What Are the Drivers of Channel Evolution?

Distribution Reform in the People´s Republic of China

Jaffe, Eugene D.

WORKING PAPER

Nr. 1, 2004

What Are the Drivers of Channel Evolution?

Distribution Reform in the People´s Republic of China

Eugene D. Jaffe

INSTITUT FOR AFSÆTNING
COPENHAGEN BUSINESS SCHOOL

What Are the Drivers of Channel Evolution?
Distribution Reform in the People's Republic of China

Introduction

The focus of this paper is The People's Republic of China (hereafter, PRC). The PRC is in transition from a planned to a market economy. As the economy evolves from a planning orientation to a market orientation, distribution structure reform is a critical factor in this process (Sherriff, et al 1997). Identifying and explaining the factors that influence channel structure is one of the most important tasks of channel research (Anderson, 1985; Bucklin, et al 1996; Dwyer and Welsh, 1985; John and Weitz, 1988; Klein, Frazier and Roth, 1990; Stern and Reve, 1980). The objective of this paper is to develop a model for analyzing the relative importance of facilitating and constraining factors that determine marketing channel structure.

Retailing and distribution structures of developing countries have been the subject of a number of studies, the objectives of which have varied significantly (Samiee, 1993). Some have focused on a single nation or particular channel member, while others have provided cross-cultural insights. However, an examination of the literature devoted to the evolutionary process of distribution structures shows little progress in theory development (Jain, 1990; Mueller, at al, 1993; Bucklin, et al, 1996). Very little is known about the factors that shape a nation's channel system (Sharma and Dominguez, 1992). Improvements in distribution systems are crucial to upgrading marketing systems in developing countries (Samiee, 1993). Understanding how improvements in distribution systems contribute to economic development can aid decision-makers in developing countries to improve resource allocation. Therefore, the development of theory in channel evolution is a necessary condition for the implementation of marketing reform.

Market Structure and Channel Length

Market structure has been described as the configuration or length of the channel (i.e., the number of intermediary levels between manufacturer and consumer, or the number of channel members involved) and the allocation of function among channel members (Rosenbloom, 1987, pp. 155-158; Stern and El-Ansary, 1988, pp.10-11; Coughlan and Lall, 1992, 201). Channel length is defined as the configuration of institutions, agencies, and establishments through which products move to their final user (Stern and El-Ansary, 1988).

Channel length is important from a public policy perspective as many governments in developing countries have put in place vertical distribution systems, bypassing traditional channels. And distribution reform plays a very crucial role in a country's economic development. The failure of Gorbachev's perestroika was primarily due to a breakdown in the economy's distribution system (empty store shelves, widespread hoarding of goods, etc.). Such a breakdown in distribution was actually both a cause and effect of a general loss of public confidence in the former Soviet Union's economy (Holtzman, 1991), which finally contributed to the fall of Gorbachev and the collapse of the Soviet Union. Some studies focus on the dimension of government economic policy and have demonstrated its influences on market entry decisions (Karakaya and Stahl, 1989; Root, 1994). In addition, several marketing scholars have studied the effects of the economic role of government and associated policy factors on distribution systems in different countries (Fubara, 1991; Mahmoud and Rice, 1991; Mitchel, 1991). Channel length is also important for comparative analysis of marketing systems (Boddewyn, 1981; El-Ansary and Liebrenz, 1982; Kaynak, 1982; pp. 112-116, Kaynak and Hudanah, 1987; Mallen, 1975). A comparative study of channel evolution between countries can contribute to our understanding of the factors that explain market structure and can lead to the development of marketing theory.

In addition to its importance at the macro level to researchers and public policy officials trying to better understand the forces that shape the organization of the exchange system, channel length is strategically significant also at the micro level to individual firms and hierarchies attempting to enhance profits and lower costs.

Literature Review

An assessment of the literature on channel length has been summarized by Sharma and Dominguez (1992) and is reproduced in Table 1. Shown for each of the studies is the predicted relationship between economic development and channel length, the theoretical support for the study and whether the assumptions were tested empirically, and if so, the results.

As shown in Table 1, only about half of the studies were tested empirically, resulting in conflicting findings. Wadimambiaratchi (1965) found that channels lengthen as economic development occurs. On the other hand, Livesay and Porter (1969) found that channels shorten. Forman and Reigelhaupt (1970) and Douglas (1971) found that the function is U-shaped, i.e. channels first lengthen and then shorten. Other difficulties in interpreting the findings stem from the diverse methodologies used. Some researchers focused on developed countries; others on developing countries. Most relied on cross-sectional data, while only Layton's (1989) and Livesay and Porter (1969) analyze time-series data. Such differences in methodology may account for the apparent differences in empirical findings (Boddewyn, 1981; El-Ansary and Liebrenz, 1982).

Table 1
Relationship between Channel Length and Economic Development

Author	Claims/ Results	Theoretical Support	Level of Development Addressed/Empirical Test
Wadinambiaratchi (1965)	Lengthen	Separation of functions; emergence of large-scale retailing; decline in the role of traditional merchants.	LDCs/Cross-sectional data on eight countries.
Livesay and Porter (1969)	Shorten	Forward integration of manufacturers brought about by intensified competition and by failure of open market transactions to provide broadened distribution; need for greater technical support to customer; need to provide consumer credit.	Historical records of matched set of vertically integrated and nonintegrated U.S. firms.
Bucklin (1970)	Lengthen*	Specialization of functions due to increases in volume; number of services performed; opportunity costs of performing alternate activities; breadth of product assortment; market decentralization and heterogeneity.	All levels/No empirical analysis
Preston (1970)	Shorten	Aggregate market size; Larger firm sizes; market decentralization and heterogeneity; increased product-related service; shift towards bureaucratic management structures; larger size of channel members.	All levels/ No empirical analysis
Forman and Riegelhaupt (1970)	Inverted U-shape	Marketing systems built around major distribution centers and urban population will ultimately lead to restructuring of agricultural production system	Tracing of production and distribution of basic foodstuffs in Northern Brazil.
Douglas (1971)	Inverted U-shape / Found no relationship	Limited market opportunities and small size of firms lead to predominantly local markets with wholesalers playing a dominant role. Channels lengthen with increasing	All levels / Analysis of cross-sectional data on six countries.

		market size, larger firms, and sellers' market conditions.	
Guiltinian (1974)	Inverted U-shape	Evolving competitive objectives of channel members. Factors lengthening channel: increasing customer contact and market coverage. Factors shortening channel: reducing channel costs and increased monitoring of channel services lead to administered channels; need to further reduce costs and need for more coordinated effort ultimately lead to vertical integration.	No empirical/U.S. historical experiences and perspective.
Mallen (1975)	Inverted U-shape	Functional spin-off theory based on Stigler (1951). Factors lengthening channel: market size allows firms to spin off functions to specialists. Factors shortening channel: at high level of demand and throughput, large merchants begin to reintegrate.	All levels / Not empirical.
Mittendorf (1978) **	Inverted U-shape	Theory based on magnitude of consumer demand, size of urban market demand, scale advantages of large supermarket chains. Factors lengthening channel: increases in income and size of urban market lead to specialization and increasing advantage of large supermarkets. Factors shortening channel: achievement of economies of scale and competitive advantage of supermarket lead to more direct channels.	All levels/Not empirical
Shimagushi and Lazer (1979)	Shorten	Factors that propel shorter channel of distribution; Large-scale retail chains; expanding capacity of manufacturers. Factors that arrest channel evolution; geographic market	Interviews with Japanese and foreign executives in Japan.

		fragmentation; prevalence of small retailers; political clout of small retailers; financial role of trading houses and interlocking system of mutual obligation; role of harmony and tradition.	
McGuire and Staelin (1983a, 1983b)	Lengthen	Product substitutability; Channel disintegration isolates producers from retail competition.	Not specified. Tested against U.S. sample by Coughlin
Layton (1989)	Inverted U-shape	Entropy in channels: tendency of exchange systems to evolve toward greater degree of internal organization.	Time-series data on trade flows in Australia and Java
Coughlan and Lall (1992)	Lengthen	Channel length is a function of the degree of competitiveness of products (substitutes).	Game-theoretic model.
*To be read: Direction of relationship between channel length and degree of economic development; as an economy develops, channel will lengthen ** As reported in other sources. Source: Adapted from Arun Sharma and Luis V. Dominguez (1992), 4.			

Sharma and Dominguez (1992) proposed a framework for analyzing channel evolution via a comprehensive model for analyzing the environmental forces that affect channel length. Their explanatory variables included economic development; adherence to culturally entrenched shopping behavior, management style, government intervention and the degree of urbanization. Samiee (1993) proposed similar variables for studying distribution structures in developing economies. Neither Sharma and Dominguez nor Samiee empirically tested the propositions raised in their articles, but gave some suggestions as to how the constructs might be measured. Several of their suggested propositions will be tested in this paper.

Distribution Reform in the PRC

Premier Zhu Rongji stated that the restructuring of the agricultural distribution system was one of the major aspects of the central government's reform agenda in 1998 (Beijing Review, 1998). Moreover, the growing importance of the PRC in the world market has triggered some scholars' interests in investigating the economic and marketing behaviors of Chinese enterprises. A brief review of the extant literature reveals two problems. First, research in Chinese retailing and distribution has not grown proportionately with the economic development in the PRC (Chow, 1995). Second, much of the pioneering work (Wortzel, 1983; Wortzel, 1987; Mun, 1988; Reeder, 1983, 1984, Qiang and Harris, 1990; Xu, 1990) has become outdated due to the rapid development in the PRC. For instance, Wortzel, (1987) provided a comprehensive analysis of development of retailing in free markets, but the importance of some of the distributive organizations investigated by them has been declining and many new retailing forms developed in the last decade were not covered. Mun (1988) investigated the types and characteristics of retailing activities in China, but at the time the research was done very few market forces were actually in play. Qiang and Harris (1990) only reviewed the development of retailing reform in general. Xu's (1990) work, while informative, little of it is closely related to distribution management activities in the PRC.

