Instituto Superior de Ciências do Trabalho e da Empresa

THE IMPACT OF THE ANCHOR STORE ON THE PERFORMANCE OF A COMMERCIAL CENTRE

(On the model of Sonae Sierra)

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Abstract

This master thesis uses a unique data of mall store contracts in order to study the complex economic issue that arises when stores are placed together within a large shopping centre. Bringing a large number of stores together in a single location, economize on consumer search costs and create a complicated web of externalities and incentive issues between store owners and mall developer. Planned shopping centres usually have few department stores, as called anchor stores and multiple specialized retailers selling substitutable commodities in each commodity category. Consumers are aware of the quality and prices of the anchor's commodities. Shopping centres give them the opportunity to learn about other retailer's commodities, economizing their costly search and in this way collocation of both store types have mutual benefits. This thesis examines the impact of the anchor stores on the performance and results of the shopping centres and on the charges of the other stores. The empirical analysis shows that a greater presence of anchors in a mall directly increases the sales, and consequently the rents of non-anchor stores in a mall. We demonstrate that externalities are internalized by an efficient allocation of space and incentives across stores. We also show that they increase the customer drawing power measured as the number of people who visited the mall in a specific moment of time but lately they have a smaller impact on the sales per each person that visits the centre.

Key Words: Externalities, Anchor store, Shopping centre, Rent

JEL Classification: C12; D62

Resumo

Nesta tese de mestrado utilizamos um conjunto de dados relativos a estabelecimentos comerciais para analisar a complexidade económica de um grande Centro Comercial onde existem várias lojas que estão muito próximas entre si. Colocar um grande número de lojas num mesmo local permite ao consumidor economizar tempo e gera também uma rede complexa de externalidades e incentivos entre os lojistas e o *mall developer*. Os Centros Comerciais planificados têm geralmente vários tipos de lojas, nomeadamente as chamadas lojas-âncora, e vários retalhistas especializados que comercializam bens e serviços diversos e em geral substitutos. Os consumidores estão a par da qualidade e dos preços das lojas âncora e os Centros Comerciais não só lhes oferecem a possibilidade de conhecer produtos de outros retalhistas, como lhes permitem desta forma, economizar tempo e dinheiro. Nesta lógica, a colocação de ambos os tipos de estabelecimentos comerciais possuem benefícios mútuos. Este trabalho analisa o impacto das lojas-âncora no desempenho e resultados dos Centros Comerciais, e nos custos e desempenho das outras lojas. A análise empírica demonstra que uma maior presença de âncoras num centro comercial tem influência directa no aumento das vendas e, consequentemente, dos preços de arrendamento das outras lojas existentes no Centro Comercial em questão. Os resultados obtidos permitem concluir que as lojas-âncora aumentam o poder de atracção da clientela medido pelo número de pessoas que visita o Centro Comercial num dado momento, mas também que ultimamente, elas têm um menor impacto nas vendas por visitante.

Palavras chave : Externalidades, Loja-âncora, Centro Comercial , Renda

Classificação JEL: C12; D62

Contents

1. Introduction

Commercial centres have generated the best return of any of the main real estate sectors in the most European countries over the last few years. The sector benefits from the low structural vacancy rates, default risks are smoothed by the high number tenants in any centre and it has traditionally generated very stable returns with consistent rental growth.

Shopping centres have been conquering an ever more important place in the commercial system. On account of their number and diversity of formats, countrywide presence and market share, they contribute to the modernization and restructuring of the real estate sector, as well as to the transformation of the urban landscape.

The commercial centre concept assumes the simultaneous existence of a number of characteristics: spatial integration of establishments, unitary management and shared services, adaptation of the commercial project to the specific nature of the target population, diversity in the trade mix and the presence of anchor stores, extended opening hours common to all installed units and availability of car parking facilities. These essential requirements allow for multiple formats, which may be based on size (from the neighborhood centre to the supra-regional centre), commercial structure (a more generalized or a more specialized range of stores), anchor stores (one or various-food, non-food, leisure areas), the urban location (central business district, urban district, suburb), or the commerce/leisure ratio. The range of possible combinations proves the concept's versatility, without compromising its basic indentifying principles.

Implicit in the origin of the concept are the principles of agglomeration and complementarities. The former maintains that the sales of establishments with products of the same category benefit more from proximity of other congeners than from their distancing, while the latter assumes that units with products of different categories, but corresponding to buying patterns with identical requirements, increase their sales when situated nearby, due to greater purchasing convenience. This philosophy was inspired on the centres of historical and industrial cities where, based around centrality and accessibility, commerce sought out the best location in terms of the number of potential customers frequenting the location. The concentration of the offer occurred through the

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spontaneous convergence of several individual decisions regarding the location of commercial units, cumulatively contributing to strengthen the attraction of these areas.

However, concentration in commerce is due to a number of planned actions converging towards the structuring of a pre-defined commercial project, eliminating functions that do not fulfill the requirements. In the initial development of the concept, commerce emerges as the dominant function, while services are residual in nature. But the importance of the latter in the make-up of the mix has been increasing. Leisure and entertainment-associated functions play an ever greater role, accompanying the emphasis on leisure in contemporary society. Confined at first to cinemas and the food court, these functions have gained in space and visibility as they have widened in scope and added further values. This has culminated in the creation of a specific format-the leisure park-where recreational activities are dominant and commerce is only complementary. This potential for adaptation allows the concept to be installed in a wide variety of territorial and socioeconomic situations, and enables it to react swiftly to fluctuations in demand requirements and upstream needs, facilitating its expansion and reconversion.

Nowadays, the shopping centre has revolutionized the spatial organization of retail trade all over the world. It had been noticed, since the time of the first merchants selling goods in the bazaars that the clustering of consumer service activities, in particular locations generates advantages and economic benefits. By locating near other stores selling similar products, a retailer can reduce consumer search costs and thus attract more consumers, than if it had chosen to have an isolated location. It also has been shown that multipurpose shopping behavior on the part of consumers and profit maximizing location choice on the part of firms can lead firms selling different goods to locate near one another and form "the shopping centres". Hotelling (1929) indicated why two or more competitive operators might tend to cluster at a central location within a market, while two or more operators within the same chain will locate separately within distinct sub-markets. Ironically, "monopolistic" situation implies shorter average customer travel distances than the "perfect competition" (Yates et al., 2001).

Hoover (1971) has emphasized the underlying importance of external economies in the creation of clusters of consumer service enterprises that may individually be competitive with each other. The clustering of stores has market-widening and consumer

attracting effects beyond those that could have been achieved by an individual business within the nucleation (Pashigian, 1995).

Thus, an individual consumer service enterprise has to weight the advantages that may be gained from locating within a cluster to the more evident benefits that might be gained from "free-standing" location.

While shopping malls economize on consumer search costs by bringing a large number of stores together in a single location, they also create a complicated web of externality and incentive issues between store owners and the mall developer. There are two kinds of externalities, the positive and the negative ones. Positive inter-store externalities, sometimes termed as demand externalities (Eppli and Benjamin, 1994), are the positive effects generated from one or more tenant(s) to other tenant(s) without consent and compensation between the generator and receiver. Conversely, negative externalities can generate lower rates of return. Stores as anchor stores or department stores and national brand name stores, generate positive externalities by drawing customer traffic not only to their own store but also to other stores. Thus, at some degree, it can be said that the success of each store depends upon the presence and the effort of other stores, but also of the effort of the developer to maintain the mall. Demand externalities were usually seen as the synonym of customer-spillover effects generated from anchor tenants (Gatzlaff et al., 1994; Pashigian and Gould, 1998). These demand externalities have been recognized as significant agglomeration economies that generate increased returns in shopping centres.

However, agglomeration economies in shopping centres could be more than just the spillover of customer drawing power of the anchor tenants. Under a wider definition of positive inter-store externalities, these inter-store effects should have a broader content including compatibility and complementarities among tenants, enhancement of the shopping atmosphere and resulting sales efforts, shopper circulation and the public services and facilities provided by the shopping centre. These positive interactive effects are the sources generating increasing returns (Fujita and Thisse, 2002).

One of the most critical objectives in shopping centre management is to maximize these positive inter-store externalities in order to achieve the highest profits and investment returns possible. As known that the anchor stores are the ones that mostly contribute to the

customer spillover effect, it is interesting to measure and analyze their impact on the achievement of the highest profits of the shopping centres.

The thesis is structured as follows. The next section presents the previous researches done in the field, defines the anchor store concept, describes briefly the Portuguese market leader, Sonae Sierra, and resumes the techniques and the methodologies used to defend the researches done before. Section 3 describes the unique data set, enumerate four hypotheses and analyze the results of the tests and estimation results based on SPSS and EVIEWS software tools.

The four hypotheses resume the thesis main objectives. Firstly, we propose to demonstrate that the total sales of the shopping malls are directly influenced by the number of the anchors and that the area allocated to them is a strategic tool.

Secondly, we aim to prove that the anchor stores provide the shopping centres with a proportional and reliable income and they represent an important reason for the customers to visit the mall. On the third place we measure the impact of the anchor stores on the total sales per shopping centre guest. It is important to find the answer to the following question: "If the anchor stores increase the customer drawing power and the total sales of the shopping centres, do their influence respects the same trend regarding the sales per visitor?"

Still, their impact on the non-anchor stores can be seen in the former's rent levels. Our last objective is to demonstrate that the stores who benefit from the externalities generated by anchors are indeed charged a premium.

2. Literature Review

2.1. Previous Researches

As shown by Eppli and Benjamin (1994), the literature on shopping centres has evolved into four broad areas each one providing a justification for the existence of shopping centres:

- Central place theory
- Retail agglomeration economics
- Retail demand externalities
- The valuation of shopping centres and their leases.

2.1.1. Central Place Theory

Central place theory explains the relationship of retail trade between cities. It assumes that consumers patronize the nearest outlet; however, consumers tend to make disproportionately more trips to larger centres, giving retailers located at larger centres a competitive advantage over similar retailers in smaller centres (Anderson, 1985). The central place models proposed by Christaller (1966) and Losch (1954) provide the basic framework for normative theories of the spatial organization of retailing. Starting from simple postulates regarding consumer shopping behavior, these models attempt to logically deduce the expected spatial organization of retail firms. Both authors present conclusions regarding the location and spacing of different types of retail firms in a market region, many of the normative predictions being confirmed by a number of empirical studies of retail organization in metropolitan as well as rural areas (for example Berry, 1967, Berry and Barnum, 1962). The well known of the theoretical predictions of central place models is the formation of retail hierarchies in which a large variety of stores agglomerate at few centralized locations, and there exist many smaller neighborhood centres offering a limited variety of goods. The agglomeration of diverse retailers in particular towns or shopping

centres increases the attractiveness of those places for consumer shopping (Bucklin, 1967; Huff, 1964; Thompson, 1964).

