The Effect of Consumers' Lifestyle on Trade Area Size

--A Study of TESCO in Ireland and the Czech Republic

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1Introduction

Location is very important to business. Location is critical for a retail site to achieve success for a number of reasons. First, location is the first thing customers consider when they choose stores. People usually like to buy what they want with the least inconvenience. Second, location is an exclusive, unique advantage because once a store occupies a location; its rivals can't occupy the same location. Third, starting a new business in a location means substantial initial investment. The retailer has to either buy the land and build a store, or lease an existing building from the property owner. He also has to decorate, and arrange logistical support for the new store. For some big sites, the retailer even has to invest in infrastructure such as parking (Levy, 2011, p121; Marquardt, 1983, p150; Morgenstein, 1992, p226; Guy, 1994, p21; Poloian, 2003, p318). While a good location can bring competitive advantage, a poor choice can cause huge loss (exit cost). To decide a good location, one must know the area around it, which is the "trade area".

The literature revealing the connection between marketing and geography is enormous. First, geography provides principles of consumer's spatial behavior to help evaluate and decide retail location, as for example, spatial choice models, such as the Huff model and Multiplicative Competitive Interaction models (MCI models), which assess the probability that a consumer at point i will make purchase in a store j (Cliquet, p39, p140). Second, many important concepts in marketing have geography roots. For example, the classification of products into convenience goods, shopping goods and specialty goods refers back to the

central place theory (Cliquet, p.31). Third, the development of geographical

information science has greatly facilitated the analysis of space around retail sites.

Gérard Cliquet's book *Geomarketing: Methods and Strategies in Spatial*

Marketing provides a comprehensive treatment of consumer spatial behavior,

retail location, and geographic information.

Naturally, trade area has been studied much by both market analysts and

geographers. A trade area can be defined as "a contiguous geographic area that

accounts for the majority of a store's sales and customers" (Levy, 2011, p199).

Modern retailing is mostly a demand driven industry. In order to meet customer

demand, a retailer must first know who the customers are. However this is not an

easy task, especially for a potential site where no current customers exist.

Economic, social and demographic statistics are the most practical and

accessible information source. These statistics are usually bounded to a certain

geographic area, so knowing the area from which potential customers may come

becomes the foundation of all following market evaluations. Trade area analysis

for a planned retail site discovers opportunities and the retail strategy necessary

to succeed, whereas trade area analysis for an existing site helps to decide

whether the current strategy matches consumer needs (Berman, p252)

Traditionally, researchers think the trading area should be a circular area,

centered on the retail site, with a fixed trading radius. This is known as "ring

analysis" or the "concentric circles method" (Poloian, 2003, p321). In many

analyses, physical distance is explicitly regarded as the only thing to consider

when deciding the size of a trading area. In Reilly's law of retail gravitation,

distance and population are the only two factors used to determine customer drawing power (as cited in Morgenstein, 1992, p234). Other models, like the "spatial demand curve", also use distance to determine customer purchasing behavior (Jones, 1990, p38).

In reality things are more complicated. Economic geographers have found that many other factors affect trade area size. The first factor is that physical barriers like rivers, mountains, valleys may modify theoretical trade area. Ring roads, express roads, and public transportation may also enlarge trade areas (Dunne, 1995, p204; Davies, 1984, p325; Levy, 2011, p199). But all the above factors can still be explained with accessibility.

More recently researchers have found that level of competition and the nature of merchandise sold can also affect trade area size (Levy, 2011, p200), and have begun to question whether "potential customers are likely to do their buying at the most accessible locations"(Marquardt, 1983, p157). In other words, consumer behavior can be an important determinant of retail location strategy.

In this paper, I undertake a comparative analysis of Tesco retail stores' trade areas in two different European consumer markets, Ireland and the Czech Republic, to see if there is a relationship between customer lifestyle and retail store's trade area size in these two countries. My aim is to explore the idea that a store's trade area is not only determined by distance, but also by consumer behaviors and retailing strategies to accommodate those behaviors. A store's trade area may, for example, vary with regard to consumers of different shopping frequency (Fig. 1.1). Moreover, I want to bridge the works of market analysts and

economic geographers in analyzing modern retail markets, and also to discuss

the importance of understanding a potential market's historical geography in
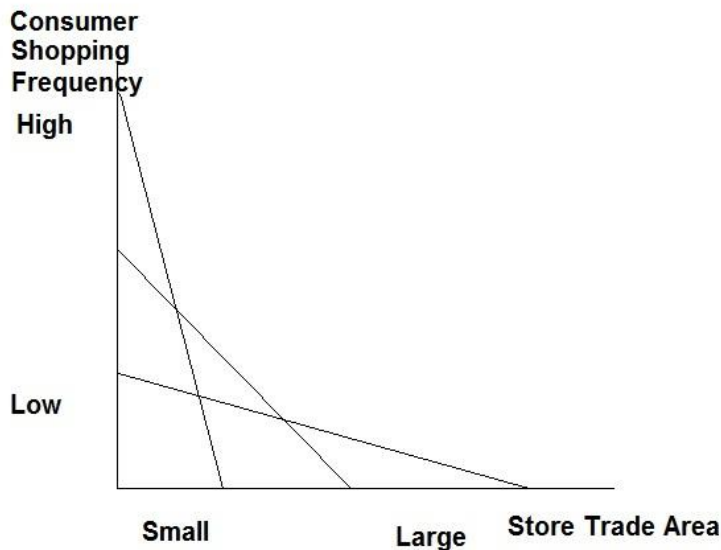
international retailers' local adaptation.

Fig. 1.1

2 Background

This paper focuses on the British retailer, Tesco and its operations in Ireland

and the Czech Republic. Tesco is the third largest retailer in the world, operating

some 3200 stores and employing over 326,000 people worldwide. As well as

operating in the UK, Tesco has stores throughout the rest of Europe as well as in

Asia. It also provides online retailing services through its subsidiary, Tesco.com.

