper. In Section 7.2 it summarises the results set out in Chapters 2 to 6. The effects of differences in tax rates on the price differential between The North and the Republic are examined. This section integrates the results obtained from the surveys, discussed in Chapters 4 and 5, with the results obtained in Chapter 6 from the econometric analysis of time series data. It estimates the total value of cross-border trade in consumer goods in 1986. It also considers the sensitivity of this trade to changing price differentials. In Section 7.3 of this chapter the policy implications of these results are considered. In Section 7.4 some suggestions for further research are set out.

7.2 Results

In Chapter 2 we documented the rise in consumer prices relative to those in the North (and the UK) over the last 10 years. We showed how, for a wide range of goods, prices in the Republic were substantially higher than in the North in 1987. In October 1987 EC purchasing power parity data showed consumer prices in Ireland to be approximately 15 per cent above those in the UK. However, these data also suggest that the UK is the most competitive market in Northern Europe and that Irish prices for goods not liable to excise taxes are not greatly out of line with those in other neighbouring members of the EC. The results of the analysis indicate that the gap between prices in the Republic and the North tended to widen in 1985 and 1986. However, there are some indications that this trend may have been reversed in the second half of 1987.

The reasons for this disparity in prices between the North and the Republic were discussed in Chapter 3. The single most important reason was the rapid rise in rates of indirect taxation in the Republic over the relevant period. This rise occurred primarily in the 1980 to 1985 period. However, given the specific rather than ad valorem nature of excise taxes and their importance in the tax system, the devaluation of Sterling vis-a-vis the Irish pound in the 1985-86 period tended to increase excise taxes in Ireland expressed in Sterling terms. The fact that indirect taxes are higher in the Republic than in the North does not mean that all of the cost of these taxes will be passed through to consumers in higher prices. Some of the incidence of the tax may fall on manufacturers or distributors.

However, using the ESRI Medium-Term Model, the results presented in Bradley (1988) suggest that most of the incidence of indirect taxes falls on the consumer, raising domestic prices. Even allowing for a less than full pass through of indirect taxes to consumer prices it is clear that higher VAT and excise tax rates have been the major reason for prices in the Republic rising well above those in the North in the early 1980s and remaining there today.

However, as shown by the surveys of the National Prices Commission, up to 1985 the tax exclusive price of many goods remained fairly similar in the two jurisdictions. (An exception was the price of spirits.) Over the period 1985-87 this situation changed. With the devaluation of Sterling, tax exclusive prices in the Republic did not adjust downwards (or upwards in the UK). As a result, in 1987 tax exclusive prices were, in general, significantly higher in the Republic than in Northern Ireland. The evidence from a number of sources, described in Chapter 3, indicates that this growing disparity in tax exclusive prices was due to a slow adjustment of prices to changes in the exchange rate. This is not a new phenomenon. The failure of purchasing power parity (prices adjusting to exchange rates) to hold in the short term is the norm rather than the exception in other countries. This slow adjustment of prices has meant that margins of manufacturers or distributors selling in the Republic have increased. The evidence suggests that retail margins have not been greatly affected. In the longer term we would expect that the tax exclusive prices would move slowly back into line if there were no further changes in exchange rates. The evidence discussed in Chapter 3 suggests that this process was under way in late 1987.

The fact that prices have been substantially higher in the Republic than in the North over the 1980s has meant that there has been a continuing incentive for residents of the Republic to shop in the North. It has also meant that there has been a strong incentive for commercial smuggling of certain goods, especially those liable to excise taxes on which the biggest price differences exist. As shown in Chapter 5, households interviewed in early 1987 had, if anything, an exaggerated perception of the difference in prices between the two jurisdictions. It is this perceived difference in price which stimulates the cross-border shopping.

In Chapter 4, on the basis of direct answers by households interviewed, it was estimated that IR£42 million was spent in Northern Ireland by households from the Republic in the second half of 1986. (Of this total, IR£29 million was attributable to households living in the 6 border counties.) Assuming no seasonal variation this would translate into IR£84 million on an annual basis. While Christmas is normally a seasonal high period for expenditure, there is reason to believe that the estimate derived from the survey data is conservative. Recall by households of their level of expenditure in the early Autumn may well have been unsatisfactory. The experience of the interviewers and the internal evidence of the survey suggests that households avoided admitting to any illegal

expenditure: this will have affected the reporting of expenditure on substantial durable items, such as television sets.

Using the answers by households in border counties to questions concerning the proportion of expenditure on different items accounted for by cross-border shopping, a much higher estimate of this trade was derived. These data would imply an annual figure for cross-border shopping by all households of around double the estimate obtained from the direct answers, i.e., approximately IR£150 million. This higher figure tends to confirm the fact that the estimate derived from the direct answers of households seriously underestimates total expenditure.

A special survey was carried out by the Customs and Excise authorities in 1986. This involved questioning shoppers crossing the border on four Saturdays in the year. On this basis, they arrived at an estimate of cross-border shopping of over IR£300 million. However, as Saturday is the peak shopping day, this sample is not representative of cross-border shopping generally and the estimate derived from it is likely to greatly exaggerate the volume of such shopping activity.

The evidence from the analysis of the time series data indicates that there is significant commercial smuggling of certain consumer goods, in particular spirits and television sets. Taken together the value of the purchases of these two items in 1986 was estimated at around IR£60 million. The evidence from the time series data on trade in petrol provided independent confirmation of the annual estimate of IR£22 million obtained from the survey. The time series data did not furnish any evidence on the volume of cross-border trade in either beer or video tape recorders.

Taking the two sets of data together, and making allowances for underestimation by households, our best estimate of the overall magnitude of cross-border trade in consumer goods in 1986 is around IR£200 million (2 per cent of personal consumers' expenditure). However, considerable uncertainty surrounds this estimate and the actual value of trade could lie in a range IR£150 million to IR£250 million. This is considerably less than the figure of IR£300 million produced by the survey of the customs authorities, which is widely quoted in the media. It includes both the expenditure by households on shopping expeditions to the North and the estimate of smuggling on a commercial basis of certain consumer goods obtained from the time series data. It does not include the legal import of goods by retailers who may be bypassing domestic distribution channels due to higher tax exclusive prices in the Republic.

The survey undertaken in Northern Ireland, described in Chapter 4, indicated that total expenditure in the Republic by shoppers from Northern Ireland was IR£7.0 million in 1986. The bulk of this expenditure went on clothing, the tax on which is currently lower in the Republic than in the North.

Since we carried out our survey in January and February 1987 the Government, in its March 1987 Budget, introduced the 48 hour rule restricting

shopping in the North (and in the rest of the EC). We have no direct evidence of what the effects of this measure have been. The limited information available from the media and discussion with the retail trade suggests that this measure had its most marked effect on shopping patterns of those furthest from the border. As those living within 15kms of the border continue to have a restricted shopping allowance, the impact on them was probably less significant. Some evidence supporting this view is provided by the results of a limited survey undertaken in Castleblayney, County Monaghan, by Mr. Alan Gibbons of Our Lady's Secondary School in that town.⁶ On the basis of the evidence available it would appear that the change in regulations did bring about a significant reduction in crossborder shopping, especially by those living far from the border, but that the volume of such shopping by border households still remains substantial. Clearly the change in regulations will have had little effect on commercial smuggling.

The fact that the total estimated expenditure by households in the Republic is slightly lower than might have been expected on the basis of media comment should not detract from the serious implications of this trade for border areas. The bulk of the trade by households is concentrated among those living in border counties of the Republic. While, due to convenience factors, one would expect quite significant cross-border shopping by such households even without price differentials, the magnitudes reported in the study go far beyond this. Two-thirds of all petrol consumed by households living in border counties which shopped in the North (46% of the total) was bought North of the border. For these households almost all alcohol bought for consumption at home was bought in the North. Approximately two-thirds of certain consumer durable items and toys were bought there. In total, the cross-border shopping of households in border areas in 1986 accounted for nearly 10 per cent of their total expenditure. Clearly, the effects of such a pattern of shopping on the retail sector in these counties is very severe in terms of turnover, profits, wages, and employment. It must also have had some effect on certain other sectors of the local economy such as restaurants and hotels.

It is not possible to work out the effect of this cross-border trade on tax revenue in the Republic without a much more complex model of how consumers allocate their budgets. If they were not able to shop in the North they would face much higher prices for some of those goods which they currently buy in the North. As a result, they would alter their spending patterns. In addition, their disposable income would be reduced because of the increase in the effective level of prices which they would face. If one ignores these effects and assumes that the goods purchased in the North in 1986 had been purchased in the Republic, Government

6. The survey was reported at the Young Scientist Exhibition in January 1988 and involved interviews with 100 persons in the town. Only a small proportion claimed to be affected by the 48 hour rule.

revenue would have been higher in the Republic by around IR£100 million. However, the actual amount received by the Government from such a change in trade patterns would have been much lower for the reasons stated above.

