

Cross-National Heterogeneity in Retail Spending: Evidence from Longitudinal Country-Level Data

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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 access and availability as measured by the density of retail stores 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.

Keywords

Retail spending, FDI, economic freedom, time series cross sectional (TSCS) models, retail density.

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Introduction

While it is tempting to suggest that a country's income and retail spending are strongly related, factors other than income seem to explain a substantial proportion of the variation in retail spending. For instance, our analysis of 48 countries included in the paper revealed that per capita income has a significant effect on per capita retail spending ($p < 0.001$) but explains only 73.9% of the variance. We further illustrate this point below with a comparison of Azerbaijan and Belarus (Table 1). As we can see in the table, Azerbaijan's per capita retail expenditure is greater than Belarus' notwithstanding a much lower income of the former compared to that of the latter. Similar relationships can be observed if we compare corresponding figures for Brazil and Bulgaria.

Most obviously, at the country level, income is an important determinant of retail spending. This is because consumers may save part of their income and invest in various assets. The remaining part is spent on retail goods as well as on the demand for non-retail goods such as entertainment, educational opportunities, health services, and housing. Retail spending can be divided into grocery retail (e.g., food products) and non-grocery retail, of which the latter can be broken into hard goods (e.g., appliances, electronics, furniture, sporting goods, etc.) and soft goods (e.g., clothing, apparel, and other fabrics). As the above remarks suggest, however, the income-retail spending relation leaves a substantial amount of variation unexplained.

In light of the above discussion, this paper seeks to explain country differences in retail spending that are not explained by the dominant factor: per capita income. More specifically, we focus on regulatory and industry factors that account for the cross-country variability in retail spending. In what follows below, the relevant literature is discussed in turn.

The drivers of retailing systems and their macromarketing impacts and implications are well discussed in a rich and growing body of academic and industry research (e.g., Belaya and Hanf 2010; Business Eastern Europe 2009; Chan et al. 1997; Datamonitor 2010a, b; Ingene 1986; Kaynak 1985; Kumcu 1987; Layton 1981; Mittelstaedt and Stassen 1991; Ortiz-Buonafina 1992). Consumers, retailers and governments are also characterized by different orientations towards grocery and non-grocery retail activities, which have led to distinctiveness in the developmental patterns of these retail categories. For instance, food and non-food retailers are found to differ in their propensity to source domestically versus internationally (Nordas 2008). Prior research also indicates that consumer behaviors differ across grocery (e.g., foods) and non-grocery retailing (e.g., clothes, books, CDs) (Næss 2006). Finally, trade policy measures such as tariff and non-tariff trade barriers differ for these two product categories (Nordas, 2008).

In the context of this paper, two sets of factors identified in the macromarketing and related literature as the determinants of the development of the retail industry deserve mention. First, prior research has indicated that government regulations shape the development of the retail industry. For instance, Ingene (1986) provided insights into the effects of Blue laws and other regulations and restrictions on the development of the retail industry. Similarly, Mittelstaedt and Stassen (1991) examined the complexity and diversity in the legislation related to collecting taxes on mail-order sales. Likewise, Ortiz-Buonafina (1992) analyzed how the evolution of modern retail institutions in Guatemala transformed the

country's retail system. Finally, Maruyama and Trung (2012) documented how Vietnam's shift from a command economy to a market economy and introduction of the renovation policy known as Doi Moi led to a modernization of the retail sector in the country.

A second stream of research has examined the industry structure and businesses' strategy and tactics in the retail sector. Ingene (1982) showed the importance of competition related factors such as per capita retail floor space in explaining the development of the retail industry. In the same vein, Ortiz-Buonafina (1992) found that retailers' expansion in rural areas helped stimulate the development of the retail industry in Guatemala. Likewise, Boylaud and Nicoletti (2001) analyzed structural developments in the retail industry and the effect on price formation. Studies in this area have also provided fundamental insights into increasing market concentration, especially vertical integration and the resulting impacts on economies of scale (Clark et al. 2003; Nordås 2008; OECD 2006).

While various antecedents of the retail industry and their macromarketing consequences are examined, to our knowledge, little research has been conducted to determine the factors that produce international variations in the development of the retail industry as well as differences across various retail categories. While some comparative studies of retail policy exist, most studies related to consumer and public policy aspects have been conducted at the national level (Burt 2010). Moreover, one cannot expect to resolve the issues related to the determinants of international heterogeneity in this industry by considering a single country or a few countries. Researchers have recognized that the possible contexts, mechanisms and processes associated with international variation in retailing are complex and poorly understood at present (Coe 2004; Vida and Fairhurst 1998; Wrigley 2000).

In light of the above discussion, we examine how the policy environment as well as nature and strategy of retailers explain the existing international variation in retail spending.

We use time series cross sectional (TSCS) data for 48 economies for ten years. Our approach thus allows us to confront the existing theories with data from a large number of economies with diverse characteristics for a sufficiently long period of time. Our study adds to the growing macromarketing literature showing the effects of social, cultural, political and economic structures on the macromarketing system, specifically the retailing systems literature (Kumcu 1987; Layton 1981) as well as the literatures on comparative retail studies (Kaynak 1985).