It has been empirically observed that, in contradiction to the results of central place theory, stores in large agglomerated clusters typically have larger market areas than similar stores located in smaller centres (Berry and Barnum, 1962). Furthermore, to reduce the time and cost of shopping consumers may sometimes bypass closer stores to visit agglomerated stores which are farther away in order to shop for different types of goods on the same trip (Ghosh, 1986). This is called multipurpose shopping. The importance of multipurpose trips in consumer shopping is well established. Empirical studies have found that between 30-50% of all shopping trips are multipurpose (Hanson, 1980; O'Kelly, 1981). Multipurpose shopping is a rational behavior pattern that reduces the cost and time of travel. A number of researchers have noted the important role that these trips play in the development of the spatial pattern of central places.

2.1.2. Retail Agglomeration Economics

Retail agglomeration economics establishes the theoretical basis for comparison shopping at agglomerated sites. Agglomeration research implies that centres with more anchors, which tend to be the larger centres, would be better locations for specialty chains of small stores which rely on traffic to create sales.

Retail and commercial service stores cluster together in certain streets or areas. This trend in retail store clustering must be motivated by some incentive or advantage for those stores agglomerating together (You et al., 2001). In retail location theory, Nelson (1958) was the first to illustrate that the agglomeration of retail activities is based on the theory of cumulative attraction and the principal of compatibility. In his research, the theory of cumulative attraction states that "a given number of stores dealing in the same merchandise will do more business if they are located adjacent or in proximity to each other than if they are widely scattered" (Nelson, 1958).

Retail store spatial affinities were also observed by Getis and Getis (1976). In their research they suggested that retail store spatial affinities are based on three location theories; the theory of land use and land value, central place theory and the theory of tertiary activity. After examining retail stores of a sample of cities in the US, they

confirmed that retail store spatial affinities do exist and are matched with notions from central place theory (Getis and Getis, 1976). Among these location theories, Christaller's central place theory, which established the hierarchy of retail activities, and Hotelling's principle of minimum differentiation in homogeneous agglomeration of retailers are known the two location theories supporting this phenomenon (Eppli and Benjamin, 1994). All the above theories relating to store clustering give us some hints concerning the agglomeration of retail stores; whether they are homogeneous or heterogeneous, whether they generate some kind of collective or inter-store advantages and whether these consequently increase transaction opportunities and store profits.

Nevertheless, these theories are not in themselves sufficient to reveal the precise forces determining micro-scale store location or how the interaction between these clustering stores influence each other. There are still two questions to be addressed. The first question concerns the inter-store advantages generated by agglomeration. The second question concerns whether it is possible to enhance or manage any positive inter-store effects so as to achieve higher collective benefits for all stores.

2.1.3. Retail Demand Externalities

Retail demand externalities delineate the effects that occur when customers are drawn to a particular shopping centre by the presence of high-order retailers or an appealing tenant mix. Shopping centre developer was quick to grasp the implications of externalities. A mall is developed as a planned project consisting of commercial outlets oriented to one another as part of a contained, inward looking, and landscape. Space within a mall is generally not sold but leased to chains, franchises or independents, usually on the basis of expected aggregate sales (Miceli and Sirmans, 1995). Thus, unless in unplanned nucleation commercial viability is determined at the level of the individual store, in malls it is determined in large part by aggregate mall sales, not the success or failure of individual stores (Benjamin et al., 1990). Thus, mall developers discovered that malls needed strong anchors to attract customers from a wide market. Stores within a mall must be placed in relation to others to encourage multipurpose and comparative shopping throughout the facility (Baker, 1996). Chains and brand name stores provide more consistent standards and superior marketing than local independents (West, 1992).

Externalities, therefore, lie at the heart of the mall marketing mix formula, as well as the overall design of the facility and the location of particular stores within it (Meija and Eppli, 1999).

Thus, whereas unplanned nucleation invariably have anchor stores located centrally surrounded by specialty outlets, planned nucleation have them located at their peripheries to generate internal pedestrian traffic flow for specialty stores that lie between (Ingene and Gosh, 1990; Brueckner, 1993). A given store's sales depend on its own space as well as on the space allocated to other stores in the centre. The given store's own sales rise as other stores grow in size because the shopping centre is then more attractive to customers. Taking this externality into account the developer allocates space to various stores to maximize the shopping centre's profit, which in a simple way of seeing things equals total rent minus operating costs.

In designing and leasing shopping centre space, developers recognize that the attractiveness of the centre to customers, and thus to tenants, depends on the types and sizes of stores that it contains. A shopping centre consisting entirely of stores selling shoes, for example, will be unable to attract the shoe buyer away from a more convenient neighborhood shoe store. To entice such a buyer, the centre offers the customer the opportunity to buy shoes and clothes in the same trip. The presence of a clothing store in the centre raises shoe-store traffic above that at the neighborhood location, making the centre attractive to the shoe retailer. Conversely the presence of shoe stores makes the centre appealing to clothing stores, which are able to lure traffic away from isolated clothing establishments as customers economize on the time cost of shopping. Each store type in the shopping centre thus generates an externality that is felt by other stores.

Store types differ, of course, in their externality-generating abilities. The odd specialty store, for example, sells goods that are not on the lists of many multiple-stop shoppers. The presence of such an establishment in the centre has little effect on the sales of other stores. Only a small number of customers are swayed to shop at the centre by the presence of such a store. A department store, on the other hand, offers goods that are on most people's shopping lists, and the presence of such a store will convince many customers that the centre is the best place to carry out a multiple-stop shopping trip. As strong generators of externalities, department stores are allocated space in all major

shopping centres. The developer, however, must take account of inter-store externalities in choosing the types and sizes of other stores in the centre. Inter-store externalities must be "optimized" to make the centre as profitable as possible.

Thus, the aggregate benefit realized by a store in this large nucleation tended to depend on its location *vis à vis* the department store(s) generating the greatest spillovers. Although big externality generators were vital to the economic existence of other stores in the unplanned nucleation in which they were located, the legal environment relating to property tax levies did not provide sufficient flexibility for this "externality generating role" to be properly recognized. Similarly, negative externality generators were not penalized for the market-reducing, and often blighting, effect that they frequently had on other establishments in nucleation within the vicinity of their trade areas. Mall developers learned quickly that:

- malls needed strong anchors, as well as free parking to attract customers from a wide market;

- stores within a mall must be placed in relation to others to encourage multipurpose and comparative shopping throughout the facility (Baker, 1996);

- judicious store selection should be implemented to minimize "tragedy of the commons" possibilities, thus providing a level of market security for lessees (Pashigian and Gould, 1998);

- Chains and franchises provided more consistent standards, and superior marketing, than local independents (West, 1992).

Positive externalities are invariably inferred, they are, by definition, virtually impossible to estimate because unplanned nucleation develops through accretion, and planned nucleation or malls usually open as fully-developed facilities with anchors already in place.

Perhaps, the order of magnitude can be estimated from the inverse. If an anchor is removed from a nucleation (such as a mall), what is the impact on sales per square foot in non-anchor stores within the nucleation? And, by implication, if the externality generating impact of an anchor diminishes, what should be the impact on mall tenant rents?

The receivers of positive effects are therefore "free riders" or "easy riders" (Corns and Sandler, 1984) on the effect generators. The issue is how management should seek to internalize or manage these inter-store externalities.

The examination of the process of internalizing positive inter-store externalities through a Pigouvian tax/subsidy mechanism is the main interest. Under the Pigouvain tax/subsidy approach, those tenants that generate positive externalities should be subsidized by those "free riders" that enjoy these benefits. The power of anchor stores has already been proven in several previous studies (Gatzlaff, et al., 1994; Finn and Louviere, 1996; Pashigian and Gould, 1998).

First, Brueckner (1993) suggested that tenants with stronger (positive) inter-store externalities should be allocated greater floor space. The author suggests that size can generate stronger positive inter-store externalities. Ambiguity in positive effects generators is another problem. In general, every tenant in the shopping centre has a role in the whole agglomeration economies environment, on customer drawing power spillover, on variety, on supportive service, etc. It is hard to distinguish who relies upon whom. For example, aside from power of anchor tenant, Pashigian and Gould (1998) also observed that "lesser-known stores can free ride off the reputations of better-known stores."

In their paper, Miceli and Sirmans (1995) examine leasing arrangements between a shopping centre landlord developer and individual stores in the presence of inter-store shopping externalities. The problem is to design individual leases so that (i) stores internalize inter-store externalities, and (ii) the landlord does not under provide marketing effort that is beneficial to all stores. It is showed that the key element for achieving these goals is the ability of the landlord to cancel the leases of stores whose sales fail to achieve a target level. The success of a shopping centre, however, depends on the developer's ability to exploit its unique feature: the spatial concentration of a diverse array of stores. Because of the close proximity of stores, a customer attracted to the centre can visit multiple stores at very low marginal cost. This creates an inter-store externality in that the profit of each store depends in part on how many customers the other stores attract.

The success of the centre therefore depends on the extent to which stores can internalize these externalities. In the presence of transaction costs, however, a cheaper alternative might be for a single agent specializing in management (e.g. a

landlord/developer) to contract with each store for the purpose of coordinating their decision-making and maintaining common areas. At the same time, however, such an arrangement creates another potential problem: if the value of the shopping centre is to be maximized, the landlord/developer must not behave opportunistically; for example, by under maintaining common areas or under investing in advertising.

Brueckner (1993) analyses the problem of optimal space allocation in shopping centres in the presence of inter-store externalities. In the model, a given store's sales depend on its own space as well as on the space allocated to other stores in the centre. The given stores' own sales rise as other stores grow in size because the shopping centre is then more attractive to customers.

Taking this externality into account, the developer allocates space to the various stores to maximize the shopping centre's profit, which equals total rent minus operating costs. In designing and leasing shopping centre space, developers recognize that the attractiveness of the centre to customers, and thus to tenants, depends on the types and sizes of stores that it contains. Store types differ, of course, in their externality-generating abilities.

2.1.4. Shopping Centre Valuation

Shopping centre valuation explores the estimation of centre values based on the returns required by the market and rent expectations. Of particular interest is the last category-shopping centre valuation. Empirical research examining the determinants of shopping centre rents is quite limited. Some researches have focused on net present value analysis to make a lease vs. buy decision (Johnson and Lewellen, 1972; Schall, 1974; Gordon, 1974; Miller and Upton, 1976). Other research, such as Benjamin et al. (1992) have used hedonic equations to estimate the value of lease provisions in order to explain variations in retail rent. One of their most significant findings is that retailers are willing to pay a rental premium to locate in planned shopping centre. Extending standard central place theory, West, Von Hohenbalken and Kroner (1985), Ghosh (1986), and Ingene and Ghosh (1990) indicate that retailers are willing to pay a premium rental rate to acquire the agglomeration economies associated with shopping centre locations.