Some recent studies are able to provide relatively updated information on the PRC's distribution sector (Chow and Tsang 1994; Chow 1995; Davies, 1994; Luk, 1995; Luk, Xu and Ye, 1996; Tseng, Cheung and Kwan, 1996). Chow and Tsang (1994) studied the relationship between the performance of major players of different types of ownership and changes in the consumption patterns during the economic reform, while Chow's (1995) most recent research focuses on the PRC's retail structure only. Davies (1994) only discussed the implications of the new regulations on foreigners' investment in the PRC's retail sector and used some on going Sino-foreign retail projects to illustrate the issues that might be encountered. Luk's (1995) work focuses on the

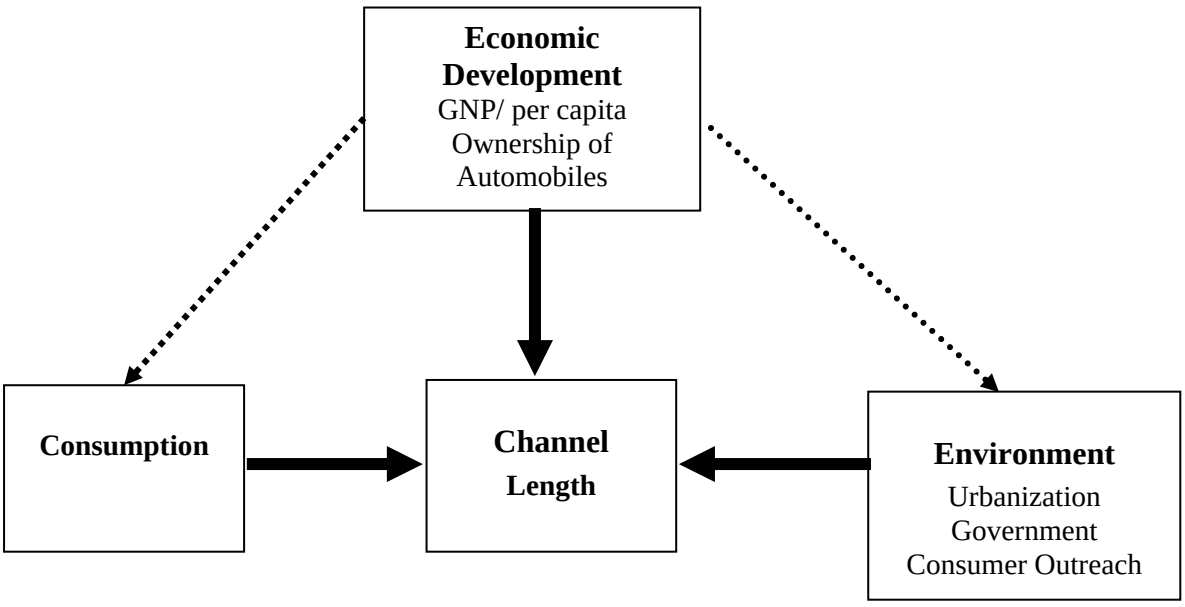
reforming process of the PRC's distribution system. The investigation by Tseng et al. (1996) focuses on the operation aspect of channel management and supports their arguments with case studies, but the lack of a clear conceptual framework is the major weakness of their study. Luk and Yi (1997) identify and compare the available channel choices for exporters to the PRC. Their research was based on survey interviews with government officials. Their conclusion is that the distribution system has become much more market-oriented. Apparently not much of previous research on the PRC's marketing channels has provided an in-depth discussion on the channel choice issue or a comparison of strengths and weaknesses among alternative channels.

Methodology

Research Model

As shown in Figure 1, our research model posits that channel length is a function of three groups of variables: Economic Development, Environment and Consumption.

Figure 1
Research Model



Economic Development

It is believed that the channel structure evolves with economic development (Kaynak, 1986). Growth in retail and wholesale institutions are attributed to a country's level of development. Higgins, (1959); Samli and Mentzer, (1981), Slater, (1970) and Wadinambiaratchi (1965, p.77) associate more levels of distribution and retail outlets with higher economic development. In economies where the producer is also the consumer, or merchandise is exchanged with others in the vicinity of its production, as in agrarian economies, channel functions are transferred to specialists who can perform them more efficiently (Mallen, 1973; Coughlan and Lal, 1992). Channels typically get longer and more complex as economic development continues (Bartels, 1981; Coughlan and Lal, 1992) and, hence, a direct relationship between economic development and the complexity of channel structures exists. In a growing market, some marketing functions will be taken over by specialized firms, thus adding to the number of levels in the channel (Coughlan and Lal, 1992). On the other hand, as economies become highly developed and largely manufacturing-based, and the average size of businesses grows significantly, channels contract and gradually become shorter (Mallen, 1975).

An increase in the standard of living of a developing country is often equated with the consumption of material goods by the private sector. However, while governments expend much effort to increase the production of consumer goods, the distribution sector of the economy is frequently ignored or superficially treated (Holton, 1953). The principle of convergence (Bartels, 1981) suggests that the entire marketing system is significantly influenced by the country's level of development (Samli, 1964; Samli and Mentzer, 1981; Slater, 1970). In addition, the increased sophistication of consumer demand stimulates the growth of the service sector (Taylor, 2003).

Developing countries go through a number of stages of economic growth (see, for example, Rostow, 1960). While the PRC as a whole may be close to the "takeoff" stage according to

Rostow's terminology, vast parts of the country are still at the "traditional" and "preconditions for takeoff" stages. Thus, markets in the PRC are diverse, and becoming more so (Veeck and Veeck, 2000), so that any study of marketing reform in the PRC must use cross-sectional data. That is the approach used in this paper as explained below.

The relationship between development and channel length suggested by hypothesis 1 below is similar to an inverted “U”. Channels first lengthen and then shorten with further development. The point where the direction of change in channel length is reversed occurs when a society has begun to achieve a high level of income and wealth accumulation (Sharma and Dominguez, 1992). In the case of the PRC, the inverted U shape may take the form as shown in Figure 2.

Figure 2

Hypothesized Channel Length Dynamics as a Function of Economic Development or Time

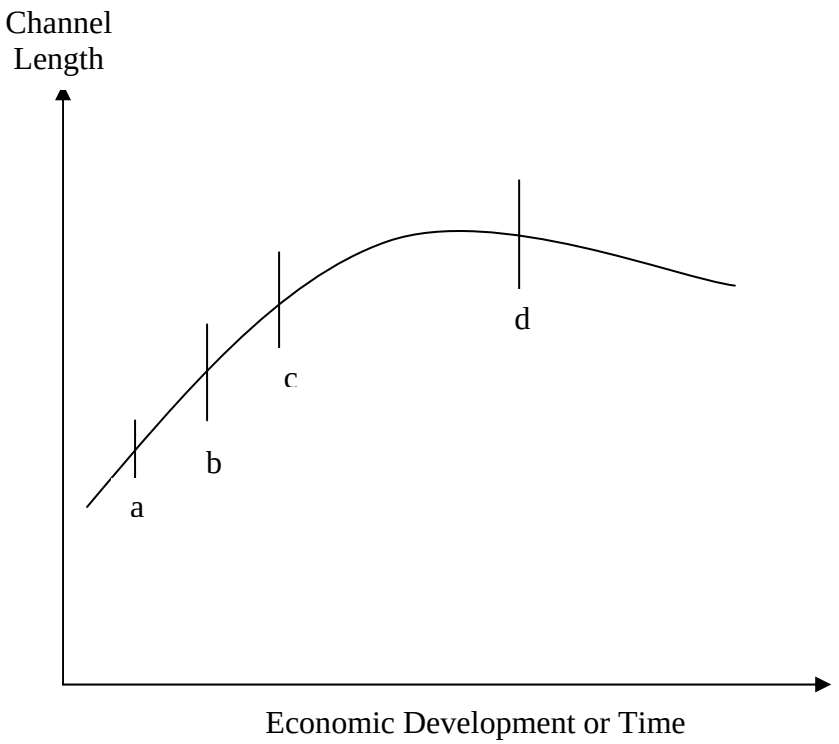


Figure 2 shows a hypothesized lengthening of channels for the PRC as a function of economic development or time. We expect that channels lengthen with economic development, and then at some point, shorten. This inverted U-shape function may be explained by looking at several points on the curve in Figure 2. The least developed areas in China should be at area “a” on the curve, developing areas at area “b” and “c” and the most developed at area “d”, when channels shorten. Using cross sectional data, time (t) is constant. In time series data of a single region, the economy develops over time. In mixed cross-sectional and time series data together, at each “t”, different regions are at different points on the curve and move along it over time.

To summarize, the inverted U relationship stems from the following:

1. In a developing economy, there is a need for more intermediaries to accumulate and re-sort goods from different suppliers. Demand for a greater variety of products will lead to an expansion in the merchandise-mix (Luk and Li, 1997). As such, longer channels are more likely to prevail.
2. The evolution towards shorter channels may be explained by two phenomena:
   (a) As the economy further develops and becomes more service oriented, there is less of a need for indirect channels; (b) the growth of urban centers encourages vertical integration in channels in order to improve efficiency.

The preceding discussion proposes that the level of economic development significantly influences the structure of distribution channels. Observations and case studies of markets in the PRC also support this notion (Xu, 1990; Veeck and Veeck, 2000). A U-shaped function is expected between GNP per-capita and channel length. From about 1980 until 2000 as GNP/n increases, channel length becomes longer for the PRC as a whole, but in developed regions beginning about

1997, channel length shortens, so that over the whole development cycle channel length takes on an inverted U shaped function. Therefore, Hypothesis 1:

H_1: As GNP/n increases, channel length takes on a U-shaped function.

Additional indicators of economic development that may be related to channel development are the ownership of privately owned automobiles.

Automobile ownership enables consumers to shop further from home and to conveniently reach larger stores located in shopping centers. They also enable buying in larger quantities. The car extends both the distance accessed and the weight to be carried, thus reducing the number of shopping trips. China's private automobile ownership increased significantly mainly in urban areas. The number of private automobiles was 284,900 in 1985 and increased to 5,338,800 in 1999.

China is a developing country with relatively low income. Public transport is the only means available (in some areas before 1990). As a result, the available consumption set is much more restricted in China. When there is a better provision of transport, it will substantially enlarge consumer purchases. On the other hand, in Hall et al (1961), Takeuchi and Bucklin (1977), Ingene and Lusch's (1981) analysis, mobility is measured by the number of automobiles owned by the shoppers. Actually, their measure of mobility is imperfect, pointed out by Ingene and Lusch (1981) because public transport is not considered (Chow Kong-Wing, 1995). In this study, conasumer mobility in China will be measured by two methods, which will be explained in the methodology section.

Since much of China's individual enterprises are located in free market areas that may not be close to residential areas, transportation is necessary for these shoppers. If mobility is increased, shoppers can have a better comparison of the products that they would like to buy and their potential choice sets should move closer to their ideal ones. Consequently, shoppers are going to increase their purchases. Therefore:

H_2: An increase in mobility should lead to shorter channels.

Environment

Urbanization

The rapid pace of urbanization is one of the most significant aspects of contemporary economic geography, particularly so in the developing areas. Urbanization, and more specifically, concentration of population in large cities, has significant transactional cost implications. Large urban centers pose distribution challenges and opportunities that small ones do not. Small urban centers can be provisioned directly from surrounding areas, whereas large cities require a vast array of producers from farther distances (e.g., Forman and Riegelhaupt, 1970). Large urban centers afford producers and intermediaries the opportunity to achieve sufficient economies of scale. High urban concentration accentuates the advantages of internal governance to large producers and intermediaries. Large intermediaries are no longer content to rely on small suppliers; they prefer to work directly with large producers in order to be assured of supply continuity (Forman and Riegelhaupt, 1970).