In the remainder of the paper, we first provide a literature review and develop some hypotheses. Following that is a section on methods. Then, we discuss the results. The final section provides conclusion and implications.

Table 1 at end of document

Literature Review and Hypotheses Development

Foreign direct investment (FDI) and retail spending

Foreign direct investment (FDI), especially in developing economies, can have an impact on the behavior of consumers, businesses (e.g., retailers), and the government in ways that directly and indirectly affect retail spending. First, let us discuss the effects of FDI on local businesses. Agh (1999) found that a high level of FDI and the presence of multinational corporations (MNCs) enhanced the level of international competitiveness of Hungarian enterprises. Prior research has documented various spillover mechanisms such as skilled labor turnovers, enterprise spin-offs, demonstration effects, and supplier–customer relationships, which benefit local enterprises (Cheung and Lin 2004; Kshetri 2008). For instance, MNCs are likely to have an effectively managed procurement system and possess the capability to create forward and backward linkages in the supply chain, which may involve retailers in the country (Reardon, Henson and Berdegué 2007; Bohata 2000; The Economist 2001).

The various processes and mechanisms discussed above are likely to lead to a higher efficiency and productivity, adoption of innovations, improvement in products, processes and organizational structures, and modernization and adjustment of practices according to demand and supply conditions (Dunning 1994; Durand 2007; Holland and Pain 1998; Garibaldi et al 1999; Fallon, Jones, and Cook 2003). In sum, MNCs in a country, irrespective of their industry of operation, can facilitate modernization and efficiency of the retail system.

As to the effects on consumers, a high level of FDI is also associated with a growth in national income and output (Farrell 2004), which is likely to stimulate retail spending. For instance, observers have noted that thanks to high living standards associated with oil-related FDI, Azerbaijan's Baku accounts for about half of total retail sales in the country (Business Eastern Europe 2009). This might be a reason why Azerbaijan's per capita retail spending is higher than some economies with higher per capita income. Finally, a high FDI is also associated with low corruption (Kwok and Tadesse 2006).

These factors discussed above are likely to lead to quality, availability, and affordability of retail products and hence act as a demand stimulation effect for the retail sector. For instance, Mai and Smith (2012, p. 54) found that urban consumers in Vietnam generally "showed a strong proclivity for foreign products". Even more importantly, FDI in the retail sector, which accounts for a sizable share of FDI in many countries, is obviously likely to have a more direct and significant contribution to the growth of retail industry and hence retail spending. An increasing proportion of foreign investment in developing economies is going to distribution and retail sectors (Samiee, Yip, and Luk 2004). For instance, retail is a preferred sector for FDI in Romania (EBRD, 2001). Similarly, during the early 1990s, in the Czech Republic, while some foreign mass merchandisers entered the country, foreign investment was more readily apparent in food stores (Pellet 1995). Likewise,

in the late 1990s, the food industry accounted for over one third of FDI in Russia (Belaya and Hanf 2010).

Among many benefits foreign retailers create to the local economy are capital, technology, systems processes and management skills, pressures on inefficient domestic companies, superior goods, lower prices and better selection (Farrell 2004; Lipman 2007; Samiee, Yip, and Luk 2004). These effects are especially noticeable in Brazil, China, Mexico and many former Soviet economies (Farrell 2004; Pellet 1995). Even among these economies, the effect is most visible in China, which had hosted over 35 of the global top 50 retailers by 2007 (King 2007). By 2013, retail sales in China, excluding autos, are estimated to be US\$1.6 trillion. In A.T. Kearney's ninth annual study of global markets with potential for retail development, China ranked first (WWD 2010). The above leads to the following:

H_{1a}: Ceteris paribus, the level of per capita foreign direct investment is positively related to per capita retail spending.

H_{1b}: Ceteris paribus, the level of per capita foreign direct investment is positively related to per capita grocery retail spending.

H_{1c}: Ceteris paribus, the level of per capita foreign direct investment is positively related to per capita non-grocery retail spending.

The degree of access and availability of retail stores and retail spending

A high degree of access and availability is associated with a high level of competition, which indicates the existence of various offerings that appeal to a multitude of customers with a variety of backgrounds, tastes and interests that have diverse needs, wants, demands and preferences related to quality and functional requirements. It is also an indication that there are likely to be businesses running retail outlets to serve specific niche markets. One way to measure access and availability would be to use retail density as an indicator (Flath 2003; Nordas 2008).

Prior studies have examined how various supply side factors associated with retail density are linked to retail spending. Ingene (1982) found that retail spending is positively

related to per capita retail floor space. Similarly, Ortiz-Buonafina's (1992) study indicated that retail stores' expansion in the rural area stimulated the development of the retail industry in Guatemala. Likewise, in China and Russia, foreign as well as 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).

