The Japanese Distribution Sector in Economic Perspective:
The Large Store Law and Retail Density
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Abstract
This paper compiles facts on the distribution sector of Japan and puts them in historical and international context, expresses in a coherent way the conventional view that the peculiar features of Japan's distribution sector are due to distorting government regulations, and provides new evidence that bears on the truthfulness of that proposition. We find that regulation has indeed mattered, but that fundamentals like Japan's geographic centricity, lack of private cars and smallness of dwellings have had a larger effect. A myriad of small stores is the crucial characteristic of the Japanese distribution sector, from which other peculiarities such as the complex wholesale marketing channels with multiple steps and ubiquity of vertical restraints also follow. And regulations inhibiting stores with large floor space, in particular the Large Store Law, have been identified by many as the fundamental reason for Japan's proliferation of small stores. That law was relaxed in 1994 and in 2000 was completely replaced by a new law that shifts responsibility for regulating large stores from the national government to the prefectures. The new law may well lead to a perpetuation of regulatory barriers. But the regulatory limits on large stores have probably mattered a lot less than many suppose. Estimates presented here show that in the period 1985 to 1997 the variation in the number of stores per person across prefectures and over time exhibited little sensitivity to variation in the numbers of large stores per person. Japan's proliferation of small stores is fundamentally due, not to regulation, but to its relative lack of private cars and to its small dwellings. Regulatory limits on large stores are themselves the result of the ubiquity of small stores, not the other way around. The Large Store Law could survive politically precisely because its distorting effects were small (There were bound to be a lot of small stores in Japan even without government protection). This is now changing. Increased private car ownership and suburbanization in Japan are favoring large specialty super stores and convenience stores and undercutting the small, family-owned non-self service stores. This process is not only reducing the overall number of stores in Japan, it is also enlarging the distorting effects of regulatory limits on large stores, and to just that extent it is eroding the political viability of such policies. JEL classifications L50,L81, P52.

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I. Introduction

   The distribution sector of Japan employs about one sixth of the nation's labor force and accounts for around one eighth of its GDP, large enough to matter for any economy-wide assessment of barriers to growth and efficiency. Moreover, the phrase "inefficient distribution sector of Japan" has been repeated so many times one might suppose that evidence of gross distortion is overwhelming. It isn't. My own economic analyses of distribution practices and institutions in Japan point towards geography and infrastructure and away from distorting regulations as the dominant economic forces.[1] But perhaps I am an iconoclast on this. If so I am not the only one. My allies include economists in Japan such as professor Nariu of Kyoto U. and professor Maruyama of Kobe U.[2]

   This paper seeks to accomplish three things. First, we compile facts on the state of the distribution system of Japan and put the facts in historical and international context. Second, we will attempt to describe the logical framework behind the still widely held view that regulation, in particular the Large Store Law (repealed in 2000), is the key determinant of the structure of Japan's distribution system, and derive some testable predictions about what this implies. And, finally, we provide new evidence on whether the testable predictions are true.   We find that regulatory limits on large stores have indeed had an effect on the numbers of stores of differing formats, but that more fundamental influences including ownership of private cars and urban population density have been more important. Accounting for such fundamentals explains much of the variation in retail density between Japan and other countries, and across prefectures within Japan, and leaves little for regulation per se to account for. The undeniable peculiarities of Japan's distribution sector are mostly due to fundamentals–car ownership, size of dwelling, and geography–not regulation.

   The peculiarities of Japan's distribution sector include the myriad of small stores and lack of large stores, multiple wholesale steps, and ubiquity of vertical restraints. Some simple data bearing on each of these is included in the Japan-US comparisons of Table 1. In recent years Japan had 11 stores per thousand inhabitants compared to 6 stores per thousand in the US and 3 in the UK. The typical US supermarket grocery store in the year 2000 had around 44,600 sq ft (4,143 m^2), and there were 31,830 of them (with annual sales of $2 million or more). In Japan in 1997 there were fewer than 4,000 stores that large selling anything. The Japanese analogue of the typical US supermarket grocery is the food specialty super (i.e. self-service) store and in 1999 there were 18,707 of them with average area of 832 m^2, roughly a fifth the size of the typical American grocery. A lot of the stores in Japan are family enterprises with even smaller floor space. This is evident in the average number of workers per store in Japan of only 5 compared to

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[1]For an overview of my work and that of some other scholars refer to Ch. 14 of my book The Japanese Economy, Oxford University Press, 2000.

[2]See for example Nariu (1994), Maruyama, *et al* (1991),and Miwa and Ramseyer (2002).

the US figure of 11. Japan's proliferation of small, traditional "papa-mama" stores has struck many observers as a sign of economic backwardness, more characteristic of a developing nation than one of the wealthiest nations in the world (which Japan clearly still is despite its recent economic malaise).

Fragmentation of the retail sector in Japan is accompanied by long and complex wholesale marketing channels. This is evident in several statistics. First, Japan's distribution sector employment is disproportionately concentrated in wholesaling compared to the US. In Japan 6 to 8 percent of the labor force is employed in the wholesale sector compared to 4 percent for the US, while at the same time in both Japan and the US 10 to 11 percent of the labor force is employed in the retail sector. Additionally, the fraction of wholesalers' revenue that is comprised of sales to other wholesalers is much higher in Japan than in the US: 42 percent in Japan versus 25 percent in the US (1985-6). This has fallen to 35 percent in Japan in 1997, still higher than that of the US.

Finally, the ubiquity of manufacturer imposed pricing rules, customer assignments, and stipulations of exclusivity can be judged from the large fraction of wholesalers reporting their participation in manufacturer initiated "distribution keiretsu", 45 percent of them in 1992, down from 70 percent in 1986. Though no direct comparison with the US can be made here, the implication is that such practices are less widespread in the US for they frequently run afoul of US antitrust laws.

