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**Sources of Global Heterogeneity  
in Retail Spending\***

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# **Sources of Global Heterogeneity in Retail Spending**

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# Sources of Global Heterogeneity in Retail Spending

## Abstract

*Economies worldwide vary greatly in terms of how much their consumers spend on various types of retail activities. The purpose of this paper is to examine how the regulatory characteristics as well as the natures and strategies of businesses are related to retail spending. We employed random effect time series cross sectional (TSCS) models linear in parameters for forty-eight economies using annual data for the 1999-2008 period. The results provided strong support that economic freedom, foreign direct investment (FDI) inflow and concentration of retail stores in an economy positively affect retail spending. We also found that tax and social security contributions as a proportion of the GDP is positively related to per capita grocery retail spending. A lack of data for a large number of economies, especially less developed ones potentially provides a limitation of this paper.*

*Keywords: Retail spending, FDI, economic freedom, time series cross sectional (TSCS) models*

## 1. Introduction

Economies worldwide vary greatly in terms of how much their consumers spend on various types of retail activities. According to Euromonitor International, for instance, per capita retail spending for 2006 varied from US\$110 for Pakistan to US\$9,338 for Norway. Likewise, Poland has 133 square meters of shopping-center space per 1,000 inhabitants, compared with Norway's 632.5 square meters (Kilbinger, 2007).

Consumers may save part of their disposable income and invest in various assets. The remaining part of the income is spent on retail goods as well as on the demand of non-retail goods such as entertainment, educational opportunities, health services, and housing. Retail spending can be further divided into grocery retails (e.g., food products) and non-grocery retails, which can be further broken into hard goods (e.g., appliances, electronics, furniture, sporting goods, etc.) and soft goods (e.g., clothing, apparel, and other fabrics). One important question then is how economies worldwide vary in terms of the proportion of the income spent in various categories of retailing.

With the rapid rate of retail internationalization, the study of retailing is rapidly taking off in international business and marketing literatures (Alexander and Myers, 2000). It is, however, difficult to draw any wide-ranging conclusions from these studies concerning international variation in retail spending. In this paper, we would thus argue that the drivers of retail spending, especially in the global context, while well documented, are only partially understood.

In prior theoretical and empirical research, scholars have noted that internationalization of the retailing industry is a “complex and relatively poorly understood phenomenon” (Vida and Fairhurst, 1998, p. 141). There is growing recognition that the internationalization of retailing is a phenomenon that is highly understudied in the academic literature (Coe, 2004; Wrigley, 2000a). Prior researchers have noted the importance of more research in this area (Alexander and Myers, 2000), especially on the quantification front. Vida et al. (2000) noted that empirical research in international retailing “remains scarce and lacks integration”.

Prior researchers have also suggested that consumers behave differently for grocery (e.g., foods) and non-grocery (e.g., clothes, books, CD) retailing (Næss, 2006). What is not clear is what factors explain such differences.

Econometric models in particular will provide valuable insights into the economic geography of retailing (Anderson, Chatterjee and Lakshmanan, 2003). Such models allow for policy simulations with respect to changes in marketing actions. Such a line of thought is also echoed in more recent perspectives on marketing research (Bronnenberg, Rossi and Vilcassim, 2005; Chu, Chintagunta and Vilcassim, 2007; Franses, 2005; Kshetri, Williamson and Schiopu, 2007). Researchers have also emphasized the importance of going beyond multinationals’ point of entry into a foreign market and studying the temporal and spatial dimensions of retail internationalization (e.g., Clarke and Rimmer, 1997; Wrigley, 2000b).

Most obviously, at the country level, per capita income is an important determinant of retail spending. Yet, having said this, it is apparent, too, that factors other than income explain to a significant proportion of the variation in retail spending. To substantiate this claim, we now call attention to Table 1. As we can see in the table, Azerbaijan's per capita retail expenditure is greater than Belarus' notwithstanding a much lower income level of the former compared to that of the latter. Similar relationships can be observed if we compare corresponding figures for Brazil and Bulgaria.

To more fully understand international variation in the development of the retail industry, in this paper, we examine how the policy environment as well as the nature and strategy of retailers drive retail spending in the economy. In the remainder of the paper, we first provide a literature review and develop some hypotheses. Following is a section on methods. Then, we discuss the results. The final section provides conclusion and implications.

*Insert Table 1 about here*

## **2.0 Literature Review and Hypotheses Development**

### **Foreign direct investment (FDI)**

A study conducted in Mexico showed that MNCs' presence accelerates retail modernization (Durand, 2007). Similarly, McKinsey Global Institute's study of retailing in China, India, Brazil, and Mexico found that foreign companies improve efficiency and productivity. They do so by bringing capital, technology, and management skills and forcing inefficient domestic companies to either improve their operations or to exit (Farrell, 2004).

In a discussion of the FDI effect on the development of the retail industry, the most relevant issues concern multinational retailers' innovative practices (Chan and McNeal, 2006; Davis and Sensenbrenner, 2000), which are likely to stimulate retail industry in the host country. Especially in developing countries, distribution and retailing channels are

fragmented (The Economist, 1991). These economies are not prepared to transform these services on their own (Keren and Ofer, 2000, 2002). Compared to local firms, global retailers arguably have better ways of managing supply chains and marketing activities. Global retailers possess assets based on conceptual and technological advantages (Alexander and Myers, 2000). For instance, Samiee (1995) lists three areas in which U.S.-based retailers have considerable advantages: 1) experience in the use of information technology (IT); 2) strong customer service; and 3) possession of advanced and sophisticated marketing skills in various areas<sup>1</sup>.