In summary, it is expected that the presence of large urban markets will spur the growth of large-scale intermediaries and of shorter channels, where *there is already a sufficient level of development and competition*. This leads to hypothesis 3:

H_3: As urbanization increases, shorter channels of distribution will develop.

The Role of Government

Several marketing scholars have studied the effects of the economic role of government and the associated policy factors on the distribution system in different countries (Fubara, 1991; Mahmoud and Rice, 1991; Mitchell, 1991; Naor, 1990). Their findings seem to suggest that the role of government in marketing could be regulatory, facilitative, or entrepreneurial (Mitchell 1991). A

government that assumes a regulatory role attempts to establish and maintain an orderly framework for economic activities, whereas the facilitative role requires more direct involvement in infrastructure projects and supporting marketing programs by the government. The entrepreneurial role requires the government to actively invest in and operate business projects. Therefore, the knowledge of the aims of a government and its economic policies is important as this could have profound impact on negotiations and transaction behavior (Wells, 1977).

The Situation of China's Distribution System Prior to the Reform

The PRC implemented central planning more than 30 years ago. Before economic reform, China like other communist countries had a shortage economy. The production and distribution of commodities were centrally planned. Nearly all the existing marketing channels at that time were state-owned. The distribution system was established not according to economic functions, but according to political and administrative functions (Mun 1988; Qiang and Harris 1990). At least five problems resulted from this system: (1) the marketing channel was long and steeped in red tape. The final retail price that consumers paid was several times the initial price as the product had to pass through many government middlemen. Moreover, it was difficult for industrial products manufactured in cities to reach consumers in rural areas; similarly, agricultural products also took weeks to reach consumers in nearby cities, (2) The system was highly rigid and impervious to changes, (3) All products were bought and sold by the state distribution system according to the price set by the planning bureau. There was no correlation between the profits or losses of the state distributors and their performance, (4) Products offered to consumers were of limited variety and were of inferior quality. Opportunities for enterprises to vary the quality or quantity of their products were highly restricted. Managers were also unwilling to allow for such opportunities because of the absence of incentives, (5) With insufficient and backward storage facilities, many of

the goods were simply ‘lost’ in storage or shipping processes. The problems that existed at that time were similar to what Gajewski (1992) and Iwinska-knop (1992) discussed in the case of Poland and the case of the Soviet Union mentioned by Holtzman (1991) under central planning. The whole system is basically driven by a central planner rather than by consumer sovereignty. Compounded by the monopolization of distribution by state enterprises, marketing simply has no role to play in such a shortage economy (Ennew, Filatochev, Wright and Buck 1993; Hooley 1993).

The PRC's economic reform model emphasizes competition over privatization. The Chinese government at first did not attempt to privatize state-owned enterprises directly. Instead, it allowed or encouraged the non-state enterprises sector to compete with and gradually outgrow the state sector. The majority of these non-state enterprises are collective enterprises that are basically a communal organization or a "vaguely defined cooperative" (Weitzman, 1993). The collective enterprises are exactly opposite the type of private organizations that are at the center of the East European model. Although the performance of the state sector also improves under competitive pressure, it may not be enough to save them in the long run. In contrast to the East European model, the Chinese model places more stress on the design of a competitive market structure which, in turn, gradually exerts pressure on inefficient state enterprises that must improve their productivity in order to survive in the market (Chow Kong Wing, 1994). McMillan and Naughton (1992) report that the Chinese reform strategy followed three stages: (1) massive entry of non-state enterprises; (2) a dramatic increase in competition; (3) improvements in the performance of state-owned enterprises resulting from state-imposed market-like incentives. The PRC has demonstrated how it has successfully used the fundamental market forces of entry and competition in moving its centrally planned economy toward a market economy. (Chow Kong-Wing, 1994).

The evolution of PRC government reformist policy toward its distribution system may be divided into three stages:

1. *Introduction of Market Forces -1978 to 1985*. The distribution system was opened to individual businessmen, thereby encouraging private entrepreneurs to compete. Government distribution policy enabled the growth of small businessmen "getihu" in the distribution system. Greater autonomy was granted to enterprises, especially those run by the state, in managing their business activities (Luk, 1998).
2. *Introduction of Market-Driven Incentives - end of the 1980's*. A dual distribution system was formed to establish horizontal connections between enterprises across different industries and/or provinces (Luk, 1998). The pricing of products was gradually left to supply and demand. Manufacturers were permitted to sell directly to retailers, bypassing state distributors.
3. *Consolidation of Wholesale Markets – mid 1990's*. The government promoted supermarket chains in urban areas. In 1992, the retail sector was opened to foreign enterprises, in order to promote the state-owned enterprises reform. Most state-owned distributors were transformed to public companies listed on the stock exchange. Greater autonomy was granted to commercial enterprises and large manufacturers to import and export finished goods and components. By the end of 1996, the role of non-state enterprises had accounted for 73 percent of consumer goods sales (Xu, 2000).

The above discussion leads to the following hypothesis:

H_4: Changes in government policy will impact channel length.

Consumer Outreach

The concept of consumer outreach was developed by Goldman (1974). It is defined as the "ability and willingness of consumers to venture out of traditional territories and activities" (Goldman, 1974, 9). The lure of modern retailing institutions, such as supermarkets and discount

stores, may not be sufficient to motivate consumers to change their shopping habits. On the one hand, consumers may lack the mobility to reach more distant, but larger stores, because of low incomes and/or the lack of convenient transportation. On the other hand, the habit of shopping in different stores for various consumption items several times a week may be so ingrained that it is difficult to change. If either or both cases prevail, then consumer outreach will be constrained. Therefore:

H_5: As consumer outreach increases, channel length shortens.

Consumption

As an economy develops, consumption of consumer goods and services increases. There is growing demand for a greater variety of products and product quality, both from domestic and foreign producers. The increase in demand, in turn, should be associated with an evolution towards a greater variety of retail outlets. This should be the case for shopping goods such as food, clothing and services (life expenditures). This leads to the following hypothesis:

H_6: As the consumption of shopping goods increases, channels tend to become longer.

Variable Measures

Table 2 lists the criterion and predictor variables, hypotheses and variable measurement. The length of a nation's aggregate channel system is the composite of all channel lengths. As a result, direct measurement is infeasible. Instead, proxy measures may be used (Sharma and Dominguez, 1992). In this study, we use a measure based on the ratio of wholesale sales to total producers' sales as an indicator of the extent to which intermediaries are being bypassed (Bucklin, 1972). An increase in the wholesale/producers sales ratio indicates that channel length is longer. Measures used for all other variables are detailed in the appendix.

Table 2
Measurement Criteria

VARIABLES	HYPOTHESES	MEASURES
Channel Length (Cl)		Wholesaler Sales (W)/Producers Sales (PTS)
Economic Development	1. As GNP/n increases, channel length takes on a U-shaped function.	GNP/per-capita
Mobility (M)	2. As mobility increases, channels become shorter.	Mobility ownership measured by number of private automobiles per thousand persons, or total civil and private vehicle seats divided by its regional population.
Environment		
Urbanization (Ur)	3. As urbanization increases, shorter channels will develop.	Population density in urban areas.
Government (G)	4. Changes in government policy impact channel length.	Dummy variable, before 1985 = 0; from 1985 to 1992= 1, from 1992 to 1997=2, after 1997 =3.
Consumer Outreach (CO)	5. As consumer outreach increases, channels become shorter.	Number of shopping trips per week.
Consumption (C)	6. As the consumption of shopping goods increases, channels become longer.	Life expenditures/per-capita.

Model Specification

By using 20 years of time series and cross-sectional data, beginning with the economic reform in 1980, hypotheses can be tested in two ways. First, we used linear regression to test the influence of

the explanatory variables on channel length using time series data. Next, we tested the contribution of each variable to channel length by using cross sectional data. National time series data were not available for China as a whole, but only for one major city. This necessitated using cross-sectional data wherein comparisons were made between developed and less developed regions and cities. In a country the size of the PRC, regional economic differences are significant (Jiang and Prater, 2003). This has resulted in uneven economic development between regions and variability in reform policy (Luk, 1998). Cross sectional data for the years 1999, 2000 and 2001 were used to compare differences between developed and less developed regions.

The Ordinary Least Squares (OLS) method was used for multiple regression and correlation analyses. The linear regression function is given as:

$$Cl_t = \beta_0 + \beta_1 GNP/n_t + \beta_2 Ur_t + \beta_3 C_t + \beta_4 G_t + \beta_5 CO_t + \beta_6 Pa_t + \nu_t$$

t = 1980, 1981, 1982, …2000 year ---(1)

where:

1. Cl_t = value of the dependent variable in the t'th trial, or observation. Cl_t is channel length (Wholesale Sales / Producers' Total Sales).

2. *GNP/n, Ur, C, G, CO, Pa* = the specified value of the independent variable in the t'th trial or observation.

3. GNP/n is GNP per-capita; *Ur* is the urbanization ratio; Pa is private automobiles ownership; CO is consumer outreach; *C* is consumption of food, clothing and services as measured by expenditures/per capita and G is government.

β_0 = intercept of the regression equation.

β_{1-6} =parameters of the regression equation, which indicates the contribution ratio of each factor.

Findings

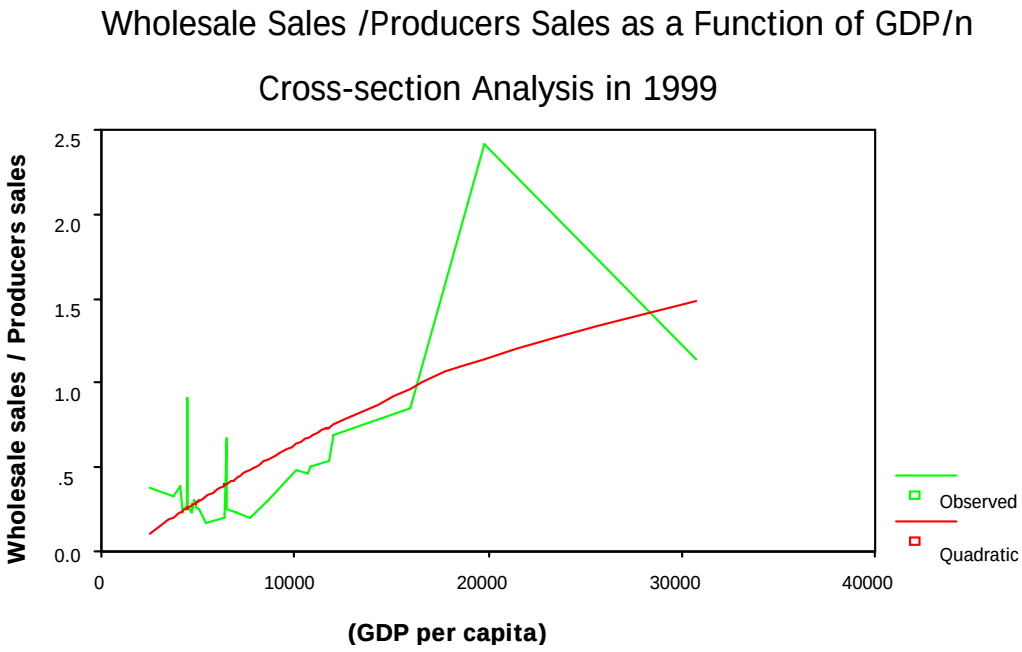
We first test the hypothesis of a relationship between economic development and channel length, using cross-sectional data for 1999, 2000, and 2001 and time-series data from 1980 to 2001 for Guangzhou City. Tables 3, 4 and 5 contain the cross-sectional data, while Figures 3-6 show the results of the regression analyses.