Nowadays Tesco is an international retailing company of more than £2 billion

trade profit before tax (Annual Report 2013, Tesco PLC). Taking advantage of

"group skill and scale", Tesco can apply the expertise from one country to the

global market and source goods at lower prices from suppliers around the world.

Yet Tesco has also realized that retailing is a local business: the company needs

local knowledge and persons to run its operations (Annual Report 2012, Tesco PLC, p16). This realization comes from Tesco's experience that has sometimes even required expensive disinvestment from some countries. Palmer has called this experience "retail multinational learning", stating that "As Tesco accumulated much experience it recognized the importance of local and regional scale economics for achieving profitability" (Palmer, 2005, p41). Evaluation, learning and adaptation of the reactions of host economies are important to retailing internationalization (Burt, et al, 2005).

Ireland and the Czech Republic are two important markets for Tesco, and as such can be considered representative cases for retail research. Geographic proximity and cultural similarity led UK-origin Tesco to take its first step toward retailing internationalization in Ireland in 1979, however that was an unsuccessful experiment (Palmer, 2005; A strategic dilemma, Alexandra, 1995). Ireland is a West European country with long history of market economy, joining the EU in 1961. The Czech Republic, an East European country transiting to market economy and joining the EU in 1990s, was the first place Tesco entered in Eastern Europe, along with Hungary, making Tesco a pioneer in foreign direct investment in the post-socialist state.

Ireland's GDP per capital is 2.5 times that of the Czech Republic's (World Bank, 2012). Although Ireland and the Czech Republic are approximately equal in land area, Ireland has only half of the population of the Czech Republic. History, as well as people's culture and life habits are very different in those two countries. Tesco's various strategies in Ireland and the Czech Republic releases abundant

information about how an international retailing company adapts to national

conditions.

Our evolution to becoming a global business

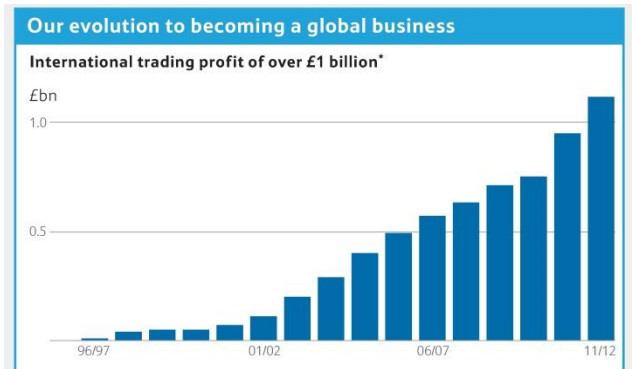International trading profit of over £1 billion*

Fig. 2.1 International trading profit of Tesco, Tesco PLC 2012 Annual Report

Tesco reentered the Irish retail market in 1997 with the acquisition of

Associated British Foods' Irish retail operations. (It entered Ireland in 1979 but

soon failed and quit), and today Tesco Ireland has 142 stores. Ireland accounted

for 4.1% of Tesco's global retail sales in 2011. Tesco Ireland has a national

presence across Ireland. Its various outlets allow the company to target city

dwellers and suburbanites, as well as small rural communities. The company

operates outlets at a number of forms, including Tesco supermarkets, Tesco

Metro convenience stores, Tesco Extra hypermarkets and Tesco Petrol forecourts.

The company also operates Ireland's largest online grocery service, accessible to

over 70% of the population (Passport, 2012).

Tesco's Czech retailing operation started in 1996 when it acquired six existing

department stores from K-mart (palmer, 2005). In 1998 Tesco built its first

hypermarket in the Czech Republic. By 2011, the company operated 75 Tesco

hypermarket outlets, 6 Tesco Extra outlets, 54 Tesco supermarket outlets, 85

Tesco Express and 81 Zabka convenience store outlets. The Czech market

accounted for 2.5% of Tesco's global retail sales in 2011. Today Tesco has 376

stores in the Czech Republic. Although Tesco generates the majority of its Czech

Republic sales through hypermarkets, it is actively expanding its retailing

presence though convenience stores and small supermarkets in order to target

small towns and compete more effectively with other retailing brands. In an

attempt to further broaden its Czech Republic market position and to strengthen

customer loyalty, Tesco launched its Internet retailing in early 2012 in the Czech

Republic, with a focus on selling groceries.

   Given the aim of this paper, which is to explore differences in customer

lifestyle in these two countries as factors that act to determine retail store trade

areas, it is important to define "lifestyle" and to profile each country's consumer

lifestyle. Lifestyle is a very broad collection of consumer characteristics

referring to "how people live, how they spend their time and money…" There are

many indicators that marketing analysts use to describe consumer lifestyle, such

as the VALS^{TM} American Lifestyle (Berman, p99, p100). In Euromonitor

International's report on consumer lifestyles in the Ireland, lifestyle covers learning,

working habits, eating habits, drink habits, grooming habits, fashion habits, health

and wellness habits, smoking habits, shopping habits, leisure habits, DIY and

gardening habits, pet ownership habits, travel habits, vacation habits, travel habits.

However this is far from complete. However, in this paper I only focus on two

aspects of lifestyle, which are housing pattern and shopping frequency. Housing

pattern is the result of a countries economy development stage, urbanization process and housing policy. Shopping frequency is primarily influenced by culture and people's buying power. Housing pattern and shopping frequency together can provide valuable knowledge on market basis.

Generally Irish people prefer to live in houses rather than urban apartments. Suburban neighborhoods and industrial parks have gained popularity in Ireland over the past few decades when the Irish economy experienced rapid growth. Many small towns and villages have turned into dormitory towns serving big cities (Passport, 2012). In contrast, in the Czech Republic, many people live in prefabricated urban apartment buildings called *paneláks*, most of which were constructed during the socialist years as a means of solving post-war housing shortages. Only after privatization took hold in the 1990s, has some suburban housing begun to emerge. As a result, people living in Czech cities are far more geographically concentrated than people in Irish cities.