Survey data collected at one point in time do not, by their nature, allow a direct estimate of the sensitivity of the cross-border trade to changes in price differentials. However, the extent to which the volume of such trade falls with distance from the border, and households' own estimate of savings required to justify travelling, does give some indirect evidence of the sensitivity of household behaviour. The fact that approximately half of the petrol purchases of households who lived between 15 and 30 miles from the border and who shopped in the North was made in the North is striking. Given the households' estimate of the savings required to justify travelling North (IR£0.42 per mile), and given the expected savings on a tank of petrol, trips across the border by these households merely to buy petrol could be expected to show a substantial reduction if the price differential were halved. (It would not be profitable to travel North merely to buy petrol.) The purchases of petrol by households living between 6 and 15 miles from the border would also be significantly affected by such a cut. A similar argument applies in the case of purchases of food and groceries. However, for alcohol and consumer durables, such as television sets, the potential savings per unit are large. As can be seen from the data, this justifies consumers travelling much longer distances. For these items, the required reduction in price differential to stem such trade may be quite substantial. In particular, where commercial smuggling is concerned, the costs of travel are likely to be small compared to the other costs involved in the trade.

The evidence from the analysis of the timeseries data shows that, at a national level, the sales of alcohol and TV sets are quite sensitive to changes in the price differential between the North and the Republic. The estimated elasticity of substitution of spirits with respect to the Northern Ireland price is high and very close to the elasticity with respect to the (own) price in the Republic. This indicates that there is a very high degree of substitutability between purchases in the Republic and in the North.

7.3 Policy Implications

The results of this study indicate the central role of differences in relative prices in driving the cross-border shopping trade. The single biggest factor giving rise to the higher prices in the Republic is the difference in rates of indirect taxes. However, the rates of indirect taxes were increased over the first half of the 1980s due to wider economic considerations and these wider considerations must be taken into account in discussing policy for the future. It is not sufficient to establish that high indirect taxes give rise to cross-border trade. It is necessary to take

account of the costs which would arise from the use of any alternative form of tax which might partly substitute for VAT and excise taxes.

One approach, adopted in the March 1987 Budget, is to try and control the distortions arising from the high taxes by administrative regulation. Apart from the question of their long-term acceptability in the EC, they only provide a partial solution to the problem. They are at their least effective in dealing with commercial smuggling.

The analysis carried out in this study suggests that, even without the requirements of the completion of the internal Community Market, there is a need for greater harmonisation of the Republic's tax system with that in Northern Ireland. The reform of the indirect tax system must be given higher priority for the future. In the case of spirits and television sets the level of commercial smuggling is sufficiently large that a reduction of tax levels in the Republic to those in the North would be likely to leave total domestic tax revenue relatively unchanged. As such, the immediate implementation of reform in this area would not conflict with the requirements of overall budgetary policy. This is unlikely to be the case for any other commodities. However, the distortions to trade in other commodities in border counties is sufficiently large to give serious cause for concern. This is particularly true in the case of petrol where the distortions arising from the tax system have forced many petrol stations operating close to the border to close down.

In the longer term, the completion of the internal market implying, as it does, the ending of all restrictions on cross-border trade, clearly has major implications for the Irish indirect tax system. The evidence, presented above, suggests that for everyday items and goods which are difficult to transport or store quite significant cross-border price differentials are possible without seriously affecting the shopping patterns of private individuals outside border counties. However, the situation is different for items such as consumer durables. Where there are large savings to be made on a particular item which has a high value (e.g., electric cookers, TV sets, etc.) it may be worthwhile for a private individual to travel long distances to avail of a lower VAT rate.

In the case of traders small differences in VAT rates should not result in trade distortions as the VAT rate on final sale will be determined by the location of the retailer. However, there are other ways in which the complete freeing of trade could have a serious impact on the retail and wholesale sectors. While this study does not examine the sensitivity of this trade to price differences, it is clear that for retailers and wholesalers, wherever they are located in the Republic, the existence of even a small price differential caused by factors other than VAT rates will be enough to cause them to shift their source of supplies North of the border. As outlined above, this has already happened to a significant extent on an illegal basis for spirits. It is this factor which makes the harmonisation

of the indirect tax systems North and South of the border an essential prerequisite for completing the internal market (see Fitz Gerald, 1986).

One final issue which is raised by the results of the price surveys, described in Chapter 3, is the question of what causes the price differential between the Republic and Northern Ireland. That chapter shows that only part of the current price differential is due to the difference in tax rates in the two jurisdictions. It is not clear how long the tax exclusive price differential will persist. The completion of the internal market may affect these price differences in two ways.

It may result in an approximation of both tax inclusive and tax exclusive prices. Domestic retailers will, in theory, have access to the wholesalers in the North at current Northern trade prices. To the extent that tax exclusive prices are higher in the Republic because of higher margins of UK exporters or the margins of Irish importers this should allow a reduction in prices in the Republic. At present, given the price differential for many items, this could significantly improve the lot of consumers in the Republic. To the extent that Irish manufacturers (and distributors) are benefiting from the higher margins there could obviously be a cost in terms of domestic employment which would partly offset the gains to consumers. However, the evidence suggests that a substantial part of these costs would be borne by UK manufacturers. (An alternative scenario is that UK producers and distributors cease subsidising the transport costs for goods sold in the North and that prices rise in the North in consequence. In this case consumers in the Republic would obviously reap no benefits though retailers in border areas would be competing on equal terms with their Northern counterparts.)

The alternative is that agreements which grant exclusive import licenses and restrict maintenance on durables bought outside the jurisdiction could cause considerable problems in such a free internal market. They could effectively prevent the convergence of tax exclusive prices and could seriously distort trade. The recent report of the Restrictive Practices Commission and evidence given to RTE's *Today Tonight* programme on 24/2/1988 indicates that there are currently major problems for retailers in parallel importing. It is, therefore, important that the relevant Directorate of the European Commission give urgent consideration to this aspect of the completion of the internal market. Certainly, if there is not a rapid approximation of tax exclusive wholesale prices on the completion of the internal market this would have very serious implications for the distribution trade in Ireland.

Finally, it should be noted that this problem is not unique to the Republic of Ireland. The purchasing power parity data make clear that this difference in tax exclusive prices between member states of the Community is the rule rather than the exception. As a result, the problems set out here will affect all member states to a greater or lesser degree.

7.4 *Further Studies*

The disadvantage of the survey data presented in this paper is that they were collected over a short time and do not span a period of varying prices. This approach was necessary given the need to obtain a consistent sample. As a result, these data do not allow a direct estimate to be made of the sensitivity of cross-border trade to changing relative prices. It would, therefore, be useful if a second survey could be carried out of households in border areas at a time when price differentials had changed from their early 1987 level.

As outlined in Chapter 6, the effects of changing relative prices on the pattern of consumption, and hence on Government revenue, is complex. To estimate the full effects of the completion of the internal market and the necessary harmonisation of tax rates on the Irish economy would require a more sophisticated approach than was possible in this study. It would require the estimation of a complete model of consumer demand (see Keegan, 1984). The results of such a model could be incorporated in the ESRI's Medium Term Model (See Bradley et al., 1985) to estimate the full economywide effects of the changes in the tax system.

The behaviour of consumer and wholesale prices clearly needs further examination. As outlined above this has important implications for the process of completing the internal market. The process of price determination in Ireland, which was examined extensively in the 1970s (see Geary, 1976 and Bradley, 1977) clearly needs to be examined again in the context of Ireland's membership of the EMS. In addition, the difference in tax exclusive prices needs to be examined in a wider Community context, possibly covering the UK, the Republic of Ireland and either France or Belgium.