Table 3: Producers', Wholesale Sales and GDP per-capita (1999)

Region	Producers' Sales (100 million Yuan)	Wholesale Sales (100 million Yuan)	Wholesale Sales / Producers Sales	GDP/per-capita (unit: Yuan)
National Total		22055.81		6534
Guizhou	551.73	209.24	0.379243471	2475
Gansu	518.89	167.38	0.322573185	3668
Shaanxi	754.77	295.91	0.392053208	4101
Guangxi	1133.74	268.94	0.237214882	4148
Sichuan	2234.55	599.93	0.26848	4452
Yunnan	1092.18	991.4	0.907725833	4452
Ningxia	128.71	34.93	0.271385285	4473
Jiangxi	1077.52	248.19	0.230334472	4661
Qinghai	110.5	31.42	0.284343891	4662
Anhui	1877.12	491.04	0.261592226	4707
Shanxi	810.58	203.61	0.251190506	4727
Chongqing	776.67	238.13	0.306603834	4826
Henan	2911.98	759.73	0.260898083	4894
Hunan	1874.81	477.6	0.254745814	5105
Inner Mongolia	771.24	129.13	0.167431668	5350
Jilin	975.82	192	0.196757599	6341
Hainan	235.85	52.46	0.22242951	6383

Xinjiang	586.44	394.82	0.673248755	6470
Hubei	2346.45	578.68	0.246619361	6514
Hebei	2756.18	629.28	0.228316003	6932
Heilongjiang	1777.08	354.57	0.199523938	7660
Shandong	4472.77	1341.04	0.299823152	8673
Liaoning	2316.51	1116.32	0.481897337	10086
Jiangsu	4391.5	2029.63	0.462172378	10665
Fujian	1897.81	956.88	0.504202212	10797
Guangdong	4727.18	2518.74	0.532820836	11728
Zhejiang	3261.94	2266.69	0.694890157	12037
Tianjin	711.22	600.29	0.844028571	15976
Beijing	736.82	1783.86	2.421025488	19846
Shanghai	1838.68	2090.78	1.137109231	30805

Figure 3
Wholesale Sales/ Producers' Sales as a Function of GDP/n in 1999



To test the efficacy of the proposed measurement, Channel length (wholesale sales / producers sales) as a function of GDP/n was run for the above regions.

Y_{CL} = -0.090198 +8.2147.2*10-5 * GDP - 1.0036617.497 * 10^{-9}* GDP^2

(T= -0.047) (T= 2.3)

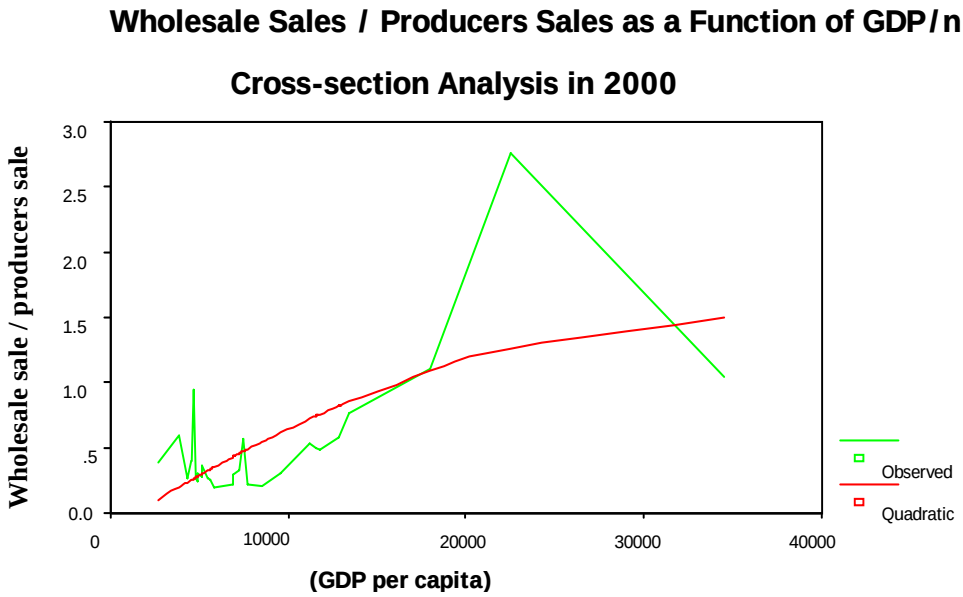
R= 0.7028 R2= 0.4939 Adjusted R= 0.45

F= 13.175 significant F= 0.0001

Table 4: Producers', Wholesale Sales and GDP per-capita (2000)				
Region	**Producers' Sales (100 million Yuan)**	**Wholesale Sales (100 million Yuan)**	**Wholesale Sales / Producers Sales**	**GDP/per-capita (unit: Yuan)**
National Total				
Guizhou	585.72	225.75	0.385423069	2662
Gansu	521.77	309.61	0.593384058	3838
Shaanxi	828.7	329.53	0.397646917	4549
Guangxi	1158.53	307.13	0.265103191	4319
Sichuan	2339.42	682.77	0.291854391	4784
Yunnan	1133.95	1074.02	0.947149345	4637
Ningxia	138.95	36.15	0.260165527	4839
Jiangxi	1024.92	248.19	0.242155485	4851
Qinghai	119.08	33.29	0.27955996	5087
Anhui	1832.6	556.72	0.303786969	4867
Shanxi	886.25	261.82	0.295424542	5137
Chongqing	810.48	292.18	0.360502418	5157
Henan	3240.52	864.7	0.26683989	5444
Hunan	2015.63	519.43	0.257701066	5639
Inner Mongolia	806.01	152.3	0.188955472	5872
Jilin	1054.41	223.77	0.212222949	6847
Hainan	262.32	75.67	0.288464471	6894
Xinjiang	710.26	405.27	0.570593867	7470
Hubei	2565.58	830.79	0.323821514	7188
Hebei	3071.28	671.86	0.218755698	7663
Heilongjiang	2021.35	404.52	0.20012368	8562
Shandong	5005.95	1529.18	0.305472488	9555
Liaoning	2618.33	1378.12	0.526335489	11226
Jiangsu	4879.69	2381.84	0.488112974	11773
Fujian	2110.64	1051.51	0.49819486	11601
Guangdong	5295.09	3068.5	0.579499121	12885
Zhejiang	3547.53	2694.4	0.759514366	13461
Tianjin	820.82	906.79	1.104736727	17993

Beijing	835.29	2308.52	2.763734751	22460
Shanghai	2039.86	2124.41	1.041448923	34547

Figure 4
Wholesale Sales/ Producers' Sales as a Function of GDP/n in 2000



The results for 2000 are as follows:

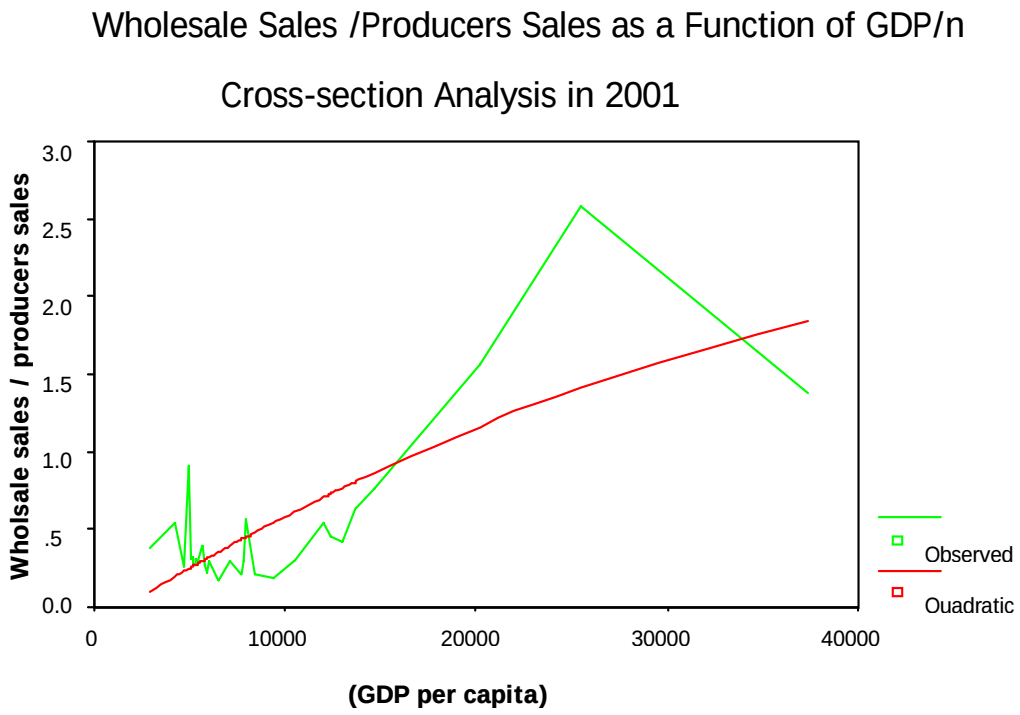
Y_{CL} = -0.12819 +8.9418*10-5 * GDP - 1.2268 * 10^{-9} * GDP^2

(T= -0.599) (T= 2.451)