A wide availability of stores or a high level of competition could stimulate the development of the retail industry through a number of mechanisms. First, a wide availability of retail stores can improve the convenience for shopping and thus may lead consumers to spend more on retailing. More specifically, a wide availability of retail stores means an easy access to retail amenities, lower transaction costs as well as time savings (e.g., Seiders, Berry, and Gresham 2000; Yale and Venkatesh 1986). An easy access to retail stores is especially effective in stimulating retail spending in economies with low car ownership rates. For instance, it was reported that European hypermarkets were performing exceptionally well in China but most customers had no cars and thus could buy only what they could carry (Chan et al. 1997).

Second, as retailers face more competitors, they are likely to engage in price wars and decrease the prices, which would help them attract price-conscious consumers (Datamonitor 2010a). Prior research has indicated that an increase in the supply of stores is likely to lead to downward pressures on major retail firms' prices (Harris and Vega 1996).

Finally, an important point to note is that most grocery retail products such as food as well as non-grocery retail products such as apparel are characterized by negligible switching costs for consumers (Datamonitor 2010a, b). A low switching cost allows consumers to benefit from new retailers' entry as well as price competition among retailers, which may lead to an increase in retail spending. Based on above discussion, the following hypotheses are presented:

H_{2a}: Ceteris paribus, the degree of access and availability of retail stores is positively related to per capita retail spending.

H_{2b}: Ceteris paribus, the degree of access and availability of grocery retail stores is positively related to per capita grocery retail spending.

H_{2c}: Ceteris paribus, the degree of access and availability of non-grocery retail stores is positively related to per capita non-grocery retail spending.

Economic freedom and retail spending

Government regulations related to operations of the retail sector vary widely across the world (Boylaud and Nicoletti 2001). Governments' reform measures and proactive steps play an instrumental role in stimulating the development of the retail industry (Howard 2009; Pilat, 1997). Some examples of such effects can be observed in retail sectors of Japan, Mongolia, Romania and Russia (Gumbel 2006; Reid 1995). At the same time, some governments have introduced regulations that restrict retail activities. Shannon (2009) observed that stringent regulations on store development in Thailand are likely to have an adverse impact on the development of the retail sector.

Overall, we would argue that economic freedom or openness would drive the development of retail industry (Dickson 2000). Before proceeding further it is necessary to briefly review the concept of economic freedom (ECFR) proposed by the Wall Street Journal and The Heritage Foundation. Several ideas in the definition of ECFR deserve elaboration. The Index covers ten components of economic freedom, which according to Heritage Foundation, are based on Adam Smith's theories about liberty, prosperity and economic freedom and measure economic success. Each component is assigned a score in each component (in a 0 to 100 a scale, 100 representing the maximum freedom). The overall economic freedom for an economy is the average of the scores for the ten components: business freedom, trade freedom, fiscal freedom, government spending, monetary freedom, investment freedom, financial freedom, property rights, freedom from corruption and labor freedom (heritage.org 2010). It is also important to note some commentators' view that the

ECFR index is influenced by right-wing political ideology and is associated with freedom for corporations rather than for societies.

Next, we illustrate how the various components of ECFR might affect the development of the retail industry. A good example to illustrate this concerns the changes undergoing China. In recent years, global consumer goods retailers have been encouraged by the news that the Chinese government's interference in the foreign-exchange market may gradually decline (WWD 2010). A low degree of government control and interference in the financial sector means a higher financial freedom.

To move to a different issue, in 2007, the Russian government outlawed foreign migrant workers in the Russian retail markets. Another restriction required that at least half of all salespeople sold their own produce (Lipman 2007). Ex-President Putin argued that in Russia, foreigners have “long ruled the roost” (Nikolayeva 2006). The regulatory burdens and restrictions in the country’s labor market have led to a decreased labor freedom and hence an adverse effect on retail spending.

Next, there is the issue of the effect of business freedom on the development of the retail industry. 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). This law restricted the farmers’ business freedom.

We turn next to investment freedom. Until the 1990s, foreign firms faced constraints in investing in the Japanese retail sector. That is, the Japanese retail sector lacked investment freedom. 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). As another example, investment freedom stimulated the development of the Polish retail industry in the late 1980s. Private retail businesses in Poland were encouraged to make investments and 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). In Poland and the Czech Republic, the retail industry is driven by Western retailers, which are hesitant to enter Russia (Gumbel 2006).

We next discuss some components of economic freedom in Eastern Europe and former Soviet Union countries in the context of the development of the retail industry. Before the 1980s, the Soviet Union and other Eastern Bloc economies lacked property rights as well as investment freedom. Service activities such as retailing, wholesaling and consulting go against the Marxist ideology (Goldman 2006). Following the late 1980s, these economies promoted investment freedom and developed institutions for the protection of property rights, which facilitated the growth of the retail industry. In Russia, big supermarket operators such as Seventh Continent and Pyaterochka were publicly listed. In 2006, Pyaterochka merged with rival Perekriostok to form Russia's biggest food retailer, with almost 900 stores and sales of US\$2.4 billion (Gumbel 2006). Likewise, it is reported that easier borrowing and lower taxes are driving retail spending in Romania (BMI 2006). By reducing the tax burden, the Romanian government has promoted fiscal freedom. In the same vein, in the early liberalization period in Eastern Europe, privatization of ownership (property rights), and the removal of restrictions on pricing and product ranges (business freedom) stimulated the development and proliferation of small retail outlets (Burt 2010).

