

**DO CHAIN AFFILIATION AND STORE PRESTIGE
AFFECT SHOPPING CENTER RENTS?**

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by

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Abstract :

This study aims at testing whether, and to what extent, *chain affiliation* within regional and super-regional shopping centers affects store rent levels. In this paper, based on the hedonic methodology, international, national, provincial as well as local chains are considered together with independent stores. The impact of *store prestige* on rents is also assessed. The research is performed in a Canadian context, with eleven regional and super-regional shopping centres located in Quebec City (5) and Montreal (6) being used, totalling over three million square feet of gross leasable area (GLA). Anchor stores and storage space are excluded from the analysis. Once filtered, the database consists of 1,477 valid leases running over the 2000-2003 period. Unit base rent is used as the dependent variable while regressors include: GLA, the shopping center weighted age, a location variable, lease duration, a time variable, the percentage rent rate, a series of retail category variables, the shopping center concentration index, an economic potential index, the retail chain affiliation level and, finally, a store level-of-prestige descriptor.

Findings suggest that, even when micro-market influences are accounted for, chain-affiliated stores are granted a rent discount by landlords, with the latter ranging between 4.9% (Quebec City) and 6.0% (Montreal). Findings also suggest that a substantial rent premium is assigned to high-prestige stores. Based on this research, the high-prestige rent premium stands at 10.5% for Quebec City shopping centers while it reaches 13.0% for Montreal retail establishments.

1. OBJECTIVE, CONTEXT AND ORGANIZATION OF RESEARCH

While a substantial body of literature has been developed on shopping centers since the mid-1980s, several issues still remain unsettled. This study, which is a follow-up of a previous paper by Des Rosiers *et al.* (2008), aims at testing whether, and to what extent, *chain affiliation within regional and super-regional shopping centers* affects store rent levels. In this paper, based on the hedonic methodology, international, national, provincial as well as local chains are considered together with independent stores. The impact of *store prestige* on rents is also assessed, in light of previous research by Hardin and Wolverson (2000 & 2001), Hardin *et al.* (2002) and Hardin and Carr (2006) on the impact of micro-market attributes on retail rent rates.

Following a literature review (*Section 2*) on the determinants of shopping center rents, the database is described in detail and the analytical approach developed in *Section 3*. Main regression findings are then presented and discussed (*Section 4*). A conclusion (*Section 5*) ends the paper.

2. LITERATURE REVIEW

Over the past decades, several authors have studied the determinants of shopping center rents with respect to a large array of issues (Benjamin *et al.*, 1990; Sirmans and Guidry, 1993; Gatzlaff *et al.*, 1994; Mejia and Benjamin, 2002; Hardin and Wolverson, 2000 & 2001; Hardin *et al.*, 2002; Hardin and Carr, 2006; Des Rosiers *et al.*, 2005; Des Rosiers

and Thériault, 2004; Gerbich, 1998; Yuo *et al.*, 2003). So far, very few studies have focused on the impact of chain affiliation on rent levels.

The academic literature on shopping centers has namely evolved around various theories of urban spatial structure (Hotelling, 1929; Christaller, 1933). With regard to the location theory, sales potential in shopping centers are looked upon through the concepts of *agglomeration economies and externalities* derived from the presence of anchor tenants (Eaton and Lipsey, 1983; West *et al.*, 1985; Ghosh, 1986; Fisher and Yezer, 1993; Eppli and Benjamin, 1993; Mejia and Benjamin, 2002) whose bargaining power results in their negotiating lower rents with shopping centers' owners (Anderson, 1985). Consumer traffic levels (Sirmans and Guidry, 1993) and customers' fidelity have also been investigated as rent determinants in relation with shopping center age (Tay *et al.* 1991). Yuo *et al.* (2003), Des Rosiers and Thériault (2004) and Des Rosiers *et al.* (2009) are among the few who have looked at retail concentration and its impact on shopping center rents.

The impact of *micro-market attributes* on retail rent rates has been investigated with respect to neighbourhood (Hardin and Wolverton, 2000 & 2001) and community (Hardin *et al.*, 2002) shopping centers. Among other things, findings suggest that primary trade area purchasing power does exert a positive, and highly significant, influence on rent levels while the hypothesized multipurpose shopping effect of nearby higher order shopping nodes is also confirmed. Hardin and Carr (2006) also highlight the detrimental effect that the presence of lower-income households in the community center's primary trade area has on its rent rates.

Risk issues with respect to rent settlement are yet another field of shopping center research. Miceli and Sirmans (1995) demonstrate that the type of rent (base or percentage) used by owners depends upon their aversion for tenant risk while Brueckner (1993) and Chun *et al.* (2003) focus on the relation between risk aversion and the percentage rent. In his study on 1,035 leases from twenty regional East Coast shopping centers, Wheaton (2000) concludes that percentage rent varies positively with base rent.

Retail image research first started with Martineau (1958) who stated that store personality is an operational force that defines the store in the consumer mind. From then on, many authors have investigated the issue (Lindquist, 1974; James *et al.*, 1976; Bearden, 1977; Pessemier, 1980; Houston and Nevin, 1981; Mazursky and Jacoby, 1986; Ghosh, 1990; Osman, 1993; Bloemer and De Ruyter, 1998; Birtwistle *et al.*, 1998; Newman and Patel, 2004). By and large, retail image emerges as a consumer's perception and results from the highly complex combination of several store and/or shopping center attributes (Houston and Nevin, 1981; Bearden, 1977; James *and al.*, 1976; Jain and Etgar, 1976; Mazursky and Jacoby, 1986; Grewal *and al.*, 1998).