Many have asserted that government policies underlie each of these peculiarities. The sparseness of large stores clearly is the result of regulations including the Large Store Law that until recently made it difficult and often impossible to open new stores with large floor space anywhere in Japan. That law was in June 2000 superceded by another (The Large-Scale Retail Store Location Law) that vests prefectural governments with a wide latitude for implementing like policies. Restricting the number of large stores has protected inefficient small stores. Possibly also it has had a secondary distorting effect on Japan's foreign trade insofar as imported consumer products are more effectively distributed through large, upscale department stores like Mitsukoshi and Takashimaya. The multiple wholesale steps and disproportionately large employment in wholesaling may in large part also be a secondary effect of the proliferation of small stores, and thus an indirect result of the protection of small stores. For example Nariu and Flath (1993) offer a regression equation linking multiplicity of wholesale steps and proliferation of stores. Regulations also matter for vertical restraints, for although they are often presumptively in violation of the antimonopoly law of Japan, they appear to be widespread nevertheless. The fact is that the penalties for violating the antimonopoly laws are notoriously weak in Japan and the resources devoted to their enforcement quite parsimonious. Finally, government regulations pertaining to inward FDI may have had a relatively large effect on the distribution sector. A disproportionately large share of FDI consists of the wholesale subsidiaries of foreign firms both in Japan and elsewhere. Japan's vanishingly small stock of inward FDI in comparison with the US and EU has been linked to Japanese government restrictions relaxed around 1980. Relative absence of foreign affiliate wholesalers in Japan could inhibit competition and protect inefficient domestic incumbent producers and distributors.[3]

As a first pass at assessing whether the distorting effects of these regulations might be significant,

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[3]For a close investigation of FDI in Japan's wholesale industry and its effects on import penetration see Flath (2001).

consider some data from the McKinsey Global Institute ("Why the Japanese Economy is not Growing: Micro Barriers to Productivity Growth", July 2000). The authors of the report construct estimates of value-added per hour of labor across stores of different kinds in Japan in 1997 and the US in 1995. As depicted in Table 2, they conclude that traditional "papa-mama" stores in Japan have lower average labor productivity than do large stores in Japan and account for a disproportionately large share of total labor input compared to the US. Overall average labor productivity in Japan's retail sector is only about half as great as that of the US. A closing of that gap would increase Japan's GDP measurably. How much? Here is a back of envelope calculation. Let us suppose for the sake of argument that only regulatory barriers limit the number of general merchandise stores and supermarket groceries, and that eliminating those barriers would double the labor hours each employed in 1997 (to roughly match the US pattern), diverting workers from traditional stores. Suppose also that as this occurred, value-added in traditional stores would fall in proportion to the withdrawal of labor while value-added in other stores would remain unchanged as wages displaced their profits. This would eliminate a deadweight loss equal to about one fourth a percent of Japanese GDP each year, 1.3 trillion yen or 10 billion dollars per year[4]. Now suppose further that as a result of the changes in retailing, Japan's wholesale sector also evolved to more resemble the US in terms of labor productivity. Then instead of employing 6 to 8 percent of the labor force, Japan's wholesale sector would employ closer to 4 percent of the labor force as is true of the US, freeing millions of workers for employment elsewhere in the economy. If this thought experiment holds any validity then the distortions afflicting Japan's distribution sector are enormous. But the back-of-envelope calculation is highly suspect.

Set aside the obvious difficulties in measuring labor hours and productivity in small family operated stores. The back of envelope calculation accepts at face value that any differences between Japan and the US in allocation of labor across store types and between the retail and wholesale sectors are wholly the result of distortions and could be eliminated by an act of government policy. If this were true then large stores of Japan ought to be immensely profitable. They are not. The recent bankruptcies of the Sogo department store chain and MyCal supermarket chain are reminders of this fact. Actually the fundamental forces that account for Japan's proliferation of small stores are the relative lack of private cars, smallness of Japanese dwellings, highly developed system of transporting goods by trucks, and geographic centricity of Japan. Some of this is changing. For example car ownership has increased dramatically in Japan over the last decade and the average size of dwelling is also steadily increasing. Probably as a result of these factors, in the last decade, grocery supermarkets and general merchandise super stores increased in number in Japan even as the overall number of stores steadily declined. Changes in implementation of the Large Store Law introduced in 1994 and its ultimate repeal and replacement with the Large Scale Retail Store Location Law in 2000 have also contributed to the recent changes in numbers and composition of Japan's

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[4]If labor hours employed in general merchandise stores and supermarkets doubled from the 1997 levels with no change in value-added (as wages displaced profits), value-added per hour would fall by half in each. The deadweight loss thus eliminated would equal the area of a Harberger triangle with right sides equal respectively to the initial labor hours and half the initial value-added per labor hour. In other words the recovery of deadweight losses would amount to about one fourth the initial value-added or $\frac{1}{4}(2.2+3)=1.3$ trillion yen. This is around one-fourth percent of Japan's GDP.

stores. It is important to quantify these effects because doing so sheds light on the likely prospect that deregulation could further alleviate distortions. This is the main focus of the new empirical analysis presented later in the paper. We find that economic factors including relative lack of cars and narrowness of dwellings, and not regulation, are the main reason Japan has so many small stores compared to the US. But as car ownership increases in Japan the number of stores there can only decrease significantly if regulatory limits on large stores are lifted. The recent relaxation of regulation of large stores in Japan may reflect this very fact.

In the next section, section 2, we undertake a comprehensive international comparison of the distribution sectors of Japan and those of other nations, and econometrically analyze some of the underlying differences. Following that, in section 3 we offer some details on the Large Store Law of Japan and on changes in the numbers and scales of stores of different formats in Japan. Then, in section 4 we offer econometric estimates of the elasticities of numbers of stores of different formats in Japan with respect to changes in car ownership, spaciousness of dwellings, urban population density and the regulation-determined numbers of large stores. A conclusion offers my own assessment of regulatory distortions in the Japanese distribution sector, based on the foregoing analysis.

2. Japan's Distribution Sector in International Perspective

Let us begin with a comprehensive comparison of Japan's distribution sector with that of other nations. Table 3 depicts statistics for OECD countries on density of retail stores, employment per store, and value-added and employment in wholesaling and retailing. The countries are listed in ascending order of their respective numbers of stores per thousand inhabitants in the mid 1990's. Japan lies towards the bottom of this list along with Hungary, Mexico, Ireland and others. And here it should be noted that in 1982 Japan's number of stores was 14.3 per thousand inhabitants placing it even farther down the list. The US, UK, Germany and France are closer to the top, having fewer stores per person. From the data in the table a simple index of the average productivity of labor employed in the distribution sector relative to the average productivity of labor in the overall economy can be easily constructed for each country as follows:

Index of average productivity of labor in
distribution sector relative to the overall economy =

Share of distribution sector value-added in GDP
÷ Share of distribution sector employment in the total labor force.