Finally, a China-India comparison would provide insights regarding the effects of economic freedom on retail spending. 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) and thus promoted trade freedom. In India, there are over 12 million small retailers in the unorganized sector in 2005,

which accounted for 97% of retail revenue in 2005 (Dutt 2005; Rai 2006). More recent estimates suggest that the organized sector accounts for 8% of urban Indian retail spending and even lower proportions in rural India (Kazmin 2010). Another compelling indicator concerns the availability of modern self-service outlets in the two countries. In 2009, the share of modern stores in India was 6.5% compared to 65% in China (Dholakia, Dholakia, and Chattopadhyay 2012; NielsenWire 2010). India allows only single-brand foreign retailers to enter into the country. 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). Thus:

H_{3a}: Ceteris paribus, the level of economic freedom is positively related to per capita retail spending.

H_{3b}: Ceteris paribus, the level of economic freedom is positively related to per capita grocery retail spending.

H_{3c}: Ceteris paribus, the level of economic freedom is positively related to per capita non-grocery retail spending.

Tax and social security contributions and retail spending

This section starts with a discussion of the concept of welfare state, in which one of the roles of the government is to protect its citizens' health and well-being. The degree of welfare state universality is positively related to the possibilities for poverty relief (Korpi and Palme 1998; Michalski 2003). Note that poverty is defined as the inability to meet basic human needs such as food (Kawachi, Subramanian, and Almeida-Filho 2002).

Nations across the world differ drastically in terms of the degree of welfare state support (Greve 2006). Among the members of OECD, welfare expenditure as a proportion of GDP varies from 11% in South Korea to 38.2% in Sweden (Barr 2004), significant proportions of which are spent on foods.

A natural question is then: Where does the money for the “welfare state” come from and where does it go? As to the sources of funds for the welfare state, the so called “universal model” of welfare state is financed through taxation and involves a transfer of funds from the state to the providers of various services such as healthcare and education as well as directly to individuals in form of benefits (Bergh 2004; O'Hara 1999).

Reducing poverty is a major goal of the welfare state. Based on the definition of poverty above (Kawachi, Subramanian, and Almeida-Filho 2002), the most relevant point concerns the right to food. In at least 20 countries including South Africa, India and Egypt, everyone has a constitutional right to receive sufficient food (Vink 2004; Drèze 2004; Gutner 1999; Irudaya Rajan 2001; van Ginneken 2003). The food benefits associated with the welfare state provide substantial and significant relief to low-income households, which are likely to stimulate grocery retail spending. The Food Stamp Program (FSP) is a major component of the U.S. welfare state. In 2009, 15 million families or single individuals received food stamps equivalent to US\$50 billion (Bitler and Hoynes 2010). Similarly, it was estimated that about a quarter of India’s elderly received government subsidies for food and other necessities in the early 2000s (Irudaya Rajan 2001; van Ginneken 2003). Likewise, other developing countries such as Egypt and South Africa have large food subsidy programs (Gutner 1999; Vink 2004). Chile and Costa Rica have been cited as examples of other economies that followed the strategy of “support-led security” (Dreze and Sen 1989; Osmani 1993).

One reason why Scandinavian countries have relatively high welfare expenditure as a proportion of GDP (Barr 2004) concerns their high tax and social security contributions rates. For instance, tax and social security contributions (TSSC) rates for 2006 were 35.5% for Finland, 34.4% for Norway, 36.7% for Denmark and 40% for Sweden. These figures are significantly higher than corresponding proportions for developing economies which include

5.4% for India and 10.6% for South Africa. Thanks to increased tax revenue, from mid-1950s to the end of 1970s, total welfare expenditure in Sri Lanka accounted for 8-12% of GDP and 30-40% total government expenditure (Osmani 1993). Countries with low TSSC rates are thus likely to face resource constraints in allocating funds for food subsidy programs. For instance, Egypt's food subsidy programs have drained resources and created budgetary challenge (Gutner 1999).

In general, a low personal income tax rate is related to an increase in private consumption (Consumer Goods Industry Report: Israel 2011). A related point is that low levels of personal income tax and spending on basic necessities lead to more disposable income to spend on luxury items and other non-grocery categories (Danziger 2007).

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

H_{4a}: Ceteris paribus, the level of tax and social security contributions is negatively related to per capita retail spending.

H_{4b}: Ceteris paribus, the level of tax and social security contributions is positively related to per capita grocery retail spending.

H_{4c}: Ceteris paribus, 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. These relationships are presented in Figure 1.

Figure 1 Omitted

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 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), 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), savings ratio as a percentage of disposable income (SR), the population density (people per km²) (PD), and businesses' advertising spending divided by the population (PCTAFA).