As for shopping frequency, most Irish families own cars. According to Nielsen market research, customers offset inflation by shopping "little and often" – making more frequent trips to grocery store but buy less each time (Tescoplc.com). They usually do their grocery shopping several times a week. Many will do their biggest shopping on a weekday evening. Much of Irish grocery shopping tends to be customarily done quite locally. Distance is a primary factor affecting where customers shop. In recognition of this face, Tesco has been increasingly targeting local grocery consumers (Passport, 2012).

On the contrary, in the Czech Republic, a recent increase in private car

ownership has facilitated interest in bulk shopping in suburban hypermarkets, revolutionizing in this key way the traditional short-distance local shopping behavior of the socialist years. Czech people today often make big shopping trips for food and groceries once a week during weekends. Families have in many ways come to regard shopping as a weekend leisure activity (Passport, 2012).

Given those difference in housing pattern and shopping frequency, my aim is to see how they may be reflected on the reality of Tesco stores' trade area size in the two countries.

3 Literature Review

Traditional trading area analysis (O'Brien, 1992, p72; Jones, 1990, p38-39) considers distance as the only factor affecting consumer's buying behavior. This is a very necessary simplification. Consumer behavior is naturally driven by a series of complicated, interconnected factors: social, economic, cultural, and sometimes stochastic. Every consumer behaves differently. But for convenience, traditional analysis have typically picked out a limited number (preferable one) of factor(s) to determine approximate retail market areas. It is natural that economic geographers would like to link consumers' buying activity (behavioral features) with travel distance (spatial features). "Where you are influences what you do", and therefore, travel distance becomes the first thing to consider.

The "spatial demand curve" clearly offers a sound rationale for privileging distance as a primary factor. As the cost of goods increases, fewer goods will be purchased (Fig. 3.1.a). As distance increases, the time and money cost of transportation, which adds to the cost of goods, also increases (Fig. 3.1.b and c).

Therefore, the quantity of a good purchased by a household declines with the household's distance from the store (Fig. 3.1.d). The curve in Fig. 3.1.d is called the "spatial demand curve" (Bib). Traditional trading area analyses claim that at a certain distance the travelling cost will become so large that the purchase falls to zero. This distance is called the "range" of the store and determines the boundary of the store's trade area (Fig. 3.2).
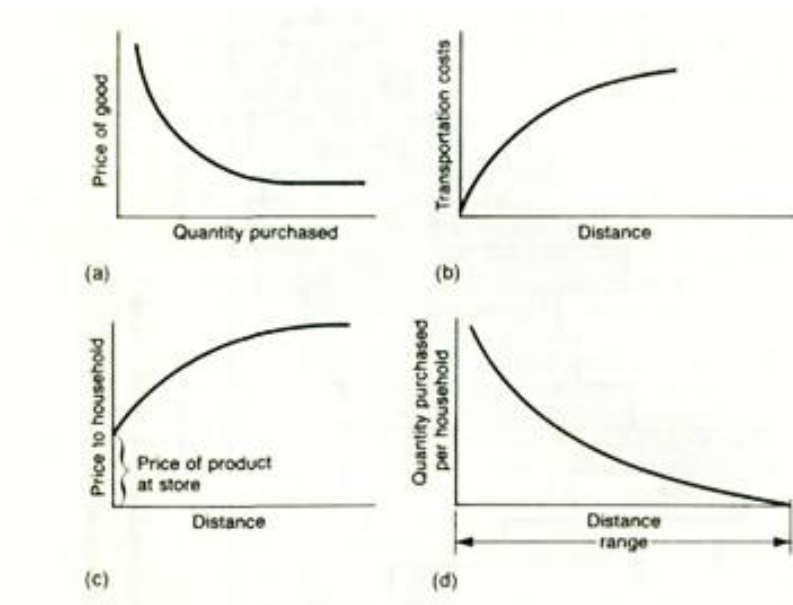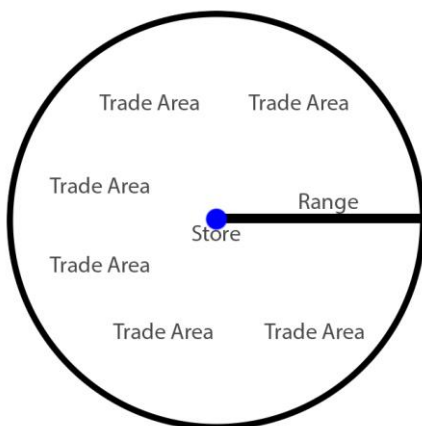
Fig. 3.1 Spatial demand curve

Fig. 3.2 Range

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Some market analysts have talked about the relationship between housing pattern and trade area size. In a book Berman and Evans say "In many urban communities, people are clustered in multi-unit housing near the center of commerce. With such population density, it is worthwhile for a retailer to be quite close to consumers; and trading areas tend to be small because there are several shopping districts in close proximity to one another, particularly for the most densely populated cities. In many suburbs, people live in single-unit housing – which is more geographically spread out. To produce satisfactory sales volume there, a retailer needs to attract shoppers from a greater distance." (Berman and Evans, p224) However Berman and Evans do not provide numbers to prove this statement.

Also they mention that retailers can delineate the trade area boundary by knowing the frequency with which people from various geographic locales shop at a particular store. Yet they do not say that shopping frequency not only signals trade area boundary but also probably affects this boundary (Berman and Evans).

4 Hypothesis

My analysis of Tesco retailing strategies in the Czech Republic and Ireland looks at two hypotheses.