A simple OLS regression of the natural logarithm of this index (for 1996-7) on the natural logarithm of GNP per person measured in purchasing power units (for 1998, second to the last column of Table 4) is revealing:

$$\ln(Index) = 4.1 - 0.45 \ln(GNP\ per\ person\ in\ PPP\ units)$$
$$(\text{t-stat.}=-3.8)$$
$$\text{number of observations} = 20;\ R^2=0.44$$

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In other words the countries with higher standards of living tend to have wider discrepancies in average labor productivity between the distribution sector and other sectors (The US is a regression outlier but Japan is not). This has a simple interpretation. It reflects the generally slower pace of technical change in the service sectors compared to the manufacturing sector, first noted by Baumol. Where does Japan fit in all this? About where one would expect. Its distribution sector relative labor productivity index stands at 0.69 which lies below the 0.75 average for all the countries, as we should expect given Japan's high standard of living.[5] The upshot is that the variation in the index across countries probably more reflects international differences in average productivity of manufacturing than in distribution. But the association many have made between Japan's ubiquity of small stores and economic backwardness is probably not based on productivity data anyway. It is based on the cross-country correlation between standard of living and density of stores.

Countries with lower standards of living (lower GNP per person in PPP units) tend to have more stores per person, and smaller average store size (i.e. fewer employees per store on average). This more than any other fact underlies the widely asserted view that Japan's ubiquity of small stores is a wasteful anachronism. For Japan, contrary to the usual pattern, has a high standard of living and still a proliferation of stores. To understand why requires that we delve into the reason why other countries with high standards of living generally have few stores per person. Simply stated, the countries with high standards of living (except for Japan) tend to have high rates of ownership of private cars and spacious dwellings. Both factors lower households' willingness to pay for the added convenience of next-door shopping for daily necessities, and thus favor larger and more sparse retail stores.

There are two broad types of economic model for explaining the overall density of retail stores, those that presume the density of stores attains the economic optimum but without explicitly modeling how prices are set, and those that presume the density of stores is the maximum consistent with positive profits given some explicit model of pricing by firms. Flath (1990) and Matsui and Nariu (2001) adopt the social optimality approach. Heal (1980) and Gabszewicz and Thisse (1986) model pricing explicitly and presume free entry. The comparative statics of store density are qualitatively the same for both types of model. Factors like increasing car ownership that lower households' costs of transporting goods and thus lower their willingness to pay for the convenience of next-door shopping make a greater proliferation of stores not only inefficient but also unprofitable under wide assumptions about pricing behavior. Factors like increased spaciousness of dwellings that lower household storage costs have a similar effect to those that lower households' transport costs. Factors that lower the distribution sector's costs of transporting and storing goods make a greater proliferation of stores both more profitable and more efficient. It is therefore appropriate to base empirical analysis of international variation in retail density upon factors associated with the costs of transporting and storing goods of both households and firms. This is exactly the approach taken by Flath and Nariu (1996) using data from the early 1980's. We now repeat that exercise with more recent data.

Refer to the data in Table 4. The first column identifies numbers of stores per thousand persons in Japan and other OECD nations around 1996 (mostly carried over from Table 3). The other columns include

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[5]The US doesn't fit this pattern; its index is 0.92, which is above the international average.

observations on some variables associated with the costs and benefits of a proliferation of stores. The benefits of a proliferation of stores reside in the increased average proximity to stores that allows households to shop more frequently and economize on household storage space. The costs of a proliferation of stores lie in the added costs of restocking a greater dispersion of outlets. Simply put, a proliferation of stores shifts some costs of storing and transporting goods from households to the distribution sector. The variables in Table 4 are proxies for things that affect the relative efficiency of households and firms at performing these tasks. For example car ownership (CARS) lowers households' costs of shopping, and thus lowers their willingness to pay a premium to shop at stores close to their residences. Narrowness of living space inside dwellings (CRWDNG) increases that premium. A proliferation of trucks (TRUCKS) and the infrastructure of roads that make it worthwhile to use trucks lowers the added costs of restocking a multiplicity of stores as opposed to a smaller number of larger ones. If a nation is geographically compact (LENGTH) like Japan rather than dispersed over half a continent like the US, the added costs of restocking a multiplicity of stores are further reduced. And if the population is more concentrated in cities (URBAN) then any given expansion in the number of stores per person has a smaller effect on the average distance between stores and residences and so has a smaller marginal benefit.

All of the variables just mentioned contribute to the cross-country variation in number of stores per person in the way we would expect. The Table 5 reports OLS regressions based on these variables. The estimates in the first two columns include as an explanatory variable the average number of persons per room CRWDNG, a proxy for the dearness of household storage space. This variable is only available for some of the countries. Excluding it from the equation, and thus enlarging the sample, narrows the standard errors of estimates of the other coefficients, as shown by the estimates in the second column. This possibly reinforces one's confidence that the results are qualitatively valid. Countries with more cars per thousand persons CARS have fewer stores. Those with more trucks per thousand persons TRUCKS have more stores. The more geographically dispersed countries LENGTH have fewer stores. The countries with more city dwellers URBAN possibly have fewer stores per person. And finally countries with narrower dwellings CRWDNG have more stores per person. Japan is not a regression outlier. The number of stores per thousand persons predicted by regressions excluding Japan are 11.8 and 11.7, statistically indistinguishable from the actual value of 11.3 (The t-statistics for these tests are reported in the last row of the Table 5).

These results very much resemble those obtained in Flath and Nariu (1996) for a slightly different set of countries (but also including Japan, US, UK, and France of course) and earlier data (from around 1980). The conclusion of both sets of estimates is that Japan's relatively high density of retail stores is due to its paucity of private cars, superabundance of trucks, narrowness of household living space and geographic centricity. All of this pointedly leaves regulation out of the picture. Partly this reflects the lack of a suitable proxy for regulation to include in the regression equation. But it also reflects my own judgment that regulation itself is a corollary of the economic variables like the ones already in the equation. I will return to this point at the end of the paper.