Marketing strategies are also shown to trigger the establishment of an adequate shopping center image (Jain and Etgar, 1976; James *and al.*, 1976; Grewal *and al.*, 1998) which can positively affect sales level (Brown, 1992; Kirkup and Rafiq, 1994; Anikeeff, 1996). Hardin and Wolverton (2001) look at how the image dimension of neighbourhood centers, expressed in terms of both center facilities (building age and access) and anchor

store brands, affect nonanchor-tenant rental rates. While shopping center age emerges as a negative, highly significant, determinant of rents, anchor store brand only appears to affect nonanchor-store rents upward where primary trade area purchasing power is excluded from the model. This suggests that neighbourhood center image simply reflects the consumer market the anchor chain chooses to serve. In contrast, Des Rosiers *et al.*'s (2008) preliminary findings suggest that prestige stores tend to command rents that are significantly higher than those assigned to standard outlets, with the rent premium ranging from 10.6% to 13.9%.

Regarding *chain store affiliation* and its impact on rents, Mejia and Benjamin (2002) suggest that, while it is reasonable for shopping center owners to search for some equilibrium between franchisee and independent stores, they often prefer dealing with acknowledged retail chains because of their clientele attraction power. In that respect, Golosinski and West (1995) emphasize chains' capacity to promote their own outlets whereas independent stores rather tend to skimp on their communication and marketing expenses while relying on chain stores' attraction for boosting their sales. Finally, chain stores prove to be financially more stable and more profitable (Mejia and Benjamin, 2002; Wenthe *et al.*, 1988).

Although constraints differ among retail categories, all chain stores do compete for the limited space available in shopping centres. Those who can't have their requirements satisfied will generally agree to pay a higher rent for locating in another shopping center so as to get their share of the market (Golosinski and West, 1995). Furthermore, chain stores often look for specific locations that will reduce competition from rival chains (Golosinski and West, 1995). According to Benjamin *et al.* (1992), tenants with a national affiliation as well as local chain stores seem to experience a lower level of risk because of their higher creditworthiness, operational experience and traffic enhancement potential. Finally, and in direct contrast to the latter, Des Rosiers *et al.* (2008) argue that, on the whole, chain stores do command significantly higher rents, with the average premium standing at roughly 15% over non-affiliated stores' rents.

In summary, while both chain affiliation and store prestige are found to affect shopping center rents, their financial impact rests on a complex combination of interacting factors that namely include neighbourhood socio-economic profile as well as tenant selection and store location strategies. Finally, local market structure – *e.g.* supply/demand equilibrium for retail space - and specificities may also explain discrepancies in shopping center rent response to such determinants.

3. DATABASE, VARIABLE DESIGN AND ANALYTICAL APPROACH

3.1. Database and Variable Design

The research is performed in a Canadian context and is based on detailed financial data obtained from private and institutional shopping center owners / investors in Quebec. In addition to basic information on the shopping center itself (location, original age, layout of the premises, type and dates of renovations and additions to main building, non-recoverable expenses), the database provides systematic and reliable information on

retailers' identity and retail category, on store gross leasable area (GLA) and storage space as well as on tenant leases: base and percentage rents, beginning and ending dates of lease, step-up conditions.

In this research, eleven regional and super-regional shopping centres located in Quebec City (5) and Montreal (6) are being used, totalling over three million square feet of GLA. Among these, six are central establishments while the remaining five ones are found in a suburban setting. The main characteristics (identity, type and location, number of leases and shops) of shopping centers under analysis are reported in *Table A-1*. Only non-anchor stores are considered here; storage space has also been removed from the analysis. Once filtered, the database consists of 1,477 valid leases (836 for Quebec City as opposed to 641 for Montreal) running over the 2000-2003 period.

Unit base rent is used as the dependent variable while basic regressors include: GLA, shopping center's weighted age - accounting for transformations and additions, a location variable, lease duration, a trend variable, the percentage rent rate as well as a series of retail category variables. Based on previous research (Des Rosiers *et al.*, 2009), an index of retail concentration is also included in the analysis. Based on the Herfindahl index - a measure of the concentration of production in an industry -, it is computed for each retail category and each shopping center on the basis of the individual retail units' GLA. The index, which has been shown to exert a negative, significant impact on retail rents, may stand anywhere between 0 (absence of store in a given retail category) and 1 (all retail activity is concentrated in the hands of a single tenant).

In order to capture influences that relate to chain affiliation and store prestige, additional variables have been designed accordingly. Firstly, each retail outlet is being assigned a chain affiliation level based on information available in the original database, complemented by information openly available on the web. Thus, international, national, provincial (used as the reference where relevant) as well as local chains are identified together with independent stores. A store level-of-prestige descriptor is also designed on the same grounds.

Secondly, and in order to address the issue raised by Hardin and Wolverton (2000 & 2001), Hardin *et al.* (2002) and Hardin and Carr (2006) with regard to the impact of micro-market attributes on retail rent rates, an *economic potential index* (EPI) is computed for each shopping center. The EPI combines the socio-economic profile of residents (*i.e.* the average yearly personal income of the working population aged 15 and over, based on the 2001 Canadian census) with the actual customer volume for each retail establishment, as estimated through the daily trip patterns for shopping purposes. The latter rest on extensive origin-destination (O-D) surveys conducted by the *Réseau de transport de la Capitale*, RTC, for Quebec City (2001 survey) and the *Société de transport de Montréal*, STM, for Montreal (2003 survey), in cooperation with the Quebec Ministry of Transport (MTQ). The EPI is obtained by multiplying the customer volume targeted for each shopping center by the relevant income figure. The whole operation is processed through a regional GIS, with cross-computations being handled using a uniform, hexagonal spatial grid composed of 500 meter-radius cells that enable linking retail establishment centroids with residential micro-zones. Finally, a standardized, hence

relative, EPI (Stdz EPI), expressed as a percentage, is computed and used as an independent variable in the model.