Here are our rationales for the use of these control variables. The income level needs no explanation as a control variable, given the associations of per capita income and per capita retail spending. The rationale for saving rate as a control variable is explained in the introduction section. As to the population density, Howard and Fulfroost (2007) found that

retail food outlets are more likely to be available in neighborhoods with a higher population density, which is likely to affect spending on food retailing. Hence population density is used as a control variable. In the same vein, prior research has found the demand effect of advertising spending (Rosenthal et al. 2003). That is, advertising spending is likely to lead to an increase in retail sales.

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. Economies used in our analysis and per capita retail expenditures for 2008 are shown in Table 2. Table 3 and Table 4 present descriptive statistics and the correlation matrix respectively for the variables for 2006.

<p><i>*Tables 2, 3 and 4 at end of document*</i></p>
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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. 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 2002). 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, feeling or intention and have straightforward operationalizations, international comparability does not seem to be a problem. Euromonitor data have been used in several studies including Coulter et al. (2003), Kshetri, Williamson and Schiopu (2007), Blecher (2010) and Kopf and Enomoto (2011). Likewise, 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). TSCS models are designed to overcome the limitations of usual linear models. It is likely that pooled data may violate one or more assumptions of the usual linear model. Fomby, Hill and Johnson (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 squares techniques 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 for 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 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.

β_{1it} is the dummy variable for the i^{th} country for the t^{th} time period and β_{kit} 's ($k \geq 2$) are the slopes. X_{kit} ($k \geq 2$) is the value of the predictor X_k for the i^{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 β_{1it} in (1) can be written as

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

where α_i are the country “dummies” and τ_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 α_i and τ_t as random in which case only two parameters corresponding to each, the mean and the variance of the α 's (and similarly for τ 's), are estimated instead of the $N+T$ 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 α_i and τ_t as random can be rationalized by arguing that the dummy variables do in effect represent some ignorance – just like ε_{it} . Maddala (1971) argues that this type of ignorance, or “specific ignorance,” can be treated in the same manner as ε_{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 β_{lit} can be considered random and drawn from an independently and identically distributed (IID) distribution (Hausman 1978). The statistical consideration is whether β_{lit} 's satisfy “di Finetti’s exchangeability criterion” (p. 1263), a necessary and sufficient condition for random sampling. If these conditions are satisfied, then a random model can be more appropriate than a fixed model. To empirically test the statistical consideration, we estimated the fixed effect model 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 5 and 6). As tables 5 and 6 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.

Tables 5 and 6 at end of document

After establishing the appropriateness of a random effect TSCS model over a fixed effect model, the next step would be to select the most appropriate random effect model. In the pooled data used in the paper, 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. The 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. Thus, we estimated the parameters by using the Parks method (SAS Institute Inc. 1999). It should however be noted that the Parks model arguably tends to have poor finite sample properties. A simulation study showed that confidence intervals generated by the estimated standard errors of the Parks model were too small and led to only minimal gains in efficiency (Beck and Katz 1995).

4.0. Results and Discussion

According to the World Bank, in 2008, there were 25 economies for which purchasing power parity per capita incomes were less than the minimum value observed in our sample for the PCGDPPPP variable (Table 3). Our sample thus excludes economies that are at the bottommost of the global economic pyramid.

As the descriptive statistics of table 3 indicate, there are fundamental differences among the economies analyzed in this paper in terms of the explanatory and dependent variables. For our sample, non-grocery retail spending (PCNGRetail, mean = US\$1676.55) is higher than grocery retail spending (PCGRetail, mean = US\$1388.79). The measures of variability as represented by coefficient of variation ($\frac{S.D.}{Mean}$) are 0.812, 0.829 and 0.833 for the per capita retail spending, grocery retail spending and non-grocery retail spending variables respectively although as the descriptive statistics suggest non-grocery retail spending has a higher range than that for grocery retail spending. The mean for the grocery

retail spending in our sample is 45% of the total retail spending which is slightly higher than the worldwide figure of 42% (Branston 2009).

Likewise, while grocery retail sites (PCGRetailsites, mean = 3.73) are less widely available than non-grocery retail sites (PCNGRetailsites, mean = 3.89), variability measures as represented by $\frac{S.D.}{Mean}$ for these two variables are comparable (0.646 and 0.604 respectively). The descriptive statistics in Table 3 also show that foreign investment stock varies substantially among the economies analyzed in the paper. The descriptive statistics in Table 3 also make clear that TSSC and ECFR exhibit the lowest variability with the values of $\frac{S.D.}{Mean}$ 0.148 and 0.498 respectively. Finally, as the descriptive statistics on the control variables indicate, the economies differ widely in population income, density, ad spending and saving rate.

Table 4 indicates that high values of Pearson correlation coefficients (more than 0.8) are observed among the three dependent variables (PCRetail, PCGRetail and PCNGRetail) and between the two control variables, PCTAFA and PCGDPPPP. Moreover, each of these two control variables (PCTAFA and PCGDPPPP) has a high value of Pearson correlation coefficients (more than 0.8) with each of the dependent variables. All other values of Pearson correlation coefficients are less than 0.8.