We have focused on the density of stores. A question that it is appropriate to raise is the extent to which the complex wholesale marketing channels of Japan are induced by its large density of retail stores as opposed to reflecting some additional Japanese idiosyncracy. Proliferation of stores induces branching of logistical arteries to economize on transport costs. Such branching does not by itself imply a multiplicity

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of wholesale steps but would seem to lower the costs of such a profusion of wholesalers. And evidence does suggest that Japan's high retail density and wholesale complexity are entertwined. Nariu and Flath (1993) construct estimates of the average number of steps in matched wholesale industries of Japan and the US for the early 1980s. Besides confirming that the Japanese wholesale channels have on average more steps than the American ones (1.8 for Japan versus 1.4 for the US), we also showed that the variation in number of steps across wholesale marketing channels is highly correlated between Japan and the US, and for consumer products is also related to the relative density of stores. In Nariu and Flath (1993; table 6-3, p. 94) we present the following OLS regression:

Number of steps in Japanese wholesale industry	= 0.3	+ 0.6	Number of steps in matched US wholesale industry	+ 0.09	Stores per household in Japan divided by stores per household in the US for retail category corresponding to the wholesale industry
		(t-stat:4.1)		(t-stat: 3.3)	

number of observations =24; R^2=0.57

In other words, there are common influences operating on the length of wholesale channels in both Japan and the US. Also, the number of wholesale steps in Japan is greater for products (like food) that have particularly many retail stores in Japan compared to the US. This suggests that Japan's elephantine wholesale sector is to some extent due to its proliferation of stores.

We next undertake a close analysis of distribution sector regulation in Japan focusing on the Large Store Law.

3. The Large Store Law

The regulation that bears most directly on the density of retail stores in Japan is the Large Store Law. It is the essential reason why Japan, at least for now, has far fewer department stores and general merchandise super stores per person than the U.S., when at the same time it has far more of most other kinds of stores per person. See McCraw and O=Brien (1986) for an early recognition of this fact. The Large Scale Retail Store Law (which was enacted in 1973 and took effect in 1974, amended in 1978 and 1992, relaxed in 1994 and abolished in May 1998) was the latest in a succession of Japanese laws over the last sixty-five years that imposed bureaucratic obstacles to the establishment of large stores. The Department Store Act of 1937, which was suspended in 1947 and then reinstated in 1956, required approval of the national government for the opening of new department stores anywhere in Japan. In 1974 the Large Scale Retail Store Law replaced the Department Store Act and made the extent of floor space of proposed stores, rather than the nature of the stores, the criterion for necessitating MITI approval. The cutoffs were 3000m^2 in the largest cities and 1500m^2 everywhere else; in fact almost all stores of larger floor space than these cutoffs had been department stores. In 1978 this law was

completely revamped so as to broaden its coverage to include all proposed new stores with floor space above 500m^2.

Prior to 1998, the process of securing MITI approval to open a large store was torturous, and, if successful, typically required two years or longer from the time approval was first sought. The process involved hearings before local panels that included owners of existing stores whose businesses would have suffered if the particular proposed large store was established. These panels tended either to recommend against MITI approval or else propose restrictions on the hours or days of the week that a new large store could operate. In many cases they proposed onerous requirements such as the requirement that the large store offer classes in cultural activities like calligraphy or floral arrangement, at prices that fail to cover costs. MITI tended to adopt these recommendations and proposals. Consequently, following the adoption of the 1978 amendments to the Large Store Law, the number of applications to open new stores dropped to a mere trickle in 1984 of less than 500 applications for permission to open stores with floor space in excess of 500m^2 in all of Japan, a nation of 120 million persons. See Larke (1994) on the details of the process of gaining approval to open a new large store under this regime.

In 1989, the U.S. government identified the Large Store Law as a "structural impediment" to the sale of U.S. made consumer products in Japan, arguing in trade negotiations with the government of Japan for repeal or relaxation of the law. The government of Japan responded first by amending the law in 1992 to shorten the process for reviewing applications. Then in 1994 it relaxed the implementation of the law by raising the minimum floor space necessitating advance review from 500m^2 to 1000m^2. In May 1998, the Diet replaced the old law with a new one (actually with three new laws) that place details of the regulation of large stores under the control of the prefectural governments but mandates that they consider only environmental factors such as noise and traffic and not the economic harm to incumbent owners of small stores. The line between environmental factors and economic ones is sufficiently fuzzy that some prefectures may actually enact more severe restraints on the opening of large stores than existed under the previous regime (though I consider this unlikely). Other prefectures may remove the restraints on large stores altogether. As shown in Table 6, the number of large stores in operation increased after 1994. However the overall number remains low compared to the US. It is not shown in the table, but in 1997 there were only around 24,000 stores in all of Japan with floor space in excess of 1,000m^2 which is about one fourth the size of the typical American grocery store. The Table 6 also breaks down the number of large stores by "Class 1" and "Class 2". The Class 1 category includes the larger stores (with floor space of 3,000 m^2 or more in most regions, 6,000 m^2 in the central business district of Tokyo and other such places) and the Class 2 includes the remaining large stores. In the 1999 Census of Commerce the Class 1 and Class 2 distinctions were abandoned.

So what are these large stores in Japan? Primarily they have one of three formats: department stores, general merchandise super stores and specialty super stores. The format of a store in the Census of Commerce of Japan is roughly determined by two criteria: whether it is a self-service store (i.e. "super" store), and the extent to which its sale of merchandise is distributed across three broad categories of products (clothing, food, and living (jun- kanren)). A store is classified as having a self-service format if at least half of its floor space is devoted to sales of merchandise in prepackaged or final form at a price marked on the product, to customers who move freely about the store with a cart or hand-basket and who pay no fee to enter the store. Convenience stores are in a special category. The essential difference

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between department stores and general merchandise super stores in this classification scheme is that the latter are self-service stores while the former are not. The specific types of stores are defined as follows:

Self-service:

General Merchandise Super Stores =self service stores with more than 10 pct but less than 70pct of sales in each of the three broad product categories.

Specialty Super Stores =self-service stores with area>250m^2 (before 1997 the criteron was >500m^2) and at least 70pct of sales in one of the broad product categories and not less than 10pct of sales in any one of them.

Convenience Stores =self-service stores for which merchandise includes food, area is between 30m^2 and 250m^2 (before 1997 between 50m^2 and 250m^2)and open at least 14 hours per day.

Other Super Stores =all self-service stores other than those listed above.

Non-self service:

Department Stores =non-self service stores with more than 10 pct but less than 70pct of sales in each of the three broad product categories: clothing, food, and living (sumi- kanren).

Specialty Stores =non-self service stores with at least 90pct of sales in one of the three broad product categories.

Semi-specialty Stores =non-self service stores with between 50 pct and 90pct of sales in one of the three broad product categories.

Other Non-Self-Service Stores =all other stores.