REFERENCES

- BRADLEY, J., 1977 "Lags in the Transmission of Inflation" *The Economic and Social Review*, Vol. 8, No. 2, January.
- BRADLEY, J., 1988. "Competitiveness and Output: What Empirical Models Show" in D. McAleese (ed.) *How Can Irish Industry Become More Competitive?*, forthcoming.
- BRADLEY, J., C. FANNING, C. PRENDERGAST, and M. WYNNE, 1985 *Medium-term Analysis of Fiscal Policy in Ireland: A Macro-Econometric Study of the Period 1967-1980*, The Economic and Social Research Institute, General Research Series, Number 122.
- Central Statistics Office Ireland. 1987, "Economic Series"
- Central Statistics Office, Ireland 1982. "Household Budget Survey, 1980, Vol. 1 – Summary Results".
- Commission on Taxation Third Report 1984 on "Indirect Taxation". Commission of The European Communities, 1985. "Completing the Internal Market" White paper from the Commission to the European council.
- DEATON, A. J. MUELLBAUER. 1980. "An Almost Ideal Demand System", *American Economic Review*, Vol. 70, No.3, June.
- EUROSTAT, 1977, "Comparison in Real Values of the Aggregates of ESA 1975", Luxemburg. EUROSTAT, 1983, "Comparison in Real Values of the Aggregates of ESA 1980", Luxemburg.
- FITZGERALD, J., 1982, "A Study of the Determinants of Irish Industrial Output Prices", Dublin: The Economic and Social Research Institute mimeo.
- FITZGERALD, J., 1986. "The Economic Implications of Tax Harmonisation" in *The Economic Consequences of European Union*, Dublin: The Economic and Social Research Institute, Policy Research Series Number, 6.
- FITZGERALD, J., 1987. *The Determinants of Irish Imports*, Dublin: The Economic and Social Research Institute, General Research Series, No. 135.
- FITZGERALD, J., T. QUINN, B. WHELAN, and J. WILLIAMS, 1987. "The Effects of Differences in Rates of Indirect Taxation on Trade In Consumer Goods Across the Republic of Ireland – Northern Ireland Border", Report prepared for DG XXI of the European Community, Dublin: The Economic and Social Research Institute mimeo.
- FOX, W.F. 1986. "Tax Structure and the Location of Economic Activity Along State Borders", *National Tax Journal*, Vol. XXXIX, No. 4.

- GEARY, P.T. 1976 "Lags in the Transmission of Inflation". Some preliminary Estimates". *The Economic and Social Review*, Vol 7 No. 4 July 1976.
- International Energy Agency, 1986. "Energy Prices and Taxes", Paris.
- KEEGAN, OWEN P. 1984, "Description Simulation and Analysis of an Excise Tax Forecasting Model for Ireland", The Economic and Social Research Institute Seminar Paper.
- McCARTHY, C. and J. RYAN 1976. "An Econometric Model of Television Ownership", *The Economic and Social Review*, Vol. 7, No.3, April.
- National Prices Commission. "Monthly Report" Nos 58,69,8X,135,149,150, 1976-1986.
- NORTON, D., 1984, "Smuggling Under CAP: Northern Ireland and the Republic of Ireland, 1974-1982" University College Dublin Policy Paper Series, Number 11.
- OECD, 1987. *Purchasing Power Parities and Real Expenditures, 1985*, Paris: Organisation for Economic Cooperation and Development.
- O'HAGAN, J., 1986 "Opportunities For Ireland" Paper delivered to the Foundation For Fiscal Studies First Annual Conference on *Harmonising EEC VAT and Excise rates — Impact on Ireland*, 21 Nov. 1986.
- Report of Her Majesty's Commissioners of Customs and Excise British Government Annual publication.
- Restrictive Practices Commission, 1987. *Report on Alleged Differences in Retail Grocery Prices between the Republic of Ireland and the United Kingdom (including particularly Northern Ireland)*., Stationery Office, Pl. 5236.
- THOM, R. 1985. "The Demand For Alcohol In Ireland" University College Dublin Working Paper Number 24.
- WHELAN, B.J., 1979. "RANSAM: A Random Sample Design for Ireland", *The Economic and Social Review*, Vol. 10, pp. 169-175.

Appendix 1

THE PRICES SURVEY

Methodology

The survey was carried out in 5 towns and cities on each side of the border (10 towns in all) in the last week in February 1987. A 44-item basket of goods, falling into 6 commodity categories, was selected. The categories were as follows: Food/Groceries, Beer/Spirits, Electrical Goods, Clothes, Toys, and Other. The 44 items were selected on the basis that they were generally representative of a household's aggregate expenditure pattern. For example, the most recent national figures, from the Household Budget Survey for 1980, indicate that the average household in the Republic spends IR£38.93 on food and tobacco products each week. The 15 items in the Food/Grocery category in our prices survey for which published data are available account for IR£21.84 out of this average weekly expenditure figure of IR£38.93. This means that about 56 per cent of average household expenditure on food and grocery items is accounted for by the Food/Grocery category in our survey. Unfortunately, it is not possible to work out the percentage of total household expenditure accounted for by the items in the other commodity groups in our survey due to problems with the level of aggregation and the comparability of items chosen with published data. The most we can say, for example, is that clothing and footwear accounted for IR£11.34 out of a total weekly household expenditure of IR£127.50, representing 9 per cent in total. In an attempt to capture this expenditure we have included 3 items of male and 3 of female clothing in our survey basket. These 6 we took to be representative of the clothing and footwear category in the published national statistics.

It should be noted that an attempt to establish the absolute level of price variations between two regions at one point in time is a very different exercise to comparing the percentage change in prices over time in one region as one would, for example, in compiling a Consumer Price Index series. The major problem encountered in both types of surveys is comparability of items selected for pricing. In deriving an index of prices over time, however, this problem can be effectively overcome by ensuring that each retail outlet in the panel is surveyed on successive occasions by the same interviewer. This ensures that *exactly* the same items are priced for inclusion in the basket each time. The variation between interviewer is not particularly important given that one is

looking at variations over time. In developing such a time series index where the exact item which was priced on the previous pricing survey is not available, a close substitute is chosen. Due to the discontinuity, however, it is not included in calculating the price change index until the succeeding quarter. In a large basket of several hundred items a fairly small number of missing data is not going to make a substantial difference to the overall result.

The fact that we were pricing the basket of goods at only one point in time rather than on an ongoing basis makes the problem of comparability much more intractable. One must make sure that the items priced in retail outlets in one centre are as close substitutes as possible for those priced in other centres. This is extremely difficult when the data are being collected by a number of different interviewers. Furthermore, the fact that the survey is being carried out on both sides of the border will result in an even greater divergence of brands than one would otherwise expect. To address this problem, it was decided to pair each of the pricing centres (towns) with one of comparable urban status on the opposite side of the border. Thus, the 10 towns in which the survey was carried out were paired as follows: (i) Letterkenny and Derry; (ii) Lifford and Strabane; (iii) Monaghan and Enniskillen; (iv) Dundalk and Newry, and (v) Dublin and Belfast. In each town of the first 4 pairs we selected 2 outlets in which to carry out the survey, 5 outlets being selected in the two capital cities. Each of the 5 pairs of towns was assigned to one interviewer. Each interviewer was told to price items in each of his/her 4 outlets (or 10 outlets in the case of Dublin/Belfast) which were identical, or at worst, close substitutes. In this way we hoped to minimise the variation of selected items within each pair of towns, even though we could not control for it between pairs of towns. As the purpose of the survey was to compare relative prices North and South of the border and as each observation was paired with one from the opposite side of the border, this latter problem of variation between each pair of towns was not of crucial importance.

Selection of outlet was left largely to the discretion of the interviewers. They were instructed to price the goods in each commodity category in stores of comparable size in each of their towns. The Food/Grocery items were all priced in a supermarket, the Beer/Spirits items were priced in an off-licence, not in a public house. In general it was found that stores were extremely cooperative, with only a small number refusing to allow the survey to be carried out. A list of the 44 items making up the basket of goods is set out below together with the average of the prices observed for each commodity on each side of the border.

Item	Price in IR£	
	Republic	North
<i>(1) Food/Grocery:-</i>		
1 lb round steak	2.25	2.43
A 3 lb uncooked fresh chicken	3.34	3.06
1 lb back rashers	1.95	1.82
1 lb loose carrots	0.31	0.29
5 lbs potatoes (kerrs pinks)	0.77	0.69
1 lb tomatoes	0.81	0.76
1 large white sliced pan (800 grms)	0.68	0.56
1 packet McVities rich tea biscuits (300 grms)	0.61	0.39
1 kg. white granulated sugar	0.65	0.55
1 lb butter	1.19	1.08
1 litre milk (regular, not low fat etc.)	0.48	0.47
1 box Kellogs cornflakes (500 grms)	0.76	0.86
1 jar Maxwell House coffee (mild blend) 100 grms	1.89	1.73
1 bar Cadbury's chocolate (54 grms)	0.29	0.26
1 litre of Coca-Cola	0.73	0.53
1 packet of six toilet rolls	1.16	0.94
A box of Ariel Automatic (3,930 grms)	1.29	1.09
20 Carrolls No. 1/20 Embassy Red	1.86	1.62
<i>(2) Beer/Spirits:-</i>		
1 bottle Jameson Whiskey (750 mls.)	12.42	9.10
1 bottle Paddy Whiskey (750 mls.)	12.45	9.05
1 bottle Smirnoff Vodka (750 mls.)	11.02	8.02
1 six-pack of Harp (bottles)	3.76	2.03
1 six-pack of Guinness (bottles)	3.53	2.15
1 can of Harp (500 mls./440 mls.)	1.09	0.43
1 can of Guinness (500 mls./440 mls.)	1.07	0.48
<i>(3) Electrical Goods:-</i>		
A 22 inch Phillips Colour TV with remote control	540.6	356.8
A VHS video recorder with remote control	491.5	385.2
A Hoover 800 washing machine	345.8	290.8
A steam iron	24.10	19.29
A jug kettle	22.48	18.32
A current popular LP record	7.41	6.31

(4) Clothes:-

A man's shirt	10.67	7.93
A pair of men's casual jeans (e.g. Levis, 501s etc.,)	18.30	16.71
A man's anorak	25.79	24.53
A woman's cheap skirt	13.76	12.78
A woman's cheap blouse	10.29	10.36
A woman's cheap jumper	11.22	10.31

(5) Toys:-

HE-man original figure	6.65	4.05
Trivial Pursuits	30.82	25.44
A Basic Lego 720 set for 5-7 year old	12.54	10.15
B.M.X. Bicycle for a 10-12 year old	112.67	94.81
Cindy doll	8.21	6.22

(6) Other:-

1 litre top grade petrol	0.58	0.42
A 12.5 kgs. handypack bag of coal	1.93	1.70

Appendix 2

QUESTIONNAIRE USED IN NATIONAL SURVEY

E. E. C. Consumer Survey - Supplement on Shopping Patterns, January 1987

Area

Resp. Code

The E. E. C. is examining the extent of cross-border trade in a number of countries and have commissioned us to find out the extent to which people from the Republic shop in N. Ireland. All the information you give will be treated in strict confidence and will only be released by us in aggregate form.