International retailing firms possess systems and processes that are largely lacking in developing countries (Samiee, Yip and Luk, 2004). Multinationals (MNCs) in supermarkets and other sectors engage in 'proactive fast-tracking strategies' to change the 'enabling conditions' of entry and growth via mechanisms such as procurement system modernization and local supply chain development (Reardon, Henson and Berdegué, 2007). For instance, FDI of Skoda and Volkswagen in the Czech Republic stimulated new supply networks through backward linkages (Bohata 2000; Keren and Ofer, 2000, 2002; The Economist, 2001). MNCs in the retail sector also engage in 'follow sourcing' strategy, that is, they encourage the entry of other MNCs in logistics and wholesale firms, which are parts of the former's supplier network in its home country (Reardon, Henson and Berdegué, 2007). Volkswagen's operation in the Czech Republic discussed above is an example of follow-sourcing. Multinational retailers also engage in multi-network-sourcing, that is, they use national, regional and global networks to source (Coe and Lee, 2006; Reardon et al., 2007).

Compared to local firms, global retailers can also manage their marketing mix related variables in a better way. For instance, an important role of advertising is to "manipulate the desires and habits of the common man" (Gagnon, 2007) and few local firms in a primitive

market can do so more skillfully than global MNCs on this front. Multinational retailers are also likely to have superior goods to sell (Haslach, 1992; Lipman, 2007).

An especially interesting case of a rapid development of the retail industry is that of the post-WTO China. By 2013, retail sales in China, excluding autos, are estimated to be \$1.6 trillion. In A.T. Kearney's ninth annual study of global markets with potential for retail development, China ranked first (WWD 2010). After the WTO accession in 2001, China allowed foreign retail participation in joint ventures (JVs) in the five special economic zones (Hainan, Shantou, Shenzhen, Xiamen and Zhuhai) and in the cities of Beijing, Dalian, Guangzhou, Qingdao, Shanghai and Tianjin (Country Commerce 2006). In April 2004, China announced that it would allow 100%-foreign-owned companies to engage in retailing and wholesaling. From December 2004, the Chinese Ministry of Commerce (MOFCOM) started approving applications from companies (Country Commerce 2006; Chandler, 2005). Over 35 of the global top 50 retailers entered into the country by 2007 (King, 2007). China has been the world's biggest market for cars since 2009. In this regard, it is worth emphasizing that car prices in China dropped by over 30 percent during 1995-2001, while overall consumer prices grew by 10 percent during the same time period (Farrell, 2004).

Global retailers' footprints across the world economy are getting bigger. To take one example, Wal-Mart's international division is growing faster than the company's U.S. business (Los Angeles Times, 2007). Likewise, 60% of the U.K. based food retailer Tesco's outlets are outside its home market (Kilbinger, 2007). Commenting on the nature of "a virtual headlong rush" of many retailers, a Chain Store Age (1997) article put the issue this way: "The change isn't simply about numbers. For one thing, those first international efforts were often limited to given regions--U.S. retailers entering Canada, pan-European retailing, or Asian stores branching out within the Pacific Rim. Today, however, retailers are increasingly crossing oceans and thinking, sourcing, and selling globally".

An increasing proportion of foreign investment in developing economies is going to distribution and retail sectors (Samiee, Yip and Luk, 2004). One estimate suggested that the top 25 global retailers would account for 40 percent of the world's retail spending by 2009 (Christian Science Monitor, 1999). Likewise, seven multinationals dominated the global retail market for hot drinks, which was estimated at US\$75 billion in 2004 (Business Wire 2005).

Factors related to the retail sector as well as the general business environment (e.g., saturation of the home markets, higher growth opportunities in foreign countries, increasing homogeneity of consumer markets worldwide, and the opening of emerging markets that had underdeveloped retail sector) have led to a rapid internationalization of retailers (e.g., Alexander 1997; Kumar 1997; Sternquist 1997; Vida et al. 2000).

The retail industry and spending in this industry in many developing countries have received a big boost due to global retailers' innovative practices (Chan and McNeal, 2006; Davis and Sensenbrenner, 2000). For instance, FDI and joint ventures have replaced the old distribution and production network systems of central planning in Central and Eastern European (CEE) economies (Keren and Ofer, 2002).

Similarly, China's advantage over India in the development of the retail sector is partly due to foreign retailers' higher investments in the former. China also lowered its tariffs faster than India (Chu and Magnier, 2006). Chinese retail spending is rising meteorically. In India, on the other hand, there are over 12 million small retailers in the unorganized sector (Dutt, 2005), which accounted for 97 percent of retail revenue in 2005 (Rai, 2006). More recent estimates suggest that the organized sector accounts for 8 % of urban Indian retail spending and even lower proportion in rural India (Kazmin, 2010).

India allows only single-brand foreign retails to enter into the country (Kazmin, 2010). To conform to restrictions protecting Indian retailers, Wal-Mart was required to form an



alliance with Bharti's retailing division (Chandler, 2007). Indian politicians have argued that global retailers may drive local players out of business (Rai, 2006). Recent legislation relaxed some of these rules.

Foreign retailers' effects are even more readily apparent in post socialist economies, in which decades of socialism suppressed the market. In particular, retailing, and marketing more broadly, were not part of the DNA of these economies. For instance, it is argued that Russian companies are run by "antiquated modes of organization", which are characterized by inadequate marketing and sales skills, lack of quality control, and lack of incentives and teamwork (The Economist, 1999). In these economies, consumers lack choices. Starting the late 1980s, retail multinationals (e.g., McDonald and IKEA) <sup>2</sup> started entering these economies through FDI. Their entry arguably contributed to the development of retail services in these economies (Keren and Ofer, 2000).