R= 0.6726 R2= 0.45239 Adjusted R= 0.41183 F= 11.15 significant F= 0.0003

Table 5: Producers', Wholesale Sales and GDP per-capita (2001)				
Region	**Producers' Sales (100 million Yuan)**	**Wholesale Sales (100 million Yuan)**	**Wholesale Sales / Producers Sales**	**GDP/per-capita (unit: Yuan)**
National Total				
Guizhou	609.17	231.09	0.379352233	2895
Gansu	563.56	302.51	0.536784016	4163
Shaanxi	893.36	277.47	0.310591475	5024
Guangxi	1210.71	314.82	0.260029239	4668
Sichuan	2389.49	641.34	0.26840037	5250
Yunnan	1174.52	1065.79	0.907426012	4866
Ningxia	151.8	46.32	0.30513834	5340
Jiangxi	1101.55	348.1	0.31600926	5221
Qinghai	131.99	35.94	0.272293356	5735
Anhui	1941.69	552	0.284288429	5221
Shanxi	950.87	283.91	0.298579196	5460
Chongqing	869.61	342.7	0.394084705	5654
Henan	3514.23	771.76	0.219609986	5924
Hunan	2135.23	620.87	0.290774296	6054
Inner Mongolia	865.58	148.98	0.172115807	6463
Jilin	1133.83	233.17	0.205648113	7640
Hainan	273.38	81	0.296290877	7135
Xinjiang	738.12	414.95	0.562171463	7913
Hubei	2758.64	812.85	0.294656062	7813
Hebei	3353.46	709.44	0.211554633	8362
Heilongjiang	2177.09	399.1	0.183318099	9349
Shandong	5451.69	1605.76	0.294543527	10465
Liaoning	2734.56	1494.27	0.546438915	12041
Jiangsu	5353.33	2240.31	0.418489053	12922
Fujian	2296.45	1032.89	0.449776829	12362
Guangdong	5736.76	3653.47	0.636852509	13730
Zhejiang	3801.44	2909.36	0.765331032	14655
Tianjin	899.73	1408.13	1.565058406	20154
Beijing	909.32	2350.47	2.584865614	25523
Shanghai	2206.69	3035.13	1.375422012	37382

Figure 5
Wholesale Sales/ Producers' Sales as a Function of GDP/n in 1999



The results for 2001:

Y_{CL} = -0.11268 +7.5776*10-5 * GDP - 6.2272 * 10^{-10} * GDP^2

(T= -0.581) (T= 2.473)

R= 0.765 R2= 0.5858 Adjusted R= 0.555

F= 19.09 significant F= 0.0000

Results of the Data Analysis

According to hypothesis 1, as economic development progresses, channel length becomes longer, and then at some stage of development it becomes shorter. As shown in Figures 3-5, there is evidence of a shortening of channel length in the most underdeveloped regions, a lengthening process in developing areas, and finally a shortening process observed in the most developed regions. On the other hand, the quadratic curves show one cycle of a lengthening channel as economic development increases, which supports hypothesis one.

The Economic Development Gap between Eastern and Western China

China's economic development is unbalanced between the western inland and east coast regions. At similar points in time, some Western regions lagged behind developed cities more than 10 years. For example, Guizhou's GDP/n in 1999 was 2475 Yuan, compared to Shanghai City's GDP/n of 2568 Yuan in 1980. Shanghai City's GDP/n in 1999 was 13 times that of Guizhou, which is located in the western inland region. Table 6 shows Guangzhou City's GDP/n in time series as compared to the cross-sectional GDP/n data in 1999 for each region of China.

Table 6: GDP/n -Guangzhou City and by Region

Time	Guangzhou City's GDP/n at Constant Prices 1980=100 (unit: Yuan)	China's Cross-sectional Data of Each Region in 1999	GDP/n at Constant Prices 1980=100
Before 1980		*Guizhou*	721.312
		Gansu	1068.999
1980	1160.00	*Shaanxi*	1195.192
1981	1228.52	*Guangxi*	1208.89
		Tibet	1242.114
		Sichuan	1297.487
		Yunnan	1297.487
		Ningxia	1303.607
1982	1343.61	*Jiangxi*	1358.398
		Qinghai	1358.689
		Anhui	1371.804
		Shanxi	1377.633
		Chongqing	1406.486
		Henan	1426.303
1983	1438.94	*Hunan*	1487.797
		Inner Mongolia	1559.2
1984	1690.00	*Jilin*	1848.016
		Hainan	1860.256
		Xinjiang	1885.612
		Hubei	1898.435
1985	1943.32	*National*	1904.264

		level	
1986	2019.67	Hebei	2020.256
1987	2294.94	Heilongjiang	2232.424
1988	2633.79	Shandong	2527.652
1989	2633.52	Liaoning	2939.456
1990	2821.51	Jiangsu	3108.199
1991	3271.37	Fujian	3146.669
1992	4038.64	Guangdong	3417.999
		Zhejiang	3508.053
1993	5085.39	Tianjin	4656.032
1994	5397.80		
1995	5879.60	Beijing	5783.902
1996	6347.65		
1997	7067.14		
1998	8007.46		
After 1998		Shanghai	8977.784

According to the data in Table 6, it is observed that in 1999, the GDP/n of 20 developing regions was lower than Guangzhou City's GDP/n in 1985, which means that 65 percent of China's regions (20 developing regions / 31 total administration regions) lagged behind Guangzhou City (one of the most developed cities) by more than 13 years. In nine semi-developed regions, GDP/n is lower than in Guangzhou City during 1993; only Beijing City's GDP/n came close to that of Guangzhou City.

Most underdeveloped regions such as Guizhou, Gansu, Shaanxi, etc., are located in the western inland part of China with GDP/n around 3,000 to 6,000 Yuan during 1999. Those regions commenced market reform later than the eastern coast regions. Other economic factors such as infrastructure, commercial environment, and consumption level in those areas are also significantly lower than in the eastern coast regions of China. Their Channel length indexes (ratio of wholesale sales/ producer sales) are around 0.19 to 0.39 that are on the lower part of the curve (See Figures 3-6). On other hand, the eastern coast regions including cities such as Shanghai, Beijing, Tianjin, etc. with GDP per capita over 10,000 Yuan in 1999 had a channel length index (ratio of

wholesale sales / producers' sales) from 0.48 to 2.42. Therefore, higher GDP/n will lead to longer channel length (wholesale sales / producers' sales ratio).

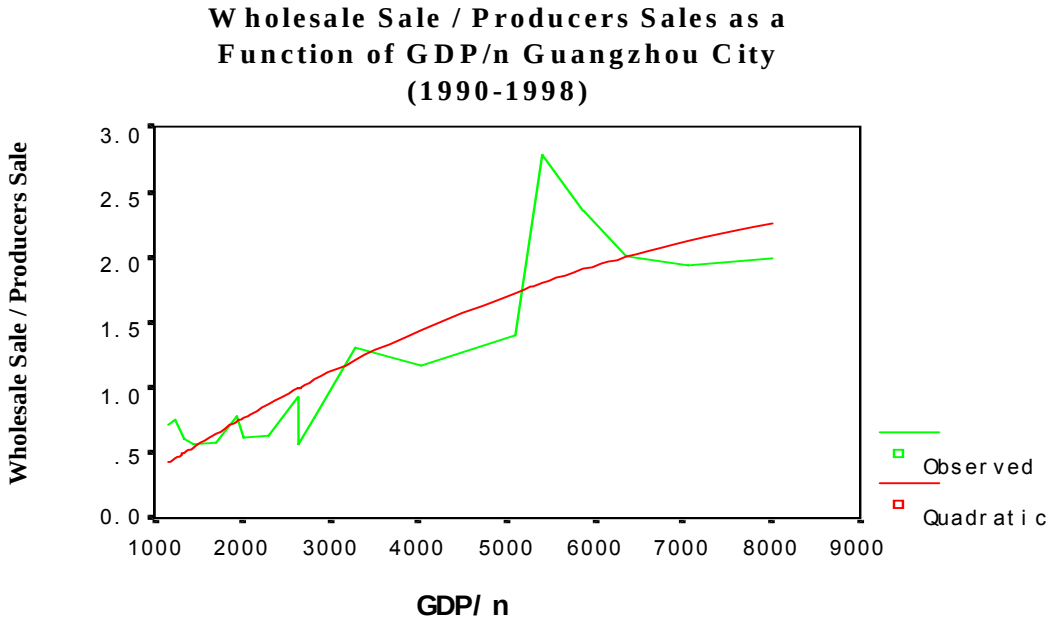
Shanghai is a special case with higher GDP/n (30,850Yuan in 1999) but with a shorter Channel length (1.137 in 1999), which causes the curve to turn downwards. As the distribution system modernizes, a shortening process occurs in distribution channels as can be observed in the most developed regions such as Shanghai, Guangzhou, and Beijing City.

Time Series Data of Guangzhou City of Channel Length (Wholesale Sales / Producers' Sales)

Table 7: Time Series Data of Guangzhou City for Channel Length (Wholesale Sales/Producers' Sales)

Time	GDP/n at Constant Price 1980=100% unit: Yuan	Producers' Sales unit:100 million	Wholesale Sales unit:100 million Yuan	Wholesale Sales/ Producers Sales
1980	1160.00	3577.75	2557.75	0.714904619
1981	1228.52	3979.66	2987.97	0.750810371
1982	1343.61	4500.1	2739.00	0.608653141
1983	1438.94	4945.07	2765.31	0.559205431
1984	1690.00	5573.74	3236.62	0.580690883
1985	1943.32	6974.97	5438.81	0.77976106
1986	2019.67	7405.9	4623.63	0.624317099
1987	2294.94	8497.97	5366.23	0.631471987
1988	2633.79	11998.5	6827.13	0.568998625
1989	2633.52	13370.51	12490.00	0.934145369
1990	2821.51	14382.66	10941.57	0.760747317
1991	3271.37	18647.04	24240.86	1.299984341
1992	4038.64	24764.95	29066.59	1.173698715
1993	5085.39	35312.64	49458.38	1.400585739
1994	5397.80	44896.27	124827.00	2.780342331
1995	5879.60	56940.04	134110.74	2.355297608
1996	6347.65	66261.96	132899.74	2.005671731
1997	7067.14	75191.23	146150.58	1.943718436
1998	8007.46	80315.98	160167.23	1.994213729

Figure 6



The series analysis of Guangzhou City shows that channel length (wholesale sales/ producers' sales) takes an inversed U shape as a function of GDP/n, with a significant quadratic regression function.

$Y_{CL} = 0.000468 * GDP - 2.19 * 10^{-8} * GDP^2$

(T=2.432) (T=-0.988)

R= 0.879 R2=0.7735 Adjusted R square = 0.74523

F= 27.32 significant F= 0.0000

To summarize, in a cross-sectional data analysis of China in 1999, 2000 and 2001, and time series data analysis of Guangzhou City, it was found that channel length was inversely U shaped with a quadratic function. As GDP per-capita increased over time, channel length changed in a similar inversed U shaped fashion.

Thus, hypothesis 1 is confirmed.

Channel Length as a Function of Environmental and Consumption Variables

Table 8 summarizes the findings for the three sets of variables. Mobility, Urbanization and Consumption were significant predictors of channel length for the years 2000 and 2001, while urbanization and consumption were significant in 1999. However, the mobility coefficient is positive, which means that when mobility increases, channel length becomes longer. This result leads to a rejection of hypothesis 5. Although mobility has increased, much of private car ownership consists of company cars. The use of company cars for personal purposes is strictly controlled. While the number of private automobiles increased very quickly in some developed cities, the average rate of ownership in China as a whole is still at a low level compared to developed countries. Most Chinese still depend on public transportation and do their traditional shopping activity near their homes. So, increased mobility such as it is in China, has not lead to a shortening of channels as has occurred in the West.