Full descriptive statistics for variables used in the modeling process are reported in *Table A-2*. It can be seen that mean unit base rent stands at \$54.50 (Canadian dollars) while mean percentage rent rate stands at 4% of yearly sales¹. Store size (GLA) reaches, on average, 3,592 square feet, with strong variations among outlets though. By and large, shopping centers are between 17 and 34 year old (mean weighted age at roughly 26 years). As for lease duration for stores under analysis, it averages 9 years.

With respect to retail categories, women's clothing stores clearly dominate with 241 outlets (16% of total), followed by fast food restaurants (179 outlets, 12% of total). On average, the concentration index and the standardized EPI stand at 0.29 and 8.90, respectively. In the latter case, the maximum value is set at 14.29, which implies that the shopping centre exhibiting the largest retail potential (*i.e.* the Eaton Center, downtown Montreal) roughly captures 14.3% of all shopping expenditures by households in the selected regional and super-regional establishments.

Finally, some 79% (1,175) of retail outlets belong to a chain, with the remaining 304 shops (21%) being independent stores. As for the prestige dimension, low- and high-prestige stores are equally represented in the sample, each category accounting for 15.5% of all outlets.

3.2. Analytical Approach

Considering the statistical distribution of base rents – highly skewed to the right - and in line with the current real estate literature on retail modeling, regression models are calibrated using a log-linear functional form, with the natural logarithm of base rent (Ln_BaseRent) being used as the dependent variable. Similarly, a logarithmic transformation is applied to the store size (GLA) variable, whose regression parameter is therefore expressed as the size-elasticity of unit rent.

The general formulation of the hedonic rent equation used here can be expressed as follows:

$$\text{BaseRent} = e^{B_0 + \text{Size} B_1 + B_{2*} \text{Age} + B_{3*} \text{Duration} + B_{4*} \text{Percent} + B_{5*} \text{Time} + B_{6*} \text{Mix} + B_{7*} \text{Conc} + B_{8*} \text{EPI} + B_{9*} \text{Chain} + B_{10*} \text{Prest} + \varepsilon}, \quad (1)$$

where « Size », « Age », « Duration », « Percent », « Time », « Mix », « Conc », « EPI », « Chain » and « Prest » respectively account for store size, shopping center weighted age, lease duration, percentage rent rate, time elapsed since 1971, retail categories, concentration index, economic potential index, chain affiliation and prestige status.

¹ Considering that percentage rents are effective in only a few retail establishments, the mean rate of 4% indicated here grossly underestimates the actual rate charged, where applied; thus, according to the data, the « typical » percentage rate rather stands at between 6% and 8% of yearly sales.

This, in turn, can be put as:

$$\text{Ln_BaseRent} = \mathbf{B}_0 + \mathbf{B}_1 * \text{Ln_Size} + \mathbf{B}_2 * \text{Age} + \mathbf{B}_3 * \text{Duration} + \mathbf{B}_4 * \text{Percent} + \mathbf{B}_5 * \text{Time} + \mathbf{B}_6 * \text{Mix} + \mathbf{B}_7 * \text{Conc} + \mathbf{B}_8 * \text{EPI} + \mathbf{B}_9 * \text{Chain} + \mathbf{B}_{10} * \text{Prest} + \varepsilon \quad (2)$$

Before proceeding with final model calibration, heteroskedasticity (Breusch-Pagan) and overall comparative performance (Schwartz' Information Criterion, SIC) tests were run on six specifications (*i.e.* Detailed and Grouped chain categories applied on the Global sample and on the Quebec City and Montreal sub-samples). Test results are reported in *Table A-3*. They show, on the one hand, that heteroskedasticity is present, and highly significant, in all six specifications and that, consequently, a correction needs to be applied to the data². On the other hand, models built using the grouped chain category specification tend to yield better overall performances than those built upon detailed categories. Consequently, our analysis is confined to four models, with both detailed and grouped chain category specifications being applied on the global sample while only the latter is applied to segmented sub-samples.

Main regression results are reported in *Tables A-4* through *A-6*.

4. MAIN REGRESSION FINDINGS

Overall performances for the four model specifications retained are presented in *Table A-4*. As can be seen, the explanatory performance is quite acceptable for a retail rent model and ranges from 0.625 (Quebec City sub-sample) to 0.695 (Montreal sub-sample). Similarly, the predictive performance, although relatively high with a Root MSE standing at roughly 0.44, is in line with similar findings found in the literature and reflects the complexity of the retail rent setting process in shopping centers. Finally, all models are free from excessive multicollinearity: as can be seen from *Tables A-5* and *A-6*, most VIF (Variance Inflation Factor) values stand below 2.0 while the highest VIF still lies well below the 5.0 threshold.