Prior researchers have noted that domestic services developed during the early phase of the transition lacked customer orientation and consisted of inferior know-how, technology, management and organization and provided low quality services (Keren and Ofer, 2000, 2002). Overall, foreign retailers' lower prices and better selection often tend to stimulate consumer demand and industry growth (Farrell, 2004). Beyond all that, there are also indirect effects related to the growth in national income improved productivity and output (Farrell, 2004). The above leads to the following:

*H<sub>1a</sub>: The level of per capita foreign direct investment is positively related to per capita retail spending.*

*H<sub>1b</sub>: The level of per capita foreign direct investment is positively related to per capita grocery retail spending.*

*H<sub>1c</sub>: The level of per capita foreign direct investment is positively related to per capita non-grocery retail spending.*

### **Concentration of retail stores**

The idea of retail convenience (Seiders, Berry and Gresham 2000) deserves mention. Retail convenience is related to a consumer's time and effort costs in shopping (Beauchamp and Ponder, 2010). For one thing, retail convenience is related to consumer's time savings (Yale and Venkatesh 1986). Seiders et al. (2000) propose four dimensions of convenience relevant to retailing: access, search, possession, and transaction.

We would argue that access and transaction dimensions and consumer's time savings (Seiders et al. 2000; Yale and Venkatesh 1986) are affected by the concentration of retail stores. There are reasons to expect that concentration of retail stores stimulate retail spending by facilitating convenience. As retailers face more competitors, they are forced to decrease the prices, which would help them attract price-conscious consumers. There is some evidence to suggest that an increase in the supply of stores has led to downward pressures major retail firms' prices (Harris and Vega, 1996). In China and Russia, foreign as well as and local retailers have expanded into the urban as well semi-urban areas, which have stimulated the development of the retail industry (Khanna et al. 2005). Based on above discussion, the following hypotheses are presented:

*H<sub>2a</sub>: Concentration of retail stores is positively related to per capita retail spending.*

*H<sub>2b</sub>: Concentration of grocery retail stores is positively related to per capita grocery retail spending.*

*H<sub>2c</sub>: Concentration of non-grocery retail stores is positively related to per capita non-grocery retail spending.*

### **Economic freedom**

Of equal importance in the discussion of the development of the retail industry that follows below is the degree to which the government facilitates an “unfettered” operation of retailers. There are a number of pieces of evidence indicating that economic freedom or openness drives the development of retailing (Dickson, 2000). For instance, in recent years, global

consumer goods retailers have been encouraged by news that the Chinese government's interference in the foreign-exchange market may gradually decline (WWD 2010).

The regulatory environment or a lack of economic freedom has created various obstacles to the development of the retailing industry in some countries. One of the major obstacles centers around regulations related to store operating hours (Samiee 1995). In Europe, while Sweden and the U.K. have significantly liberalized trading hours, countries such as Austria, Denmark, Finland, Germany and Norway still impose a number of restrictions on shopping hours. There are virtually no major retail activities in these countries on Sundays. Not long ago in Germany, stores were required to close by 8 PM on weekdays, and by 2 PM on Saturdays (Shy and Stenbacka, 2008).

To put in the historical context, Landes (1969, p. 52) comments how the openness drove the development of the British retailing industry in the 19<sup>th</sup> century: "British shopkeepers were relatively free of customary or legal restrictions on the objects or character of their activity. They could sell what and where they would; and could and did compete freely on the basis of price, advertising and credit. If most shopkeepers continued to haggle, many followed the lead of the Quakers in selling at fixed, market prices. In so far as such methods prevailed, they conduced to a more efficient allocation of economic resources and lower costs of distribution".

In many emerging economies, government controls on ingredients of the retailing system have hindered the growth of this sector. Foreign as well as domestic firms may face various constraints. Walker and Etzel's (1973) survey found that internationalizing franchisors faced legal and other problems. In April 2007, the Russian government outlawed foreign migrant workers in the Russian retail markets. Another restriction requires that at least half of all salespeople sell their own produce (Lipman, 2007). Ex-President Putin argued that in Russia, foreigners have "long ruled the roost" (Nikolayeva, 2006). Likewise, an Indian

law enacted in 1966 banned farmers from dealing directly with retailers and forced them to sell through licensed middlemen, called “mandis” (Robinson, 2007).

Domestic retailers have played an important role in the development of retail industries in economies such as Japan, Mongolia, Romania and Russia (Gumbel, 2006; Reid, 1995). A common thread that runs through these economies is that domestic as well as foreign firms’ involvements in retailing are facilitated by reform measures. In the 1990s, Japan proposed deregulation plans for retailing and distribution (Mallaby et al. 1998). The Large-scale Retail Store Law was amended in 2006. However, companies with the intention of entering the Japanese retail market still complained about disadvantages against existing companies (Buckley, 2007, 20). Likewise, many developing economies have launched economic reform programs to free up markets due to pressures from the World Bank (The Economist, 1995).

In the Soviet Union, the retail industry was state-owned (Hilton, 2004). Note too that service activities such as retailing, wholesaling and consulting go against the Marxist ideology (Goldman, 2006). Following the late 1980s, in Russia, big supermarket operators such as Seventh Continent and Pyaterochka were publicly listed on the stock exchange (Gumbel, 2006). The Russian retailing industry is also consolidating. In 2006, Pyaterochka merged with rival Perekriostok to form Russia's biggest food retailer, with almost 900 stores and sales of \$2.4 billion (Gumbel, 2006). Note that Russia’s retail trajectory is significantly different from those of other East European countries such as Poland and the Czech Republic. In Poland and Czech Republic, the retail industry is driven by Western retailers, which are hesitant to enter Russia (Gumbel, 2006). Likewise, factors such as easier borrowing and lower taxes—some indicators of economic freedom- are driving retail spending in Romania (BMI, 2006).