Year	**Formula**	**Significant Independent Variable**	**Co linearity**
1999	CL =-0.748 + $1.055*10^{-2}$*Ur + $3.701*10^{-4}$C (T=-3.37) (T=2.532) (T=3.57) R=0.77 R^2= 0.592 Adjusted R^2=0.562 F=19.61 Significant F=0.000	**Ur** **C**	**No**
2000	CL =-0.666 + $1.32*10^{-2}$*Pa + $9.845*10^{-3}$*Ur + $2.454*10^{-4}$*C (T=-2.551) (T=2.094) (T=1.881) (T=1.883) R=0.744 R^2= 0.553 Adjusted R^2=0.501 F=10.713 Significant F=0.000	**M** **Ur** **C**	**No**
2001	CL =-0.808 + $7.932*10^{-3}$*Pa +	**M**	**No**

	$1.138*10^{-2}$*Ur + $2.857*10^{-4}$*C (T=-3.692) (T=1.877) (T=2.543) (T=2.697) R=0.808 R^2= 0.653 Adjusted R^2=0.615 F=16.96 Significant F=0.000	**Ur** **C**	

Channel length became longer when urbanization increased, which leads to a rejection of hypothesis 2. Urbanization is still at a low level for Chinas as a whole (19% in 1980 to 30% in 1999), as the main urbanization strategy is to develop small and medium towns and cities. When small and medium cities develop, more retail establishments and distribution companies enter the trade sector, and most of them are small in size.

On the other hand, the consumption coefficients were positive which indicates that channel length became longer when consumption increased. As hypothesized, when the economy develops, consumption of consumer goods and services increases. And the increase in demand, in turn, should be associated with an evolution towards a greater variety of retail outlets. This should be the case for shopping goods such as food, clothing and services. More shops and retail outlets will be established, and more retail companies and wholesale companies enter the trade sector. Thus pulls towards longer channels. So, hypothesis 6 is confirmed.

An analysis of Guangzhou City's time series data confirms that Government Policy influences channel length. This means that when government policy is more "open" and promotes market reform, channel length shortens. This finding confirms hypothesis 3.

Consumer Outreach

Consumer outreach was measured as the average number of shopping trips per week among consumers in representative regions and cities----the frequency of shopping activity. In order to find the consumer outreach frequency in different regions, we used the following formula:

$P=\sum Pi/N$

In this formula, N represents the total number of objects, P represents the average consuming outreach frequency in this region, while, Pi represents one of the family consuming outreach frequencies. Therefore, we obtained the average family consuming frequencies in different areas as follows:

In the Western region: P=2.56

In the middle region: P=2.13

In the Eastern region P=1.56

Consumer outreach data of Chinese families were collected during the Summer of 2002 by students of Chongqing Technology and Business University. Data were collected in Beijing, Shanghai, Tianjin, Jiangsu, Zhejiang, and Fujian, cities that are representative of developed regions. Data were also collected in Hebei, Liaoning, Jilin, Heilongjiang, Anhui, Jiangxi and Shandong provinces that are representative of semi-developed regions, while Shanxi, Inner Mongolia, Chongqing, Sichuan, Guizhou, and Yunnan represent provinces in the developing regions. Questionnaires were distributed in supermarkets, on main streets and at entrances to apartment buildings. While the survey focused on consumer outreach, it also included consumers' income, the distance between the residents' homes and shopping centers, consumption habits, the frequency of consumers' visiting supermarkets and shopping centers, as well as recording how they arrived at the shopping point. Approximately 100 questionnaires were distributed in each city, resulting in a total of 810 questionnaires, including 725 that were usable.

Table 9

Region	Channel Length ---- Wholesale Sales/ Producers' Sales	GDP/per -capita Unit: Yuan	Private Cars (Unit: 10,000)	Urban Population Weight %	Consumer Outreach = the Average Number of Shopping Trips Per Week	Consumption (Unit Yuan)
Beijing	2.757025	28449.00	72.880	77.54	1.2	4335.96
Tianjin	1.223833	22380.00	20.340	71.99	1.3	3190.32
Hebei	.186498	9115.00	53.090	26.08	2	2372.76
Shanxi	.294198	6146.00	17.870	34.91	2.2	2188.32
Inner Mongolia	.169675	7241.00	13.130	42.68	2.0	2206.92
Liaoning	.552357	12986.00	21.860	54.24	1.8	2720.28
Jilin	.238721	8334.00	13.200	49.68	2.0	2436.96
Heilongjiang	.180539	10184.00	17.040	51.54	2.0	2195.40
Shanghai	1.768939	40646.00	14.360	88.31	1.1	4733.04
Jiangsu	.407012	14391.00	28.770	41.49	1.7	3076.36
Zhejiang	.776872	16838.00	30.920	48.67	1.6	4218.36
Anhui	.310460	5817.00	11.890	27.81	2.2	2603.16
Fujian	.454762	13497.00	11.650	41.57	1.8	3408.72
Jiangxi	.299245	5829.00	4.530	27.67	2.3	2291.52
Shandong	.311437	11645.00	42.550	38.00	2.0	2679.36
Chongqing	.477275	6347.00	5.820	33.09	2.2	3038.56
Sichuan	.256163	5766.00	35.560	26.69	2.4	2662.80
Guizhou	.384779	3153.00	5.020	23.87	2.5	2272.44
Yunnan	.686041	5179.00	18.920	23.36	2.4	2962.92

Regression:

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.911[a]	.830	.765	.317241338	
2	.911[b]	.830	.781	.305867097	1.704

a. Predictors: (Constant), consumer outreach = the average number of shopping trips per week, Private automobiles (Unit:10,000 units) , consumption =life expenditures/per-capita in urban area (unit: Yuan), Urban population weigh (Over Total population) %, GDP/per-capita (unit: Yuan)

b. Predictors: (Constant), consumer outreach = the average number of shopping trips per week, Private automobiles (Unit:10,000 units) , consumption =life expenditures/per-capita in urban area (unit: Yuan), Urban population weigh (Over Total population) %

c. Dependent Variable: channel length = wholesale sale/ producers sale

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.387	5	1.277	12.692	.000[a]
	Residual	1.308	13	.101		
	Total	7.695	18			
2	Regression	6.385	4	1.596	17.063	.000[b]
	Residual	1.310	14	.094		
	Total	7.695	18			

a. Predictors: (Constant), consumer outreach = the average number of shopping trips per week, Private automobiles (Unit:10,000 units) , consumption =life expenditures/per-capita in urban area (unit: Yuan), Urban population weigh (Over Total population) %, GDP/per-capita (unit: Yuan)

b. Predictors: (Constant), consumer outreach = the average number of shopping trips per week, Private automobiles (Unit:10,000 units) , consumption =life expenditures/per-capita in urban area (unit: Yuan), Urban population weigh (Over Total population) %

c. Dependent Variable: channel length = wholesale sale/ producers sale

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-4.621	1.919		-2.409	.032
	GDP/per-capita (unit: Yuan)	3.808E-06	.000	.055	.119	.907
	Private automobiles (Unit:10,000 units)	1.238E-02	.005	.334	2.520	.026
	Urban population weigh (Over Total population) %	3.014E-02	.014	.864	2.224	.045
	consumption =life expenditures/per-capita urban area (unit: Yuan)	5.006E-04	.000	.585	2.408	.032
	consumer outreach = the average number of shopping trips per week	1.100	.647	.683	1.702	.113
2	(Constant)	-4.620	1.850		-2.497	.026
	Private automobiles (Unit:10,000 units)	1.241E-02	.005	.335	2.626	.020
	Urban population weigh (Over Total population) %	3.101E-02	.011	.888	2.816	.014
	consumption =life expenditures/per-capita urban area (unit: Yuan)	5.167E-04	.000	.604	3.399	.004
	consumer outreach = the average number of shopping trips per week	1.080	.600	.670	1.800	.094

a. Dependent Variable: channel length = wholesale sale/ producers sale

Model 2, excluding GDP/n, shows that mobility, urbanization, consumption and consumer outreach are all significant indicators of channel length. Thus, hypothesis 2 is confirmed.

Conclusion

Results of the cross-sectional analyses for channel length lead to an acceptance of three hypotheses, economic development (hypothesis 1), government (hypothesis 3) and consumption (hypothesis 6). Hypotheses 2 (urbanization), 4 (consumer outreach) and 5 (mobility) were rejected. Apparently,

mobility of Chinese consumers has not reached significant enough proportions in order to have an impact on channel length. Similarly, urbanization is still at a

Table 10 Summary of Hypotheses Outcomes

VARIABLES	HYPOTHESES	MEASURES
Channel Length (Cl)		Wholesaler Sales (W)/Producers Sales (PTS)
Economic Development	As GNP/n increases, channel length and productivity take on a U-shaped function. **Accepted**	GNP/per-capita
Environment Urbanization (Ur)	As urbanization increases, channel productivity increases and channels shorten. **Rejected**	Urban population weight in areas.
Government (G)	Changes in government policy impact channel length. **Accepted**	Dummy variable, before 1985 = 0; from 1985 to 1992= 1, from 1992 to 1997=2, after 1997 =3.
Consumer Outreach (CO)	As consumer outreach increases, channel productivity increases and channels shorten. **Rejected**	Number of shopping trips per week.
Mobility (M)	As mobility increases, channel productivity increases and channels shorten. **Rejected**	Mobility ownership measured by number of private automobiles per thousand persons or total civil and private vehicle seats divided by its regional population.
Consumption (C)	As the consumption of shopping goods increases, channel productivity decreases and channels lengthen. **Accepted**	Life expenditures/per-capita.