The determinants of lease rentals are of fundamental importance to real estate researchers and practitioners. Retail leases are unique in that they typically have two rental components: a base rent and an "overage" rent equal to a percentage of the tenant's gross sales above some threshold level (Benjamin et. al, 1990).

Retail leases generally contain two types of rental payment: a base rent component and an "overage" provision that calls for a contingent rent payment based on a percentage of the tenant's gross sales above some threshold level. The overage is zero for sales up to and including the threshold (or break-point) and is positive for sales above the threshold level. Total rent in any year is thus equal to base rent plus the overage rent.

There appear to be at least three possible reasons for the co-existence of base and overage rents. First, landlords, on average, have better financial and geographic diversification than tenants, so overage rents are a method of transferring risk from susceptible agents (tenants) to agents better equipped to deal with it (landlords). In addition, overage rent reduces the volatility of a tenant's cash flow by allowing the tenant to pay higher rent when sales are good and lower rent when sales are poor. Second, if the lease contains an overage provision, then the landlord's rental revenues rise with sales. Thus, the landlord has a greater incentive to maintain and promote the shopping centre as well as to create an optimal tenant mix. Third, overage rent serves as a hedge against inflation for the landlord by increasing rental receipts when prices (and thus operating expenses) rise.

Charging the same rent and designing the same level of incentives for each store would be highly inefficient: stores which generate the most externalities by their presence and effort should pay lower rents and have larger incentives to exert effort.

The externalities are efficiently internalized by subsidizing the rent of stores who generate mall traffic to other stores and charging a rent premium to stores who primarily benefit from the traffic-generating efforts of other stores. Beyond simply providing evidence that anchor stores are compensated in some way for the traffic that they bring to the mall, it is showed that the contracts are designed to efficiently allocate space in the mall. On the margin, sales from an additional square foot of anchor space are equal to those from an additional square foot of non-anchor space.

At the same time, the success of the entire mall depends on how the developer maintains the mall over time – keeping it clean, remodeling it every few years, attracting

the best stores, updating the mix of stores, keeping the mall competitive with other malls in the area, etc.

To measure the importance of anchors within a mall, the percent of total mall space occupied by anchors should be considered. The premise here is that the higher the percentage of mall space occupied by anchors, the higher the externalities generated for the benefit of non-anchor stores. The generation of externalities carries implications not only for the rents paid by non-anchor stores but also those paid by anchors. Specifically, anchors should receive rent discounts in order for their externalities to be internalized.

Another concern is that there is variation in the quality of malls. For example, some malls could be located in better areas, and have high quality anchors. An increase in the relative sales of a store significantly increases the relative rent paid by that store within a mall. That is, stores pay for the external benefits derived from being in the presence of more anchor space by paying higher relative rents, so we are confident that the earlier results are not generated by unobserved mall quality.

Sirmans and Guidry (1993) indicate that shopping centre rents are highly related to variables such as type of anchor, centre size, centre age, centre design, location and general economic condition. Eaton and Lipsey (1979) and Mulligan (1983) report that merchants located in large centres have a competitive advantage over merchants in small centres due to the attraction of multipurpose shoppers to large shopping centres, and Anderson (1985) indicates the importance of anchor stores in the success of shopping centres. These studies indicate that the loss of an anchor tenant should dramatically reduce the consumer drawing power of the centre and result in substantial rental rate decreases relative to similar centres with anchor tenants; however, the size of this loss in rental rates has not been examined. The number of anchor stores and specific anchors can have a potentially important impact on the character and image of a shopping centre. The number of anchors tends to be associated with a type of centre. Superregional centres and regional centres tend to have more anchors than smaller centres. Specific anchors have resources to do location research and to do advertising and other marketing communications. The non-anchors' advertising is relatively minimal.

2.2. The Anchor Store Concept

An anchor store is a store that increases, through its name's reputation, the traffic of shoppers at or near its location. Consumers, attracted by the anchor's name, are likely to visit the location (the mall), and thus nearby stores' sales and profits are increased by the presence of the anchor. Planned shopping malls usually have one or more department stores and multiple specialized retail stores in each commodity category. Pashigian and Gould (1998) provide empirical evidence that rents for anchor (or department) stores are heavily discounted. They interpret the discounted rents charged to department stores as an attempt by land developers to lure these stores to mall locations, creating a positive externality for the mall's retail stores. The free-riding retail stores' surplus can then be extracted through higher rent for retail space.

It is not clear why consumers are attracted by anchor stores, nor is it clear why anchor stores generate a positive externality for the specialized retailers. Many shopping malls have specialty retailers of shoes, men's apparel and women's apparel, while also having anchor stores that devote substantial retail floor space to each of these product categories. If brand names are so important to consumers and the department store competes with other mall retailers in every product category, department stores are unlikely to exert a positive externality on retailers. Consumers would make their purchases only at the department stores. Consequently, the above "brand name" theory by itself cannot motivate using department stores as anchor stores. Another reason department stores may increase consumer traffic at a mall location is commuting cost savings. That is, since department stores sell commodities in many different categories, consumers may be encouraged to visit the stores to economize on commuting costs. This effect may explain why department stores are regarded as anchor stores. However, it is also not sufficient since it again does not explain why both department and other retail stores sell substitutes. The anchor store may receive an external benefit from collocating with the specialized retailers (i.e., the retailers are not „free riders"). Suppose that the anchor store stands alone at a location. A consumer knows how much surplus she can get by visiting the anchor store, so the anchor store has a steady, but possibly scant, traffic of customers.

Now suppose instead that the anchor store collocates with the specialized retailers at a shopping centre. A consumer's expected surplus from visiting this shopping centre will be substantially higher than that of a visit to the stand-alone anchor if she thinks that one of the specialized retailers is likely to have a commodity very well suited to her tastes. Thus, mall traffic can again be increased by collocation of the anchor store and specialized retailers. As above, if the reduction in profit margins due to increased competition is offset by the profit-enhancing effect of increased traffic, the anchor store has an incentive to collocate with the specialized retailers.

The body of literature on anchor stores is not very large. The only theoretical papers that investigate inter-store externalities in a shopping mall are Benjamin, Boyle, and Sirmans (1990, 1992) and Brueckner (1993). These papers consider the land developers' space-allocation problem of internalizing externalities among tenant stores, assuming that the developers have decided on the composition of stores at the malls. Assuming reduced-form revenue functions of sales (without explicitly modeling prices and market size), they derive optimal discriminatory rent schemes in a variety of settings. Empirical analyses include West (1992), who uses data on shopping malls in Alberta and finds similarity among planned shopping malls. The inference West (1992) draws from this result is that owners of shopping malls are selecting retail stores and their locations in a profit-maximizing way. Pashigian and Gould (1998) found that anchor stores (department stores) at shopping malls receive substantial rent subsidies. They infer from this result that anchor stores increase mall traffic, increasing the profits of other stores. Thus, rental contracts at shopping malls internalize externalities among stores. Each of the papers cited above takes the land developer's profit-maximization problem to be the origin of the observed mall composition and rent structure. Finally, Rauch (1993) has an interesting paper on profit-maximizing rent discrimination over time by land developers. Although its focus is different from the others', the idea is related in that land developers strategically discriminate in rents in order to internalize externalities in the mall.

The main commonly accepted definitions of the anchor store are:

- "A major store (usually chain of stores) in a shopping centre, having substantial economic strength and occupying a large square footage."
- "A major department store branch in a shopping centre."

- "The stores and other uses that occupy the largest spaces in a centre and serve as the primary traffic generators freestanding anchors are excluded." (in Dictionary of Shopping Centre Terms- ICSC)
- "A retail establishment that is able to attract a large number of clients, contributing to ensure the shopping centre's flow of visitors. May be food or non-food seller. In smaller centres, with less of a commercial focus, may be cinemas or certain restaurants. Given the importance to the centre success, sometimes it is possible to ensure ownership or leasing contracts with especially beneficial terms."

  (in the Franchising dictionary, freely translated from Spanish by R Pelote)
- "An anchor store is a store that increases, through its name's reputation, the traffic of shoppers at or near its location. Consumers, attracted by the anchor's name, are likely to visit the location ("the mall"), and thus nearby stores' sales and profits are increased by the presence of the anchor. Planned shopping malls have one or more department stores and multiple specialized retail stores in each commodity category." (in Konishi and Sandfort "Anchor Stores" introduction)
- "Anchor stores: the largest retail outlets. Usually located at the end or corners of shopping centres and chosen in part for their potential to attract customers to the shopping centre generally; department stores usually anchor regional and super-regional malls and supermarkets are typical anchors in community centres." (Easter Connecticut State University Shopping Mall Studies)
- "A major retailer chosen for its ability to drive traffic to the mall or shopping centre in which is located." (multichannelmerchant.com/retail glossary)
- "A large store, such as a department store or supermarket, that is prominently located in a shopping mall to attract customers who are then expected to patronize the other shops of the mall." (answers.com)

During the analysis of the available literature and definitions we have learned that the concept evolves according to the consumer preferences, however the basic criteria is sustained by the common mention that it is a store that, by itself, is capable of generating benefits for the overall centre.

By analyzing all definitions, some common elements stand out:

- Size of the store;
- Attraction of the brand;
- Recognition of the brand;
- Belonging to a chain of stores;
- It is traffic generator for the centre;
- Other stores benefit from its presence.

Other elements although less common, have adhered significantly to Sierra reality:

- Advantageous contract terms, when compared to the centre standard
- Wide and deep range of merchandising
- Good value proposition for the customer
- Higher productivity(turnover per m2) in general

Sonae Sierra definition of the anchor store is:

"Unit integrated in a shopping centre mix of tenants with the purpose of significantly increasing the scheme attractiveness to the customer. It comprises all or most of the following features:

- Large (commonly above 600m2 Gross Livable Area (GLA)
- Multiple (national or international chain- a minimum of 3 stores)
- Has a strong brand (high awareness and positive response levels)
- Adds significant traffic (specifically generates footfall)
- Wide attractiveness: this is taken to mean it would trade successfully as a stand-alone unit)
- As an ex-post test, an anchor tenant usually enjoys a privileged position in the rent and service charges.

From the previous features, all are measurable, with the exception of the last one, namely for stores for which there are no examples of stand-alone units.

2.3. Sonae Sierra Business Activity

Sonae Sierra is the international shopping centre specialist that is passionate about bringing innovation and excitement to the shopping and leisure industry. Incorporated in Portugal in 1989, it is owned by Sonae, SGPS (Portugal) with 50% and Grosvenor (United Kingdom) with 50%.

The integrated approach to the shopping centre business includes the ownership, development and management activities. Whilst benefiting from the active support of its key shareholders, Sonae Sierra:

- Is a leader in the Iberian market;
- Takes an integrated approach to its activity;
- Has created new retail formats and innovative concepts;
- Utilizes a consistent policy of partnerships;
- Maintains a clear and consistent growth strategy based on international expansion.