The data in Table 7 depict time-series on the numbers and average scales of stores in each of these formats. Note the 1997 changes in definitions of specialty super stores and in convenience stores. The average scale of department stores and general merchandise super stores is such that these are mostly all "large stores", that is opening such a store was subject to the Large Store Law. Before 1997 specialty super stores only included stores with floor space above the 500m^2 cutoff for application of the Large Store Law. Beginning in 1997 stores with floor space as small as 250m^2 were moved from the "other super stores" category to the "specialty super stores category if their concentration of sales across the three broad classes of products warranted it, effectively tripling the number of stores classified as specialty super stores. A curious fact is that between 5 and 10 percent of the specialty (non-super) and semi-specialty (non-super) stores are contained within the premises of "large stores". The total number of such stores (not themselves large but contained within the premises of ones that are large) has remained around 100,000 since 1991. Large stores do not necessarily only compete with small ones. They also complement them, perhaps offer

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agglomeration economies. In other words there are opposing effects on number of small stores of regulatory limits on large ones. Empirical analysis is needed here.

There is of course no category reserved for the small family-owned stores but most of these are either specialty or semi-specialty stores, two-thirds of which are sole proprietorships. Only 5 percent of the specialty super stores are sole proprietorships and none of the large stores are. Of particular interest for judging some effects of the Large Store Law is the persistent increase in number of specialty super stores larger than $500m^2$ (old definition) and persistent decrease in semi-specialty stores. The department stores and general merchandise super stores have actually decreased in number from 1997 to 1999, and numerous news accounts document their travails. Table 8 shows the time-series for composition of total sales across the types of store. These data reflect the same trends in numbers of stores just related.

Japan's Large Store Law has limited the number of stores with large floor space almost all of which are either department stores, general merchandise super stores or specialty super stores. Any regulatory limits on numbers of these stores ought also to have induced increased numbers of stores of all other formats. These include the small family-owned, non-self service stores that are mostly classified as specialty stores or semi-specialty stores. Our next task is to attempt to measure these effects statistically.

4. Effects of Regulation, Motorization, Housing and Suburbanization on Changing Numbers of Stores of Different Types in Japan

In measuring the effect of changes in regulation on numbers of stores it is necessary to control for other factors that influence retail density and that also have been changing in Japan. These include the increasing ownership of passenger cars, the increasing average space per person in Japanese dwellings, and the declining population density in cities as the suburbs expand. Increasing car ownership favors evolution towards a retail sector with fewer stores and more large stores. Declining population density per se has the opposite effect on retail density but is probably itself an inevitable accompaniment to the move towards car ownership and larger dwellings. All three of these trends could be placed under the same heading: suburbanization. Tables 9, 10, and 11 document these trends with data from the Japan Statistical Yearbook, the Japanese analogue of the US Statistical Abstract. These data elicit a few remarks, a prelude to our econometric analysis.

As shown in Table 9 the growth in passenger cars per person in Japan during the 1970's averaged 9 percent per year and has since slowed to just under 4 percent per year (3.78 pct from 1980-98) which is still a rapid clip. As more households rely on cars, small stores lose a lot of their inherent advantage over large ones which resides in their greater proximity. And motorization is not the only change affecting the shopping behavior of Japanese households. As depicted in Table 10, the average Japanese dwelling is both becoming larger and accommodating fewer persons. There is increasingly less crowding. The average floor space per person in Japanese dwellings has been persistently growing around 1.5 percent per year over the last two decades. More living space means that storage space is less constrained enabling households to shop less frequently for daily necessities and maintain larger stocks, further eroding the value to households of proximity to stores selling nondurables. The effect of larger, less crowded dwellings on the numbers of stores selling durables is possibly the opposite, leading to more such stores. But stores selling nondurables such as food and daily necessities are more numerous than the ones selling durables like

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furniture.

Accompanying the trends just noted toward increasing car ownership and more spacious dwellings is another one, the diffusion of urban populations. Table 11 depicts data on the changing extent of Japan's "densely inhabited districts" and their average population density. These are contiguous census-enumeration districts with high population density (in principle, 4,000 inhabitants or more per km^2) within the boundary of a city, ward, town or village constituting an agglomeration of 5,000 inhabitants or more. These districts have been steadily expanding in area and population and gradually declining in average population density. As population density becomes less, the marginal benefit to households of a proliferation of stores becomes greater. This effect arises because as households are more diffuse, any given number of stores per household entails a greater average distance from each household to the nearest store, and the reduction in that distance with each given increase in number of stores becomes correspondingly greater. See Flath (1990) for an algebraic treatment of this phenomenon. The point here is that the gradual decline in average population density that has accompanied the proliferation of cars and increased spaciousness of dwellings has possibly in and of itself slowed the push towards fewer stores and larger stores in Japan. All these same forces involving car ownership, spaciousness of dwellings and urban density are also operative in explaining the prefecture by prefecture variation in numbers of stores of different formats.

Regarding the effects of the Large Store Law, we should expect the regulatory limits on large stores to have constricted the number of department stores, general merchandise super stores and specialty super stores, and to have thus induced an increase in the numbers of stores of all other formats. These regulatory effects would vary from prefecture to prefecture because although the Large Store Law was a national statute it was implemented through locally administered advisory panels in each municipal jurisdiction.

Before confronting the data we can regard it as a highly interesting and open question whether regulation, or fundamentals like car ownership and urban density, explain more of the cross-prefecture and temporal variation in numbers of stores of different types of format. Is Japan's proliferation of small family-owned, non-self service stores ("specialty stores" and "semi-specialty stores") primarily due to protection from competition by large stores, or is it due to fundamentals? Are the prefectures with the greatest density of stores the ones in which large stores were kept out by strict application of the Large Store Law, or are they the prefectures in which private cars are few and urban population density is less? Has relaxation of the Large Store Law precipitated an elastic response in the numbers of stores or only an inelastic one?

To answer these questions I ran a set of regressions. These are OLS regressions explaining numbers of stores per person of different kinds using data for each of Japan's 47 prefectures from five consecutive reports of the Census of Commerce of Japan, 1985, 1988, 1991, 1994, and 1997. The dependent variable in each regression is the natural log of the number of stores per thousand persons. There is a different equation for each different format of store. The regression equation in the first column is for all stores of every format. The independent variables are the same in each equation and as in Matsui and Nariu (2001) include a dummy variable for each of Japan's 47 prefectures (I do not report the estimates of coefficients on these dummies). The independent variables of interest include the natural logs of three variables based on the same statistics just discussed, observed for each prefecture: passenger cars per thousand persons, dwelling floor space per person, and thousand persons per km^2 in densely inhabited districts. To further control for the diffusion of population I also included the fraction of each prefecture's

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population residing in densely inhabited districts. It was necessary to log linearly interpolate between or extrapolate from housing census years and population census years respectively. Annual data was available for passenger car registrations. All of the data were drawn from the <u>Japan Statistical Yearbook</u>. The natural logarithm of numbers of Class 1 large stores and Class 2 large stores respectively are included to measure the severity of regulation of large stores. So for example after 1994 large stores with floor space between $500m^2$ and $1000m^2$ were automatically approved by MITI, but in the Census of Commerce these were still classified as " large stores".