4.1. The Global Model

Regression results for *Models 1a* and *1b* calibrated with the global sample are reported in detail in *Table A-5*. Starting with basic descriptors, findings confirm the prominent influence that store size, shopping center age, lease duration and percentage rent rate exert on retail base rents, with very similar results for either model specification. As expected, the GLA variable parameter estimate – expressed as an elasticity coefficient – displays a negative sign and indicates that each 10% increase in store leasable area results in a 4.1% drop in unit base rent. Also negative in sign and highly significant, the building weighted age coefficient provides a most realistic estimate for structural depreciation, which stands at roughly 1.6% per year. The positive contribution assigned

² Referred to as the « sandwich estimator of variance » procedure in the Stata software, the correction consists in adjusting the variance-covariance matrix, as suggested by White (1980).

to lease duration (around 1.1% per year) corroborates previous research findings by Des Rosiers *et al.* (2008 & 2009) and highlights, as argued by Fisher and Lentz (1990), the ability of shopping center landlords to capture through higher rents part of the business enterprise value generated by successful, long established tenants. In line with Wheaton (2000), the percentage rent rate coefficient is positively signed and highly significant. As for the trend variable parameter estimate, it does not emerge as being statistically significant, which may seem quite surprising considering that retail rents are expected to rise with inflation. The explanation probably lies with the fact that the recession of the early 1990s, which has been particularly harsh on Quebec City's property market, has kept commercial rents virtually flat for nearly a decade, thereby cancelling previous real rent increases. Finally, findings obtained with the global sample do not provide evidence in support of a significant difference in the overall shopping center rent level between Montreal and Quebec City.

Looking at retail categories, most significant and positively signed categories – which command unit rents over and above those that apply to men's clothing outlets, used as the reference - fit the description that Yuo *et al.* (2004) give of « core retail categories » characterizing *higher order* goods and services. In particular, beer, wine and liquor stores as well as gambling industries are assigned rent premiums (64% and 45%, respectively) that mirror their strategic location within shopping centers, hence their high profitability. Other outlets include: camera and photographic supply stores; optical goods stores; clothing accessory and unisex clothing stores; luggage and leather goods stores; fast food restaurants; grocery stores; jewelry and luggage stores; music and book stores; office supplies, stationery and gift stores; telecommunications as well as banking, finance, insurance and real estate services.

On the other hand, significant and negatively signed category coefficients clearly refer to *lower order* goods and services that, although filling customers' daily needs, rather characterize community and neighborhood malls: sewing, needlework and piece goods stores (58% discount), dry cleaning and footwear repair stores (51% discount) as well as hair, nail and skin care services (18% discount) all fit that profile. Such retail outlets, which are located in the less-accessible nooks of the shopping center, are usually managed by small-business tenants that could not afford typical unit rents.

Finally, regression findings clearly suggest that, by and large, retail concentration, as measured by the Herfindahl index, significantly affects shopping center rents downward. In other words, and as argued by Des Rosiers *et al.* (2009), the higher the retail concentration the lower the rent. Indeed, a high level of retail concentration – and, consequently, a low level of competition - in a given category may provide dominant tenants with enough bargaining power to negotiate favorable rental agreements with the landlord; hence the negative sign obtained.

Let us now turn to the core results of this paper. Starting with the standardized EPI, it can be seen that its coefficient is, as expected, positively signed and significant at the 0.01 level. According to findings, *each percentage point increment in the EPI translates into a 1.4% rise in unit rent* (1.3% in Model 1b). With regard to chain store categories (Model 1a) – whose coefficients are to be interpreted in relation to the provincial chain

affiliation – only the independent store variable displays a significant coefficient. Thus, findings indicate that non-affiliated stores command a unit base rent that is 15.3% below the one assigned to provincial chain stores. This said, a more straightforward interpretation of regression results is obtained with Model 1b, where all chain-affiliated stores are grouped under the chain store variable. Here, findings clearly suggest that *belonging to a retail chain will result in a 4.5% discount in unit base rent*. This corroborates Mejia and Benjamin's (2002) argument as to the preference of shopping center owners for chain-affiliated tenants which, by and large, prove to be financially more stable and more profitable than their unaffiliated counterparts while also benefitting from a greater clientele attraction power.

Finally, whereas the low-prestige store regressor yields a negative, although non significant, parameter estimate, *regression results clearly support the assumption that prestige outlets do command higher rents, even where micro-market, socio-economic factors are accounted for in the model*. Indeed, under the global sample model, *the market premium assigned to prestige stores ranges between 12.8% and 14.2%*, depending on the model specification. In either case, the coefficient is significant at the 0.001 level. Such a finding, which is at odds with Hardin and Wolverton's (2001) work, suggests that shopping center owners are actually in a position to capture part of the profits accruing to prestige tenants in the form of higher base rents. Prestige tenants, on the other hand, agree to pay for a strategic location in shopping centers where they can feed on agglomeration economies.

4.2. Segmented Models

By and large, findings from segmented models reported in *Table A-6* do not substantially differ from those obtained with the global sample. They highlight some noteworthy differences though which stress the discrepancies between Quebec City (*Model 2*) and Montreal (*Model 3*) with respect to shopping center rent setting dynamics. For instance, whereas percentage rent rate is shown to be most influential on unit base rent in Montreal shopping centers, the impact, although still positive, is much weaker for Quebec City retail establishments where the formula is being used more sparingly. Furthermore, as hypothesized above, the trend variable (Time elapsed since January 1st, 1971) is statistically significant in Montreal, with a yearly contribution on base rent of 1.7%, whereas it is not in Quebec City.

With respect to retail category variables, higher order goods and services identified in Models 1a and 1b still maintain their status when segmented samples are used. This being said, family clothing stores emerge as being highly influential on rents in Quebec City shopping centers, but not in Montreal's where the variable coefficient is not statistically significant. A similar statement can be made for luggage and leather goods stores. Gambling industries again dominate the picture – just behind beer, wine and liquor stores which generate rent premium of 63.9% and 68.6% for Quebec City and Montreal, respectively -, but their impact on base rent is substantially higher for Montreal establishments which command a 65.2% premium, as opposed to 45.7% in Quebec City. Whereas Quebec City centers benefit from a substantial rent premium (53.5%) from grocery stores, this is not the case for Montreal centers. The reverse applies to banking

and related financial services which generate a marked, and statistically significant, excess rent (58.8%) only in Montreal.