Sonae Sierra is present and operating in the following markets: Portugal, Spain, Italy, Germany, Romania and Greece, in Europe; Brazil, in South America.

The company has earned an international reputation for the development of innovative products as well as for is management skills, and has been awarded more international prizes than any other company in this sector. Sonae Sierra has had a significant role in the modernization of the shopping centre concept, having introduced new formats integrating retail and leisure and several innovative concepts in the shopping centres industry:

- Shop Utilization Contracts in shopping centre;
- Themed Shopping centres;
- "Green" Shopping centres;
- Full integration of leisure with retail and services.

Sonae Sierra aims to be the best sustainable international shopping and leisure centre specialist and to achieve a leading position in all the markets in which it operates.

Its mission is to create value for its shareholders, through the shopping centre business, while taking into account its social responsibilities towards other important stakeholders, as well as its environmental responsibilities. It firmly believes that this balance is crucial to achieve the sustained development of the Company.

2.3.1. Sonae Sierra's Strategy

Sonae Sierra is determined to keep focused on its central core integrated activities of investment, development and management of shopping and leisure centres, aiming to create "leading-edge destinations" for consumers by:

- Maintaining an integrated view of the industry of shopping and leisure centres where value added is achieved not only through development but also through active management of the property;
- Aiming, in all targeted markets, to innovate and introduce new concepts, through local partnerships and based on a long-term view of investments.
- Creating and developing concepts and services that add value to retail properties and that produce, directly or indirectly, additional income for the assets it develops retains and manages.

2.3.2. Sonae Sierra's Values and Responsibilities

Sonae Sierra, aware of its business and social responsibilities, and regardless of the countries where its companies are located, undertakes to respect the following values and principles regarding its business culture, responsibility towards staff, community responsibilities and independence from political power.

Its business culture is based on values and principles as leadership, willingness to change, loyalty, control, and transparency. Sonae Sierra commits itself in developing skills that add value, enabling businesses to attain positions of leadership in the markets where they operate and bases daily management practice on the principles of professionalism, loyalty, frugality, risk management, and the adoption of management methods that swiftly

detect and correct adverse situations. Therefore Sonae Sierra puts into place procedures that allow a true evaluation to be made of business performance and degree of compliance with Sonae Sierra values and principles, namely by obtaining the opinion of employees and outside observers, maintaining as a fundamental characteristic of the Group's culture, a permanent willingness to change.

The Sonae Sierra human resources management policy incorporates values and principles as equal treatment, professional development and safety. It assumes, before the employees, the responsibility to offer high levels of satisfaction, encouraging career development through access to training and educational programs and to provide working conditions that avoid risks to the health and safety.

The human resources management policy contains no form of discrimination on the grounds of race, sex, religion, nationality or social class.

Sonae Sierra community responsibilities policy is based on values and principles as environmental awareness, community involvement, and openness to society, confidence and ethics. It tries to constantly improve the environmental performance of our products, processes and activities and close ties with the community specifically through cooperation and support to cultural, sport and social institutions, in ways which are appropriate to each case. This social awareness also consists of divulging information about internal projects and activities targeted for employees, the media and the general public, but obviously keeping certain information confidential.

The relationships that it establishes with third parties and business partners, namely customers and suppliers, are based on high standards of confidence, principles of honesty, integrity, and transparency. Any form of corruption even in a passive way is unacceptable.

Sonae Sierra assumes a position of independence from political power and does not finance political organizations and parties, avoiding involvement in party political questions. However Sonae Sierra has the right to express itself publicly in the way it sees fit, to defend its values and interests. It adopts a position of independence in relation to central and local government but with a willingness to co-operate with government in many different ways, for example in planning and executing development projects, for infrastructure construction or new legislation.

2.3.3. Why Customers Go To Centres

Sonae Sierra manages a very extensive portfolio of shopping and leisure centres whose rapid growth poses new challenges. A striking characteristic of Sonae Sierra's portfolio of centres is the overlapping of some centres. In Oporto, Sao Paolo and Madrid, one can find various Sonae Sierra's centres that compete among themselves. Since these centres are sometimes only a few kilometers away from one another, they can not be presented to consumers all in the same way, making sure that each centre serves as a real alternative versus competition and provides a relevant shopping experience to customers is the main reason for differentiation.

Differentiation is relevant only when it's targeting the reasons that lead consumers to visit a centre. In other words, to promote centres in a distinctive way, it is important to know why consumers decide to shop at a particular shopping centre. Classifying and grouping the motivations for visiting a shopping centre is a work that has been in place for two years and is delivering some results. Everyone knows that the main reason for selecting a shopping centre is its proximity or convenience, as the nearest centre will be selected over other alternatives. However, shopping centres do not rely solely on convenience, as every day millions of consumers visit centres that are farther away than other alternatives. Beyond location, size is the next reason for consumers to select a shopping centre. Actually, it would be more accurate to say that variety is the second most important reason for selecting a shopping centre, since size translates into a bigger variety of shops and products offered. Even so, Sonae Sierra has many centres that are not the largest in the region, but highly successful.

Besides the variety of shops, there are other reasons for consumers to choose a centre such reasons are the quality of shops, the well known chains of shops, the presence of anchor stores, the centre's atmosphere or the type of people visiting.

"For us, shopping and leisure go hand in hand. We are guided by our belief that the people who visit our centres want to enjoy more than just a satisfying shopping experience. They also want to take pleasure from a variety of leisure facilities at the same location. Today our vibrant portfolio of award-winning shopping and leisure centre is recognized as one of the most dynamic in the sector", (Portela (CEO), 2006).

2.4. Research Models Applied

A notable research of Yates et al. (2001) was directed to the answer of the question "if an anchor is removed from a nucleation, such as a mall, which is the impact on sales per square foot in non-anchor stores within the nucleation?" By implication, if the externality generating impact of an anchor diminished, what should be the impact on mall tenant rents? The answers to these questions are another form of proving the impact that anchor stores have on the performance of the commercial centre. It is a form of quantifying the negative externality effects on in-mall tenants that are associated with the closure of a major department store anchor in large regional shopping centre. From a practical perspective, the analysis was one of the first attempts to measure empirically the concept of externalities. The authors accomplished by tracing and linking the spillover effect on monthly sales performance of nearby specialty stores with the closure of a major department store anchor. Their research was based on monthly sales information of 18 regional and super-regional malls located in Quebec, Ontario and the West, every mall having at least 2 anchor stores.

Their research comprises four types of analysis as following:

- The analysis of the trends in monthly sales
- The analysis of the Trends in Month-Over-Month Sales
- Pre-closure/Post-closure Changes in Sales by Merchandise Category
- Estimating Future and Past Zonal sales

A measure commonly used to classify malls is annual sales per square foot. Based on this the malls are grouped in four categories: A, B, C, D. Using the graph analysis, the authors show the trend in monthly sales for the 24 month period for the zones A and B compared to the national unadjusted department store type merchandise.

Given the variations in monthly sales, during a twelve month period, changes are expressed on a month over month basis and graph analysis is again the used tool. Two basic periods can, therefore be defined for summarizing the month over month trends: a pre-closure and a post-closure period both afterwards analyzed by graph method.

The results point to the following conclusions: there is no doubt that the closure of the department store in their study had a negative impact on stores in the malls involved in the analysis. However, the negative impact:

- did not result, in the aggregate, in current dollars losses;

- was felt in the form of a dampening of month-over-month increases in store sales;

- was felt strongly only in the stores in the zone closest to the commercial centre entrances, and, on the basis of the weak impact on stores in further zones, probably felt little throughout the rest of the malls;

- was not experienced similarly in all merchandise categories – stores selling fashion accessories, gifts/books/stationary and food were most affected; while stores involved with leisure goods, personal services and jewelry were the least affected;

It would appear that if the absence of an anchor can dampen aggregate sales in adjacent stores by about 12 %, then a vibrant anchor may stimulate aggregate sales in adjacent stores by a similar percentage.

You et al. (2003) have the main objective to find out some definition of "strong tenant", the strong positive externality generators, the existence of rent premiums and subsidies and how are they distributed through different tenant characteristics. Three different indices were used in defining "strong" tenants a) different size band of the tenant (defined as anchor tenants, major space users, MSUs, large standard tenants, small standard tenants, and small tenants); b) the number of outlets appearing in regional shopping centre in the database, (these will be classified as strong chains, medium chains, weak chains, and independent retailers); and c) the "top" retailers in each retail/service categories.

The examination of the internalizing process is still not completed by this research since the definition of a "strong" retailer may be time varying due to changing market and fashion trends, consumer preferences in various shopping and recreation activities or the special market segmentation strategies of each shopping centre. Further, other internalizing/managing devices like the terms of the leasing contract or leasing incentives under the principles of Coase Theorem and second-best regulation can also provide the same adjustment outcomes as the Pigouvian tax/subsidy approach. The appropriate uses of these different internalizing/ managing tools depend on each shopping centre manager's

objectives in operation and management. Knowing how to manage the positive inter-store externalities is the key of increasing profitability and returns in every shopping centre, and this can only be possible in the presence of the "strong tenants".

The analysis is designed in two stages. The first stage is to test the influence and significance of the independent variables to the response variable rent per square foot of the tenants using multiple linear regression models. The second stage focuses explicitly on the externalities variables using an Analysis of variance approach. Three major hypotheses in this empirical research are:

Ha: Larger tenants should pay lower rents, and smaller tenants will have to pay higher rents as a rent premium compensating for the positive external effects they have enjoyed.

Hb: The stronger the chain, the lower the rent paid; by contrast, the weaker the chains, the higher the rents paid to in compensate for the benefits enjoyed results from the presence of stronger chains.

Hc: Top retailers, that is, the leading brands in a particular retail category, will pay lower rents, other things equal.

The two-stage process gives encouraging results. In the regression models, the majority of variables are significant and corrected signed- including those that relate to inter-store externalities. The analysis of variance tests also identify significant relationships between rents and the retail characteristics that relate to shopping centre cross-benefits. As already mentioned, one of the major objectives in this research is to define "strong" tenants. According to the three hypotheses, those larger in size, stronger in chain numbers or defined as "top" retailers in different retail categories, should generate positive inter-store externalities. Therefore, these retailers should enjoy lower rent as "rent subsidies".

The results show that both unit size and size grouping have a significant negatively relation with rent per square foot. This means, in average, the larger the tenant, the lower the rent. In addition to anchor stores, other larger tenants, perhaps as a result of the positive

effects generated by their presence, pay relatively lower rents while smaller stores, benefiting from the generation of demand, pay relatively higher rents. Similarly, the brand leader tenants pay lower rents than other tenants within individual retail categories.

The paper of Miceli and Sirmans (1995) examines leasing arrangements between a shopping centre landlord/developer and individual stores in the presence of inter-store shopping externalities. Their objective is to design individual leases so that stores internalize inter-store externalities, and the landlord does not under provide marketing effort that is beneficial to all stores.