4.1 Hypothesis A

According to World Urbanization Prospects, the urbanization rate in the Czech Republic is more than 10% higher than in Ireland. As shown in Fig. 4.1, major Czech cities are more populous than major Irish cities; the contrast is even more striking if capital cities are excluded (Fig 4.2).
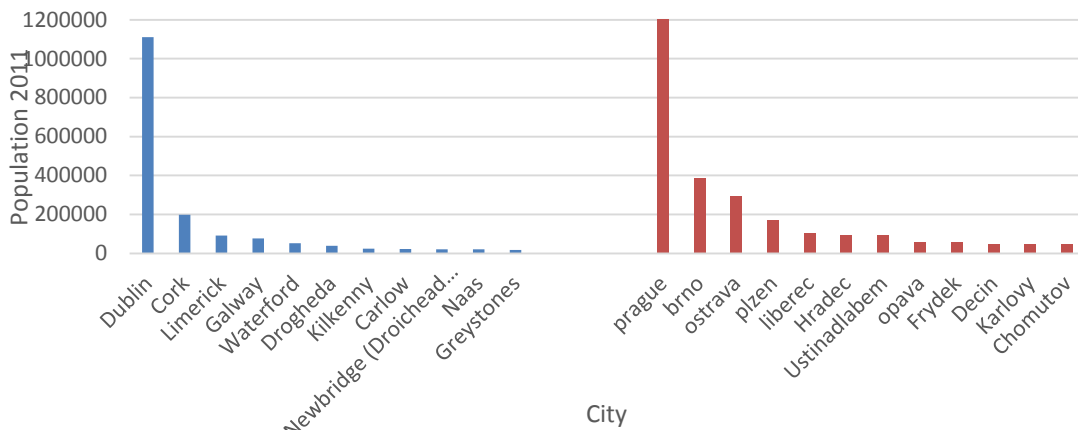
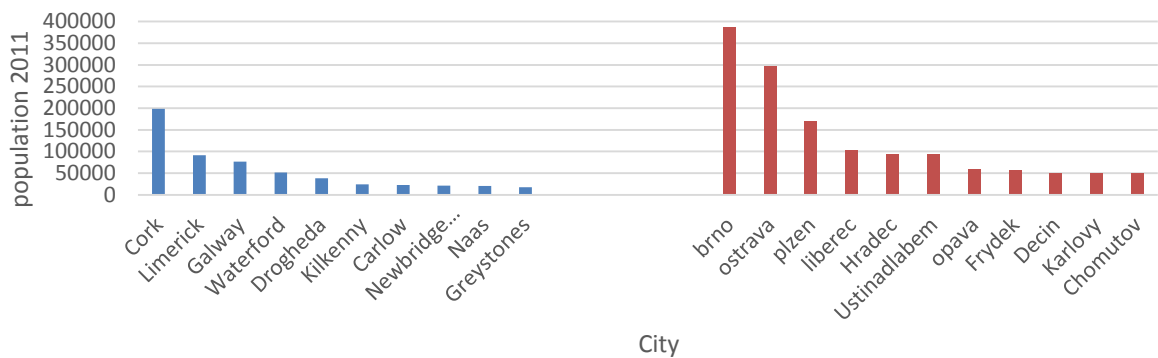Fig. 4.1 Population of major cities, including national capitals

Fig. 4.2 Population of major cities, excluding national capitals

Because Czech cities are comparably much more populous, a relatively small trade area may be all that necessary for a store to gather sufficient customers to be profitable. Irish cities and suburban areas are, in contrast, more sparsely populated, and urban populations tend to be smaller; hence a larger trade area may be required to gather sufficient customers to support a store. In both markets, Tesco, as a publicly traded company, tend to open as many stores as possible to appease investors. As a result, I hypothesize that the average trade area of Tesco stores in the Czech Republic should be smaller than in Ireland.

4.2 Hypothesis B

Regardless of how many goods a consumer buys at one time, the travelling cost (economic cost and time cost) is the same. As total value of goods (store price) increases, the share of travelling cost in the total cost will decline. Also it is reasonable to assume that if the total consumption is fixed, the less frequently a consumer goes to a store, the more he or she will buy each time. As a result, for people who go shopping less frequently, traveling cost is less relative to the price of goods, making shopping less sensitive to distance (Fig. 4.3) and making consumers more willing to go to a more distant store to buy things (Fig. 4.4). Thus, the trade area of a store may be larger if consumers buy the same total amount of goods in fewer visits.
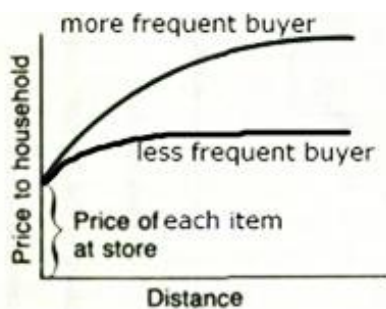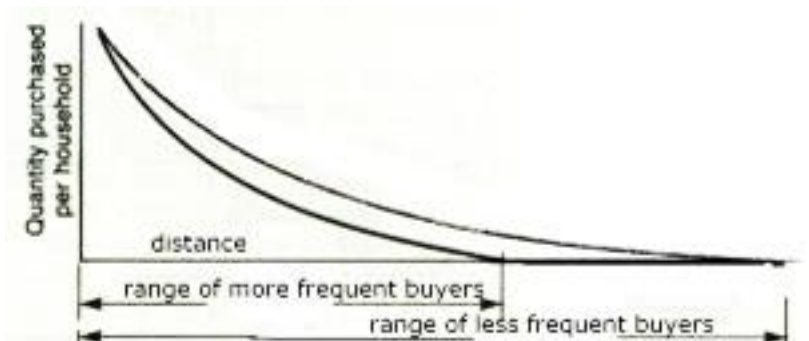
| Fig 4.3 | Fig. 4.4 |

According to the Passport Consumer Lifestyle reports (Euromonitor, 2012), which monitors consumer habits in the EU, Irish people tend to buy groceries in nearby stores multiple times a week, while Czech people usually go to out-of-town hypermarkets for bulk shopping on weekends. Czech people appear to be willing to travel a longer distance to stores, which may allow Czech Tesco stores to attract customers living farther from them. Therefore. My second hypothesis

suggests that the average trade area size of Czech Tesco stores should be larger than of Irish Tesco stores.

5 Method

5.1 compare the mean distance-to-the-closest-store (DCS) in Ireland and the Czech Republic

To test my hypotheses, I needed to establish trade areas for stores in the Czech Republic and Ireland. Because the number of stores is small, trade areas drawn as polygons are not closed and therefore not comparable. Instead, distance-to the-closest-store (DCS) can be used to reflect the size of trade areas of stores. The smaller the DCS, the smaller the trade area size. I therefore use DCS as an approximation of the "range" of the trade area.