TSCS results are displayed in Tables 7 and 8. 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. Since data related to PCFDIIS were not available for 2007 and 2008, we estimated TSCS models for only 8 years (1999-2006) for models that included PCFDIIS as an explanatory variable (Table 8).

Hypothesis 1a, 1b and 1c predicted that the level of per capita FDI stock has a positive effect on retail spending as well as on grocery retail spending and non-grocery retail

spending. The TSCS results (Tables 8) provide support for H_{1b} . We, however, found no support for H_{1a} and H_{1c} . While there is a positive relationship between PCFDIIS and retail spending, the effect fails to reach statistical significance. A scatterplot between per capital retail spending and per capita FDI stocks for 2006 is presented in Figure 2. This scatterplot indicates the possibility of non-linear associations and the presence of some extreme values.

The nature of the set of economies included in this paper, which are mainly big and/or developed countries only, might be a reason why PCFDIIS has a significant effect on grocery retail spending but not on non-grocery retail spending. For instance, among the world's 250 largest retailers in 2005, most of which were in the grocery sector, the average number of countries of operation was 5.9 (Deloitte 2007). Prior research indicates that non-food retailers are among the most globalized ones (Nordas 2008). This means that if smaller and/or less developed countries are included in the models, the effect of PCFDIIS on non-grocery retail spending may reach significance.

Figure 2 Omitted

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).

A comparison of Tables 7 and 8 indicates that FDI mediates the effect of retail density on retail spending. However, the nature of such effect is different in the case of grocery retailing from that in the case of non-grocery retailing. In Table 7, PCGRetailsites has a significant effect on PCGRetail ($p < 0.001$). When PCFDIIS is included in the model, however, the effect of PCRetailsites is no longer significant (Table 8). PCNGRetailsites exhibits an opposite pattern. In Table 7, the regression coefficient corresponding to PCNGRetailsites is 47.841 ($t = 3.14$, $p < 0.01$). PCFDIIS has entered in Table 8 and the

regression coefficient for PCNGRetailsites increases to 56.777 ($t= 4.74$, $p <0.001$). It is clear that the addition of PCFDIIS in the analysis has unsuppressed the underlying pattern of relationships as PCNGRetailsites is more strongly related to PCNGRetail than before (Thompson and Levine, 1997). This means that the relationship between PCNGRetailsites and PCNGRetail is likely to vary dramatically in economies with various levels of PCFDIIS.

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 7), PCFDIIS acts as a suppressor variable by increasing the predictive validity of ECFR by its inclusion in the model (Conger 1974). We have also performed additional analyses to identify the ECFR components that are likely to have the most impacts on the retail spending-related variables. As presented in Table 9, eight of the ten components of ECFR have positive correlations with retail spending and seven of the them are significant ($p <0.001$). The same pattern can be observed with the two components of retail spending. Among all the components of ECFR, the freedom from corruption variable seems to have the highest positive correlation with retail spending as well as with the two components of retail spending. An explanation as to how corruption might affect retail spending is that corruption is positively related to the size of the informal economy (Djankov et al. 2002). This means that the true values of retail spending are likely to be underestimated in economies that are characterized by high corruption rates. Similarly, business freedom has the second highest correlation with retail spending as well as with its two components. This means that the removal of restrictions on pricing, product ranges and other factors are likely to stimulate retail spending. It is also worth noting that variables related to fiscal freedom and government size have negative correlations with retail spending and its components.

<i>*Table 9 at end of document*</i>

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 7 and $t= 7.02, p < 0.001$ in Table 8). The spending on food welfare thus seems to have a positive influence on food retail spending.

This variable, on the other hand, has no significant effect on non-grocery retail spending (Tables 7 and Table 8). Our hypothesis regarding the effect of TSSC on PCNGRetail (H_{4c}) is thus not supported. This might be due to the phenomenon of "conspicuous consumption" (Veblen 1908 [1899]) or what Frank (1999) refers as "Luxury Fever", which imply that tax rates might have little effect on consumers' propensity to spend. Also contrary to our hypothesis (H_{4a}), the relation between TSSC and retail spending seems to be more defined by grocery retail spending rather than by non-grocery retail spending. This may be due to the fact that while non-grocery retail spending is higher than grocery retail spending, cross-country variation in non-grocery retail spending may be attributed to income differences rather than TSSC differences.

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

Tables 7 and 8 at end of document

5.0. Conclusion and Implications

In this paper, we examined the sources of heterogeneity in retail spending in economies across the world. This is among the most comprehensive cross-national studies on the retail industry. In this way, we have extended prior macromarketing studies to a cross-national setting.

A contribution of this paper is to investigate how regulatory and industry factors determine cross-national variation in retail spending and its components. In particular, our

results provide some insightful information regarding differential impacts of these factors on grocery and non-grocery retail spending. A particularly insightful finding of this paper is that the tax and social security contributions rate has a significant effect on grocery retail spending but not on non-grocery retail spending. Likewise, we found that FDI stock has a positive effect on grocery retail spending but not on non-grocery retail spending.