1. First, could I ask how many people aged 15 and over there are in the household? _____

2. Has any of these done any shopping in N. Ireland in the last six months? Yes 1 No 2

About how many trips in total have been made by household members in the last six months?

End Interview

3. Of these _____ trips how many were:

(i) Solely for shopping						
(ii) Mainly for shopping						
(iii) Mainly for business						
(iv) Mainly for holidays/visit						

→ Go to Q. 5

4. (If at least one trip to N. Ireland was made solely or mainly for shopping)

(a) What means of transport was used on the most recent shopping trip to N. Ireland by a household member?

Private car belonging to the household 1	Organised shopping trip on a private bus 4
Private car belonging to another household 2	Other (specify) 5
Public transport (bus/train) 3	

(b) How much was spent on the most recent shopping trip to N. Ireland? STG £ _____

(c) Do you think that you saved money by doing this shopping in N. Ireland? Yes 1 No 2

How much do you think the same items would have cost you here in the Republic? IR£ _____

(d) Who went on this most recent shopping trip? (circle all that apply)

Head of household 1	Other relative resident in the household 5
Spouse of HOH 2	Non-relative resident in the household 6
Son/Daughter (less than 15 yrs) 3	Non-household member 7
Son/Daughter (more than 15 yrs) 4	

5. Which parts of N. Ireland have household members shopped in during the last six months? Please state the distance of each location from your home.

<u>Location</u>	<u>Distance</u>	<u>Location</u>	<u>Distance</u>
(i) _____	_____ miles	(iii) _____	_____ miles
(ii) _____	_____ miles	(iv) _____	_____ miles

6. Which of the following items has any household member bought on a trip to N. Ireland in the last six months and approximately how much was spent on each?

Item	Purchased on a trip to N. Ireland in the last six months		Total amount spent on item in N. Ireland in last 6 mths	Item	Purchased on a trip to N. Ireland in the last six months		Total amount spent on item in N. Ireland in last 6 mths
	Yes	No			Yes	No	
General groceries	1	2	£ _____	T. V. /Video Sets	1	2	£ _____
Petrol	1	2	£ _____	Other "Black Electrics" (e. g. radios, stereos cassettes etc.)	1	2	£ _____
Beer (incl. lager)	1	2	£ _____	"White Electrics" (e. g. washing machine, deep-freeze, fridge, cooker etc.)	1	2	£ _____
Spirits	1	2	£ _____	Non-electric household hardware or furniture	1	2	£ _____
Wine	1	2	£ _____	Other (specify) _____			£ _____
Tobacco/cigarettes	1	2	£ _____				
Ladies clothes	1	2	£ _____				
Gents clothes	1	2	£ _____				
Childrens clothes	1	2	£ _____				
Toys	1	2	£ _____				
				Total All Items			£ _____

7. What are the main advantages of shopping in N. Ireland? _____
 Any other? _____

8. What are the main disadvantages of shopping in N. Ireland? _____
 Any other? _____

Appendix 3
QUESTIONNAIRE USED IN BORDER SURVEY

ESRI The Economic and Social Research Institute
4 Burlington Road Dublin 4

Interviewer's Name: _____

Area

Resp.

Area
Resp

E.E.C. Survey on Shopping in N. Ireland - January 1987

The EEC is currently examining the extent of cross-border trade in a number of countries and has commissioned the ESRI to undertake a survey of households in Ireland to assess the extent to which people from the Republic shop in N. Ireland. Your household was selected, on a purely random basis from the electoral register, to participate in this survey. I would be grateful if I could talk to you about whether or not anyone in the household has done any shopping in N. Ireland in the last six months. All the information you give will be treated in the strictest confidence and will only be released by us in aggregate form.

Date of Interview

Day	Mt	Yr	

Date

Shortest road distance to N. Ireland border

--	--

 miles

Dist

1. First, could I ask if anyone in the household has done any shopping in N. Ireland in the last six months?

Q01

Yes 1 No 2

About how many trips in total, on which shopping has been done, have been made by household members to N. Ireland in the last six months?

Do you think that prices in general are lower in N. Ireland than here in the Republic?

Yes .. 1 No..2 (end interview)

What is(are) the main reason(s) for not shopping in N. Ireland?

(end interview)

01 Y/N
02 Num
03 Y/N

04 R1
05 R2
06 R3

I would like to administer the remainder of the questionnaire to the person who knows most about the household's shopping patterns in N. Ireland over the last six months.

2

2. I'd like to consider all purchases made in N. Ireland in the last six months by everyone in the household.

(Show Card A) The card shows a list of items. Could you tell me (a) whether or not anyone in the household has bought any of these in N. Ireland in the last six months; (b) the total amount spent (in STG £) on each; and (c) what percentage of the total amount spent by the household on each item in the last six months was spent in (i) N. Ireland and (ii) the Republic.

(Note: (i) + (ii) should equal 100%.)

Q02

Items	(a) Purchased in N. Ireland in last six months		(b) Total amount spent on items in N. Ireland in last six months (STG£)	(c) Per cent expenditure in last six months in		Pur.	£	% NI
	Yes	No		(i) N. Ireland	(ii) Republic			
Food	1	2	STG£ _____	____%	____%	01	02	03
Other groceries	1	2	STG£ _____	____%	____%	04	05	06
Petrol	1	2	STG£ _____	____%	____%	07	08	09
Beer (incl. lager)	1	2	STG£ _____	____%	____%	10	11	12
Spirits	1	2	STG£ _____	____%	____%	13	14	15
Wine	1	2	STG£ _____	____%	____%	16	17	18
Tobacco/cigarettes	1	2	STG£ _____	____%	____%	19	20	21
Ladies' clothes	1	2	STG£ _____	____%	____%	22	23	24
Gents' clothes	1	2	STG£ _____	____%	____%	25	26	27
Children's clothes	1	2	STG£ _____	____%	____%	28	29	30
Toys	1	2	STG£ _____	____%	____%	31	32	33
TV/Video set	1	2	STG£ _____	____%	____%	34	35	36
Large kitchen electrics (e.g., cooker, fridge, washing machine)	1	2	STG£ _____	____%	____%	37	38	39
Other electrics (e.g., radios, cassettes, stereo, etc.)	1	2	STG£ _____	____%	____%	40	41	42
Non-electric household hardware or furniture	1	2	STG£ _____	____%	____%	43	44	45
Other (specify)			STG£ _____	____%	____%	46	47	48
_____			STG£ _____	____%	____%	49	50	51
_____			STG£ _____	____%	____%	52	53	54

3

3. You said that household members made _____ trips to N.I. on which they did some shopping. Of these _____ trips how many were:

- (i) Mainly or solely for shopping on which more than STG£20 was spent
- (ii) Mainly or solely for shopping on which less than STG£20 was spent
- (iii) Mainly for business
- (iv) Mainly for holiday/visit/ passing through

Q03

- 01 > 20
- 02 < 20
- 03 bus
- 04 hol

(Ask only of households which made at least one trip to N. Ireland on which more than STG£20 was spent)
Thinking now of the most recent trip on which you spent more than STG£20.