Lower order goods and services brought out by Models 2 and 3 are similar to those obtained with the global sample, that is : sewing, needlework and piece goods stores; hair, nail and skin care services; dry cleaning and footwear repair stores. In the former case though, the rent discount assigned in Montreal establishments (-95.2%) happens to be much larger than the one which prevails in Quebec City centers (-36.1%). The reverse is observed in the latter case. Finally, while the retail concentration index coefficient displays, as expected, a negative sign in both sub-samples, its magnitude (-0.303) and statistical significance is higher in Quebec City shopping centers, characterized by a lower level of competition among tenants of a given retail category.

Turning to the focus of this research, it can be seen, firstly, that the standardized EPI parameter estimate pertaining to Model 2 (Quebec City) is negative in sign – a counter-intuitive finding. Since the coefficient doesn't fulfill the minimum requirement in terms of statistical significance though, no firm conclusion may be drawn from it. Results derived from the Montreal sub-sample are more consistent and in line with theoretical expectations. Secondly, both sub-samples yield negative chain store parameters that are highly significant. Regression results suggest that, once controlled for micro-market factors, *the rent discount granted by landlords to chain-affiliated outlets ranges between 4.9% (Quebec City) and 6.0% (Montreal)*. Thirdly and finally, the substantial rent premium assigned to high-prestige stores is confirmed and is shown not to be affected by the inclusion in the analysis of the socio-economic dimension. *Based on this research, the high-prestige rent premium stands at 10.5% for Quebec City shopping centers while it reaches 13.0% for Montreal retail establishments.*

5. SUMMARY AND CONCLUSION

This study aims at testing whether, and to what extent, chain affiliation within regional and super-regional shopping centers affects store rent levels. In this paper, based on the hedonic methodology, international, national, provincial as well as local chains are considered together with independent stores. The impact of store prestige on rents is also assessed in light of previous research on the impact of micro-market attributes on retail rent rates.

The research is performed in a Canadian context, with eleven regional and super-regional shopping centres located in Quebec City (5) and Montreal (6) being used, totalling over three million square feet of gross leasable area (GLA). Anchor stores and storage space are excluded from the analysis. Once filtered, the database consists of 1,477 valid leases running over the 2000-2003 period. Unit base rent is used as the dependent variable while regressors include: GLA, the shopping center weighted age, a location variable, lease duration, a time variable, the percentage rent rate, a series of retail category variables, the shopping center concentration index, an economic potential index, the retail chain affiliation level and, finally, a store level-of-prestige descriptor.

Findings suggest that, even where micro-market influences are accounted for, chain-affiliated stores are granted a rent discount by landlords, with the latter ranging between 4.9% (Quebec City) and 6.0% (Montreal). This corroborates Mejia and Benjamin's (2002) argument as to the preference of shopping center owners for chain-affiliated tenants which, by and large, prove to be financially more stable and more profitable than their unaffiliated counterparts while also benefitting from a greater clientele attraction power.

Findings also suggest that a substantial rent premium is assigned to high-prestige stores, in spite of the inclusion in the analysis of the socio-economic dimension. Based on this research, the high-prestige rent premium stands at 10.5% for Quebec City shopping centers while it reaches 13.0% for Montreal retail establishments. Such a finding, which is at odds with Hardin and Wolverton's (2001) work, suggests that shopping center owners are actually in a position to capture part of the profits accruing to prestige tenants in the form of higher base rents. Prestige tenants, on the other hand, agree to pay for a strategic location in shopping centers where they can feed on agglomeration economies. The latter, it seems, are thus willing to pay a rent premium so as to find a place under the sun.

While bringing into question previous findings, this research adds some useful insights into how both chain affiliation and level-of-prestige affect the rent setting process in regional and super-regional shopping centers. In summary then, whereas chain affiliation enhances tenants' bargaining power, high-prestige stores' pull potential is shared among landlord and tenants. This said, the question should be raised as to whether or not such retail patterns apply generally to any context. Indeed, it could be argued that both chain-affiliated discount and high-prestige premium are context-sensitive and merely mirror the local balance between supply and demand for retail outlets. While our comparative analysis of two quite distinct metropolitan markets differing in both size and structure points towards an overall, universal pattern, further research is needed in order to investigate the complex relationships between shopping centre management and retail tenants (Roberts *et al.*, 2010) on which business trade-offs, hence rents, are shaped.

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APPENDIX

TABLE A-1 : CHARACTERISTICS OF SHOPPING CENTERS UNDER ANALYSIS

Quebec City	GLA (sq.ft)	Type ¹	Location	Number of Leases	Number of Shops
Place Fleur de Lys	862,600	SR	Suburban	162	179
Galeries de la Capitale	827,719	SR	Suburban	252	261
Place Laurier	1,288,145	SR	Central	397	324
Place Ste-Foy	585,369	R	Central	138	130
Place de la Cité	225,458	F	Central	93	93
Sub-Total Quebec City:	3,789,291 sq.ft			1,042	987
Montreal	GLA (sq.ft)	Type	Location	Number of Leases	Number of Shops
Place Vertu	909,578	SR	Suburban	152	169
Les Galeries Rive Nord	559,289	R	Suburban	127	129
Mail Champlain	715,559	R	Suburban	142	158
Complexe les Ailes	388,351	R	Central	56	86
Centre Eaton	288,056	R	Central	59	84
Place Mtl Trust	257,589	R	Central	166	219
Sub-Total Montreal :	3,118,422 sq. ft.			702	845
Total GLA²:		6,907,713 sq. ft.			
Total Number of Leases² :	1,744		Total Number of Shops² :	1,832	

1. SR : Super-regional; R : Regional; F : Fashion (grouped with regional centers).
2. These figures include all leases and shops whereas, in this paper, only non-anchor tenants are considered for analysis.