The success of a shopping centre, however, depends on the developer's ability to exploit its unique feature: the spatial concentration of a diverse array of stores. Because of the close proximity of stores, a customer attracted to the centre can visit multiple stores at very low marginal cost. This creates an inter-store externality in that the profit of each store depends in part on how many customers the other stores attract. The success of the centre therefore depends on the extent to which stores can internalize these externalities.

The analysis represents a simple model of a shopping centre in which the profit of each store depends on its own sales effort, the sales effort of all the other stores, and the effort of the landlord/developer. It was examined a class of retail contracts that induces optimal effort by all stores as well as the landlord. The cases of both stochastic and non-stochastic sales are taken into account. The key element of the efficient contracts in each case is the ability of the landlord/developer to cancel the leases of stores whose sales fail to achieve a target level.

The authors developed a simple model of a shopping centre in which the profit of each store depends on its own sales effort, the sales effort of all the other stores and the effort of the developer. Each store generates revenue that depends positively on the sales effort of the store's manager, the effort of the managers of all the other stores, and the effort of the landlord. Each stores' sales increase its expected sales through advertising, better merchandise selection, attractive displays, while the effort of other stores increases the expected sales of particular stores as a result of inter-store externalities.

The effort of the landlord consists of several activities, including determining the best design for the centre, choosing the mix of tenants, conducting advertising and

maintaining common areas. In their model, each store incurs the cost of its own effort, and it pays rent to the landlord.

The obtained results showed that the key mechanism for achieving these objectives is the ability of landlords to cancel the leases of stores whose sales fall short of a target level. Although cancellation clauses of this sort are a common feature of actual retail leases, the analysis failed to explain fully other common features, most notably, the percentage-of-sales form of overage rents.

Another study that can be considered a basis for the elaboration of other studies is the Benjamin et al. (1990). The determinants of lease rentals are of fundamental importance to real estate researchers and practitioners. Of particular interest are the determinants of rents on shopping centre space. Retail lessees generally contain 2 types of rental payments: a base rent component and an overage rent equal to a percentage of the tenant's gross sales above the threshold level. The understanding of the way these two types of rents function is the answer to many questions regarding the space allocation in shopping centres and the internalizing of the externalities. Moreover, it is also the base of the strategies undertaken by the commercial centre's developers. Having the appropriate structure of stores, and the optimal number of anchor stores brings the higher profits and increases the performance of the shopping centre.

In this paper it is tested a simple cash flow model of retail lease valuation that predicts that base rents are lower with higher percentage rent rates and are higher with greater threshold levels of sales. Using a sample of shopping centre leases, regression analysis indicates that these tradeoffs are observed in the market. There have been considered two types of analysis: the simulation and regression analysis.

Specifically, the regression results indicate that in average the percentage rent rate increases, base rent declines significantly. Also, increases in the threshold sales level result in an increase in the base rental rate.

Brueckner (1993) has an important role on the problem of optimal space allocation in shopping centres in the presence of inter-store externalities. In his model, a given store's sales depend on its own space as well as on the space allocated to other stores in the centre.

The given stores' own sales rise as other stores grow in size because the shopping centre is then more attractive to customers. Taking this externality into account, the developer allocates space to the various stores to maximize the shopping centre's profit, which equals total rent minus operating costs.

Store types differ, of course, in their externality generating abilities. As strong generators of externalities, department stores are allocated space in all major shopping centres. Inter-store externalities must be "optimized" to make the centre as profitable as possible. The purpose of the present article is to provide a simple analysis of this space allocation problem, focusing in particular on inter-store externalities. The shopping centre developer is assumed to allocate space to different store types to maximize profit, which equals total rent minus the centre's operating costs. In addition to illustrating the structure of the developer's problem, the analysis sheds light on the connection between the externality-generating abilities of different store types and the rents they pay to the developer.

The design of a shopping centre can be viewed as a two-stage problem. First, the developer decides on the number and types of stores that the centre will contain. Then, he or she decides on the amount of space that will be allocated to each of the chosen stores. Analytically, the first stage involves a discrete choice problem, while the second stage has continuous choice variables. Since the discreteness of the first-stage problem means that little can be said about its solution, the analysis will focus entirely on the second stage, where store sizes are determined. As a result, the role of inter-store externalities in determining the centre's optimal store mix receives no attention in the analysis, which focuses instead on the relation between externalities and optimal store sizes.

It should be noted that in his approach, space is the only input used in the generation of sales (the role of inventory and labor is ignored). The model could be more realistic by including other inputs, but this modification leaves the basic results unchanged while introducing more superficial complexity.

Dean et al. (1994) examines the effect that the loss of a shopping centre anchor tenant has on the rental rates of the remaining tenants. The researches on shopping centre rents have revealed several findings. First, smaller retailers are willing to pay a rental

premium to locate in planned shopping centres, having high-order retailer customer drawing power. Second, there is a trade-off between base rents and overages, and third, retail rents are determined by a set of factors that include: customer drawing power, which includes a vector of physical building characteristics and a vector of anchor tenant types, designs characteristics of the centre, such as strip centre layouts versus enclosed mall designs; market condition variables such as occupancy rates, population or households and income; other specific location attributes.

The paper measures the effect that the loss of a major anchor tenant has on the rent rates of the remaining centre tenants by examining comparable centre data from smaller and moderately sized centre, some of which have recently lost anchor tenants. Two regression procedures are employed and the results are compared. A single equation model using OLS (Ordinary Least Squares) procedures is initially estimated and the regression errors are examined for heteroscedasticity. The model is estimated using the exponential functional form. An alternative two-stage estimation model is applied to examine the robustness of the estimated effects of anchor loss on rent rates.

They applied weighted least squares (WLS) and weighted instrumental variable regression. The conclusion suggests that the loss of an anchor tenant affects the consumer drawing capacity of the centre and results in a decline in occupied tenant space. Both methods indicate that loss of an anchor store substantially affects the rent rates of the remaining tenants and both yield similar estimates. The WLS model suggests a direct 26,14% decline in rents, the two-stage model indicates the decline in rent rates result from an approximate 33% increase in vacant space, not including the space vacated by the anchor. The subsequent decline in rent is estimated to be 27,3%.

Another important empirical contribution to the real estate area is the paper of West (1992). The purpose is to formulate some hypotheses regarding the similarity of planned shopping centres in terms of the brands of stores they contain.

Planned shopping centres are the focus of this investigation because casual empiricism suggests that there is a great deal of similarity among planned centres, whereas the same degree of similarity is not observed among unplanned retail store agglomerations. Planned shopping centres are also under the control of an owner/developer that can restrict

access to the centre. Shopping centre similarity should then be an outcome consistent with profit-maximizing tenant choice on the part of the shopping centre owner/developer in conjunction with profit-maximizing location choice on the part of retail chains.

It is assumed that each "planned" shopping centre is controlled by a single owner/developer that chooses tenants to maximize its profits. It is further assumed that there is a hierarchy of planned shopping centres with larger centres containing the same types of stores as the smaller centres ones, plus additional store types as well. In order for shopping centres to be similar in terms of the names of stores they contain, chain stores must exist.

There is a recent literature on branding that suggests that brands (or chains) form to signal the quality of an existing product or the characteristics of a new product produced or sold by a firm under an established brand. The implicit model that is used to suggest the hypotheses in this paper is one of spatial competition in a hierarchy of shopping centres owned by single owner/developers. Shopping centre owners choose their tenant mix to maximize their profits, while retail chains compete with one another for space in planned shopping centres. Consumers are assumed to engage in both multipurpose and comparison shopping, and this leads the shopping centre owner/developer to select stores catering to both types of shoppers. In the same time, two broad store categories need to be distinguished: C stores, containing those stores that cater to comparison shoppers on a multipurpose trip, and M stores containing those types of stores that cater to multipurpose shoppers on a multipurpose shopping trip. M stores sell goods and services that tend to be frequently purchased, that tend to be experience goods. In the analysis, 5 hypotheses are tested:

H1: Planned shopping centres at the same level of the shopping centre hierarchy in different geographic markets will be more similar in the brands C stores they contain than in their brands of M stores.

H2: There will be smaller proportions of multichain M stores than multichain C stores in planned shopping centres at the same level of the shopping centre hierarchy.

H3: Malls will be more similar in terms of their brands of C stores for those C stores types that have a high proportion of multichain firm representation than those C store types that do not.

H4: Neighboring planned shopping centres will be more similar in terms of firm ownership of stores that non-neighboring centres.

H5: Planned shopping centres owned by the same firm will be more similar than planned shopping centres owned by different firms.

Some evidence was obtained to support the hypothesis that multimarket chaining is more important for comparison shopping-type stores (C stores) than for multipurpose shopping-type stores (M stores). Evidence of an intra-mall store brand proliferation strategy being practiced by certain types of C-store firms (e.g. those selling men's and boys' clothing, women's clothing, shoes and jewelry) was also obtained, along with evidence of a higher degree of shopping centre similarity for these store types relative to other C-store types. There is also support for the hypothesis that malls owned by the same firm are more similar in store brands than malls owned by different firms.

The weakest results were obtained with respect to the spatial preemption hypothesis. Strong evidence for broadly-based spatial preemption of store sites in neighboring centres was not obtained for either C stores or M stores. The implication is that tests for spatial preemption should be done one store type at a time and should look at the time series of entry and exit of all stores of a type over a long period of time.

Gould et al, (2005) paper uses a unique data set of mall store contracts to analyze the complex economic issues that arise when stores are placed together in close proximity within a large shopping mall. While shopping malls economize on consumer search costs by bringing a large number of stores together in a single location, they also create a complicated web of externality and incentive issues between store owners and the mall developer. Certain stores, such as anchor stores (department stores) and national name brand stores, generate positive externalities by drawing customer traffic not only to their own store, but also to other stores. Therefore, to varying degrees, the success of each store depends upon the presence and the effort of other stores, and also the effort of the developer to maintain the mall. In a mall, the importance of each store's effort to the overall performance of the mall is related to the net externalities generated by the store.

Charging the same rent and designing the same level of incentives for each store would be highly inefficient. The paper demonstrates that externalities are efficiently

internalized by subsidizing the rent of stores who generate mall traffic to other stores and creating contractual provisions which align the incentives to induce optimal effort by the developer and each mall store according to the externality generated by each store's effort. On average, anchor stores occupy over 58% of the total lease able space in the mall and pay only 10% of the total rent collected by the developer. Stores with national name brand also receive significant rent discounts. The two sided agency or team production problem is solved with a rental contract consisting of both a fixed rental component and an overage rent provision which is contingent on store performance. The overage rent provision consists of two factors: a threshold sales level and a sharing percentage. When sales are below the threshold level, stores are required to pay only the fixed rental payment; otherwise, the store pays the fixed rental payment plus a fraction of the store's sales in excess of the threshold level.