Q04

4. What means of transport to N. Ireland was used?
- Private car belonging to the household..... 1
 - Private car belonging to another household... 2
 - Public transport (bus/train) 3
 - Organised shopping trip on a private bus 4
 - Other (specify) _____

01

5(a) How many in the household shopping party on the most recent such shopping trip to N. Ireland were:

Q05

- (i) Adults (15 years and over)
- (ii) Children (less than 15 years)

- 01 Ad
- 02 Ch
- 03 Yr

(b) Over how many years have household members been making such shopping trips to N. Ireland? Since 19 _____

Q06

6. Were the following people on the most recent such shopping trip:

- Head of Household 1
- Spouse of Head of Household 2
- Son/daughter (15 years and over) 3
- Son/daughter (less than 15 years) 4
- Other relative resident in the household ... 5
- Non-relative resident in the household 6
- Non-household member 7

- 01
- 02
- 03
- 04
- 05
- 06
- 07

7.(i) Could you tell me in which part(s) of N. Ireland did the most recent such shopping trip take place? Please state the distance travelled to each location, the travel time, the amount spent (in STG£) and the amount of time spent shopping at each. (Record one-way travel distance and travel time from home to location (a) and from location (a) to location (b).)

Q07

Location	Distance	Travel time to shop	Amount spent in STG£	Time spent shopping
(a) _____	_____ miles	_____ hrs _____ mins	STG£ _____	_____ hrs _____ mins
(b) _____	_____ miles	_____ hrs _____ mins	STG£ _____	_____ hrs _____ mins

- (a) (b)
- Loc — 01 — 06
- Dis — 02 — 07
- Tr. ti — 03 — 08
- Amt — 04 — 09
- Ti. sh — 05 — 10

(ii) So in total you spent STG£ _____ on your most recent such shopping trip.

11 Tot

4

8. Do you think that you saved money by doing this shopping in N. Ireland?

Yes... 1 No... 2

How much do you think the same items would have cost you here in the Republic? IRE _____

Q08

01 Y/N

02 Amt

9. On the most recent such shopping trip approximately how much was spent on:

- (a) Return transport (estimate of petrol or bus/train fare) IRE _____
- (b) Lunches, snacks, other incidental expenses STGE _____

Q09

01 Tr

02 Lu

10. (If only one trip was made to N. Ireland solely or mainly for shopping in the last six months ask:)

(a) Was this single shopping trip which you made to N. Ireland in the last six months a Christmas shopping trip?

Yes ... 1 No... 2
go to Q.11

Q10

01 Y/N

(If more than one trip was made to N. Ireland solely or mainly for shopping in the last six months ask:)

(b) Did you spend as much, less or more on the most recent such shopping trip as on other such trips to N. Ireland in the last six months?

Less ... 1 As much ... 2 More ... 3

How much would you spend on an average shopping trip to N. Ireland? STGE _____

- (a) Did you spend more on this most recent trip because of: (circle all that apply)
- (i) Special purchases made for Christmas..... 1
- (ii) Special 'once-off' purchases 2
- (iii) Other (specify) 3
- (b) How much would you spend on an average shopping trip to N. Ireland? STG £ _____

02 L/Mu/Mo

03 L/Av £

04 Mo/R1

05 Mo/R2

06 Mo/R3

07 £ Amt

(Ask all Respondents)

11. Over the next six months will members of the household, taken as a whole, shop as frequently, less frequently, or more frequently in N. Ireland than over the last six months?

Less frequently ... 1 Same frequency ... 2 More frequently.. 3

Why do you say that? _____

Q11

01 Fr

02 R1

03 R2

04 R3

12. In general what do you feel is the main advantage of shopping in N. Ireland?

And are there any other advantages? _____

13. What is the main disadvantage of shopping in N. Ireland?

And are there any other disadvantages? _____

14. Do you think the government here could do anything to encourage you to do the shopping which you do at the moment in N. Ireland here in the Republic?

Yes ... 1 No ... 2

What can it do? _____

15. (Show Card B.) A number of items are listed on the card. Could you estimate the price of each in the Republic (in Irish punts) and in N. Ireland (in pounds sterling).

Item	IR£ in Republic	STG£ in N. Ireland
1 litre of Paddy Whiskey	IR£ _____	STG£ _____
A six-pack of Harp	IR£ _____	STG£ _____
A packet of 20 silk cut	IR£ _____	STG£ _____
1 gallon of petrol (regular)	IR£ _____	STG£ _____
A standard 22 inch colour TV with remote control	IR£ _____	STG£ _____
A box (E3, 930g.) of washing powder	IR£ _____	STG£ _____
A 100 gram (medium jar) of coffee	IR£ _____	STG£ _____
A packet of six toilet rolls	IR£ _____	STG£ _____
1 lb. butter	IR£ _____	STG£ _____
A sliced pan (bread)	IR£ _____	STG£ _____
A litre of milk	IR£ _____	STG£ _____

Q12

- 01 R1
- 02 R2
- 03 R3

Q13

- 01 R1
- 02 R2
- 03 R3

Q14

- 01 Y/N
- 02 M1
- 03 M2

Q15

IR£	STG£
01	02
03	04
05	06
07	08
09	10
11	12
13	14
15	16
17	18
19	20
21	22

16(a) Value Added Tax (VAT) is applied to different goods at different rates. Could you tell me how many VAT rates there are here, in the Republic?

No. of VAT rates _____ DK. go to Q.17

(b) What are these rates? (i) ___% (ii) ___% (iii) ___% (iv) ___%

Q16

- 01 Num
- 02 R1
- 03 R2
- 04 R3
- 05 R4

17(a) How many VAT rates are there in N. Ireland?

No. of VAT rates _____ DK. go to Q.18

(b) What are these rates? (i) _____% (ii) _____% (iii) _____% (iv) _____%

18. What is the current rate of exchange between the Irish pound and pound sterling, i.e., what is the Irish pound worth in terms of sterling?

The Irish pound is worth STGf _____ p

19. Taking everything into consideration such as your time, travel costs etc., what do you consider is the minimum amount of money (in Irish pounds) which you would have to save to make it worth your while making a shopping trip to N. Ireland?

IRf _____
(probe for an approximate amount)

20. I'm going to read out some statements about shopping in N. Ireland. Could you tell me whether or not you strongly agree, agree, neither agree nor disagree, disagree or strongly disagree with each. (Circle one number on each line.)

	<u>Strongly Agree</u>	<u>Agree</u>	<u>Neither agree nor disagree</u>	<u>Disagree</u>	<u>Strongly disagree</u>	
Every time we go to shop in N. Ireland we go with a view to purchasing a small number of <u>specific</u> items	1	2	3	4	5	01
When we go to shop in N. Ireland we go mainly because prices in <u>general</u> are cheaper not to buy a small number of specific items.	1	2	3	4	5	02
The different variety of goods in shops in N. Ireland is as important as lower prices	1	2	3	4	5	03
Having a day out travelling to N.Ireland to shop is as important as lower prices	1	2	3	4	5	04
We would shop in N.Ireland more frequently than we do at the moment if it weren't for the present troubles	1	2	3	4	5	05
The troubles in N. Ireland make us more cautious about <u>where</u> we would shop in N.Ireland	1	2	3	4	5	06

Q17

01 Num
02 R1
03 R2
04 R3
05 R4

Q18

01

Q19

01

Q20

21. Do you feel that shopping in N. Ireland has any effect on the economy of the Republic?

Yes... 1 No ... 2

What effect(s) do you think it has? (Probe as fully as possible.)

Q21
 — 01 Y/N
 — 02 E1
 — 03 E2
 — 04 E3

22. Is there any restriction on the value of goods which an individual may take back to the Republic from N. Ireland on each shopping trip?

Yes.. 1 No... 2

How much? STGE _____

Q22
 01 Y/N
 02 Val

Finally, I'd like to ask you a few questions about yourself and your household in order to classify your responses. I want to stress once again that everything you say will be treated in the strictest confidence and will not be released to anyone outside the ESRI.

23. Is the respondent (i.e. main N. Ireland shopper):

- Head of household..1
- Spouse of head of household.....2
- Son/daughter of head of household.....3
- Other relative living in the household....4
- Non relative resident in the household....5

Q23
 01

24(i) Sex of respondent: Male ... 1 Female ... 2

(ii) Do you drive? Yes ... 1 No..... 2

Do you have access to a car most days? Yes...1 No... 2

(iii) Could you tell me your age at last birthday? _____ years

(iv) What is your occupation. (If farmer state acreage.)

Q24
 01 M/F
 02 Dr
 03 Ac
 04 Ag
 — 05 Oc

25(i) What is the occupation of head of household. (If farmer state acreage.)

(ii) Sex of head of household Male... 1 Female ... 2

(iii) Total number of adults in the household _____

(iv) Total number of children (under 15 years) in the household _____

(v) Does this household own a car? Yes... 1 No... 2

Q25
 — 01 Oc
 02 M/F
 03 Ad
 04 Ch
 05 Ca

26. (Show Card C.) Could you tell me the total household net income from all sources, i.e., all income from employment, rents, pensions, dividends, interest, etc., after deductions for income tax, National Insurance and other statutory deductions.