In the late 1980s, private retail businesses in Poland were encouraged to compete with the state (Diehl, 1988). This difference is powerfully illustrated in the differential development of supermarket outlets in Poland and Russia. In the late 1990s, supermarket outlets had a 1% market share in Russia compared with 18% in Poland (The Economist, 1999).

Another way in which the government can restrict the development of the retail sector is through control in locations of retail activities. Unlike in many Western cities (Wang and Zhou 1999), the location of central business districts cannot be located in city centers in China (Yan, 1995, p. 481). Retailing and commercial activities are relatively less emphasized in Chinese city centers (Wu, 1993). For instance, since 1949, the Chinese government has emphasized Beijing's role as the national political and cultural centre and restricted commercial and industrial activities through city plans (Hu, 1993). Such a "politically motivated stigmatization" of city centers seems to be apparent in other cities in former socialist countries (Bater, 1980, pp. 125-130; French and Hamilton, 1979, p. 318; Altrock, 1998; Borchert, 1979, 1995; Kulke, 1992, 1996, 1997). Thus:

*H<sub>3a</sub>: The level of economic freedom is positively related to per capita retail spending.*

*H<sub>3b</sub>: The level of economic freedom is positively related to per capita grocery retail spending.*

*H<sub>3c</sub>: The level of economic freedom is positively related to per capita non-grocery retail spending.*

### **Tax and social security contributions**

It is reasonable to assume that retail spending decreases when tax and social security contributions increase. This is because, a high level of tax and social security contributions leads to a decline in consumers' spending power.

That said, in some economies, tax and social security contributions have been a major driver of consumers' grocery retail spending. In 2004, the U.S. spent \$24.6 billion on the Food Stamp Program (FSP) and \$34.7 billion on Supplemental Security Income (SSI)

benefits (Spar 2006, cited in Trenkamp and Wiseman, 2007). In 2007, FSP served 26 million Americans (Congressional Food Stamp Challenge, 2007). This means that an average FSP beneficiary family received over \$900 annually. This is significant if we consider the fact that average yearly expenditures on food in U.S. urban household was \$2,207 in 2004 (Blisard and Stewart 2007). There are additional mechanisms such as the Earned Income Tax Credit (EITC) that are available to help the low-income families. The EITC is arguably one of the main Federal programs to subsidize the working low-income individuals.

A final point that should be taken into account concerns non-grocery retail's dominance in the retail industry. For instance, grocery retail spending is estimated to account for only 42% of total retail spending worldwide and only 34% in Gulf Co-Operation Council markets (Branston, 2009). We thus expect that the relation between tax and social security contributions and retail spending is more likely to be described by non-grocery retail spending than by grocery retail spending. Thus:

*H<sub>4a</sub>: The level of tax and social security contributions is negatively related to per capita retail spending.*

*H<sub>4b</sub>: The level of tax and social security contributions is positively related to per capita grocery retail spending.*

*H<sub>4c</sub>: The level of tax and social security contributions is negatively related to per capita non-grocery retail spending.*

### **Concluding hypothesized relationships**

From the above discussions it should be noted that the major hypotheses concerning the drivers of per capita retail spending (grocery, non-grocery as well as total) are that: (1) it is positively related to per capita FDI inflow; (2) it is positively related to economic freedom; (3) it is positively related to the concentration of retail stores. In addition, we hypothesize that (4) per capita grocery retail spending is positively related to tax and social security contributions as a proportion of GDP.

### **3. Methods**

Our unit of analysis is an economy.

#### **Dependent variables**

The dependent variables used in the analyses are per capita retail spending excluding sales tax (PCRetail), per capita grocery retail spending excluding sales tax (PCGRetail) and per capita non-grocery retail spending excluding sales tax (PCNGRetail).

#### **Explanatory variables**

Explanatory variables used in this study include per capita GDP measured at purchasing power parity (US\$) (PCGDPPPP), retail sites/outlets per 1000 people (PCRetailsites), grocery retail sites/outlets per 1000 people (PCGRetailsites), non-grocery retail sites/outlets per 1000 people (PCNGRetailsites), foreign direct investment inward stocks per person (PCFDIIS)<sup>3</sup>, economic freedom (score) (ECFR), and Tax and social security contributions as % of gross income (TSSC).

#### **Control variables**

As control variables, we used per capita GDP measured at purchasing power parity (US\$) (PCGDPPPP), the population density (people per sq km) (PD), savings ratio as a percentage of disposable income (SR), and businesses' advertising spending divided by the population (PCTAFA).

#### **Data sources**

Prior to analyzing the data, we developed hypotheses regarding potential sources of heterogeneity in the development of the retail industry. We analyzed 48 economies for which data on dependent and independent variables were available. Table 2 and Table 3 present descriptive statistics and correlation matrix respectively for variables for 2006.

<i>Insert Tables 2 and 3 about here</i>
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Most of the data related to retail spending and related indicators were obtained from Euromonitor publications. We used the Economic Freedom Index calculated by The Heritage Foundation, which formulates this index for 161 economies. Before the 2007 estimates, the index was based on 9 freedom variables related to regulation, trade, fiscal, government, monetary, investment, financial, property rights, and corruption. Starting 2007, labor freedom was added to the list<sup>4</sup>. These variables capture difficulties of economic and political natures that are likely to face retailers in an economy (Colla and Dupuis, 2002).