To carry out my analyses, I chose 20 the most populous cities in both the Czech Republic and Ireland. Then I used the "store locator" on the Tesco official websites to find the street addresses of all Tesco stores in the selected cities. Among those stores I selected only big-sized stores, which included Tesco's extra stores and superstores in Ireland, and its supermarket, hypermarket, extra stores, and city malls in the Czech Republic. If a city had only one selected store, I neglected that city because no inter-store distance exists. Next I geocoded the geographic coordinates of all stores using the service provided by *www.findlatitudeandlongitude.com*. The results were listed as in Table 5.1. When computer geocoding failed, manual geocoding was substituted.

Item number	City	Name and Street address	Type	Latitude	Longitude	Accuracy(m)
9	Prague	Supermarket Praha Brandlov??Brandlov?? 1640, Praha 4	Supermarket	50.03252	14.51428	0
10	Prague	EXTRA Praha SkalkaPretluck?? 3295/50, Praha 10	EXTRA	50.07078	14.51087	9

Table 5.1

Latitude and longitude coordinates were then outputted as a point shapefile in

ArcMap. The *Point Distance* tool in ArcMap was used to generate a table of

inter-store distance in one city, as in Table 5.2. For each store I found the store

with the shortest distance to it and defined that distance as the DCS for that store.

I then calculated the mean DCS for that city, as in Table 5.3. Duplicating this

process, I came up with a mean DCS for every selected city in both countries, as

in Table 5.4 and 5.5.

Distance From Item Number	Distance to Item Number	DISTANCE(m)
21	23	2945.65013062000
21	22	2337.64410513000
21	24	5854.93237613000
22	23	4541.52374337000
22	21	2337.64410513000
22	24	6287.99381639000
23	22	4541.52374337000
23	21	2945.65013062000
23	24	3556.57524906000
24	23	3556.57524906000
24	22	6287.99381639000
24	21	5854.93237613000

Table 5.2 Inter-store distance in Waterford, Ireland

Distance From Item Number	Distance to Item Number	DISTANCE (m)	Mean (m)
21	22	2337.64410513000	2794.38
22	21	2337.64410513000	
23	21	2945.65013062000	
24	23	3556.57524906000	

Table 5.3 DCS of Tesco stores in Waterford, Ireland

City	Mean (m)
Celbridge	8080.704
Waterford	2794.378
Newbridge	12893.89
Nass	3650.626
Limerick	3861.962
Killarney	2330.384
Greystones	10044.83
Galway	13547.32
Cork	4927.455
Drogheda	14061.35
Dublin	6318.375

City	Mean (m)
Brno	4476.29
Chomutov	3373.597
Decin	6725.801
Frydek	3763.002
Hradec	4302.455
Karlovy	3506.782
Liberec	3515.633
Opava	1892.374
Ostrava	7945.837
Plzen	5538.545
Ustinadlabem	14214.96
Prague	3995.976

Table 5.4 Mean DSC of cities in Ireland of   .   .

Table 5.5 Mean DCS cities in the Czech Republic

Finally, I used a two-sample z-test of mean to compare the patterns in the two countries. The null hypothesis was that the mean DCS in the Czech Republic would not be less than in Ireland, and the null was not rejected at 0.05 significance level, therefore no conclusion can be made.

GROUP	N	Mean	Standard Deviation
CZ	12	5270.938	3247.595
IR	11	7501.025	4477.319

p-value : 0.084

Fig. 5.1

Two-sample z-test
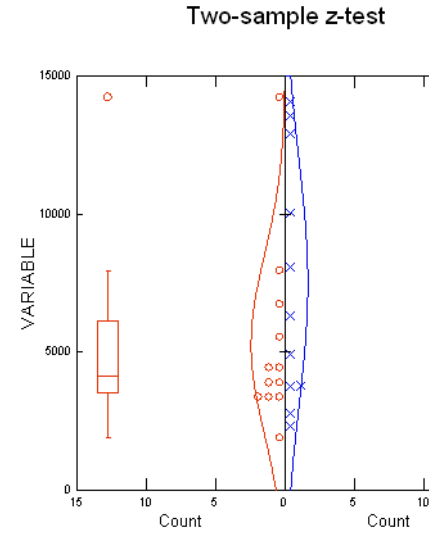
However, I could clearly see that the mean DCS in Ustinadlabem was an

outlier in the Czech Republic. Actually, Ustinadlabem is located in a river valley so

the city shape is highly tentacular and the DCS is large. If I neglected that outlier,

and did the same two-sample z-test again with the same null hypothesis, the null

was rejected at 0.05 significance level, meaning that the mean DCS in the Czech

Republic is smaller than in Ireland e.t. trade area size is smaller in the Czech

Republic. Hypothesis A was supported.

GROUP	N	Mean	Standard Deviation
CZ	11	4457.845	1695.516
IR	11	7501.025	4477.319

p-value : 0.017

Fig. 5.2

Two-sample z-test
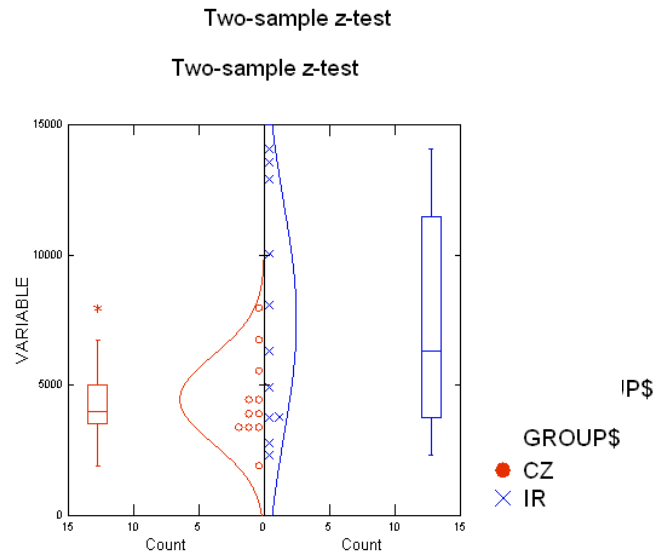
5.2 Compare the distance-to-city-center in Ireland and the Czech Republic

The distance from each store to the center of the city in which it is located (administrative unit) can insinuate approximately whether store locations are dispersed or concentrated. Sparsely located stores extending out to the outer city could be expected to have larger trade area sizes than densely located stores near the center of the city.