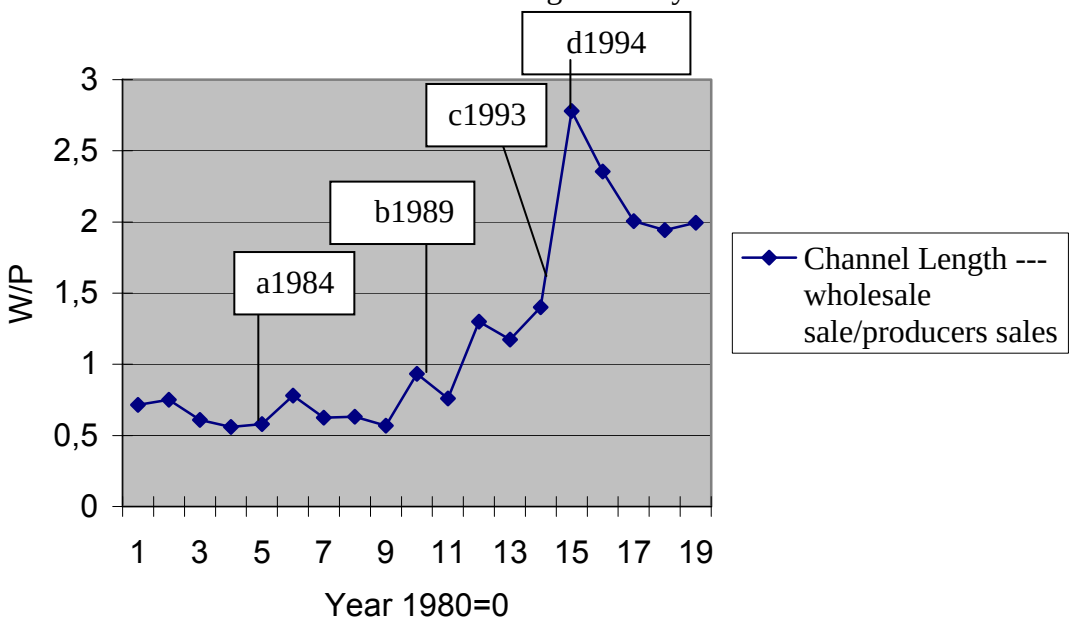
relatively low level for China as a whole. The rejection of consumer outreach as an explanatory variable of channel length is partially owing to the definition of this term. The increase in shopping trips does not necessarily lead to shorter channels. What might lead to shorter channels, however, would be the ability of consumers to increase their shopping range or distance, which would not require stores to be located closer to residences. This issue will be investigated in further research. Possibly, if national time-series data become available for the entire nation, it will be possible to see if channels will eventually shorten as urbanization and consumer outreach significantly increase over time.

The most significant findings from the above research are that channel length is determined by economic development and government policy. Both of these factors work hand-in-hand to affect distribution reform. First, economic development provides the need for more efficient channels, first lengthening as more intermediaries enter the distribution system, but later shortening as the number of channel layers contracts as a result of efficiencies such as vertical integration. Second, government policy can be formulated to encourage these developments. In order to promote efficiencies, the government's "open policy", which allows for market access by foreign firms as well as local ones, should be continued. Moreover, the government has permitted, since 1986, the sale of goods by manufacturers directly to retailers, thereby making some state distributors redundant. In addition, chain stores sell a wide range of goods from necessities to durables, with food products accounting for 63 percent and clothing 4 percent of sales (Taylor, 2003). An increase in the proportion of chain stores in distribution channels will increase their leverage over manufacturers, perhaps leading to backward vertical integration (Sun, 2000; Xu, 2000). While the above examples of market access are a condition for China's entry into the World Trade Organization, it is expected that most of the restrictions affecting the distribution sector will not be phased out until after the year 2005(AmCham-China White Paper, 2001). Removing such

restrictions will encourage more foreign investment, which in turn, will contribute to China's economic development.

An example of channel length dynamics as a function of economic development and time is shown in Figure 7. The change in channel length for Guangzhou City may be demonstrative of other developed cities in the PRC. Several milestones may be observed. First, there is indication

Figure 7
Channel Length Dynamics as a function of Economic Development or Time-Guangzhou City



of short channels in 1984 (point a on Figure 2), before economic development progressed. Subsequently, channels lengthened between about 1989 and 1993 (points b and c on Figure 2) as economic development rapidly increased, finally becoming shorter after 1994 (See Table 7 for the data, the inverted U-shaped function is shown in Figure 6). These milestones further demonstrate the relation between economic development and channel length.

It has been shown above that consumption is also a modifier of channel length. The stimulation of consumption in turn, will be driven by reform of the distribution system. Prices of

consumer goods should decline as the distribution system becomes more efficient, leading to more consumption of price elastic goods. An increase in consumption is supported by PRC government policy, which is aimed at increasing living standards, a priority in the Tenth Five Year Plan (2001-2005). This plan calls for a shift on emphasis from increased production to increased demand.

More research of this sort should be carried out in additional countries, especially those in transition towards a market economy. In the case of China, follow-up research can be done as additional data becomes available. Another question that can be investigated is the extent of efficiency in channels. As channels become shorter, how more efficient do they become? Such research would be a welcome addition to theories of channel evolution and structure.

Appendix 1: Variable Measures

GNP/per-capita is used by the World Bank to place nations in development categories. It is the measure used here.

There are two methods by which to measure Mobility (M). The first way is measured by private automobile ownership, which is the number of cars per thousand persons. However, mobility cannot be measured by the number of automobiles owned by households in the PRC since most Chinese cannot afford them, (especially before 1990). Therefore, mobility is measured by the total number of civil and private vehicle seats available divided by the corresponding provincial population so as to obtain a per capita index of mobility. (Chow Kong-Wing, 1995)

Urbanization is measured by population density in the PRC cities that are included in the research reported above. For example, people in cities or urban areas/total regional population.

The effect of government policy and organizational behavior on channel length has been discussed above. However, quantitative measurement of government intervention in the form of regulations governing channel management is difficult. For example, a surrogate measure, the ratio of public sector expenditures to the value of domestic production, used by the World Bank (1988) to measure state intervention does not capture the policy of government with regard to the specifics of channel management.

Given the experience in the PRC, three stages of government intervention may be observed. The first, during the period up to 1985, may be typified as the era of state-owned distribution system. From 1985 to 1992 began the era of opening the distribution system to private ownership as the second stage of the PRC's distribution reform. Since 1992, the retail sector started to be opened to foreign ownership. Most state owned enterprises in distribution began to reform and changed to public companies listed on the stock exchange market. At stage three, the government promoted supermarket chains in urban areas, and the market began to show characteristics of a

buyers' market orientation after 1997. The effect of government should not be expected to be a constant, but rather linear, or monotonic increasing non linear. The Dummy variable assumes a constant shift in the function of the other variables. A more appropriate measure may be a constant zero until 1985, and 1 from 1985 to 1992, and 2 from 1992 to 1997, and 3 after 1997. This implies that the government initiated a trend of development.

Consumer outreach is measured by the number of shopping trips for convenience goods such as food that consumers make per week and by the number of stores patronized. Generally, consumers who patronize a variety of stores for different, e.g. food needs, make frequent shopping trips (cf. Goldman, 1974; Slater, et al, 1969, 1970). Therefore, one measure should suffice, i.e. the number of shopping trips per week.

Consumption (C) is measured by food, clothing, and services expenditures per-capita.

Appendix 2

2.1 Regressions of Cross-Sectional Data in 1999 for Channel Length as a Function of GDP/n

```
Dependent variable. CL                Method. QUADRATI

Listwise Deletion of Missing Data

Multiple R           .70280
R Square             .49392
Adjusted R Square    .45644
Standard Error       .32362

            Analysis of Variance:

               DF   Sum of Squares      Mean Square

Regression      2        2.7598416        1.3799208
Residuals      27        2.8277507         .1047315

F =      13.17579       Significant F =  .0001

-------------------- Variables in the Equation --------------------

Variable                  B        SE B       Beta         T  Sig T

GDP          8.21498141E-05  3.5663E-05   1.088412     2.303  .0292
GDP**2      -1.00366118E-09  1.1465E-09   -.413656      .     .
(Constant)         -.090198     .189984                -.475  .6388
```

2.2 Regression results of Cross-Sectional Data in 2000

```
Dependent variable.. CL               Method.. QUADRATI

Listwise Deletion of Missing Data

Multiple R           .67260
R Square             .45239
Adjusted R Square    .41182
Standard Error       .37786

            Analysis of Variance:

               DF   Sum of Squares      Mean Square

Regression      2        3.1846927        1.5923463
Residuals      27        3.8550648         .1427802

F =      11.15243       Signif F =  .0003

-------------------- Variables in the Equation --------------------

Variable                  B        SE B       Beta         T  Sig T

GDP          8.94185261E-05  3.6481E-05   1.196061     2.451  .0210
GDP**2      -1.22676149E-09  1.0519E-09   -.569066      .     .
```

```
(Constant)         -.128190     .214184                -.599  .5545
```

2.3 Regression Results of Cross-Section Data of 2001

```
Dependent variable.. CL                Method.. QUADRATI


Listwise Deletion of Missing Data

Multiple R           .76541
R Square             .58585
Adjusted R Square    .55517
Standard Error       .33955

            Analysis of Variance:

               DF   Sum of Squares      Mean Square

Regression      2        4.4034637        2.2017319
Residuals      27        3.1129023         .1152927

F =      19.09689       Signif F =  .0000

-------------------- Variables in the Equation --------------------

Variable                   B        SE B       Beta         T  Sig T

GDP          7.57763128E-05  3.0644E-05   1.078741     2.473  .0200
GDP**2      -6.22721085E-10  8.1607E-10   -.332887      .     .
(Constant)         -.112677     .194073                -.581  .5663
```

2.4 Regression Model of Guangzhou Time Series Data for Channel Length (Wholesale Sale /Producers Sale) as a Function of GDP/n

```
Dependent variable.. channel length                Method.. QUADRATI

Listwise Deletion of Missing Data

Multiple R           .87951
R Square             .77353
Adjusted R Square    .74523
Standard Error       .35261

            Analysis of Variance:

               DF   Sum of Squares      Mean Square

Regression      2        6.7949170        3.3974585
Residuals      16        1.9893330         .1243333

F =      27.32541       Signif F =  .0000

-------------------- Variables in the Equation --------------------

Variable                   B        SE B       Beta         T  Sig T
```

GDP	.000468	.000192	1.447463	2.432	.0271
GDP**2	-2.19063460E-08	2.2182E-08	-.587703	-.988	.3381
(Constant)	-.086171	.328969		-.262	.7967

References

AmCham-China White Paper (2001), The American Chamber of Commerce in the People's Republic of China.

Anderson, E. (1985), "The Salesperson as Outside Agent or Employee: A Transaction Cost Analysis," Marketing Science, 4, 234-254.

Bartels, R. (1981), Global Development and Marketing Columbus, Ohio: Grid Publishing. Company.

Beijing Review (1998), "Smooth Reform of Grain Marketing Stressed," 17-23-24.

Boddewyn, J. (1981), "Comparative Marketing: The First Twenty-Five Years," Journal of International Business Studies, 17, 61-79.

Bucklin, L., V. Ramaswamy and S. Majumdar (1996), "Analyzing Channel Structures of Business Markets via the Structure-Output Paradigm," International Journal of Research in Marketing, 13, 73-87.

Bucklin, L. (1970), "National Income Accounting and Distributive Trade Cost," Journal of Marketing, 34, 14-22.

Carson, D. (1967), International Marketing: A Comparative Systems Approach, New York: Wiley John and Sons.

Chow, C. and E. Tsang (1994), "Distribution Reform in China: An Analysis of the Private Sector Development," International Journal of Retail and Distribution Management, 22, 2, 27-33.

---------- (1995), "Distribution Reform and Retail Structure in China: An Empirical Analysis of Entries and Exists of Enterprises," Asia Pacific Journal of Marketing and Logistics, 3-25.