An examination of the first column estimates in Table 12 reveals that car ownership and urban population density have influenced the overall density of stores in the expected way. Disappointingly, size of dwelling has not exerted a statistically significant effect on overall density of stores (nor a coherent effect on numbers of stores of particular formats). The density of Class 2 large stores (a proxy for regulation) is, as expected, inversely related to the overall number of stores. The number of Class 1 large stores (another proxy for regulation) has no measurable effect on the overall number of stores. Possibly this reflects the much greater temporal variation in the number of Class 2 large stores than in Class 1 large stores depicted in Table 6. All of the variables including number of Class 2 large stores have inelastic effects on the overall number of stores in Japan. Over the period 1985-1997 the number of Class 2 large stores grew about 5 percent per year while the overall number of stores shrank about 1.1 percent per year. Given the estimated elasticity of overall number of stores with respect to number of Class 2 large stores of -0.10, expansion of these large stores by itself accounts for a little less than one half of the constriction in overall number of stores. Relaxed regulation is a contributing factor to reduction in number of stores in Japan, slightly less important than increasing car ownership. The inelasticity of overall number of stores with respect to number of (class 2) large stores (=-0.10) generally argues against regulatory limits on large stores as being in any way crucial in explaining Japan's proliferation of small stores. For example, quadrupling or quintupling the number of class 1 and class 2 stores would roughly match the density of such stores per person in the US, but based on these estimates would still not dramatically reduce the overall number of stores in Japan. Also, if regulation mattered greatly, then one should expect that in prefectures where the large store law was more loosely applied, overall retail density would be dramatically smaller than elsewhere. This doesn't appear to have been the case. Fundamentals, including those embedded in the prefecture by prefecture fixed effects, account for far more of the variation in overall density of stores both across prefectures and over time than does the regulatory determined number of large stores.

The influences of the regulation variables and car ownership on density of stores of each format further instill confidence in the economic model underlying the specification and the interpretation of results just offered. The positive influence of the regulation-determined number of Class 1 large stores on the number of department stores is evident, as is the positive influence of the number of Class 2 large stores on the number of general merchandise super stores and specialty super stores. This comports with the fact that most of the department stores have very great floor space and so are in the Class 1 category. Car ownership is generally undercutting specialty stores and semi-specialty stores and promoting convenience stores, department stores and self-service (i.e. super) stores of all kinds. In other words, as expected, car ownership favors large stores and undercuts small ones (other than convenience stores). The very large and positive influence of increasing car ownership on the number of convenience stores may be an important reason for their recent very rapid growth. The size of the effect of car ownership on overall

number of stores shown in Table 9 (elasticity=-0.17) is quite a bit less than in the cross-country regression of Table 5 (elasticity=-0.3)[6]. There is a simple explanation for this: The regulatory limit on the number of large stores in Japan is dampening the response of number of stores to increasing car ownership. If this is true then it suggests a way of quantifying the likely ultimate effect of deregulation on the overall number of stores in Japan: It might be roughly equivalent to the effect of doubling the responsiveness of overall numbers of stores to increased car ownership from an elasticity of 0.17 to one of 0.3. That is one might expect the overall number of stores in Japan to ultimately fall by about 15 percent from its 1997 level (=11.3 per thousand persons) to equal around 9.6 per thousand. This doesn't really amount to much. The picture that emerges is one that matches the earlier analysis of international data; regulatory distortions account for little in explaining Japan's high density of stores.

Finally, although our analysis suggests that the distorting effects of the Large Store Law may have been less than often supposed, it also indicates that regulations not specifically focused on that sector may nevertheless have a distorting effect upon it. Regulations that unnecessarily or wastefully increase the cost of owning and operating a private car indirectly favor small stores over large ones by enhancing households' willingness to pay for proximity to stores. Japan does indeed have such a regulation, the requirement that private car owners submit their vehicles to comprehensive inspections every two years beginning with the car's third year on the road. These vehicle inspections (*shaken*, in Japanese) are made unnecessarily expensive by the limited number of shops licensed to conduct them and by the onerous requirement that numerous working parts be replaced if an older car is to pass (Beck (1993)). This is widely cited as the reason why the average vehicle age in Japan is 5.8 years compared to 8.3 years in the US while the average annual mileage per car in Japan is only about half that of the US.[7]

As already discussed, car ownership has grown dramatically in Japan over the last decade. As a first pass at assessing whether this process may have run its course consider a simple log linear OLS regression of cars per thousand persons on GNP per person in purchasing power units based on the 1998 data in Table 4:

ln(Cars per thousand) = -2.9 +0.9 ln(GNP in PPP units) - 0.13 Dummy equal to one for Japan
$$(\text{t-sat}=6.6) \qquad\qquad (\text{t-stat}=0.5)$$
number of observations=26; R^2=0.65

predicted cars per thousand for Japan =450.1 versus actual=395.1

This is hardly definitive but it shows that Japan's number of cars is less than its standard of living would predict though not by a statistically significant amount. As recently as 1990 Japan had a mere 291 cars per thousand persons based on the data of Table 9. My guess is that a further dramatic increase in car ownership in Japan is unlikely but that a lagged response of retail structure to the past increase in car

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[6]The larger coefficient estimate -0.6 from the same table 5 is perhaps biased by exclusion of the variable CRWDNG pertaining to size of dwelling.

[7]JETRO (2002), p.14.

ownership may still play out over the coming decade and beyond.

Table 13 identifies the regulatory distortions in Japan's distribution sector discussed in this essay.

4. Conclusion

Japan has about twice as many stores per person as the US. The Large Store Law (and now the Large Store Location Law) is only part of the reason. Japan's proliferation of small stores is not fundamentally due to government protection from competition by large stores. Scarcity of living space in Japan, and the inconvenience there of owning and operating a car, enhance Japanese households' willingness to pay for the added convenience of next-door shopping. And Japan's geographic centricity and highly developed transport system lower the costs of a distribution sector that accommodates this preference, a distribution sector having a proliferation of retail outlets that must be continually restocked through complex logistical arteries. These factors combine to make a proliferation of stores in Japan not only inevitable, but efficient. And given this, regulations like the Large Store Law that protect small stores from competition by large ones imply only minor economic distortions and encounter little effective political resistance. But as car ownership has grown, the distorting effects of regulations limiting large stores have become greater and politically less tenable.