Using the point shapefile of Table 5.1, and another point shapefile of all city centers in Ireland and the Czech Republic from the ESRI map database, I determined the distance-to-city-center of all stores in one city (Table 5.6). Each item number in the table represented a store.

Item Number	Store-to-city-center Distance (m)	City It Locates	Mean (m)
0	6191.304767	Dublin City	8610.891154
1	11131.52321	Dublin City	
2	4530.375087	Dublin City	
3	8989.146456	Dublin City	
4	6609.744856	Dublin City	
5	6220.428685	Dublin City	
6	12228.02063	Dublin City	
7	12986.58554	Dublin City	

Table 5.6 Distance-to-city-center of all Tesco stores in Dublin, Ireland

Replicating this process for all selected stores and cities in both countries produced the mean distance-to-city-center of stores in cities in Ireland and the Czech Republic.

City It Locates	Mean		City It	Mean

	(m)
Bray Legal Town	6300.361
Cork City	4764.375
Drogheda Legal Town	7895.592
Droichead Nua Legal Town	6920.195
Dublin City	8901.92
Galway City	7430.229
Killarney Legal Town	1614.732
Leixlip Legal Town	7179.647
Limerick City	3687.064
Naas Legal Town	2463.085
Waterford City	2725.68

Locates	(m)
Ustinadlabem	7740.839
Brno	4971.571
Chomutov	5284.532
Decin	5018.895
Frydek	2333.496
Hradec	3096.307
Karlovy	3430.016
Liberec	2741.008
Opava	1607.668
Ostrava	7906.169
Plzen	4151.195
Prague	9004.568

Table 5.7 Mean distance-to-city-center of cities in Ireland

Table 5.8 Mean distance-to-city-center of cities in the Czech Republic

Finally, I used a two-sample z-test to compare the patterns in the two countries. The null hypothesis was that the mean distance-to-city-center would not be less in the Czech Republic than in Ireland, and the null was not rejected at 0.05 significance level. Therefore no conclusion could be drawn.

GROUP	N	Mean	Standard Deviation
CZ	12	4773.855	2373.980
IR	11	5443.898	2496.492

p-value : 0.255

Fig 5.3
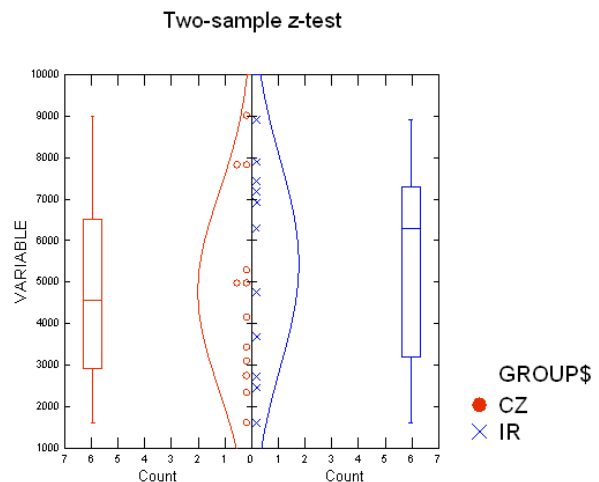
6 Discussion

Hypothesis testing on data only supported Hypothesis A. On average Czech Tesco stores have smaller trade area sizes than Irish Tesco stores do. Housing pattern has an effect on trade area size, which means trade area is decided by factors more complicated than physical distance and accessibility.

Population size of cities plays an important role in retail stores' locational pattern. Looking at urban population size, it is easy to recognize the size-rank hierarchy is very different in Ireland and the Czech Republic. In both countries the capital cities are primate, dwarfing all other cities by a wide margin. Both are in excess of one million inhabitants. However, in the next rank tier of one hundred thousand to one million inhabitants, the Czech Republic has 5 cities whereas Ireland has only one. In fact, if we include all other cities not studied in this research, Czech cities are usually several times more populous than Irish cities at the same rank tier.
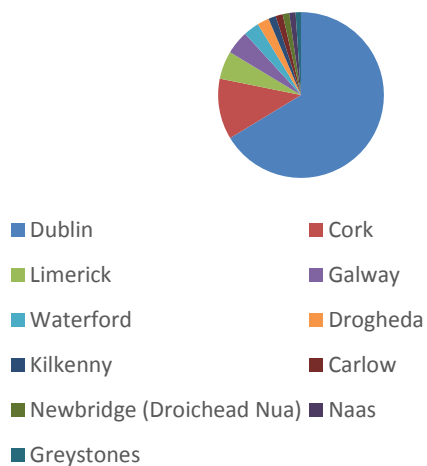
Population Propotion of Irish Cities

Population Propotion of Czech Cities

- Dublin
- Cork
- Limerick
- Galway
- Waterford
- Drogheda
- Kilkenny
- Carlow
- Newbridge (Droichead Nua)
- Naas
- Greystones

- prague
- brno
- ostrava
- plzen
- liberec
- Hradec
- Ustinadlabem
- opava
- Frydek
- Decin
- Karlovy
- Chomutov

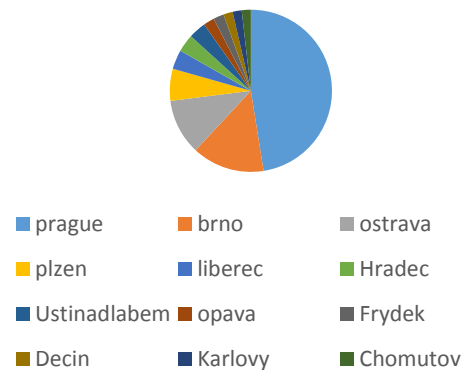Fig. 6.1   Fig. 6.2

As seen in the above figures, Dublin is an absolute primate in the size-rank hierarchy in Ireland. Prague also dominates, but less so when seen against all

other Czech cities combined. The Czech Republic has a more gradually descending hierarchy. This discrepancy can be attributed to different urbanization process of those two countries.