We have complemented prior macromarketing studies that focused on the government regulations-retail industry development nexus (Ingene 1986; Mittelstaedt and Stassen 1991; Ortiz-Buonafina 1992) by providing insights into how economic freedom can affect the development of the retail industry. We also found that tax and social security contributions are likely to have a positive effect on grocery retail spending, but not necessarily for non-grocery retail spending.

This study also contributed to the research on the effects on retail spending of competition and availability related factors. While prior studies have provided evidence regarding the effects on retail spending of per capita retail floor (Ingene 1982) and retailers' expansion in underserved areas (Ortiz-Buonafina 1992), we found that the degree of access and availability as measured by the retail density is positively associated with retail spending. We also found that FDI explains cross-national variation in retail spending.

While prior research has broadly supported the linkages between the environment and macromarketing systems (e.g., Layton 1981), our findings are detailed and specific enough to guide management and policy. For instance, our finding that economic freedom has a significant effect on retail spending implies that countries that are able to promote, preserve and guarantee freedom in various areas noted above provide conditions that stimulate 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, economies may differ in the way they deal with e-retailing. In some cases, retail spending is underestimated because the official figures may omit market stalls (Euromonitor 1990). In general, various challenges, obstacles and issues confront the measurement of the true size of the informal economy (Naylor 2005). An additional limitation of this research is that the dependent variables are measured in the US\$, which means that changes in the values of a dependent variable over time can also be attributed to an appreciation or a depreciation of an economy's local currency with respect to the US\$ in addition to the effects of the explanatory variables used in the paper.

A further limitation concerns the omission of a large number of economies, mainly the low-income ones due to data unavailability. In general, the proportion of the informal economy tends to be higher if a country is economically less developed (Zedillo 2004). Firms in developed economies have more incentives than those in developing countries to register formally due to benefits such as access to formal financing, and labor contracts (Acs, Desai and Klapper 2008). As noted earlier, it is also suggested that the corruption level in a country is positively related to the size of informal and unofficial economies (Djankov et al. 2002). Therefore, there is a higher possibility that the true value of retail spending is likely to be underestimated in a developed economy than a developing economy. Consequently the TSCS regression parameters are likely to be underestimated due to the underrepresentation or exclusion of low-income economies in the analysis.

Another limitation of this study concerns the focus mainly on regulation and business related variables and the supply side of the equation. In particular, we have not included variables related to consumers' attitude and orientation towards retailing. National level studies conducted in China (Gamble 2009), India (Eckhardt and Mahi 2012), Japan (Salsberg 2010) and Thailand (Shannon 2009) have indicated that consumers' orientations towards retailing are changing rapidly. A final limitation concerns the country-level focus of the

paper. The paper thus does not consider intra-country differences in the development of the retail industry.

There thus obviously is a need for cross-country comparative attitude studies focusing on consumer responses across various aspects of the retail industry such as the attitude differences in retail and non-retail categories and across various forms of retail activities, as well as attitudes and responses toward local and foreign retailers.

Further research is also 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 consumers can be added in the models, which may provide additional insights.

Another intriguing avenue for future research is to examine if the saving rate has differential impacts on spending on various categories of retail (e.g., durable versus non-durable or hard goods versus soft goods) other than grocery and non-grocery categories as examined in this paper. 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 the 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, future research might also explore how the amount of credit available is likely to affect retail spending and its various components discussed above. This is important because consumers are likely to finance their retail expenditures with credits from financial institutions, especially in economies with low or negative saving rates.

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Bios

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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)	Economic Freedom index for 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: Economies Used In the Analysis and Their Per Capita Retail Expenditures

Economy	Per capita retail expenditures (US\$, 2008)	Economy	Per capita retail expenditures (US\$, 2008)
China	615.11	Colombia	1776.29
Hong Kong	4304.07	Mexico	1626.52
India	201.90	Venezuela	1504.67
Indonesia	390.07	Israel	4039.77
Japan	7350.32	Saudi Arabia	2257.78
Malaysia	834.44	South Africa	1043.34
Philippines	630.53	Canada	9062.70
Singapore	3486.99	USA	7589.71
South Korea	2824.62	Austria	9259.02
Taiwan	3312.86	Belgium	9171.87
Thailand	874.96	Denmark	9774.32
Vietnam	242.52	Finland	8983.66
Australia	7842.83	France	8608.45
New Zealand	7764.55	Germany	6614.81
Bulgaria	1477.33	Greece	6602.59
Czech Republic	3204.92	Italy	6741.28
Hungary	3402.24	Netherlands	7362.59
Poland	2498.37	Norway	11690.67
Romania	1385.45	Portugal	4701.65
Russia	2241.14	Spain	6719.47
Slovakia	3523.03	Sweden	8121.08
Argentina	1825.76	Switzerland	11334.63
Brazil	1099.74	Turkey	1997.18
Chile	1657.95	The U.K.	8718.94

Source: Authors' calculations based on Euromonitor data

Table 3. Descriptive Statistics for Variables (1999-2006, Calculated For 384 Observations for The Eight Year Period)