TABLE A-2 : FULL DESCRIPTIVE STATISTICS

Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Base Rent (\$/sq.ft) of the term	1,479	.00	1,000.00	80,605	54.50	60.26
Gross Leaseable Area (sq.ft)	1,479	9.00	163,034	5,312,864	3,592	11,686
Shopping center weighted age taking into account expansions and additions	1,479	1	39	37,914	25.63	8.85
Lease duration, in years	1,477	.07	46.85	13,367	9.05	5.39
Percentage Rent Rate	1,479	.00	.15	63	.04	.03
Time elapsed since Jan. 1971, in years	1,477	.76	32.42	38,297	25.93	5.11
Shopping center is located in Quebec City	1,479	0	1	838	.57	.50
Shopping center is located in Montreal	1,479	0	1	641	.43	.50
Camera and Photographic Supplies Stores	1,479	0	1	20	.01	.12
Beer, Wine, and Liquor Stores	1,479	0	1	6	.00	.06
Optical Goods Stores	1,479	0	1	25	.02	.13
Men's Clothing Stores	1,479	0	1	73	.05	.22
Women's Clothing Stores	1,479	0	1	241	.16	.37
Children's and Infants' Clothing Stores	1,479	0	1	25	.02	.13
Family Clothing Stores	1,479	0	1	44	.03	.17
Clothing Accessories Stores	1,479	0	1	30	.02	.14
Other (Unisex) Clothing Stores	1,479	0	1	98	.07	.25
Shoe Stores	1,479	0	1	99	.07	.25
Luggage and Leather Goods Stores	1,479	0	1	27	.02	.13
Sporting Goods Stores	1,479	0	1	25	.02	.13
Hobby, Toy, and Game Stores	1,479	0	1	18	.01	.11
Sewing, Needlework, and Piece Goods Stores	1,479	0	1	13	.01	.09
Gambling Industries	1,479	0	1	14	.01	.10
Full-Service Restaurants	1,479	0	1	12	.01	.09
Limited-Service Restaurants (Fast Food)	1,479	0	1	179	.12	.33
Furniture and Home Furnishings Stores - Gr. 1	1,479	0	1	67	.05	.21
Electronics and House Appliance Stores - Gr. 2	1,479	0	1	34	.02	.15
Speciality Food Stores - Gr. 3	1,479	0	1	39	.03	.16
Drug, Health and Personal Care Stores - Gr. 4	1,479	0	1	61	.04	.20
Grocery Stores - Gr. 5	1,479	0	1	18	.01	.11
Jewelry and Luggage Stores - Gr. 6	1,479	0	1	76	.05	.22
Music and Book Stores - Gr. 7	1,479	0	1	28	.02	.14
Department and Discount Department Stores - Gr. 8	1,479	0	1	39	.03	.16
Office Supplies, Stationery and Gift Stores - Gr. 9	1,479	0	1	17	.01	.11
Telecommunications - Gr. 10	1,479	0	1	32	.02	.15
Banking, Finance, Insurance and Real Estate - Gr. 11	1,479	0	1	32	.02	.15
Hair, Nail and Skin Care Services - Gr. 12	1,479	0	1	23	.02	.12
Travel Agencies - Gr. 13	1,479	0	1	14	.01	.10
Drycleaning and Footwear Repair - Gr. 14	1,479	0	1	15	.01	.10
Concentration Index based on GLA (Herfindhal Index)	1,479	.03	1.00	435	.29	.27
Stzrd Economic Potential Index	1,479	2.50	14.29	13,169	8.90	3.20
International Chain Stores	1,479	0	1	207	.14	.35
National Chain Stores	1,479	0	1	372	.25	.43
Provincial Chain Stores	1,479	0	1	447	.30	.46
Local Chain Stores	1,479	0	1	149	.10	.30
Independant Stores	1,479	0	1	304	.21	.40
Low level of prestige	1,479	0	1	228	.15	.36
Neutral level of prestige	1,479	0	1	1,021	.69	.46
High level of prestige	1,479	0	1	230	.16	.36
Valid N (listwise)	1,477					

**TABLE A-3 : HETEROSKEDASTICITY STATISTICS AND
COMPARATIVE MODEL PERFORMANCE**

Detailed Chain Store Categories	Global Model		Quebec City Model		Montreal Model	
	Statistics	Prob.	Statistics	Prob.	Statistics	Prob.
Breusch-Pagan Test (heteroskedasticity)	61,79	***	32,83	***	18,85	***
Schwartz's Information Criterion	-1,440		-1,3171		-1,3373	
Grouped Chain Store Categories	Global Model		Quebec City Model		Montreal Model	
	Statistics	Prob.	Statistics	Prob.	Statistics	Prob.
Breusch-Pagan Test (heteroskedasticity)	65,51	***	32,71	***	21,11	***
Schwartz's Information Criterion	-1,449		-1,3349		-1,3517	

Note 1: * *prob.* < 0.05 / ** *prob.* < 0.01 / *** *prob.* < 0,001

TABLE A-4 : OVERALL MODEL PERFORMANCE STATISTICS

Model	1a - Global	1b - Global	2 - Quebec City	3 - Montreal
	Detailed Chain Store Categories	Grouped Chain Store Categories	Grouped Chain Store Categories	Grouped Chain Store Categories
Number of obs.	1,477	1,477	836	641
F Test	53.12	55.83	27.65	39.86
Prob > F	0.000	0.000	0.000	0.000
R-squared	0.6466	0.6446	0.6247	0.6949
Root MSE	0.4434	0.4442	0.4479	0.4298