The anchor store contracts are very flexible and this allows the mall to internalize the externalities. Higher incentives for the anchor reduce the developer's marginal return to effort, thus decreasing incentives to the developer. This reduction is compensated by increasing the developer's share of non-anchor sales. In this manner, externalities are internalized by shifting two burdens from externality generating stores to those stores which thrive off of them: the rent burden, the burden of providing incentives to the developer to exert effort. This process allows the mall to achieve an efficient pricing and allocation of space, and an efficient allocation of incentives to exert effort by all participants.

The paper is testing a more primitive implication namely the incentives should increase when the marginal return to unobserved actions rises. When the sales of the anchor stores have a greater effect on the sales of other stores, the share of their own sales that they keep rises. The most striking feature of anchor contracts in this paper is that most anchors either do not pay any rent or pay only a trivial amount. In some situations, the anchor owns its store and sometimes the land, an arrangement that is negotiated between the developer and the anchor before the mall opens. However, the fact that many anchors own their structure cannot explain why anchors pay so little rent to developer, because some do not own their own store and explicitly pay no rent.

The anchor store has also a much lower sharing percentage than non anchor stores. This is consistent with the idea that not only is the rent burden shifting from anchor stores to non anchor stores, but in addition, the burden of providing incentives to the developer is also being shifted to non anchor stores. This is just another mechanism to internalize the externalities generated by the effort of anchor stores: if store effort needs to be "taxed" to generate incentives to the developer, it is more efficient to tax the effort of stores who do not generate externalities. Non anchor stores with larger brand name and reputation are also "taxed" less on their marginal effort due to the externalities they generate for other stores with no brand name recognition.

To demonstrate that the primary function of malls is to price the net externality of anchor stores in order to achieve an efficient allocation space the authors used the OLS regression analysis which shows that the anchor stores generate positive externalities by increasing the sales of non anchor stores, and in turn non anchor stores pay for those benefits through higher rents.

The analysis verifies this prediction: anchor stores have much lower sharing percentages than non-anchor stores, and variation in the sharing percentages of non-anchor stores is significantly explained by the externalities they enjoy. Furthermore, the probability that a non-anchor store exceeds their sales threshold is also explained by the externalities they receive. Consequently, it is demonstrated that externalities are internalized by an efficient allocation of space and incentives across stores in the mall.

Beyond showing that differential rents are used to price the net externalities of each store, the contracts are designed specifically to distribute the optimal amount of incentives to exert effort to each of the three major participants in a mall: the developer, the anchors and the non anchor stores. Incentives need to be created for all three but the contract between any given store and the developer can only increase incentives for one side at the expense of the other side.

Anderson (1985) analyzes the location problem for small, non-anchor stores in shopping centres. The paper develops a simple model for adding, deleting and changing stores of a national, fashion-apparel, non-anchor store. Chain management locates its stores only in shopping centres large enough to have anchor stores. The non-anchor stores tend to

rely on the location and promotional effort of the shopping centres which have anchors to generate traffic. Management chooses among centres which have anchors and the anchors' image, already in place.

Shopping centre size can indicate shopping centre type. Sub-regional centres tend to have more stores, tiers and services than regional centres or suburban centres. Shopping centre size in square feet was not significant in explaining sales and contribution income for non-apparel specialty stores, or market potential of non-apparel stores, but was significant and positive for apparel stores (Ingene, 1984).

Shopping centre image, shopping centre preferences and shopping centre personality attract subsets of consumers. The anchors define the shopping centre image. Mass merchandisers, represented by the anchors in this study have a somewhat more favorable image in terms of value for money than an average midrange fashion specialty chain like the one in this study.

The method applied was the cross-section regression analysis. The dependent variable in retail regression models tends to be a performance type of variable related to sales and profitability. In the Cronin and Skinner (1984) models, the three dependent variables were: return on assets, leverage, and liquidity. Their seven explanatory variables included four sales variables. This study differs from prior studies in its emphasis on shopping centre anchor stores, and in its more long-run approach. The dependent variable is the average over a two year period and the variable ratios are profit per square foot and sales per square foot of store space. While profit performance tends to be highly correlated with sales performance, profit and sales do not necessarily change proportionally. For instance, if sales are higher in a high-rent area, profits are higher only when the increase in sales is relatively greater than the increase in rent and related expenses.

Results depend on choice of performance variable. Some chains might set profit goals, and choose lower rent locations, while others might prefer sales goals and choose higher rent locations. Results will be influenced by the particular anchors and shopping centres used as independent variables. These might be different for different store chains. In evaluating results, management needs to consider whether the anchors in a shopping centre help or hurt a particular non-anchor store. The methodology is a technique that management of other chains might employ. The idea is to use a regression analysis to

control for some variables while analyzing the environment of the shopping centre and anchors as well as other relevant variables in evaluating performance, however defined. A parent corporation owning several different chains of stores which locate in the same shopping centres might use several chains in an extended model to compare these different chains.

In conclusion, the empirical research is based on several statistical techniques namely: the regression analysis (OLS, WLS, cross-section), graph analysis, analysis of variance, developing of a model, simulation. The main purposes related with the empirical research are to demonstrate that the closure of the department store has a negative impact on other stores in the malls, to show that the "stronger" the tenant the lower the rent it pays, to design individual leases so that stores internalize inter-store externalities, to demonstrate that a given store's sales depend on its own space as well as on the space allocated to other stores in the centre, to predict that base rents are lower with higher percentage rent rates and are higher with greater threshold levels of sales, that the anchor store has a much lower sharing percentage than non anchor stores as the primary function of malls is to price the net externality of anchor stores in order to achieve an efficient allocation space.

3. Research Design

3.1. The Data

The data collection was targeted on the commercial centres from Portugal and Spain for both performance and characteristics information. All the centres belong to Sonae Sierra multinational enterprise. In the final database, a total of 35 shopping centres under the definition of above 1.200.000 square foot are included with data for three consecutive years 2005-2007. It is important to underline that these 35 shopping centres, from which 24 belonging to Portugal and the other 11 ones to Spain, were selected in order to have coherent, homogeneous and complete information during the period mentioned before. Since tenant composition will change over time, setting a specific time in data collection is crucial to maintain data quality for later analysis.

For each mall, the data includes the centre name, size, age, number of stores, number of anchor stores, traffic people, sales, profitability, income, fixed rent, turnover rent, and service charges on a yearly basis. Variables for each anchor store include name, age, type, GLA, sales, fixed rent, discounts, turnover rent, service charge and key money. All the centres have at least one anchor store (usually department stores) with the exception of three small shopping centres from Portugal and one from Spain and in general the anchors provide about 41% of the total GLA analyzed. On average, anchor stores in our study pay only around 18% of the total rent collected by the developer. The sheer size of the subsidy can only be explained by the vast externalities created by this type of stores. We demonstrate this hypothesis empirically by showing that an increasing presence of anchor stores in a mall generates higher sales and consequently higher rents of non-anchor stores. We also demonstrate that anchor stores tend to generate mall traffic and their impact on the commercial store performance comes from the few charges they have as compared to the other stores. These results are not due to unobserved heterogeneity of store quality across malls. The data set includes multiple observations of the same store across different malls, and therefore we are able to include a fixed effect for each store in the analysis, thereby controlling for the unobserved quality of each store.

Based on the information about almost 4000 stores, the thesis uses one of the most comprehensive data sets of store contracts in shopping malls available for systematic analysis.

3.2. Hypotheses Testing

Accordingly to the main objectives of the other studies and the empirical studies previously referred, we formulate the following hypotheses related with our empirical study:

HI: The total sales of a shopping centre increases as the number of the anchor stores and the area allocated to them increases.

H2: The anchor stores can provide the shopping centre with a proportional and reliable income stream and also have customer drawing power.

H3: The sales generated by each shopping centre guest can be explained or not by the presence of the anchor stores.

H4: An increasing presence of anchor stores in a mall generates higher rents for non-anchor stores. In other words, stores who benefit from the externalities generated by anchors are indeed charged a premium for this, so that the pricing and allocation of space is efficient within the mall.

To measure the importance of the anchors within a mall, we use their number and the percentage of total mall space occupied by the anchor stores. The premise here is that the higher the percentage of mall space occupied, the higher the externalities generated for the benefit of non-anchor stores. Consequently, the analysis aims to identify whether the increased presence of anchors generates larger sales for non-anchor stores, and if so whether those stores pay for the externalities through higher rents. In other words, we try to demonstrate whether charging the anchor stores less than the rest of the stores is an optimum strategy in order to increase the performance of a commercial centre. Moreover,

through their brand name or being part of well known chain stores, anchor stores tend to generate mall traffic and their presence assures a stable income.

Recognizing that we do not use a typical classification of anchors, the entire analysis is performed with and without using the classification scheme. In this manner the results will speak to the main effect of anchors in general, and reveal some interesting patterns by exploiting the heterogeneity across the different types of anchors.

3.3. Modeling the Shopping Centre Performance

The analysis is designed in four stages as per the number of hypothesis mentioned above. In the first stage we test the influence and significance of the independent variables to the response variable shopping centre total sales using Pearson correlation analysis and the following multiple linear regression model:

HI: $TS_i = \beta_0 + \beta_1 NAS_i + \beta_2 AGLA_i + \beta_3 PS_i + \beta_4 PF_i + \varepsilon_i$ \hfill (1)

Where: TS -Total sales

NAS -Number of anchor stores

$AGLA$ - Anchor store GLA

PS - Parking spaces

PF - Parking fee

ε - the error term

and i - 1, 2, ..., 35

As can be noticed from the Pearson correlation analysis in table 1, there is a strong positive correlation between the TS (total sales) and the three variables NAS (number of anchor stores), AGLA (anchor stores GLA), PS (number of parking spaces) comparing to the weak correlation with the other one (PF-parking fee) during the whole period studied.

Table 1. Correlation coefficients between the Total sales and the independent variables

Variables	Pearson Correlation			Sig.		
	2007	2006	2005	2007	2006	2005
NAS	.858**	.853**	.883**	.000	.000	.000
AGLA	.743**	.755**	.765**	.000	.000	.000
PS	.845**	.835**	.846**	.000	.000	.000
PF	.191	.197	.189	.273	.257	.278

**. Correlation is significant at the 0.01 level (2-tailed)

(the number of observation is N=35)

It means that paying or not a certain fee for the parking space does not influence the customer drawing power and more specifically the whole sales of a shopping centre. Only 20% of Sonae Sierra portfolio charges a predefined parking fee with no remarkable impact on the final sales. On the other hand, the presence of department stores, their area and the existence of the parking facilities attract clients and increase the purchasing power.

The significance value (Sig. < 0.05) underlines that the correlation involving the first three variables is statistically significant or the probability of being wrong telling that the correlation is statistically significant is less than 1%.