	Mean	S.D.	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
PCFDIIS (US\$)	712.51	1263.42	1.5	11159.1
PD (people per km ²)	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 4. Correlation Matrix for the Variables for 2006 Data (N = 48)

	PCRetail	PCGD PPPP	TSSC	ECFR	PD	PCTAFA	SR	PCRetailsites	PCGRetail	PCGRetailsites	PCNGRetail	PCNGRetailsites
PCGD PPPP	.886** *											
TSSC	.610** *	.461**										
ECFR	.646** *	.761** *	.226									
PD	-0.021	.322*	- .279+	.457* *								
PCTAFA	0.87 ***	0.88 ***	0.52 ***	0.70 ***	0.19							
SR	-0.05	0.15	-0.26	0.04 +	0.51 ***	-0.01						
PCRetailsites	-0.20	-0.21	-0.29 *	-0.18	0.006	-0.18	-0.21					
PCGRetail	0.98 ***	0.81 ***	0.65 ***	0.56 ***	-0.13	0.82 ***	-0.10	-0.18				
PCGRetailsites	-0.48 ***	-0.54 ***	-0.51 ***	-0.38 **	-0.06	-0.44 **	-0.10	0.74 ***	-0.44 **			
PCNGRetail	0.98 ***	0.91 ***	0.55 ***	0.69 ***	0.07	0.87 ***	0.006	-0.21	0.92 ***	-0.50 ***		
PCNGRetailsites	0.28 +	0.32 *	0.17	0.18	0.08	0.26 +	-0.19	0.61 ***	0.25 +	-0.07	0.29 *	
PCFDIIS	.379**	.557** *	.024	.616* **	.777* **	.504** *	345*	-.094	.314*	-.253+	.420**	.159

- ⁺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 Country 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)	
PCNGetailsites			-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)

- ⁺Significant at 0.1 level, *Significant at 0.05 level, ** Significant at 0.01 level, ***Significant at 0.001 level

Table 6. 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)

- ⁺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	-970.825 (3.23) **	-298.742 (4.99) ***	-311.635 (3.07) **
ECFR	5.124 (1.91) +	5.774 (12.39) ***	1.742 (1.28)
TSSC	16.460 (4.54) ***	2.945 (7.02) ***	2.328 (1.22)
PCRetailsites	48.494 (2.78) **		
PCGRetailsites		19.457 (6.68) ***	
PCNGetailsites			47.841 (3.14) **
PCTAFA	11.509 (16.51) ***	4.977 (27.91) ***	5.633 (18.42) ***
SR	19.867 (7.01) ***	7.710 (14.84) ***	9.693 (5.74) ***
PCGDPPPP	0.0757(10.19) ***	0.0292 (14.03) ***	0.0415 (11.29) ***
PD	0.669 (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.
- ⁺Significant at 0.1 level, *Significant at 0.05 level, ** Significant at 0.01 level, ***Significant at 0.001 level

Table 8. TSCS Analysis (N = 48)

	Model 1 (Dependent variable: PCRetail)	Model 2 (Dependent variable: PCGRetail)	Model 3 (Dependent variable: PCNGRetail)
Intercept	-640.899 (2.32) *	-376.37 (3.84) ***	-497.133 (5.02) ***
ECFR	6.659 (1.75) +	5.57 (3.59) ***	5.446 (7.12) ***
TSSC	6.999 (2.67) **	3.86 (2.27) *	0.841 (1.37)
PCFDIIS	904.485 (0.23)	3567.75 (1.78) +	1759.067 (1.29)
PCRetailsites	-2.395 (0.09)		
PCGRetailsites		-3.66 (0.27)	
PCNGetailsites			56.777 (4.74) ***
PCTAFA	12.632 (9.28) ***	5.34 (15.01) ***	5.598 (28.95) ***
SR	32.228 (3.06) **	9.87 (3.79) ***	15.001 (4.81) ***
PCGDPPPP	0.074 (3.60) ***	0.0349 (8.84) ***	0.038 (6.93) ***
PD	-0.125 (0.28)	0.039 (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.
- ⁺Significant at 0.1 level, *Significant at 0.05 level, ** Significant at 0.01 level, ***Significant at 0.001 level

Table 9. Correlations among Retail Spending-Related Variables and Various Components of ECFR

	PCRetail	PCGRetail	PCNGRetail
Business freedom	.781***	.730***	.796***
Trade freedom	.517***	.469**	.540***
Fiscal freedom	-.658***	-.716***	-.583***
Government size	-.675***	-.711***	-.619***
Monetary freedom	.615***	.521***	.674***
Investment freedom	.637***	.599***	.647***
Financial freedom	.673***	.653***	.666***
Property rights	.769***	.720***	.783***
Freedom from corruption	.846***	.796***	.857***
Labor freedom	.221	.161	.266 ⁺

- ⁺Significant at 0.1 level, *Significant at 0.05 level, ** Significant at 0.01 level, ***Significant at 0.001 level