<u>£ per week</u>	<u>£ per month</u>	<u>£ per year</u>
(01) £0-40	(01) £0-173	(01) £0-2080
(02) £40+ - 60	(02) £173+ - 260	(02) £2080+ - 3120
(03) £60+ - 80	(03) £260+ - 347	(03) £3120+ - 4160
(04) £80+ - 100	(04) £347+ - 433	(04) £4160+ - 5200
(05) £100+ - 120	(05) £433+ - 520	(05) £5200+ - 6240
(06) £120+ - 140	(06) £520+ - 606	(06) £6240+ - 7280
(07) £140+ - 180	(07) £606+ - 780	(07) £7280+ - 9360
(08) £180+ - 240	(08) £780+ - 1040	(08) £9360+ - 12480
(09) £240+ - 300	(09) £1040+ - 1300	(09) £12480+ - 15600
(10) £300+ - 400	(10) £1300+ - 1733	(10) £15600+ - 20800
(11) £400+	(11) £1733+	(11) £20800+

Q26

Category

--	--

01

Appendix 4

SAMPLE SELECTION AND QUESTIONNAIRE USED IN NORTHERN IRELAND SURVEY

Unlike the other two surveys, which were based on households, this survey involved a quota sample of adults in Northern Ireland. The survey was conducted for us by a commercial research organisation based in Belfast. The quota sample of 1,100 respondents was drawn from 50 sampling points (each selected on a random probability basis) throughout Northern Ireland. The main quota control criteria used were age, sex, marital status, location within Northern Ireland and socioeconomic status. The data were grossed up (on the basis of the selection criteria listed above) to give population estimates of the frequency of trip, an itemised breakdown of total expenditure and views on the advantages and disadvantages of shopping in the Republic. However, because of large standard errors associated with the small number of persons who replied saying that they had shopped in the Republic, the resulting detailed analysis was not felt to be statistically reliable and so only aggregate figures are presented in this report.

ASK ALL

Q1(a) In the last six months have you made any trips to the Republic of Ireland?

Yes	V] GO TO NEXT SECTION	(67)
No	X		

Q1(b) And on any of these trips did you do shopping of any sort?

INTERVIEWER EXPLAIN: By shopping I MEAN ITEMS BOUGHT AND BROUGHT BACK TO N. IRELAND.

Yes	O] GO TO NEXT SECTION
No	I	

Q1(c) How many trips when you did some shopping have you made to the Republic of Ireland in the last 6 months?

--	--	--

(68) - (70)

SHOW CARD 'L'

(68) (69) (70)

IF ONE TRIP (Q1(c)) ASK:

Q2(a) From this card how would you describe the nature of this trip? Was it mainly for shopping, mainly for a holiday but with some shopping or mainly for business but with some shopping?

IF MORE THAN ONE TRIP (Q1(c)) ASK:

Q2(b) Of the trips you mentioned (at Q1(c)) please tell me how many were carried out mainly for shopping, mainly for a holiday but with some shopping and mainly for business but with some shopping?

	<u>Single Trip</u> Q.2(a)	<u>Multiple Trips</u> Q.2(b)			
	(71)	NUMBER			
Mainly Shopping	V	<table border="1"><tr><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td></tr></table> (72) (73) (74)			
Mainly Holiday/Visit with Some Shopping	X	<table border="1"><tr><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td></tr></table> (75) (76) (77)			
Mainly Business Trip with Some Shopping	O	<table border="1"><tr><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td></tr></table> (78) (79) (80)			

(71) - (80)

INTERVIEWER : NOTE TOTAL SHOULD EQUAL ANSWER AT Q.1(c)

PUNCHER : CARD TWO : REPUNCH Cols 1 - 8 CARD ONE, CARD TWO, Col. 9 / ②

SHOW CARD 'M'

-7-

CARD TWO

Q.3(a) Thinking of all trips which you made to the Republic during the last six months, on which you did some shopping, which, if any, of these items did you buy? Anything else?

ASK FOR EACH BOUGHT

Q.3(b) Approximately how much did you spend on? Was this in pounds sterling or Irish punts?

	Bought Q.3(a) (10)	Q.3(b)			Currency	
		Amount Spent			Sterling (44)	Punts (45)
Food/Grocery	V	<input type="text"/>	<input type="text"/>	<input type="text"/>	V	V
		(11)	(12)	(13)		
Beer/Spirits	X	<input type="text"/>	<input type="text"/>	<input type="text"/>	X	X
		(14)	(15)	(16)		
Cigarettes/Tobacco	O	<input type="text"/>	<input type="text"/>	<input type="text"/>	O	O
		(17)	(18)	(19)		
Ladies' Clothes	1	<input type="text"/>	<input type="text"/>	<input type="text"/>	1	1
		(20)	(21)	(22)		
Mens' Clothes	2	<input type="text"/>	<input type="text"/>	<input type="text"/>	2	2
		(23)	(24)	(25)		
Childrens' Clothes	3	<input type="text"/>	<input type="text"/>	<input type="text"/>	3	3
		(26)	(27)	(28)		
Toys	4	<input type="text"/>	<input type="text"/>	<input type="text"/>	4	4
		(29)	(30)	(31)		
Household Electrics	5	<input type="text"/>	<input type="text"/>	<input type="text"/>	5	5
		(32)	(33)	(34)		
Household durables/ hardware	6	<input type="text"/>	<input type="text"/>	<input type="text"/>	6	6
		(35)	(36)	(37)		
Other (STATE & CODE...)	7	<input type="text"/>	<input type="text"/>	<input type="text"/>	7	7
		(38)	(39)	(40)		
Don't Know/ Can't Remember	8	<input type="text"/>	<input type="text"/>	<input type="text"/>	8	8
		(41)	(42)	(43)		

(10 - 45)

Q.4(a) What, if anything, do you particularly like about shopping in the Republic of Ireland? Anything else? (PROBE FULLY AND RECORD VERBATIM)

(46)

Q.4(b) And what, if anything, do you particularly dislike about shopping in the Republic of Ireland? Anything else? (PROBE FULLY AND RECORD VERBATIM)

(47)

Books:

Economic Growth in Ireland: The Experience Since 1947

Kieran A. Kennedy and Brendan Dowling

Irish Economic Policy: A Review of Major Issues

Staff Members of ESRI (eds. B. R. Dowling and J. Durkan)

The Irish Economy and Society in the 1980s (Papers presented at ESRI Twenty-first Anniversary Conference)

Staff Members of ESRI

The Economic and Social State of The Nation

J. F. Meenan, M. P. Fogarty, J. Kavanagh and L. Ryan

The Irish Economy: Policy and Performance 1972-1981

P. Bacon, J. Durkan and J. O'Leary

Employment and Unemployment Policy for Ireland

Staff Members of ESRI (eds., Denis Conniffe and Kieran A. Kennedy)

Public Social Expenditure - Value for Money? (Papers presented at a Conference, 20 November 1984)

Medium-Term Outlook: 1986-1990. No. 1

Peter Bacon

Ireland in Transition

Kieran A. Kennedy (ed.)

Policy Research Series:

1. *Regional Policy and the Full-Employment Target* M. Ross and B. Walsh
2. *Energy Demand in Ireland, Projections and Policy Issues* S. Scott
3. *Some Issues in the Methodology of Attitude Research* E. E. Davis *et al.*
4. *Land Drainage Policy in Ireland* Richard Bruton and Frank J. Convery
5. *Recent Trends in Youth Unemployment* J. J. Sexton
6. *The Economic Consequences of European Union. A Symposium on Some Policy Aspects*
D. Scott, J. Bradley, J. D. FitzGerald and M. Ross
7. *The National Debt and Economic Policy in the Medium Term* John D. FitzGerald
8. *Disability Benefit Reform: Rationalisation or Subsidisation?* Gerard Hughes

Broadsheet Series:

1. *Dental Services in Ireland* P. R. Kaim-Caudle
2. *We Can Stop Rising Prices* M. P. Fogarty
3. *Pharmaceutical Services in Ireland* P. R. Kaim-Caudle
assisted by Annette O'Toole and Kathleen O'Donoghue
4. *Ophthalmic Services in Ireland* P. R. Kaim-Caudle
assisted by Kathleen O'Donoghue and Annette O'Toole
5. *Irish Pensions Schemes, 1969* P. R. Kaim-Caudle and J. G. Byrne
assisted by Annette O'Toole
6. *The Social Science Percentage Nuisance* R. C. Geary
7. *Poverty in Ireland: Research Priorities* Brendan M. Walsh
8. *Irish Entrepreneurs Speak for Themselves* M. P. Fogarty
9. *Marital Desertion in Dublin: An Exploratory Study* Kathleen O'Higgins
10. *Equalization of Opportunity in Ireland: Statistical Aspects*
R. C. Geary and F. S. Ó Muircheartaigh
11. *Public Social Expenditure in Ireland* Finola Kennedy
12. *Problems in Economic Planning and Policy Formation in Ireland, 1958-1974*
Desmond Norton
13. *Crisis in the Cattle Industry* R. O'Connor and P. Keogh
14. *A Study of Schemes for the Relief of Unemployment in Ireland*
R. C. Geary and M. Dempsey
with Appendix E. Costa
15. *Dublin Simon Community, 1971-1976: An Exploration* Ian Hart