Government policies shape the economy but the reverse is also true. Government regulations that impose large deadweight losses are not thrust upon a modern nation from the outside. They emerge from the give and take of a political process that is itself an arena in which economic forces operate. As Becker (1983) has forcefully argued, a regulation that imposes large deadweight losses encounters more political resistance than one that doesn't. Political pressure groups that support such regulations must overcome this inherent disadvantage, and occasionally do, for example with superior rhetoric or a superior ability to overcome free-riding among their own members. But in thinking about the distorting effects of government regulations it may be useful to remind ourselves that the larger are those effects the less likely is the regulation to have survived in the political marketplace. Perhaps the very durability of government restrictions on large stores in Japan should suggest that the deadweight losses they imposed were not great. This applies more broadly to other regulations that also affect Japan's distribution sector. It applies outside of Japan too.

The Japanese distribution sector indeed exhibits peculiarities. Not only does it have vastly more stores per person than most other countries. It also has particularly complex wholesale marketing channels with multiple steps and ubiquitous vertical restraints. These various peculiarities are complementary to one another. The proliferation of small stores increases the economic advantages of logistical arteries with many branches, which in turn lowers the costs of a multiplicity of wholesale steps. The implied ubiquity of retailers and wholesalers increases the horizontal externalities that arise in promoting and marketing goods and that are the target of vertical restraints such as customer assignments and exclusive dealing stipulations. The distortions that are an unwanted consequence of these sorts of stipulations lead to further manufacturer and wholesaler initiated stipulations on pricing and shipment quantities. Nor is this all. The generally weak application of antimonopoly law to vertical restraints in Japan may in some way reflect the especially large distorting effects such laws would entail in a distribution system like that of Japan. And so again the economy shapes regulations. This is a way that the Japanese distribution sector resembles that of the US.

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Geographic factors in the U.S. have favored large chain stores, and slanted the political marketplace in favor of regulations that benefit them. Local zoning in almost every city in America has had the effect of separating residential and commercial activities, which promotes car ownership and favors large stores over smaller ones. Government limitations on large stores can survive the give-and-take of political competition in Japan but not in the U.S.. For local zoning that favors large stores over small ones the reverse is true. In each case, regulation ends up exaggerating the inherent tendencies rather than fundamentally influencing them.

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Table 1. Peculiar Features of the Japanese Distribution System

Small Stores

	JAPAN	US
	11.2 stores per thousand persons (1997)[a]	6.1 stores per thousand persons (1996)[a]
	5.1 workers per store (1997)[a]	11.7 workers per store (1992)[a]
	Typical Japanese supermarket grocery (=Food specialty super store): 18,709 in 1999 with average floor space 832m2 and annual average sales 895 million yen[b]	Typical US supermarket grocery store: 31,830 in 2000 with average floor space 4,143m2 and annual average sales of $12million[c]

Long and Complex Wholesale Marketing Channels

	JAPAN	US
	8 pct of labor force employed in wholesaling (1990-93); 5.9 pct (1996-7).[a]	4.1 pct of labor force employed in wholesaling (1990-93); 3.8 pct (1997)[a]
	10.4 pct of labor force employed in retailing (1993); 11.2 pct (1996-7)[a]	11.4 pct of labor force employed in retailing (1993); 10.9 pct (1997)[a]
	42 pct of wholesale sales are to other wholesalers (1985-6); 35 pct (1997)[b]	25 pct of wholesale sales are to other wholesalers (1985-6)[d]

Vertical Restraints

	JAPAN	US
	45 pct of wholesalers in 1992 participated in manufacturer initiated "distribution keiretsu", i.e. were subject to manufacturer imposed contractual stipulations[e]	Vertical restraints often run afoul of antitrust law; no comprehensive statistics available

sources:[a]Table 3. [c]Food Marketing Institute. [b]Census of Commerce of Japan. [d]Ito and Maruyama (1991). [e]Chã shou kigyou chou, tsuushou sangyou daijin kanbou chousa toukei bu (Small and Medium Enterprise Agency, Ministry of International Trade and Industry, Minister's Secretariat, Research and Statistics Department) (1994), table 9, p180.

Table 2. Japan-US Comparison of Retail Stores

	Share of sales			Share of retail labor hours worked		Value-added		
	Japan 1988	Japan 1997	US 1995	Japan 1997	US 1995	value-added Japan 1997 (trillions of yen)	value-added per hour Japan 1997 (index; US retail avg=100)	value-added per hr Japan/ value-added per hr US
Discounters and General merchandise stores	7	8	15	4	14	2.2	106	.93
Supermarket (groceries)	7	12	24	8	21	3.0	73	.60
Specialty chains	34	36	35	23	35	12.0	102	.84
Convenience stores	3	4	3	2	3	1.0	96	.88
Department stores	10	9	7	8	8	2.0	48	.70
Traditionals	37	30	17	55	19	3.0	19	.33
Total retail sector	100	100	100	100	100	25.5 tr. yen (5% of GDP)	50	.50

Source. McKinsey Global Institute (2000), "Retail", Exhibit 4, p.27, and Exhibit 5, p28. The categories of stores do not correspond exactly to those of the Census of Commerce of Japan. Presumably this is because of the need to make correspondences between the types of stores in Japan and in the US.