Until 1990, Ireland was a predominantly agricultural society based on uneconomical small farms. It has been only 40 years since the urban population of Ireland exceeded its rural population. Most big cities first developed along the coast as ports, with the primary function of exporting goods to Britain. Given the size of Ireland, not many big ports were necessary. Each port city had a water-front market place but generally no sizeable historical city core with a square or cathedral. Trading activity was mostly with Britain on primary products, and many rich aristocrats and businessmen went to London or Paris to satisfy their needs for high-level services and goods, including education and luxury shopping. This tended to impede the formation of high-level city functions in local towns. Irish ports simply did not grow as big or as prosperous as international trading centers like Venice and Amsterdam.

Most inland areas were paid little attention with regard to urban development by the then British government. Moreover, the Irish Potato Famine tremendously reduced population in the mid-1800s. The result is that Ireland never developed a "complete" urban system. Ireland was the peripheral territory of Europe last penetrated by industrialization (World, p.59). After WWII, urbanization in Ireland was strongly influenced by British living styles and many dorm towns were built outside major cities, especially around Dublin and Cork, and during the 1970s and 1980s a growing middle class started to move to single family, low density houses,

further reducing population sizes in the urban cores. However the development

was slow. In 1988 *The Economist* commented Ireland as the "Poorest of the Rich

(Europe)" (The Economist, 1998)

The situation changed dramatically in the 1990s, when Ireland

metamorphosized into the "Celtic Tiger", a term first coined by Morgan Stanley in

1994. *The Economist* said in 1997: "Today (Ireland) is about as prosperous as the

European average, and getting richer all the time". This was an era accompanied

by "high and sustained economic growth, low inflation, a current account balance

of payment surplus, falling unemployment, net immigration and a growing budget

surplus", and the success of many high-tech companies targeting at the

international market (Murphy, 2000). According to the OECD and the EU, Ireland

outperformed all other industrialized economies from 1990 to 2006. Researchers

attribute this success to the nation's policy of economic openness to global

markets, low tax rates, and investment in education (Dorgan, 2006).

Europeanization and globalization also benefitted the Irish Economy (Murphy,

2000). However 20 years of prosperity was simply not enough for the country to

build up its urban system; even worse is that Ireland was hit hard by the global

financial crisis in 2008, and still has a long way to recovery.

In contrast, the Czech Republic has a well-developed urban system. The

Czech Republic is an inland country in Eastern Europe. In the Middle Ages many

administrative centers among the country were serving different hierarchies of

lords. Circumventing the castles of those lords many towns and cities arose.

During the second stage of the Industrial Revolution, Bohemia, then part of

Austria-Hungary, became a major industrial region (Fig.6.5, Marston, 2011). By the turn of the 20th century (1900), Bohemia had already become the strongest industrial region in Eastern Europe with a growing middle class and its culture.

Following WWII, the guiding principle was that each Soviet state had its specialization in an international division of labor, based on its initial advantage, specialization, and agglomeration economies. (Marston, 58). The Czech government (former Czech-Slovakia) allocated enormous resources to industrialization. Its machinery manufacturing, chemical, metallurgy, textile, wood, glass manufacturing and light industries were greatly advanced. Between 1959 and 1995, in order to ameliorate a severe housing shortage for industrial workers, following the USSR bloc housing model, quantities of *Panelák* were built in Czech cities. *Panelák* is a term for apartment building built with prefabricated panels made in concrete plants. From the 1970s, many enormous *Panelák* were built as more than 100 meters long and more than 20 stories high. By 1995 *Panelák* containing 1.17 million apartments had been built in the Czech Republic, providing housing to about 3.5 million people, or approximately one third of the country's population (Stankova, as cited in wikipedia). Today, Czech cities are more densely populated than Irish cities. Today, the Czech Republic is widely applauded as one of the most successful countries in East Europe in achieving economic transition and European integration. It has not been struck hard by the 2008 global financial crisis and its cities are in good economic condition.
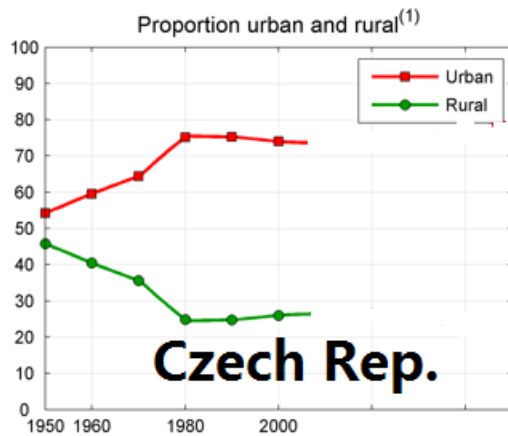
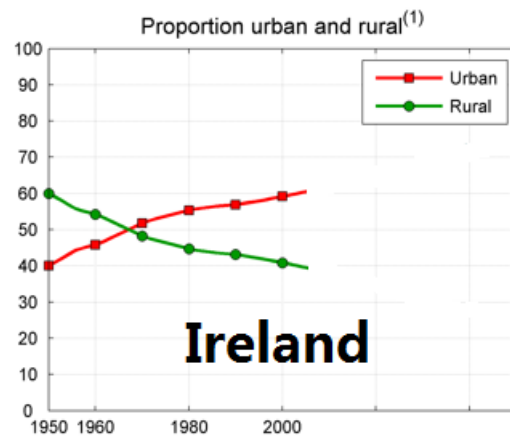Fig. 6.3 Historical urbanization rate in the Czech Republic, World Bank