16. *Aspects of the Swedish Economy and their Relevance to Ireland*
Robert O'Connor, Eoin O'Malley and Anthony Foley
17. *The Irish Housing System: A Critical Overview*
T. J. Baker and L. M. O'Brien
18. *The Irish Itinerants: Some Demographic, Economic and Educational Aspects*
M. Dempsey and R. C. Geary
19. *A Study of Industrial Workers' Co-operatives*
Robert O'Connor and Philip Kelly
20. *Drinking in Ireland: A Review of Trends in Alcohol Consumption, Alcohol Related Problems and Policies towards Alcohol*
Brendan M. Walsh
21. *A Review of the Common Agricultural Policy and the Implications of Modified Systems for Ireland*
R. O'Connor, C. Guiomard and J. Devereux
22. *Policy Aspects of Land-Use Planning in Ireland*
Frank J. Convery and A. Allan Schmid
23. *Issues in Adoption in Ireland*
Harold J. Abramson

Geary Lecture Series:

1. *A Simple Approach to Macro-economic Dynamics* (1967) R. G. D. Allen
2. *Computers, Statistics and Planning-Systems or Chaos?* (1968) F. G. Foster
3. *The Dual Career Family* (1970) Rhona and Robert Rapoport
4. *The Psychosonomics of Rising Prices* (1971) H. A. Turner
5. *An Interdisciplinary Approach to the Measurement of Utility or Welfare* (1972)
J. Tinbergen
6. *Econometric Forecasting from Lagged Relationships* (1973) M. G. Kendall
7. *Towards a New Objectivity* (1974) Alvin W. Gouldner
8. *Structural Analysis in Sociology* (1975) Robert K. Merton
9. *British Economic Growth 1951-1973: Success or Failure?* (1976)
R. C. O. Matthews
10. *Official Statisticians and Econometricians in the Present Day World* (1977)
E. Malinvaud
11. *Political and Institutional Economics* (1978) Gunnar Myrdal
12. *The Dilemmas of a Socialist Economy: The Hungarian Experience* (1979)
János Kornai
13. *The Story of a Social Experiment and Some Reflections* (1980)
Robert M. Solow
14. *Modernisation and Religion* (1981) P. L. Berger
15. *Poor, Relatively Speaking* (1983) Amartya K. Sen
16. *Towards More Rational Decisions on Criminals* (1984) Daniel Glaser
17. *An Economic Analysis of the Family* (1985) Gary S. Becker

General Research Series:

1. *The Ownership of Personal Property in Ireland* Edward Nevin
2. *Short-Term Economic Forecasting and its Application in Ireland* Alfred Kuehn
3. *The Irish Tariff and The E.E.C.: A Factual Survey* Edward Nevin
4. *Demand Relationships for Ireland* C. E. V. Leser
5. *Local Government Finance in Ireland: A Preliminary Survey* David Walker
6. *Prospects of the Irish Economy in 1962* Alfred Kuehn
7. *The Irish Woollen and Worsted Industry, 1946-59: A Study in Statistical Method*
R. C. Geary

- | | | |
|-----|---|---|
| 8. | <i>The Allocation of Public Funds for Social Development</i> | David Walker |
| 9. | <i>The Irish Price Level: A Comparative Study</i> | Edward Nevin |
| 10. | <i>Inland Transport in Ireland: A Factual Study</i> | D. J. Reynolds |
| 11. | <i>Public Debt and Economic Development</i> | Edward Nevin |
| 12. | <i>Wages in Ireland, 1946-62</i> | Edward Nevin |
| 13. | <i>Road Transport: The Problems and Prospects in Ireland</i> | D. J. Reynolds |
| 14. | <i>Imports and Economic Growth in Ireland, 1947-61</i> | C. E. V. Leser |
| 15. | <i>The Irish Economy in 1962 and 1963</i> | C. E. V. Leser |
| 16. | <i>Irish County Incomes in 1960</i> | E. A. Attwood and R. C. Geary |
| 17. | <i>The Capital Stock of Irish Industry</i> | Edward Nevin |
| 18. | <i>Local Government Finance and County Incomes</i> | David Walker |
| 19. | <i>Industrial Relations in Ireland: The Background</i> | David O'Mahony |
| 20. | <i>Social Security in Ireland and Western Europe</i> | P. R. Kaim-Caudle |
| 21. | <i>The Irish Economy in 1963 and 1964</i> | C. E. V. Leser |
| 22. | <i>The Cost Structure of Irish Industry 1950-60</i> | Edward Nevin |
| 23. | <i>A Further Analysis of Irish Household Budget Data, 1951-52</i> | C. E. V. Leser |
| 24. | <i>Economic Aspects of Industrial Relations</i> | David O'Mahony |
| 25. | <i>Psychological Barriers to Economic Achievement</i> | P. Pentony |
| 26. | <i>Seasonality in Irish Economic Statistics</i> | C. E. V. Leser |
| 27. | <i>The Irish Economy in 1964 and 1965</i> | C. E. V. Leser |
| 28. | <i>Housing in Ireland: Some Economic Aspects</i> | P. R. Kaim-Caudle |
| 29. | <i>A Statistical Study of Wages, Prices and Employment in the Irish Manufacturing Sector</i> | C. St. J. O'Herlihy |
| 30. | <i>Fuel and Power in Ireland: Part I. Energy Consumption in 1970</i> | J. L. Booth |
| 31. | <i>Determinants of Wage Inflation in Ireland</i> | Keith Cowling |
| 32. | <i>Regional Employment Patterns in the Republic of Ireland</i> | T. J. Baker |
| 33. | <i>The Irish Economy in 1966</i> | The Staff of The Economic Research Institute |
| 34. | <i>Fuel and Power in Ireland: Part II. Electricity and Turf</i> | J. L. Booth |
| 35. | <i>Fuel and Power in Ireland: Part III. International and Temporal Aspects of Energy Consumption</i> | J. L. Booth |
| 36. | <i>Institutional Aspects of Commercial and Central Banking in Ireland</i> | John Hein |
| 37. | <i>Fuel and Power in Ireland: Part IV. Sources and Uses of Energy</i> | J. L. Booth |
| 38. | <i>A Study of Imports</i> | C. E. V. Leser |
| 39. | <i>The Irish Economy in 1967</i> | The Staff of The Economic and Social Research Institute |
| 40. | <i>Some Aspects of Price Inflation in Ireland</i> | R. C. Geary and J. L. Pratschke |
| 41. | <i>A Medium Term Planning Model for Ireland</i> | David Simpson |
| 42. | <i>Some Irish Population Problems Reconsidered</i> | Brendan M. Walsh |
| 43. | <i>The Irish Brain Drain</i> | Richard Lynn |
| 44. | <i>A Method of Estimating the Stock of Capital in Northern Ireland Manufacturing Industry: Limitations and Applications</i> | C. W. Jefferson |
| 45. | <i>An Input-Output Analysis of the Agricultural Sector of the Irish Economy in 1964</i> | R. O'Connor with M. Breslin |
| 46. | <i>The Implications for Cattle Producers of Seasonal Price Fluctuations</i> | R. O'Connor |
| 47. | <i>Transport in the Developing Economy of Ireland</i> | John Blackwell |
| 48. | <i>Social Status and Inter-Generational Social Mobility in Dublin</i> | Bertram Hutchinson |