It is worth noting that there are five major constraints related to the use of any international secondary data: accuracy, age, reliability, lumping and comparability (Kotabe and Helsen, 2001). Kotabe (2002) argues that Euromonitor, despite its reliance on various sources, addresses the first four constraints. Regarding comparability, it is also important to note that this constraint is mainly a consequence of a lack a common and shared understanding of a concept (e.g., social capital) across countries (Harper, 2002). This problem is compounded by different languages used in the surveys for measuring the concepts. Since the data used in this paper represent actions rather than attitude, felling or intention and have straightforward operationalization, international comparability doesn't seem to be a problem. Kotabe (2002) observes: "Usually, the measurement quality of data collected from reputable data sources such *WMDS* [Euromonitor's World marketing data and statistics] do not get challenged in the blind review process" (p. 174). Euromonitor data have been used in several studies including Coulter et al. (2003), Dixon and Karboulonis (1999), Ein-Dor et al. (1997), Ganesh (1998), Ganesh et al. (1997). Likewise, the Heritage Foundation data have been used in studies such as Rose (2004), Vega-Gordillo and Alvarez-Arce (2003), Hanson (2003), Lau and Lam (2002).



## Statistical Analysis

We employed time series cross sectional (TSCS) models to analyze the data. We analyzed annual data for 10 years (1999-2008). Note that TSCS models are designed to overcome the limitations of usual linear models. When pooling data, it is highly likely that one or more assumptions of the usual linear model may be violated. Fomby et al. (1984, p. 337) point out several such possibilities. First, the error terms in a pooled model may be “heteroskedastic, autocorrelated and may exhibit contemporaneous correlation” which make generalized least square technique inappropriate. Second, the parameters of the data-generating process may differ from observation to observation. The reactions of different individuals may be different to changes in explanatory variables and the reactions may also change over time. TSCS models allow for differences in behavior over cross sectional units and also the differences in behavior over time for a given cross section. In this way, such models are likely to be consistent with the way the data were generated (Fomby et al., 1984). Problems related to such models include the selection of the most efficient estimation procedures and testing of hypotheses about the parameters.

We employed the TSCS models in the following form:

$$\text{PCRetail}_{it} = \beta_{1it} + \sum_{k=2}^K \beta_{kit} x_{kit} + \varepsilon_{it} \quad (1a),$$

$$\text{PCGRetail}_{it} = \beta_{1it} + \sum_{k=2}^K \beta_{kit} x_{kit} + \varepsilon_{it} \quad (1b),$$

$$\text{PCNGRetail}_{it} = \beta_{1it} + \sum_{k=2}^K \beta_{kit} x_{kit} + \varepsilon_{it} \quad (1c),$$

Where,

PCRetail: per capita retail spending excluding sales tax.

PCGRetail: per capita grocery retail spending excluding sales tax .

PCNGRetail: per capita non-grocery retail spending excluding sales tax.

$\beta_{1it}$  is the dummy variable for the  $i^{\text{th}}$  country for the  $t^{\text{th}}$  time period and  $\beta_{kit}$  ( $k \geq 2$ ) are the slopes.  $X_{kit}$  ( $k \geq 2$ ) is the value of the predictor  $X_k$  for the  $i^{\text{th}}$  country in time  $t$ .

Several factors need to be taken into consideration in selecting the best TSCS model.

The first is the choice between fixed and random effect models. For the fixed effect (or dummy variable) model, the intercept term  $\beta_{1it}$  in (1) can be written as

$$\beta_{1it} = \alpha_i + \tau_t \quad (2),$$

where  $\alpha_i$  are the country “dummies” and  $\tau_t$  are the time “dummies”. The dummy variable model, however, eliminates a major portion of the variation among explained as well as explanatory variables if the between-country and between-time period variation is large (Maddala, 1971). Additional problems include a loss in a substantial number of degrees of freedom and a lack of meaningful interpretation of the dummy variables (Maddala, 1971).

These problems can be overcome by treating  $\alpha_i$  and  $\tau_t$  as random in which case only two parameters, the mean and the variance of the  $\alpha$ 's (and similarly for  $\tau$ 's), are estimated instead of  $N+T$  parameters in dummy variable models, where  $N$  is the number of cross-sections and  $T$  is the number of time periods. The procedure of treating  $\alpha_i$  and  $\tau_t$  as random can be rationalized by arguing that the dummy variables do in effect represent some ignorance – just like  $\varepsilon_{it}$ . Maddala (1971) argues that this type of ignorance, or “specific ignorance,” can be treated in the same manner as  $\varepsilon_{it}$ . Therefore, the residual can be written as:

$$u_{it} = \alpha_i + \tau_t + \varepsilon_{it} \quad (3).$$

In TSCS models, two considerations, *logical and statistical*, may determine the choice of specification—fixed vs. random (Hausman 1978). The *logical* consideration is whether  $\beta_{1it}$

can be considered random and drawn from an independently and identically distributed (IID) distribution (Hausman, 1978, p. 1263). The statistical consideration is whether  $\beta_{lit}$ 's satisfy "di Finnetti's exchangeability criterion" (p. 1263), a necessary and sufficient condition for random sampling. If these conditions are satisfied, then random model can be more appropriate than a fixed model. To empirically test the *statistical* consideration, we estimated the fixed effect model<sup>5</sup> for 48 cross-sections for which "complete" data for the period under consideration were available. Then we calculated the correlation between the country specific fixed effects and time specific fixed effects with other country specific factors or regressors (Tables 4 and 5). As tables 4 and 5 indicate, of the 42 Pearsonian coefficients, only one is significant. Since most of the Pearsonian correlation coefficients were insignificant, it became clear that random effect TSCS models are more appropriate for the given data set than fixed effect TSCS models.