TABLE A-5 : REGRESSION RESULTS – GLOBAL MODEL

<i>Model 1a</i> - Global model with detailed chain store categories (References: Montreal, Men's Clothing, Provincial Chain Store, Neutral Level of Prestige)				Dependent variable : Ln_BaseRent	<i>Model 1b</i> - Global model with grouped chain store categories (References: Montreal, Men's Clothing, Not a Chain Store, Neutral Level of Prestige)			
Regression Coefficient	t test	Prob. ¹	VIF		Independent Variables	Regression Coefficient	t test	Prob. ¹
6.4639	34.19	***		Intercept	6.5851	33.11	***	
-0.4141	-20.89	***	2.23	Ln_Gross Leaseable Area (sq.ft.)	-0.4115	-20.62	***	2.21
-0.0157	-7.84	***	2.28	Shopping center weighted age	-0.0159	-7.91	***	2.28
0.0119	2.62	**	3.54	Lease duration, in years	0.0112	2.42	*	3.53
2.7456	5.11	***	1.58	Percentage Rent Rate	2.8545	5.27	***	1.57
0.0077	1.71	(sig. 0.10)	3.3	Time elapsed since Jan. 1971, in years	0.0068	1.49		3.28
0.0454	1.37		1.9	Shopping center is located in Quebec City	0.0524	1.58		1.87
0.2213	2.64	**	1.2	Camera and Photographic Supplies Stores	0.2395	2.90	**	1.19
0.6393	4.32	***	1.14	Beer, Wine and Liquor Stores	0.6859	4.66	***	1.12
0.3241	3.81	***	1.24	Optical Goods Stores	0.3377	4.00	***	1.23
0.0893	1.72	(sig. 0.10)	3.39	Women's Clothing Stores	0.0941	1.82	(sig. 0.10)	3.37
-0.0417	-0.49		1.22	Children's and Infants' Clothing Stores	-0.0315	-0.36		1.22
0.1575	1.94	(sig. 0.10)	1.47	Family Clothing Stores	0.1467	1.81	(sig. 0.10)	1.45
0.2986	3.07	**	1.33	Clothing Accessories Stores	0.2860	2.96	*	1.32
0.1530	2.52	*	2.03	Other (Unisex) Clothing Stores	0.1490	2.46	*	2.02
0.0928	1.55		2.04	Shoe Stores	0.0867	1.45		2.03
0.1981	2.09	*	1.28	Luggage and Leather Goods Stores	0.1988	2.10	*	1.28
0.0676	0.60		1.29	Sporting Goods Stores	0.0324	0.30		1.26
-0.0301	-0.34		1.26	Hobby, Toy and Game Stores	-0.0603	-0.69		1.18
-0.5749	-4.57	***	1.15	Sewing, Needlework and Piece Goods Stores	-0.5877	-4.74	***	1.15
0.4492	3.46	***	1.36	Gambling Industries	0.4876	3.75	***	1.32
0.0430	0.31		1.12	Full-Service Restaurants	0.0200	0.15		1.11
0.1456	2.15	*	3.32	Limited-Service Restaurants (Fast Food)	0.1256	1.87	(sig. 0.10)	3.27
-0.0674	-1.07		1.61	Furniture and Home Furnishings Stores - Gr. 1	-0.0679	-1.08		1.60
-0.0265	-0.36		1.33	Electronics and House Appliance Stores - Gr. 2	-0.0414	-0.56		1.33
0.1391	1.39		1.42	Speciality Food Stores - Gr. 3	0.1396	1.38		1.42
0.0026	0.04		1.61	Drug, Health and Personal Care Stores - Gr. 4	-0.0121	-0.18		1.58
0.3619	3.09	**	1.22	Grocery Stores - Gr. 5	0.3543	3.07	**	1.22
0.2138	3.37	***	1.83	Jewelry and Luggage Stores - Gr. 6	0.2117	3.33	***	1.83
0.2283	2.19	*	1.21	Music and Book Stores - Gr. 7	0.2213	2.14	*	1.26
-0.0612	-0.49		1.66	Department and Discount Department Stores - Gr. 8	-0.0625	-0.50		1.65
0.2745	2.13	*	1.21	Office Supplies, Stationery and Gift Stores - Gr. 9	0.2241	1.72	(sig. 0.10)	1.18
0.3783	3.00	**	1.42	Telecommunications - Gr. 10	0.4048	3.21	***	1.39
0.2262	2.03	*	1.43	Banking, Finance, Insurance and Real Estate - Gr. 11	0.2473	2.20	*	1.41
-0.1820	-2.06	*	1.23	Hair, Nail and Skin Care Services - Gr. 12	-0.1967	-2.27	*	1.22
-0.0598	-0.40		1.16	Travel Agencies - Gr. 13	-0.0604	-0.40		1.15
-0.5139	-3.27	***	1.24	Drycleaning and Footwear Repair - Gr. 14	-0.5315	-3.35	***	1.24
-0.1976	-2.91	**	2.31	Concentration Index based on GLA	-0.1999	-2.96	**	2.30
0.0136	3.01	**	1.59	Stzd. Economic Potential Index	0.0129	2.84	**	1.58
-0.0108	-0.25		1.59	International Chain Store	-	-	-	-
0.0367	1.16		1.61	National Chain Store	-	-	-	-
-0.0687	-1.61		1.33	Local Chain Store	-	-	-	-
-0.1530	-4.27	***	1.54	Independent Store	-	-	-	-
-	-	-	-	Chain Store	-0.0453	-4.00	***	1.39
-0.0446	-1.11		1.46	Low level of prestige	-0.0343	-0.84		1.44
0.1415	3.83	***	1.35	High level of prestige	0.1284	3.52	***	1.32