In the regression analysis we used stepwise OLS method to estimate the parameters. The determinants that remain in the model are NAS (number of anchor stores), PS (number of parking spaces) and PF (parking fee), but the most significant ones are NAS (number of anchor stores) and PS (number of parking spaces) as confirmed by the Pearson analysis too. The other explanatory variable has been excluded from the model because the estimated coefficients are not statistically significant or they are strong correlated with the variables remaining in the model. Thus, in customers decision of going shopping stay on the first place the number or the presence of the anchor stores and the facilities to access the shopping centre.

To conclude, we can remark the high value of R square and the .000 Sig. value (<0.05) for the two independent variables NAS (number of anchor stores) and PS (number of parking spaces) attesting the statistical validity of the model. The R square statistic is a measure of the extent to which the total variation of the dependent variable is explained by the regression. Thus, a high value of R square suggests that the regression model is able to explain the variation in the dependent variable.

Table 2. Regression coefficients and model summary

	t	Sig.	Unstandardized Coefficients		Standardized Beta	R	R Square	Adjusted R Square	N
			B	Std. Error					
Model 2007									
(Constant)	-4.195	.000	-40831.962	9733.162		.947	.897	.887	35
NAS	5.861	.000	10792.828	1841.404	.471				
PS	6.797	.000	34.524	5.080	.544				
PF	2.948	.006	42036.463	14260.864	.176				
Model 2006									
(Constant)	-3.699	.001	-36544.384	9879.223		.935	.874	.862	35
NAS	5.101	.000	9906.754	1942.003	.464				
PS	5.921	.000	31.413	5.305	.533				
PF	2.536	.016	37476.568	14776.63	.170				
Model 2005									
(Constant)	-4.180	.000	-35575.117	8509.949		.954	.910	.902	35
NAS	6.599	.000	12578.194	1906.135	.510				
PS	6.667	.000	30.688	4.603	.510				
PF	2.688	.011	34287.531	12754.449	.152				

As we expected, the number of anchor stores definitely influence the total sales of shopping malls. In order to demonstrate the reason why the AGLA (anchor store GLA) is being systematically excluded from the model we test its correlation with NAS (number of anchor stores) variable for the same period.

Table 3. Correlation coefficients between the Number of anchor stores and AGLA (anchor store GLA)

Variables	Pearson Correlation			Sig.		
	2007	2006	2005	2007	2006	2005
AGLA	.868**	.838**	.865**	.000	.000	.000

**. Correlation is significant at the 0.01 level (2-tailed)

(the number of observation is N=35)

As expected, the AGLA (anchor store GLA) variable is strongly correlated with the number of anchor stores and that's why it was excluded from the model.

The analysis of the second hypothesis was divided in two parts. Firstly, in order to test the impact of the anchor store in the shopping centre income we used the ANOVA analysis. Secondly, quantifying the customer drawing power effect was done through the stepwise OLS method applied on the following model:

H2:

$$TP_i = \beta_0 + \beta_1 T\_GLA_i + \beta_2 CCage_i + \beta_3 NS_i + \beta_4 NAS_i + \beta_5 AGLA_i + \beta_6 PS_i + \beta_7 PF_i + \varepsilon_i$$

(2)

Where: TP - Traffic people

T_GLA - Total GLA

$CCage$ - Commercial centre age

NS - Number of stores

NAS - Number of anchor stores

$AGLA$ - Anchor store GLA

PS - Parking spaces

PF - Parking fee

ε - the error term

and i - 1, 2, …, 35

A one-way ANOVA allows us to test whether several means of different commercial centres groups are equal across the centre income. The 35th Sonae Sierra commercial centres were divided in four groups by the number of the anchor stores they contain. There were identified groups with less than one anchor store, with two to four anchor stores, with five to six anchor stores and more than seven anchor stores. In order to have a reliable analysis, we considered that three commercial centres are outliers and we decide to exclude them from the groups. The criteria used to eliminate these centres, was the higher number of anchor stores in comparison with the other centres, thus the results being a lot influenced. We consider them particular cases that are not relevant for the analysis.

Before running the ANOVA test, the Kolmogorov-Smirnov (K-S) normality with Lilliefors Significance Correction and the Levene's homogeneity of variance tests were applied for each year. The results are summarized in the following tables:

Table 4. Normality test

Anchor Store	Sig.					
	2007	N	2006	N	2005	N
<=1 AS	0.299	7	0.079	8	0.237	8
2-4 AS	0.054	11	0.085	11	0.072	15
5-6 AS	0.059	9	0.061	8	0.402	6
>=7 AS	0.417	5	0.923	5	0.408	3

Table 5. Homogeneity of variance test

	Levene Statistic	Sig.
2007	1.246	.312
2006	1.144	.349
2005	1.647	.201

As the significance associated with the K-S test is higher than 0.05 for each of the four anchor store groups it means that the normality assumption is verified. The only groups less statistically significant are the second and the third ones, where the significance value is only few higher that 0.05. The conclusion regarding the homogeneity of variance is based on the Levene's test which tests whether the variances of the four groups are significantly different. As can be seen, the significance values are much higher that 0.05 which means that the homogeneity assumption is not violated. After these tests, we can proceed with ANOVA and the results are summarized as following:

Table 6. ANOVA test

ANOVA	F	Sig.	N
2007	7.727	0.001	32
2006	4.231	0.014	32
2005	2.380	0.091	32

Except 2005, the F-test and the associated significance value lead us to the conclusion that the hypothesis of equality between the means of the four groups of anchor stores are rejected, so the anchor store groups are statistically different regarding the impact they have on the total income of the commercial centres. Thus, the more anchor stores it has, the higher the probability of the commercial centre to have a stable income stream. The 2005 result is influenced by the high number of the commercial centre included in the

second group (2-4 anchor stores). From 32 commercial centres, it contains 15, which represents almost 47% of the total.

Studying the customer drawing power effect of the anchor stores we applied the multiple linear regression analysis having as independent variables the total area of the commercial centre, the age and total number of stores they contain, the number of anchor stores and their area, the number of parking spaces and the parking fee. It is known that higher facilities and easier access to the commercial centres are important factors in the customers' decision to go shopping.

Table 7. Correlation coefficients between the Traffic people and the independent variables

Variables	Pearson Correlation			Sig.		
	2007	2006	2005	2007	2006	2005
T_GLA	.721**	.802**	.742**	.000	.000	.000
CCage	.116	.109	.155	.253	.267	.187
NS	.854**	.871**	.879**	.000	.000	.000
NAS	.811**	.822**	.820**	.000	.000	.000
PS	.736**	.760**	.754**	.000	.000	.000
PF	.222	.252	.242	.100	.072	.081
AGLA	.720**	.762**	.745**	.000	.000	.000

**. Correlation is significant at the 0.01 level (2-tailed)

 (the number of observation is N=35)

Table 8. Regression coefficients and Model summary

	t	Sig.	Unstandardized Coefficients		Standardized Beta	R	R Square	Adjusted R Square	N
			B	Std. Error					
Model 2007									
(Constant)	0.856	.398	730754.300	853837.400					
NS	3.890	.000	42312.519	10877.365	.577	.876	.768	.753	35
NAS	2.283	.029	472129.000	206824.600	.339				
Model 2006									
(Constant)	0.668	.509	530181.600	793829.500					
NS	4.184	.000	43404.141	10372.984	.605	.889	.791	.778	35
NAS	2.218	.034	435481.000	196310.300	.321				
Model 2005									
(Constant)	-1.872	.070	-2516508	1343933					
NS	11.460	.000	67779.144	5914.368	.887	.899	.809	.797	35
NAS	2.464	.019	237709.900	96486.931	.191				

In the three years (2007, 2006, 2005) we can notice that the coefficient of determination is high and statistically significant which means that in the sample there is a strong linear relationship between the independent variables kept in the model and the number of people visiting the shopping centres. It is obvious that the number of stores and anchor stores are important factors to take into account when we go shopping. This happens because higher number of stores means higher variety and bigger chances to satisfy completely our shopping needs, optimizing on our costs. The presence of the anchor stores which generally are large known department stores influence customer decision to go shopping as they bring many alternatives at small/medium prices.

Looking at the table 8, we can notice that the significance associated with the t-test is equal to .000 in the case of NS (number of stores) variable and less that 0.05 for the NAS (number of anchor stores) which means that the linear relationship between the variables remained in the model and the dependent one is statistically significant.

The variables excluded from the model are T_GLA (total GLA), AGLA (anchor store GLA), PS (parking spaces), PF (parking fee) and CCage (commercial centre age). As demonstrated before AGLA (anchor store GLA) is strongly correlated with the NAS variable and that's why it was systematically eliminated. We tend to suppose that the same positive and strong correlation exist between T_GLA (total GLA) and NS (number of stores). In order to test it we used Pearson correlation analysis for the two variables with the following results:

Table 9. Correlation coefficients between the Number of stores and T_GLA(total GLA)

Variables	Pearson Correlation	Sig.
T_GLA	.879**	.000

As expected the T_GLA variable is positive and strongly correlated with the NS, maybe this is the reason why it was excluded from the model. It is well known that the bigger the commercial centre the higher its attractiveness on the customers. A large shopping centre not only has the most part of the brand stores but they offer "air", "space" to the clients when going shopping. Space, besides flexibility, accessibility and facilities is one of the factors that always counted on the decision of Sonae Sierra's clients and even more nowadays. We should remark that comparing to the first hypothesis in the second one

the PS and PF has a smaller impact on the customer drawing power than the variables remained in the model. This might be explained as customers are firstly interested in what they need to buy and in the stores they can find the products to satisfy their needs and only after comes the other facilities offered by the shopping centres.