<i>Insert Tables 4 and 5 about here</i>
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After knowing the appropriateness of the random effect TSCS models over fixed effect ones, the next step would be to select the most appropriate random effect model. In the pooled data on Internet diffusion, it is reasonable to expect heteroskedasticity [i.e.  $E(u_{it}^2) = \sigma_{ii}$ ], contemporaneous correlation or spatial heterogeneity [i.e.  $E(u_{it}u_{jt}) = \sigma_{ij}$ ] (Anselin 1987), and autoregression [i.e.  $u_{it} = \rho_i u_{i,t-1} + e_{it}$ ]. Among the three most commonly used estimation procedures for random effect TSCS models—Fuller-Battese, Da Silva and Parks—the Fuller-Battese (Fuller and Battese 1974) takes only heteroskedasticity into account while Da Silva (1975) considers heteroskedasticity and autoregression. Parks (1967) method, on the other hand, takes heteroskedasticity, autoregression as well as contemporaneous correlation into account and hence appears to be the most appropriate method to study the multi-country retailing. We estimated the parameters by using Parks method (SAS Institute Inc., 1999).

## 4.0. Results and Discussion

TSCS results are displayed in Tables 6 and 7. For PCFDIIS data were not available for 2007 and 2008. We thus estimated the TSCS models for 8 years (1999-2006) for models that included PCFDIIS as an explanatory variable (Table 6).

It is important to note that conventional measures of  $R^2$  are inappropriate for TSCS models (SAS Institute, 1999: 1136). We thus did not report  $R^2$  values for the models.

Hypothesis 1a, 1b and 1c predicted that the level of per capita foreign direct investment has a positive effect on retail spending as well as on grocery retail spending and non-grocery retail spending. The TSCS results (Tables 6) provide support for  $H_{1b}$ . We, however, found no supports for  $H_{1a}$  and  $H_{1c}$ . This may be due to the fact the FDI is more prevalent in the grocery sector than in the non-grocery sector. For instance, during the early 1990s, in Czech Republic, while some foreign mass merchandisers entered the country, foreign investment was more readily apparent in food stores (Pellet, 1995).

The TSCS results (Tables 7) indicate that  $H_{2a}$ ,  $H_{2b}$  and  $H_{2c}$  are supported ( $t = 2.78$ ,  $p < 0.01$  for overall retail spending, and  $t = 6.68$ ,  $p < 0.001$  for grocery retail spending, and  $t = 3.14$ ,  $p < 0.01$  for non- grocery retail spending). It is also important to note that in the regression model with PCNGRetail as the dependent variable (Table 6), PCFDIIS acts as a suppressor variable, which is defined as a variable that increases the predictive validity of another variable (in this case, PCNGRetailsites) by its inclusion in the model (Conger, 1974).

Results similarly provide strong support for  $H_{3a}$ ,  $H_{3b}$ , and  $H_{3c}$ . As above, in the regression model with PCNGRetail as the dependent variable (Table 6), PCFDIIS acts as a suppressor variable by increasing the predictive validity of ECFR by its inclusion in the model (Conger, 1974). Finally, as predicted by the hypothesis 4b, the variable related to tax and social security contributions as a proportion of gross income (TSSC) has a significant positive effect on grocery retail spending ( $t = 2.27$ ,  $p < 0.05$  in Table 6 and  $7.02$ ,  $p < 0.001$  in

Table 7). This variable, on the other hand, has no significant effect on non-grocery retail spending (Tables 6 and Table 7). Thus, hypothesis 4c is not supported. However, contrary to hypothesis 4a, TSSC has a positive effect on overall retail spending.

Overall, most of the hypothesized effects are statistically significant and in the expected directions. The results indicate that the drivers of the retail industry for necessity items (e.g., grocery) are slightly different from those for luxury items or non-necessity items.

*Insert Tables 6 and 7 about here*

## **5.0. Conclusion and Implications**

In this paper, we examined the sources of heterogeneity in retail spending in economies across the world. To the authors' knowledge, this is the most comprehensive cross-national comparative study on the drivers of the retail industry. A major contribution of this research is to confirm by clear and convincing evidence that economies that exhibit a higher degree of openness to outside investment (a higher FDI inflow) and with having a higher economic freedom are likely to experience a higher rate of development of their retail industry. Our study also indicated that concentration of retail stores drives retail spending and even an increase of tax and social security contributions lead to a higher grocery retail spending.

In spite of the above contributions, some limitations accompany these analyses. Prior researchers have recognized several statistical issues and challenges associated with international secondary data. For instance, in some cases, retail spending is underestimated because the official figures may omit market stalls (Consumer Eastern Europe, 1992).

Another limitation of this study concerns the focus mainly on regulation and business related variables and the supply side of the equation. A further limitation concerns the omission of a large number of economies, mainly the low-income ones due to data unavailability.

Further research is needed to validate, extend, refine, and assess the generalizability of the comprehensive model of retail spending presented in this paper. Additional variables such as availability of services and supports to consumer can be added.

Another intriguing avenue for future research is to examine if the saving rate has differential impacts on various categories of retailing spending. In this paper, we used saving rate as a control variable. For instance, consumers may save part of their disposable income in order to purchase consumer durable items such as a car at some later date. There are thus reasons to believe that saving rate is likely to stimulate spending in hard goods (e.g., appliances, electronics, furniture, sporting goods, etc.) compared to food products or soft goods (e.g., clothing, apparel, and other fabrics). It is worth examining this issue in greater detail.