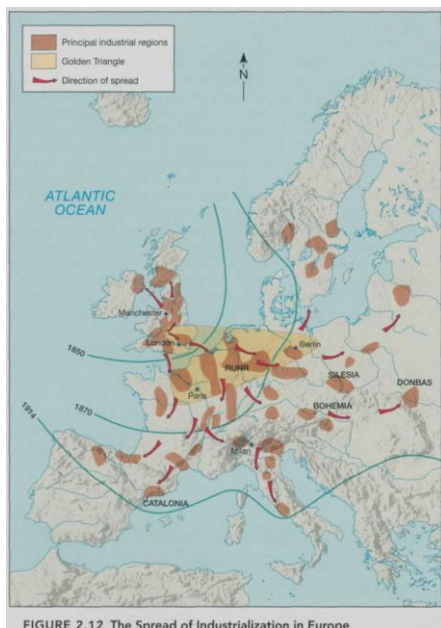Fig. 6.4 Historical urbanization rate in Ireland, World Bank

Fig. 6.5 Diffusion of Industrial Revolution in Europe, Marston, 2011

In my research Hypothesis B was not supported by data. However this does not necessarily mean that shopping habit does not play a role in retail store's trade area size. It is possible that consumers' shopping frequency does influence store's trade area size, but this influence may be overmatched by the influence of residential pattern. Besides, shopping habits are very complex and involve considerations above and beyond travelling costs. The time consumers want to

spend on shopping, store loyalty, and types of goods consumers usually buy from Tesco are among many other shopping habits that may influence how far consumers are willing to go for shopping.

7 Limitation

Tesco has multiple types of stores in both countries. In Ireland, Tesco operates small metro and express stores, medium superstores, and large extra stores. In the Czech Republic, the company retails through express (under $500m^2$), supermarket ($500\text{-}1000m^2$), hypermarket ($1000\text{-}5000m^2$), extra store and city mall ($5000m^2$ and above). For the purpose of this research, I only selected medium and large stores in Ireland and store bigger than $1000m^2$ in the Czech Republic. However this arbitrary selection may have affected my result. First the exact sizes of superstores and extra stores in Ireland were unknown, so I was not able to determine whether they are of similar sizes to selected stores in the Czech Republic. Second, small stores were neglected because they only sell a small variety of fast-moving consumer goods, while medium and large stores sell rich varieties of fast-moving consumer goods, appliances, clothing, supplies, and many others. In this sense they serve a different type of demand so small stores are not considered as competitors for trade area with large stores. However, it is those fast-moving consumer goods that are sold at the largest quantities to the most consumers, and the distribution of small stores could have an effect on the location of medium and large stores. For example, in the Czech city Havirov (Fig. 7.1), with the exception of one supermarket and one hypermarket, all other stores are express stores. Since express stores were neglected, the mean DCS in

Havirov, which equals to the distance between the supermarket and the hypermarket, is quite small. However, it is reasonable to assume that Tesco does not put a big store in the eastern part of Havirov because there are already three express stores. An additional big store may dilute the consumer flow to every store. If Tesco had put one big store instead of the three express stores in east Havirov, the mean DCS would have been larger in this city.
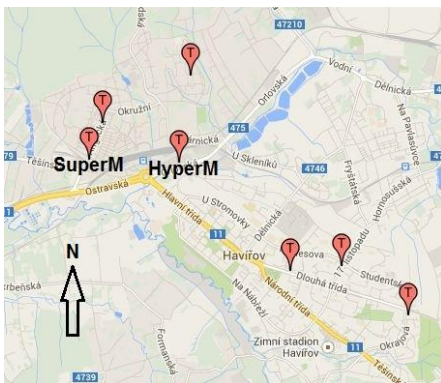

Fig. 7.1 Tesco stores in Havirov, the Czech Republic

Another important factor not considered in this research is the shape of the city. The distance-to-city-center most appropriately reflects whether stores are centrally or sparsely distributed if the city is in a circular form. However, when cities are of elliptical, semi-circular or tentacular forms, the distance-to-city center cannot suitably reflect the distribution pattern of the stores. For example, in circular city B and elliptical city C (Fig.7.2), all stores are evenly distributed and have approximately the same trade area size, but the mean distance-to-city-center is larger in city C.
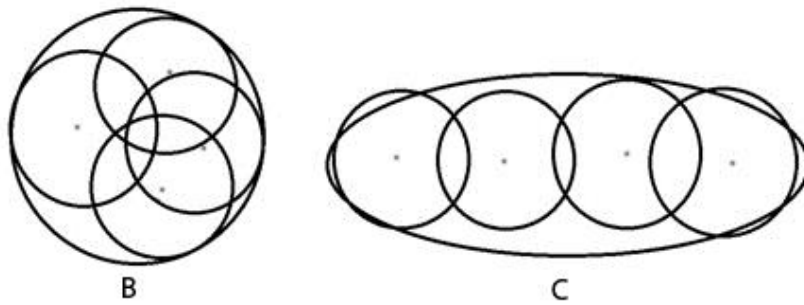
Fig. 7.2

In the comparison of distance-to-city-center method, I used ERSI shapefile to define city centers. In fact the locations of city centers are not fixed. For example, traditional European towns may have more than one center, e.g., a religious center, a civil government center, and a market place. Also, some big cities may function as several districts, and each district tends to have a relatively independent retail market. In this research, however, most cities are of 100 thousand inhabitants or less, so the multi-district pattern may not exist. If this research were to be done in big metropolitans of several million, multi-district patterns could not cannot be ignored.

Another simplification made in this research is that Tesco locates its stores only taking the living style of customers in account. Yet in reality there are many important things a retailer needs to consider in locating stores. One of those things is the competition. If competitors have already saturated certain areas of the city, Tesco may avoid those areas even if there are many inhabitants. Unlike most Tesco Ireland stores, which are established by Tesco itself, many Czech Tesco stores were acquired from other local retailers which have existed for a long time, which means the location of those stores is not decided by Tesco and may

be the result of other factors.

Many further research questions are open for study. First small stores can be included in the discussion. According to the relative sizes of every type of stores, the trade area between them can be divided proportionally and then studied. Also, the mean DCS comparison and distance-to-city-center comparison can be done among cities in one country to see whether the urban population size really has an effect on store distribution.

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