49. *Personal Incomes by County, 1965* Miceal Ross
50. *Income-Expenditure Relations in Ireland, 1965-1966* John L. Pratschke
51. *Costs and Prices in Transportable Goods Industries*
W. Black, J. V. Simpson, D. G. Slattery
52. *Certain Aspects of Non-Agricultural Unemployment in Ireland*
R. C. Geary and J. G. Hughes
53. *A Study of Demand Elasticities for Irish Imports* Dermot McAleese
54. *Internal Migration in Ireland with Appendix* R. C. Geary and J. G. Hughes
C. J. Gillman
55. *Religion and Demographic Behaviour in Ireland with Appendix* B. M. Walsh
R. C. Geary and J. G. Hughes
56. *Views on Pay Increases, Fringe Benefits and Low Pay*
H. Behrend, A. Knowles and J. Davies
57. *Views on Income Differentials and the Economic Situation*
H. Behrend, A. Knowles and J. Davies
58. *Computers in Ireland* F. G. Foster
59. *National Differences in Anxiety* Richard Lynn
60. *Capital Statistics for Irish Manufacturing Industry* C. W. Jefferson
61. *Rural Household Budget - Feasibility Study* Síle Sheehy and R. O'Connor
62. *Effective Tariffs and the Structure of Industrial Protection in Ireland*
Dermot McAleese
63. *Methodology of Personal Income Estimation by County* Miceal Ross
64. *Further Data on County Incomes in the Sixties* Miceal Ross
65. *The Functional Distribution of Income in Ireland, 1938-70* J. G. Hughes
66. *Irish Input-Output Structures, 1964 and 1968* E. W. Henry
67. *Social Status in Dublin: Marriage, Mobility and First Employment*
Bertram Hutchinson
68. *An Economic Evaluation of Irish Salmon Fishing, I: The Visiting Anglers*
R. O'Connor and B. J. Whelan
69. *Women and Employment in Ireland: Results of a National Survey*
Brendan M. Walsh assisted by Annette O'Toole
70. *Irish Manufactured Imports from the UK in the Sixties: The Effects of AIFTA*
Dermot McAleese and John Martin
71. *Alphabetical Voting: A Study of the 1973 General Election in the Republic of Ireland*
Christopher Robson and Brendan M. Walsh
72. *A Study of the Irish Cattle and Beef Industries*
Terence J. Baker, Robert O'Connor and Rory Dunne
73. *Regional Employment Patterns in Northern Ireland*
William Black and Clifford W. Jefferson
74. *Irish Full Employment Structures, 1968 and 1975* E. W. Henry
75. *An Economic Evaluation of Irish Salmon Fishing II: The Irish Anglers*
R. O'Connor, B. J. Whelan and A. McCashin
76. *Factors Relating to Reconviction among Young Dublin Probationers* Ian Hart
77. *The Structure of Unemployment in Ireland, 1954-1972* Brendan M. Walsh
78. *An Economic Evaluation of Irish Salmon Fishing, III: The Commercial Fishermen*
B. J. Whelan, R. O'Connor and A. McCashin
79. *Wage Inflation and Wage Leadership*
W. E. J. McCarthy, J. F. O'Brien and V. G. Dowd

80. *An Econometric Study of the Irish Postal Service* Peter Neary
81. *Employment Relationships in Irish Counties* Terence J. Baker and Miceal Ross
82. *Irish Input-Output Income Multipliers 1964 and 1968* J. R. Copeland and E. W. Henry
83. *A Study of the Structure and Determinants of the Behavioural Component of Social Attitudes in Ireland* E. E. Davis
84. *Economic Aspects of Local Authority Expenditure and Finance* J. R. Copeland and Brendan M. Walsh
85. *Population Growth and other Statistics of Middle-sized Irish Towns* D. Curtin, R. C. Geary, T. A. Grimes and B. Menton
86. *The Income Sensitivity of the Personal Income Tax Base in Ireland, 1947-1972* Brendan R. Dowling
87. *Traditional Families? From Culturally Prescribed to Negotiated Roles in Farm Families* Damian F. Hannan and Louise Katsiaouni
88. *An Irish Personality Differential: A Technique for Measuring Affective and Cognitive Dimensions of Attitudes Towards Persons* E. E. Davis and Mary O'Neill
89. *Redundancy and Re-Employment in Ireland* Brendan J. Whelan and Brendan M. Walsh
90. *A National Model for Fuel Allocation - A Prototype* E. W. Henry and S. Scott
91. *A Linear Programming Model for Irish Agriculture* Robert O'Connor, Miceal Ross and Michael Behan
92. *Irish Educational Expenditures - Past, Present and Future* A. Dale Tussing
93. *The Working and Living Conditions of Civil Service Typists* Nóirin O'Broin and Gillian Farren
94. *Irish Public Debt* Richard Bruton
95. *Output and Employment in the Irish Food Industry to 1990* A. D. O'Rourke and T. P. McStay
96. *Displacement and Development: Class, Kinship and Social Change in Irish Rural Communities* Damian F. Hannan
97. *Attitudes in the Republic of Ireland Relevant to the Northern Problem: Vol. I: Descriptive Analysis and Some Comparisons with Attitudes in Northern Ireland and Great Britain* E. E. Davis and R. Sinnott
98. *Internal Migration Flows in Ireland and their Determinants* J. G. Hughes and B. M. Walsh
99. *Irish Input-Output Structures, 1976* E. W. Henry
100. *Development of the Irish Sea Fishing Industry and its Regional Implications* R. O'Connor, J. A. Crutchfield, B. J. Whelan and K. E. Mellon
101. *Employment Conditions and Job Satisfaction: The Distribution, Perception and Evaluation of Job Rewards* Christopher T. Whelan
102. *Crime in the Republic of Ireland: Statistical Trends and Their Interpretation* David B. Rottman
103. *Measure of the Capital Stock in the Irish Manufacturing Sector, 1945-1973* R. N. Vaughan
104. *A Study of National Wage Agreements in Ireland* James F. O'Brien
105. *Socio-Economic Impact of the Construction of the ESB Power Station at Moneypoint, Co. Clare* R. O'Connor, J. A. Crutchfield and B. J. Whelan

106. *The Financing of Third-level Education* A. C. Barlow
 107. *An Input-Output Analysis of New Industry in Ireland in 1976* E. W. Henry
 108. *Social Insurance and Absence from Work in Ireland* Gerard Hughes
 109. *The Distribution of Income in the Republic of Ireland: A Study in Social Class and Family-Cycle Inequalities*
 David B. Rottman, Damian F. Hannan and Niamh Hardiman,
 Miriam M. Wiley
110. *The Economic and Social Circumstances of the Elderly in Ireland*
 B. J. Whelan and R. N. Vaughan
 111. *Worker Priorities, Trust in Management and Prospects for Workers' Participation*
 Christopher T. Whelan
 112. *The Impact of Energy Prices on the Irish Economy during 1973-1981*
 E. W. Henry
 113. *Schooling and Sex Roles: Sex Differences in Subject Provision and Student Choice in Irish Post-Primary Schools*
 D. Hannan, R. Breen and B. Murray, D. Watson, N. Hardiman,
 K. O'Higgins
114. *Energy Crops, Forestry and Regional Development in Ireland*
 Frank J. Convery and Kathleen Dripchak
 115. *Aggregate Supply, Aggregate Demand and Income Distribution in Ireland: A Macro-sectoral Analysis*
 John Bradley and Connell Fanning
 116. *Social Mobility in the Republic of Ireland: A Comparative Perspective*
 Christopher T. Whelan and Brendan J. Whelan
 117. *Attitudes towards Poverty and Related Social Issues in Ireland*
 E. E. Davis, Joel W. Grube and Mark Morgan
 118. *A Study of New House Prices in Ireland in the Seventies*
 Ian J. Irvine
119. *Education and the Labour Market: Work and Unemployment Among Recent Cohorts of Irish School Leavers*
 Richard Breen
 120. *Payroll Tax Incidence, the Direct Tax Burden and the Rate of Return on State Pension Contributions in Ireland*
 Gerard Hughes
 121. *Crime Victimisation in the Republic of Ireland*
 Richard Breen and David B. Rottman
 122. *Medium-term Analysis of Fiscal Policy in Ireland: A Macroeconometric Study of the Period 1967-1980*
 John Bradley, Connell Fanning, Canice Prendergast and Mark Wynne
 123. *The Irish Wealth Tax A Case Study in Economics and Politics*
 Cedric Sandford and Oliver Morrissey
 124. *Aspects of Freight Transport in Ireland*
 Jack Short
 125. *Small-Scale Manufacturing Industry in Ireland*
 Kieran A. Kennedy and Tom Healy (assisted by J. Bergin, T. Callan and
 P. McNutt)
 126. *Irish Medical Care Resources: An Economic Analysis* A. Dale Tussing
 127. *Employment in the Public Domain in Recent Decades* Miceal Ross
 128. *Multisector Modelling of the Irish Economy With Special Reference to Employment Projections*
 E. W. Henry

129. *Subject Availability and Student Performance in the Senior Cycle of Irish Post-Primary Schools* Richard Breen
130. *A Statistical Analysis of the Irish Electoral Register and its Use for Population Estimation* Gary Keogh and Brendan J. Whelan
131. *The Population Structure and Living Circumstances of Irish Travellers: Results from the 1981 Census of Traveller Families* David B. Rottman, A. Dale Tussing and Miriam M. Wiley
132. *Smoking, Drinking and Other Drug Use Among Dublin Post-Primary School Pupils* Joel W. Grube and Mark Morgan
133. *A Study of the Bovine Tuberculosis Eradication Scheme* R. O'Connor
134. *The Irish Engineering Industry: Strategic Analysis and Policy Recommendations* Eoin O'Malley
135. *The Determinants of Irish Imports* John D. FitzGerald
136. *Schooling Decisions: The Origins and Consequences of Selection and Streaming in Irish Post-Primary Schools* Damian F. Hannan with Maura Boyle
137. *An Analysis of Cross-Border Shopping* J. D. FitzGerald, T. P. Quinn, B. J. Whelan and J. A. Williams