Finally, whereas the quantitative models employed in this paper placed emphasis on insuring "tightness of control", future research can pursue "richness in reality" (Mason, 1988) of the global retailing industry by using qualitative methods such as interpretive consumer research. Qualitative methods provide the basis for elaborations, interpretations and new ideas (Morse, 1992) and will further deepen our understanding of how consumers can make use of retailing.

**Table 1: A comparison of retail spending and related indicators in selected emerging economies**

	Per capita retail expenditures (US\$, 2006)	GDP per capita (US\$, 2006)	A measure of Economic Freedom as derived by The Heritage Foundation (2006)	Per Capita Foreign Direct Investment (US\$, 2005)	Population (million, 2006)
Azerbaijan	432	1,426	53.96	198	8,569
Belarus	414	3,776	48.54	31	9,784
Brazil	697	5,640	61.71	81	189,323
Bulgaria	1,058	4,064	64.29	288	7,676

Source: Calculated from Euromonitor International

**Table 2: Descriptive Statistics for variables (1999-2006, No. of observations: 384)**

	Mean	Std Dev	Minimum	Maximum
PCRetail (US\$)	3065.34	2491.58	102.5	9742.65
PCGDPPPP(US\$)	18748.74	11520.99	1307.56	50034.32
TSSC (%)	19.86	9.9	2.9	42.8
ECFR (score)	65.67	9.74	42.68	89.97
PD (people per sq km)	405.12	1279.48	2.5	6926.4
PCTAFA (US\$)	144.37	135.14	1.39	775.48
SR (%)	9.08	8.48	-15.6	33.6
PCRetailsites (per 1000 people)	7.63	3.32	1.56	17.19
PCGRetail (US\$)	1388.79	1151.17	73.68	4860.63
PCGRetailsites (per 1000 people)	3.73	2.41	0.72	15.29
PCNGRetail (US\$)	1676.55	1396.57	28.83	5037.74
PCNGRetailsites (per 1000 people)	3.89	2.35	0.45	10.96

**Table 3: Correlation matrix for variables in 2006 (N = 48)**

	PCRetail	PCGDPPPP	TSSC	ECFR	PD	PCTAFA	SR	PCRetailsites	PCRetail	PCGRetailsites	PCNGRetail
PCTAFA	<b>0.87</b> ***	<b>0.88</b> ***	<b>0.52</b> ***	<b>0.70</b> ***	0.19						
SR	-0.05	0.15	-0.26	<b>0.04</b> +	<b>0.51</b> ***	-0.01					
PCRetailsites	-0.20	-0.21	<b>-0.29</b> *	-0.18	0.006	-0.18	-0.21				
PCGRetail	<b>0.98</b> ***	<b>0.81</b> ***	<b>0.65</b> ***	<b>0.56</b> ***	-0.13	<b>0.82</b> ***	-0.10	-0.18			
PCGRetailsites	<b>-0.48</b> ***	<b>-0.54</b> ***	<b>-0.51</b> ***	<b>-0.38</b> **	-0.06	<b>-0.44</b> **	-0.10	<b>0.74</b> ***	<b>-0.44</b> **		
PCNGRetail	<b>0.98</b> ***	<b>0.91</b> ***	<b>0.55</b> ***	<b>0.69</b> ***	0.07	<b>0.87</b> ***	0.006	-0.21	<b>0.92</b> ***	<b>-0.50</b> ***	
PCNGRetailsites	<b>0.28</b> +	<b>0.32</b> *	0.17	0.18	0.08	<b>0.26</b> +	-0.19	<b>0.61</b> ***	<b>0.25</b> +	-0.07	<b>0.29</b> *

- <sup>+</sup>Significant at 0.1 level, \*Significant at 0.05 level, \*\* Significant at 0.01 level, \*\*\*Significant at 0.001 level



**Table 4: Pearsonian correlations between country and time specific fixed effects with regressors**

Variable	Pearsonian correlation coefficient with country specific fixed effect (p-value) Country effects for PCRetail as dependent variable	Pearsonian correlation coefficient with country specific fixed effect (p-value) Country effects for PCGRetail as dependent variable	Pearsonian correlation coefficient with country specific fixed effect (p-value) Country effects for PCNGRetail as dependent variable
ECFR	-0.029 (0.843)	-0.038 (0.798)	-0.024 (0.870)
TSSC	0.203 (0.166)	0.214 (0.144)	0.188 (0.201)
PCFDIIS	-0.088 (0.553)	-0.089 (0.550)	-0.091 (0.539)
PCRetailsites	-0.057 (0.698)		
PCGRetailsites		-0.096 (0.515)	
PCNGRetailsites			-0.014 (0.925)
PCTAFA	-0.009 (0.949)	0.003 (0.983)	-0.027 (0.856)
SR	-0.058 (0.694)	-0.058 (0.696)	-0.062 (0.675)
PCGDPPPP	-0.001 (0.995)	0.015 (0.918)	-0.022 (0.882)
PD	-0.079 (0.592)	-0.089 (0.549)	-0.073 (0.623)

- <sup>+</sup>Significant at 0.1 level, \*Significant at 0.05 level, \*\* Significant at 0.01 level, \*\*\*Significant at 0.001 level

Table 5: Pearsonian correlations between time specific fixed effects with regressors