Hypothesis 3 comes to complete the analysis made before, because it tries to explain the relationship between the same independent variables and the sales per visitor of a shopping centre. Having the data for the same 35th centres regarding the sales per each guest, it seemed interesting to find out the impact of the anchor stores on this variable. Following the previous methodology, we used stepwise OLS method to estimate the parameters of the following model:

H3:

$$TSV_i = \beta_0 + \beta_1 T\_GLA_i + \beta_2 CCage_i + \beta_3 NS_i + \beta_4 NAS_i + \beta_5 AGLA_i + \beta_6 PS_i + \beta_7 PF_i + \varepsilon_i$$

(3)

Where: TSV - Total sales per guest (visitor)

T_GLA - Total GLA

$CCage$ - Commercial centre age

NS - Number of stores

NAS - Number of anchor stores

$AGLA$ - Anchor store GLA

PS - Parking spaces

PF - Parking fee

ε - the error term

and i - 1, 2, …, 35

The results are systematized in the tables below:

Table 10. Correlation coefficients between the Total sales per visitor and the independent variables

Variables	Pearson Correlation			Sig.		
	2007	2006	2005	2007	2006	2005
T_GLA	.328	.310	.282	.027	.035	.050
CCage	-.307	-.292	-.227	.036	.044	.095
NS	.447	.414	.358	.004	.007	.017
NAS	.465	.474	.493	.002	.002	.001
PS	.553	.524	.488	.000	.001	.001
PF	-.022	-.027	-.058	.450	.438	.370
AGLA	.341	.335	.316	.023	.024	.032

(the number of observation is N=35)

Table 11. Regression coefficients and Model summary

	t	Sig.	Unstandardized Coefficients		Standardized Beta	R	R Square	Adjusted R Square	N
			B	Std. Error					
Model 2007									
(Constant)	5.400	.000	125.051	23.159					
PS	4.264	.000	.024	.006	.574	.650	.422	.386	35
CCage	-2.539	.0160	-4.496	1.771	-342				
Model 2006									
(Constant)	5.209	.000	118.234	22.697					
PS	3.900	.000	.022	.006	.544	.616	.380	.341	35
CCage	-2.330	.026	-4.044	1.736	-325				
Model 2005									
(Constant)	5.912	.000	79.518	13.449		.493	.243	.220	35
NAS	3.251	.003	7.912	2.434	.493				

The results demonstrate that for 2007 and 2006 the most significant variables are the PS (parking spaces) and the CCage (commercial centre age), in other words the shopping centre parking facilities and its age. We can remark that this time the anchor stores have a smaller influence on the dependent variable. Only in 2005 the NAS (number of anchor stores) appears to have the biggest impact.

Pearson correlation analysis shows that the CCage (commercial centre age) and PF (parking fee) are negative and statistically significant. The explanation is that the younger the centre and the lower the fees to pay the higher the customer drawing power. As per Gatzlaff et al. (1994) "Older centres generally suffer from some types of function or

physical deficiencies. Tenant spaces may not be efficiently sized or located as needs change".

During time, the reasons why the customers go to shopping centres changed. If in 2005, we demonstrate that the anchor stores were an important factor of decision, lately services emerge as the dominant function. Their importance in the make-up of the mix has been increasing. Leisure and entertainment-associated functions play an ever greater role, accompanying the emphasis on leisure in contemporary society. Confined at first to cinemas and the food court, these functions have gained in space and visibility as they have widened in scope and added further values.

With the fourth hypothesis we aim to demonstrate that a primary function of malls is to price the net externality of anchor stores in order to achieve an efficient allocation of space. The analysis shows that anchors generate positive externalities by increasing the sales of non-anchor stores, and in turn the non-anchor stores pay for those benefits through higher rents. The equation of this model is:

H4: $NAR_i = \beta_0 + \beta_1 NAS_i + \beta_2 TSA_i + \beta_3 FRA_i + \beta_4 TRA_i + \varepsilon_i$ (3)

Where: NAR - Non-anchor stores rent

NAS - Number of anchor stores

TSA - Total sales anchor stores

FRA - Fixed rent anchor stores (without discounts)

TRA - Turnover rent anchor stores

ε - the error term

and i - 1, 2, …, 35

In order to analyze the impact of anchor stores as characterized by four variables, number of stores, total yearly sales, fixed rent and turnover rent paid on the non-anchor store rent, first we used the Pearson Correlation analysis. The SPSS has generated the following result:

Table 12. Correlation coefficients between the Non-anchors rent and the independent variables

Variables	Pearson Correlation			Sig.		
	2007	2006	2005	2007	2006	2005
NAS	.835**	.834**	.860**	.000	.000	.000
TSA	.913**	.922**	.897**	.000	.000	.000
FRA	-.150	-.202	-.157	.436	.295	.417
TRA	-.034	-.052	-.007	.862	.789	.970

**. Correlation is significant at the 0.01 level (2-tailed)

(the number of observation is N=35)

As expected, the numbers of the anchor stores and their own sales have a high influence on the amount of rent paid by the "free-riders". So, the higher the number of the anchor stores, the higher the charges of the non-anchor stores. On the other hand, the fixed and the turnover rent of the anchor stores vary opposite to the non anchor stores rents. However, the relationship is not statistically significant. Developers discount the rents of the anchor stores which suggest that they produce benefits to the mall which demand compensation. The generation of externalities carries implications not only for the rents paid by non-anchor stores but also those paid by anchors. Specifically, anchor should receive rent discounts for their externalities to be internalized.

Table 13. Regression coefficients and Model summary

	t	Sig.	Unstandardized Coefficients		Standardized Beta	R	R Square	Adjusted R Square	N
			B	Std. Error					
Model 2007									
(Constant)	1.443	.160	862.409	597.444		.926	.858	.853	29
TSA	12.783	.000	.127	.010	.926				
Model 2006									
(Constant)	1.824	.079	915.773	501.958		.944	.892	.888	29
TSA	14.923	.000	.143	.010	.944				
Model 2005									
(Constant)	1.261	.218	760.050	602.800		.927	.859	.854	29
TSA	12.819	.000	.165	.013	.927				

Based on regression results, we can conclude that the significance associated with the *t*-tests for the TSA (total sales anchor stores) is less than 0.05 which means that the

variable is statistically significant in relation to the dependent one. The premium charged to non-anchor stores is directly related to the increased sales and number generated by the presence of the anchor stores.

Analyzing the turnover rent paid by the anchor stores, we can underline that as stipulated in their contracts, anchors have much lower percentage sharing than non-anchor stores. This is consistent with the idea that not only is the rent burden shifting from anchor stores to non-anchor stores, but in addition, the burden of providing incentives to the developer is also being shifted to non-anchor stores. The result is consistent with the model of Brueckner (1993). This is just another mechanism to internalize the externalities generated by the effort of anchor stores, because if store effort needs to be taxed to generate externalities to the developer, it is more efficient to tax the effort of stores who do not generate externalities.

4. Conclusions

This study has analyzed the problem of the impact of the anchor stores on the financial results of a shopping centre. By focusing on the role of inter-store externalities, the analysis has highlighted an important phenomenon that has received too little attention in the literature on retail location. Empirical estimation of the strength of inter-store externalities is an important path for future research in this area. Much more needs to be done in order to quantify the strength and importance of externalities in shopping centres.

The empirical literature on incentives and externalities is surprisingly sparse, due to the lack of data at the store level. Empirical support for the externality hypothesis only recently started to appear in the studies of Pashigian and Gould (1998), but they didn't have data at the store level, and did not examine the structure of the contract or the interplay of agency and externality issues. Benjamin et al. (1990, 1992) examined the contracts of stores in a small number of neighborhood shopping centres. Larger shopping centres are different because they are anchored by several large department stores, as compared to the neighborhoods shopping centres which typically are anchored by a supermarket. On the contrary, the date in our study is vary large and includes actual rent and sales data.

The analysis shows that a greater presence of anchors in a mall directly increases the sales, and consequently the rents of non-anchor stores in a mall. Considering that the effort of some stores generates externalities for all stores, treating each store contract equally would result in an inefficient allocation of incentives, since too little effort would be induced by the externality generating stores. Therefore, the effort of stores which generate externalities should be stimulated more, while the burden of providing incentives to the developer is shifted to the stores which benefit from externalities.

In this analysis anchor stores have much lower sharing percentage than non-anchor stores, and variation in the sharing percentages of non-anchor stores is significantly explained by the externalities they enjoy. The probability that a non-anchor store exceeds their sales threshold is also explained by the externalities they receive. We demonstrate that these externalities are internalized by an efficient allocation of space and incentives across stores in a mall.

It was showed that store size is significantly and negatively related to tenant rent. In addition to anchor stores, other larger tenants, perhaps as a result of the positive effects generated by their presence, pay relatively lower rents while smaller stores, benefiting from the generation of demand, pay relatively higher rents. These results suggest that a full understanding of in-centre externalities and the way that the contribution of generators of positive benefits is rewarded by a lower rent in a form of Pigouvian subsidy is important in modeling shopping centre rents. In the future researches it would be interesting to consider negative externalities as a contributor to rent. However, it is likely that many of these are controlled through "regulatory" means by exclusion of non-conforming uses by landlords or by terms in leasing contracts.

Anchor stores provide shopping centres a relative income stream, which means that those with a bigger number of anchors have a higher probability of reliable income and increasing sales. They also influence the number of shopping centre guests.

Despite their high impact on the total sales of the shopping centres, nowadays anchor stores have a less influence on the sales per visitor as known that leisure and entertainment-associated functions play an ever greater role today. In other words, Sonae Sierra shopping centres are besides their main function, small "cities" where often people accustom just to spare their free-time.

This paper makes a contribution to the small empirical literature on agency theory. We show that mall contracts are written to solve a team problem where both the developer and the store owner are trying to elicit optimal effort from each other.

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Annexes

The regression models have been estimated by ordinary least squares method. In this annex we test the three main assumptions related with the classical linear regression model: the normality, the autocorrelation and the homoscedasticity errors assumptions. For this we use the following tests: Anderson-Darling, Breusch-Godfrey LM and White tests, respectively. The results are presented and discussed next.

RESULTS H1	2005	2006	2007
Anderson-Darling (p-value)	0.6190	0.2171	0.5882
Breusch-Godfrey Serial Correlation LM Test Prob. Chi-Square(2)	0.7278	0.1927	0.2630
Heteroskedasticity Test: White Prob. Chi-Square(9)	0.0026	0.2756	0.2170

RESULTS H2	2005	2006	2007
Anderson-Darling (p-value)	0.6700	0.7582	0.1793
Breusch-Godfrey Serial Correlation LM Test Prob. Chi-Square(2)	0.1832	0.2103	0.1410
Heteroskedasticity Test: White Prob. Chi-Square(9)	0.0013	0.0516	0.1135

RESULTS H3	2005	2006	2007
Anderson-Darling (p-value)	0.0830	0.0690	0.0890
Breusch-Godfrey Serial Correlation LM Test Prob. Chi-Square(2)	0.7512	0.6052	0.6386
Heteroskedasticity Test: White Prob. Chi-Square(9)	0.6875	0.1733	0.1369

RESULTS H4	2005	2006	2007
Anderson-Darling (p-value)	0.9708	0.5022	0.1157
Breusch-Godfrey Serial Correlation LM Test Prob. Chi-Square(2)	0.0060	0.2797	0.2902
Heteroskedasticity Test: White Prob. Chi-Square(9)	0.0566	0.6949	0.2214

According to the probability associated to the Anderson-Darling test we can admit that the error's normality assumption is not violated. Thus, the inference is valid in the multiple linear regression models.

According the Breusch-Godfrey test value and the probability associated with it we can conclude that there are no errors' autocorrelation problems in the model (except 2005 in the H4).

As the probability associated with the White test is higher than 0.05 we don't reject the null and we can admit that the errors are homoskedastic. Thus, (except 2005 in the H1 and H2) the OLS are the most efficient estimates.

In conclusion, as the normality, autocorrelation and homoscedasticity assumptions are generally not violated, the statistical inference is valid and the OLS are the most efficient estimates.