Note 1: * prob. < 0.05 / ** prob. < 0.01 / *** prob. < 0,001

TABLE A-6 : REGRESSION RESULTS – SEGMENTED MODELS

<i>Model 2 - Quebec City model with grouped chain store categories (References: Men's Clothing, Not a Chain Store, Neutral Level of Prestige)</i>				Dependent variable : Ln_BaseRent	<i>Model 3 - Montreal model with grouped chain store categories (References: Men's Clothing, Not a Chain Store, Neutral Level of Prestige)</i>			
Regression Coefficient	t test	Prob. ¹	VIF		Independent Variables	Regression Coefficient	t test	Prob. ¹
6.8195	24.69	***		Intercept	5.9410	15.99	***	
-0.4045	-14.42	***	2.26	Ln_Gross Leaseable Area (sq.ft.)	-0.4100	-15.60	***	2.42
-0.0103	-3.17	**	2.10	Shopping center weighted age	-0.0092	-2.67	**	3.24
0.0148	2.29	*	4.23	Lease duration, in years	0.0091	1.35		3.19
1.1215	1.82	(sig. 0.10)	1.71	Percentage Rent Rate	5.9532	3.97	***	1.93
0.0035	0.53		4.33	Time elapsed since Jan. 1971, in years	0.0171	2.42	*	2.95
0.3003	2.74	**	1.20	Camera and Photographic Supplies Stores	0.1509	1.19		1.2
0.4716	3.29	***	1.08	Beer, Wine and Liquor Stores	0.9165	4.75	***	1.21
0.3924	3.32	***	1.20	Optical Goods Stores	0.2314	1.76	(sig. 0.10)	1.29
0.1236	1.67	(sig. 0.10)	3.63	Women's Clothing Stores	-0.0159	-0.22		3.34
0.0140	0.13		1.24	Children's and Infants' Clothing Stores	-0.1593	-1.11		1.22
0.3002	3.51	***	1.30	Family Clothing Stores	0.0488	0.41		1.69
0.3216	2.52	*	1.38	Clothing Accessories Stores	0.2586	1.77	(sig. 0.10)	1.27
0.1914	2.31	*	2.13	Other (Unisex) Clothing Stores	0.0370	0.43		1.97
0.0764	0.92		2.04	Shoe Stores	0.0373	0.44		2.12
0.2536	1.88	(sig. 0.10)	1.25	Luggage and Leather Goods Stores	0.1276	1.01		1.35
-0.0258	-0.16		1.23	Sporting Goods Stores	0.0790	0.57		1.32
-0.0462	-0.42		1.21	Hobby, Toy and Game Stores	-0.0465	-0.37		1.19
-0.3614	-2.54	*	1.20	Sewing, Needlework and Piece Goods Stores	-0.9520	-6.50	***	1.13
0.4570	2.77	**	1.28	Gambling Industries	0.6520	3.02	**	1.47
0.0042	0.02		1.13	Full-Service Restaurants	0.0254	0.12		1.12
0.1498	1.61		3.40	Limited-Service Restaurants (Fast Food)	0.0668	0.66		3.38
-0.0165	-0.19		1.65	Furniture and Home Furnishings Stores - Gr. 1	-0.1540	-1.92	(sig. 0.10)	1.57
0.0016	0.02		1.29	Electronics and House Appliance Stores - Gr. 2	-0.0855	-0.84		1.43
0.1823	1.28		1.42	Speciality Food Stores - Gr. 3	0.0646	0.43		1.45
0.0018	0.02		1.60	Drug, Health and Personal Care Stores - Gr. 4	-0.0506	-0.57		1.58
0.5353	3.34	***	1.22	Grocery Stores - Gr. 5	0.1705	1.06		1.25
0.2251	2.54	*	1.84	Jewelry and Luggage Stores - Gr. 6	0.1708	1.88	(sig. 0.10)	1.92
0.1860	1.53		1.26	Music and Book Stores - Gr. 7	0.2996	1.52		1.29
-0.2251	-1.13		1.59	Department and Discount Department Stores - Gr. 8	0.0991	0.61		1.84
0.2784	1.60		1.20	Office Supplies, Stationery and Gift Stores - Gr. 9	0.1523	0.82		1.2
0.4419	2.26	*	1.39	Telecommunications - Gr. 10	0.4476	2.87	**	1.47
0.0869	0.53		1.34	Banking, Finance, Insurance and Real Estate - Gr. 11	0.5878	3.80	***	1.7
-0.1189	-1.06		1.20	Hair, Nail and Skin Care Services - Gr. 12	-0.3717	-2.76	**	1.29
0.0265	0.11		1.16	Travel Agencies - Gr. 13	-0.0555	-0.38		1.17
-0.6598	-2.93	**	1.25	Drycleaning and Footwear Repair - Gr. 14	-0.3601	-1.70	(sig. 0.10)	1.26
-0.3030	-2.95	**	2.83	Concentration Index based on GLA	-0.1776	-1.72	(sig. 0.10)	2.45
-0.0170	-1.87	(sig. 0.10)	1.21	Stzd. Economic Potential Index	0.0291	4.52	***	3.16
-0.0489	-3.17	**	1.38	Chain Store	-0.0598	-3.59	***	1.67
-0.0263	-0.52		1.50	Low level of prestige	-0.0439	-0.63		1.47
0.1050	2.13	*	1.33	High level of prestige	0.1298	2.47	*	1.48

Note 1: * prob. < 0.05 / ** prob. < 0.01 / *** prob. < 0,001