---------- and Kong-Wing (1994), "Entry and Exit Process of Small Businesses in P.R. China's Retail Sector," International Small Business Journal, 15, 1, 41-58

---------- ---------- (1995), "Strategic Investment Uncertainty and Distribution Reform in the P. R. China: Why a Gradual Reform strategy Works," Journal of Applied Business Research, 12, 2, 20-35.

Coughlan, A. and R. Lal (1992), "Retail Pricing: Does Channel Length Matter?," Managerial and Decision Economics, 13, 3, 201-214.

Davies, K. (1994), "Foreign Investment in the Retail Sector of the People's Republic of China," Columbia Journal of World Business, 29, 56-69.

Douglas, S.P. (1971), "Patterns and Parallels of Marketing Structures in Several Countries," MSU Business Topics, 19 (Spring) 38-48.

Dwyer, R. and A. Welsh (1985), "Environmental Relationships of the Internal Political Economy of Marketing Channels," Journal of Marketing Research, 22, 257-262.

El-Ansary, A. and M. L. (1982), "A Multistage Approach to Comparative Marketing Analysis," Journal of Macromarketing, 2, 59-65.

Ennew, C. T., I. Filatochev, M. Wright and T. W. Buck (1993), "Constraints on the Adoption of the Marketing Concept: The Case of the Former Soviet Union," European Journal of Marketing, 27, 21-34.

Forman, S. and J.F.Riegelhaupt (1970), "Market Place and Marketing System: Toward a Theory of Peasant Economic Integration," Comparative Studies in Society and History, 12 (January), 188-212

Fubara, B. (1991), "Socializing Grain Distribution in Kongi Statistics for the International Market," in E. Kaynak (ed.), Sociopolitical Aspects of International Marketing, New York: The Haworth Press, 243-256.

Gajewski, S. (1992), "Consumer Behavior in Economies of Shortage," Journal of Business Research, 24, 5-10.

Goldman, A. (1974), "Outreach of Consumers and the Modernization of Urban Food Retailing in Developing Countries," Journal of Marketing, October 8-16.

Guiultinian, J. (1974), "Planned and Evolutionary Changes in Distribution Channels," Journal of Retailing, 2, 79-91.

Hall, M., Knapp, J., and Winstin, C. (1961) "Distribution in Great Britain and North American" London: Oxford University Press.

Higgins, Benjamin, (1959), Economic Development, and New York: Norton and Company, Inc.

Holton, R.H. (1953) "Marketing Structure and Economic Development," Quarterly Journal of Economics, 67 (August), 344-361

Holtzman, F.D. (1991) "Moving Toward Ruble Convertibility," Comparative Economic Studies, 33 (Fall), 3-66.

Hooley, G. J. (1993), "Raising the Iron Curtain: Marketing in a Period of Transition," European Journal of Marketing, 27, 6-20.

Ingene, C.A., and Lusch, R.F. (1981) "A model of Retail Structure" Research in Marketing, 5, Sheth ed., pp 101-164.

Iwinska-knop, K. (1992), "Distribution as a Barrier to Application of Marketing in the Centrally Planned Economy," Journal of Business Research, 24, 19-26.

Jain, S. (1990), International Marketing Management, Boston: Kent-PWS Publishing.

Jiang, B. and E. Prater (2002), “Distribution and Logistics Development in China,” International Journal of Physical Distribution & Logistics Management, “ 32, 9/10, 783-798.

John, G. and B. Weitz (1988), “Forward Integration into Distribution: Empirical Test of Transactional Cost Analysis,” Journal of Law, Economics and Organization, 4, 121-139.

Karakaya, F. and M. Stahl (1989), “Barriers to entry and Market Entry Decisions in Consumer and Industrial Goods Markets,” Journal of Marketing, 53, 80-91.

Kaynak, E. (1982), Marketing in the Third World, New York: Praeger.

---------- (1986), Marketing and Economic Development, New York: Praeger.

---------- and Hudanah, A.(1987), Operationalizing the Relationship between Marketing and Economic Development: Some Insights from Less Developed Countries,” European Journal of Marketing, 17, 196-208.

Klein, G. Frazier and V. Roth (1990), “A Transactional Cost Model of Channel Integration in International Markets,” Journal of Marketing Research, 17, 196-208.

Layton R.A (1989) “Measures of Structural Change in Macromarketing Systems,” Journal of Macromarketing, 9 (Spring), 5-15.

Livesay H.C. and P.G. Porter (1969) “Vertical Integration in American Manufacturing, 1899-1948,” Journal of Economic History, 29 (September), 494-500.

Luk, S. and H. Li (1997), “Distribution Reform in China: A Macro Perspective and Implications for Channel Choices,” Journal of Marketing Channels, 6, 1, 77-104.

-------- (1995) “The Reform of the Distribution System in China and Its Implication for Channel Design,” in H. Davis (ed.), Business in China, Longman, 228-250.

---------, Y. Zu and W. Ye (1996), “Evolution of China’s Wholesale System: Review and Implications,” Proceedings of the East Asia-Europe Business Conference, London University.

----------(1998), "Structural Changes in China's Distribution System," International Journal of Physical Distribution & Logistics Management, 28, 1, 44-67.

Mahmoud, E. and G. Rice (1991), “Sociopolitical Analysis for International Marketing: An Examination Using the Case of Egypt’s Infitah,” in E. Kaynak (ed.), Sociopolitical Aspects of International Marketing, New York: The Haworth Press, 146-164.

Mallen, B. (1973), “Functional Spin-off: A key to Anticipating Change in Distribution Structure,” Journal of Marketing, 37 (July), 18-25.

---------- (1975), “Marketing Channels and Economic Development: A Literature Overview,” International Journal of Physical Distribution and Materials Management, 5, 5, 230-237.

McGuire, T.W and Staelin, R. (1983a), "An industry Equilibrium Analysis of Downstream Vertical Integration" Marketing Science, 2 (Spring): 161-191.

McMillan, J. and B. Naughton (1992), "How to Reform a Planned Economy: Lessons from China," Oxford Review of Economic Policy, 8, 130-143.

Mitchell, L. (1991), "The Political Element and Marketing in Grenada," in E. Kaynak (ed.), Sociopolitical Aspects of International Marketing, New York: The Haworth Press, 207-221.

Mittendorf, H. (1978), "The Challenge of Organizing Food Marketing Systems in Developing Countries," Zeitschrift für Auslandische Landwirtschaft, 17, 323-341.

Mun, K. (1998), "China's Retailing in a Changing Environment," in E. Kaynak (ed.), Transactional Retailing, Berlin: Walter de Gruyter and Co., 211-226.

Naor (1990), "Normative and Political Aspects of Socialist Marketing Policy in Transition," European Journal of Marketing, 24, 1, 44-61.

Preston, L.E. (1970), "Marketing Organization and Economic Development: Structure, Products and Management," In Louis P Bucklin (ed.), Vertical Marketing Systems, Glenview, IL: Scott, Foresman and Company, 116-134.

Qiang, Z. and P. Harris (1990), "Retailing Reform and Trends in China," International Journal of Retail & Distribution Management, 18, 5, 31-39.

Reeder, J. (1983), "A Small Study of a Big Market in the People's Republic of China – The Free Market System," Columbia Journal of World Business, 25, 74-80.

---------- (1984), "Entrepreneurship in the People's Republic of China," Columbia Journal of World Business, Fall, 43-51.

Root, F. (1994), Entry Strategies for International Markets, New York: Lexington Books.

Rosenbloom, B. (1987), Marketing Channels, 3rd. edition, Chicago: Dryden.

Rostow, W. W. (1960), The Stages of Economic Growth, New York: Cambridge University Press.

Samiee, S. (1993), "Retail and Channel Considerations in Developing Countries: A Review and Research Propositions," Journal of Business Research, 27, 103-130.

Samli, C. and J. Mentzer (1981), "A Model for Marketing in Economic Development," Columbia Journal of World Business, 16, 91-101.

Sharma, A. and L. Dominguez (1992), "Channel Evolution: A Framework for Analysis," Journal of the Academy of Marketing Science, 20, 1, 1-15.

Sherriff T. K. Luk and Hai Yang Li (1997), " Distribution Reform in China: A Macro Perspective and Implications for Channel Choices," Journal of Marketing Channels, 6, 1, 77-104

Shimagushi, M. and Lazer, W. (1979), "Japanese Distribution Channels: Invisible Barriers to Entry," MSU Business Topics, 27 (Winter), 49-62.

Slater, C. (1969), Market Processes in La Paz, Bolivia, East Lansing: Latin American Studies Center, Michigan State University.

Slater, C. (1970), "Market Channel Coordination and Economic Development, in L. P. Bucklin (ed.), Vertical Marketing Systems, Glenview, IL: Scott, Foresman.

Stern, L and El-Ansary, A. (1988), Marketing Channels 3rd edition, Englewood Cliffs, NJ: Prentice Hall.

Stern, L. and T. Reve (1980), "Distribution Channels as Political Economies," Journal of Marketing, 44, 52-64.

Sun, P. (2000), "New Characteristics of China's Consumer Markets," Jingji Daobao, (May 8).

Takeuchi, H., and Bucklin, L. (1977), "Productivity in Retailing: Retail Structure and Public Policy", Journal of Retailing, 53, Spring, pp 35-46.

Taylor, R. (2003), "China's Consumer Revolution: Distribution Reform, Foreign Investment and the Impact of the WTO," *Asian Business and Management*, 2, 187-204.

Tseng, C., P. Kwan and F. Cheung (1995), "Distribution in China: A Guide Through the Maze," Long Range Planning, 28, 1, 81-91.

Veeck, A. and G. Veeck (2000), "Consumer Segmentation and Changing Food Purchase Patterns in Nanjing, PRC," World Development, 28, 3, 457-471.

Wadinambiaratchi, G.H. (1965), "Channel of Distribution in Developing Economies," The Business Quarterly, 30 (Winter), 74-82.

Weitzman, M.L. (1993), "Economic Transition: Can Theory Help?," European Economic Review, 37, 549-555.

Wells (1977), "Negotiating with Third World Governments, " Harvard Business Review (January-February), 72-83.

World Bank (1988), World Bank Report, New York: Oxford University Press.

Wortzel, H. (1987), "The Emergence of Free Market Retailing in the People's Republic of China: Promises and Consequences," California Management Review, 29, 3, 59-76.

---------- (1983), "Equity and Efficiency in the Distribution of Non-Food Consumer Goods in China," Asian Survey, 23, 7, 845-857.

Xu, B. (1990), Marketing in China: One Billion New Customers, Lincolnwood: NTC Business Books.

Xu, X. M. (2000), "The Development of China's Retail Sector in the Twenty-First Century," *Shangye Jingji*, 7, 21-24.

Friday, October 01, 2004

SOLBJERG PLADS 3, DK-2000 FREDERIKSBERG
TEL: +45 38 15 21 00 FAX NO: +45 38 15 21 01