Variable	Pearsonian correlation coefficient with time specific fixed effect (p-value) PCRetail as Dependent variable	Pearsonian correlation coefficient with time specific fixed effect (p-value) PCGRetail as Dependent variable	Pearsonian correlation coefficient with time specific fixed effect (p-value) PCNGRetail as Dependent variable
ECFR	-0.191 (0.597)	-0.192 (0.595)	-0.244 (0.497)
TSSC	-0.459 (0.182)	-0.507 (0.135)	-0.401 (0.251)
PCRetailsites	0.483 (0.158)		
PCGRetailsites		0.787 (0.007)**	
PCNGetailsites			-0.052 (0.887)
PCTAFA	0.316 (0.374)	0.323 (0.362)	0.256 (0.475)
SR	0.146 (0.688)	0.155 (0.668)	0.149 (0.680)
PCGDPPPP	0.135 (0.709)	0.139 (0.701)	0.085 (0.815)
PD	0.028 (0.938)	0.026 (0.942)	-0.017 (0.963)

- <sup>+</sup>Significant at 0.1 level, \*Significant at 0.05 level, \*\* Significant at 0.01 level, \*\*\*Significant at 0.001 level

**Table 6: TSCS analysis (N = 48)**

	Model 1 (Dependent variable: PCRetail)	Model 2 (Dependent variable: PCGRetail)	Model 3 (Dependent variable: PCNGRetail)
Intercept	<b>-970.825 (3.23) **</b>	<b>-298.742 (4.99) ***</b>	<b>-311.635 (3.07) **</b>
ECFR	<b>5.124332 (1.91) +</b>	<b>5.773793 (12.39) ***</b>	1.742168 (1.28)
TSSC	<b>16.46031 (4.54) ***</b>	<b>2.944875 (7.02) ***</b>	2.328461 (1.22)
PCRetailsites	<b>48.49386 (2.78) **</b>		
PCGRetailsites		<b>19.45731 (6.68) ***</b>	
PCNGetailsites			<b>47.84054 (3.14) **</b>
PCTAFA	<b>11.5088 (16.51) ***</b>	<b>4.9769 (27.91) ***</b>	<b>5.6332 (18.42) ***</b>
SR	<b>19.86695 (7.01) ***</b>	<b>7.709536 (14.84) ***</b>	<b>9.693157 (5.74) ***</b>
PCGDPPPP	<b>0.0757(10.19) ***</b>	<b>0.0292 (14.03) ***</b>	<b>0.0415 (11.29) ***</b>
PD	0.669348 (0.69)	-0.43375 (1.38)	0.132692 (0.63)
Years	10 (1999-2008)	10 (1999-2008)	10 (1999-2008)
No. of observations	480	480	480
Estimation method	Parks	Parks	Parks

- The numbers in the parentheses are the t-values.
- <sup>+</sup>Significant at 0.1 level, \*Significant at 0.05 level, \*\* Significant at 0.01 level, \*\*\*Significant at 0.001 level

**Table 7: TSCS analysis (N = 48)**

	Model 1 (Dependent variable: PCRetail)	Model 2 (Dependent variable: PCGRetail)	Model 3 (Dependent variable: PCNGRetail)
Intercept	<b>-640.899 (2.32) *</b>	<b>-376.37 (3.84) ***</b>	<b>-497.133 (5.02) ***</b>
ECFR	<b>6.659 (1.75) +</b>	<b>5.56892 (3.59) ***</b>	<b>5.445688 (7.12) ***</b>
TSSC	<b>6.999362 (2.67) **</b>	<b>3.862723 (2.27) *</b>	0.840776 (1.37)
PCFDIIS	904.4848 (0.23)	<b>3567.754 (1.78) +</b>	1759.067 (1.29)
PCRetailsites	-2.39529 (0.09)		
PCGRetailsites		-3.66469 (0.27)	
PCNGetailsites			<b>56.77669 (4.74) ***</b>
PCTAFA	<b>12.6324 (9.28) ***</b>	<b>5.3375 (15.01) ***</b>	<b>5.5983 (28.95) ***</b>
SR	<b>32.22755 (3.06) **</b>	<b>9.873048 (3.79) ***</b>	<b>15.00149 (4.81) ***</b>
PCGDPPPP	<b>0.074 (3.60) ***</b>	<b>0.0349 (8.84) ***</b>	<b>0.038153 (6.93) ***</b>
PD	-0.12496 (0.28)	0.039457 (0.10)	3.274E - 7 (0.86)
Years	8 (1999-2006)	8 (1999-2006)	8 (1999-2006)
No. of observations	384	384	384
Estimation method	Parks	Parks	Parks

- The numbers in the parentheses are the t-values.
- <sup>+</sup>Significant at 0.1 level, \*Significant at 0.05 level, \*\* Significant at 0.01 level, \*\*\*Significant at 0.001 level

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## Notes:

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<sup>1</sup> Analysts say that American retailers are not better by “birthright” but have faced a more competitive retail environment at home compared to their European and Japanese counterparts in their respective countries (Johnson, 1995).

<sup>2</sup> In 1991, Belgium’s Delhaize Le Lion teamed up with the Czech Parik Group to open its first food supermarket in Prague. Similarly, Austrian food retailer, Julius Meinl, formed subsidiaries in Czech, Slovak, Poland, Hungary, Yugoslavia and Russia (Haslach, 1992).

<sup>3</sup> Because of the unavailability of FDI data specific to the retailing sector, we assumed that FDI in this sector is proportional to the total FDI in an economy.

<sup>4</sup> The think-tank also moved to a 100 point system-- 100 indicating “perfectly free” (<http://www.heritage.org/research/features/index/countries.cfm>).

<sup>5</sup> Even if random effects specification is found more appropriate on logical ground, one may still estimate fixed effects models. The fixed effect estimators are based on a particular sample which treats them as fixed in the sample (Hausman 1978).