Table 3. International Comparison of Distribution Sectors

	Retail outlets per thousand inhabitants[a]	yr	Retail employment per outlet[a]	Share of distribution value-added in GDP			Share of distribution employment in total		Share of retailing employment in total		
				1993[b]	1996-7[c]	1996-7 Retail only	1993[b]	1996-7[c]	1990[b]	1996-7[c]	
European com.	7.8	96	5.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
Luxembourg	n.a.		n.a.	13.5	10.2	3.4	15.9	21.1	9.7	10.0	
United Kingdom	3.3	93	15.4	12.8	10.7	n.a.	17.1	16.4	11.3	10.0	
Austria	3.7	96	8.4	12.8	11.9	4.3	14.4	13.4	7.5	6.6	
Australia	4.0	92	10.8	n.a.	10.8	n.a.	20.8	17.4	13.1	9.9	92
Germany	4.9	96	6.7	7.8	10.0	4.1	11.3	15.5	8.3	8.2	
Sweden	4.9	93	6.5	8.3	9.5	n.a.	11.9	12.9	6.9	4.6	
Turkey	5.0	96	0.9	16.0	14.4	5.4	12.5	n.a.	4.8	4.3	
United States	6.1	92	11.7	15.7	13.6[e]	6.7[e]	15.5	14.7[e]	11.4	10.9[e]	
Denmark	6.3	95	5.8	10.7	11.5	3.8	10.8	15.9	7.8	6.9	
France	6.6	96	3.7	12.2	9.2	4.0	13.8	13.8	9.3	7.2	
Czech Republic	6.7	96	13.3	10.7	10.8	3.7	16.4	15.0	13.6	8.5	
Iceland	6.7[a]	90	n.a.	8.9	n.a.	n.a.	11.9	13.6	6.4	7.0	
Canada	6.8	85	8.3	10.0	9.3	n.a.	16.4	18.7	10.4	12.7	85
Netherlands	7.4	96	5.0	12.7	12.0	3.7	16.2	15.1	12.3	6.9	
Finland	7.6	97	2.5	8.4	9.4	3.1	12.5	11.9	6.7	6.0	
Switzerland	7.7	96	6.5	14.7	n.a.	n.a.	13.9	n.a.	10.6	9.4	
Norway	9.3	96	4.6	9.7	9.8	n.a.	13.9	15.2	6.0	8.8	
New Zealand	9.5	90	4.4	15.2	n.a.	n.a.	12.4	15.3	10.0	6.8	
Italy	9.8	96	2.6	15.3	12.6	2.9	19.3	17.3	10.3	7.6	
JAPAN	11.2	97	5.1	12.5	11.8	5.0[d]	18.4	17.1	10.4	11.2	
Hungary	12.1	97	1.5	10.8	10.2	4.7	12.4	13.9	11.5	10.7	
Mexico	13.0	93	13.2	n.a.	15.1	n.a.	14.9	n.a.	n.a.	15.2	93
Belgium	13.7	96	1.9	n.a.	10.9	n.a.	15.9	13.3	7.3	12.7	
Spain	14.2	92	2.7	14.2	13.3	n.a.	16.7	22.3	11.0	12.8	
Ireland	14.4	97	2.5	7.9	n.a.	n.a.	14.3	n.a.	11.8	9.6	
Portugal	15.2	96	2.4	8.9	13.3	4.4	16.4	17.2	5.2	8.4	
Greece	17.6	93	3.1	9.6	13.1	6.5	15.5	14.4	9.3	15.6	93
Korea	18.5	97	2.2	11.7	n.a.	n.a.	22.0	n.a.	n.a.	9.2	85
Poland	24.8	97	1.0	18.9	18.4	n.a.	16.4	13.2	5.2	7.4	

Sources: [a]OECD Regulation Database except as noted. [b]Pilat (1997), Table 2.1, p.17. [c]Boylaud and Nicoletti (2001), Table 1, p. 256. [d]McKinsey Global Institute (2000), "Retail", exhibit 1. [e]Statistical

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Table 4. Selected International Data, 1998 (or nearest available year).

country	STORES stores per th. persons[a]	URBAN urban population pct[c]	CARS cars per th. persons[d]	TRUCKS trucks per th. persons[d]	LENGTH sq. root of country area[c] (1000km$^{1/2}$)	CRWDG persons per room[e]	GNPPP GNP per capita PPP[c] ($us=1)	GNP GNP per capita[c] ($us)
UK	3.4[b]	0.89	374.2	47.1	15.7	0.5	20,640	21,400
Austria	3.7	0.65	479.9	38.3	9.2	0.6[f]	22,740	26,850
Australia	4.0	0.85	472.3	110.5	88.0	n.a.	20,130	20,300
Germany	4.9	0.87	507.6	28.9	18.9	0.5	20,810	25,850
Sweden	4.9	0.83	426.1	38.0	21.2	0.6[f]	19,480	25,620
Turkey	5.1[b]	0.73	63.8	15.7	27.8	1.3	n.a.	3,160
US	5.8[b]	0.77	480.6	280.9	96.8	0.5	29,340	29,340
Denmark	6.3	0.86	354.2	56.2	6.6	n.a.	23,830	33,260
France	6.6	0.75	455.8	92.1	23.5	0.7	22,320	24,940
Iceland	6.7	0.92	510.9	62.0	10.1	n.a.	22,830	28,010
Canada	6.8	0.77	440.8	121.2	99.9	0.5	24,050	20,020
Czech Rep.	6.8[b]	0.66	358.0	41.1	8.9	1.0	n.a.	5,040
Netherlands	7.4	0.89	566.3	100.6	6.4	0.7	21,620	24,760
Finland	7.6	0.64	388.7	54.0	18.4	0.7[f]	20,270	24,110
Switzerland	7.7	0.62	476.5	37.6	6.4	0.6	26,620	40,080
Norway	9.3	0.74	405.9	88.9	18.0	0.6	24,290	34,330
N. Zealand	9.5	0.87	440.5	99.7	16.5	0.5	15,840	14,700
Italy	9.8	0.67	538.2	50.7	17.3	0.8[f]	20,200	20,250
JAPAN	11.2[b]	0.79	395.1	163.8	19.4	0.6[f]	23,180	32,380
Hungary	12.1	0.66	234.2	32.2	9.6	0.5	n.a.	4,510
Mexico	13.0	0.74	97.8	45.9	44.2	1.4	8,190	3,970
Belgium	13.7	0.97	437.1	45.0	5.7	0.5[f]	23,480	25,380
Spain	14.2	0.77	389.2	81.6	22.5	0.7[f]	16,060	14,080
Ireland	14.4	0.58	266.8	31.1	8.4	n.a.	18,340	18,340
Portugal	15.2	0.61	308.0	36.3	9.6	0.7	14,380	10,690
Greece	17.6	0.60	254.9	93.2	11.5	n.a.	13,010	11,650
Korea	18.5	0.84	163.4	46.1	10.0	1.1	12,270	7,970
Poland	24.8	0.65	229.7	40.8	18.0	2.0	6,740	3,900

Sources. [a]From Table 3 (except as noted). [b]More recent figures than Table 3; from Boylaud and Nicoletti (2001) Table 1, p. 256 (Czech Rep., Japan, and Turkey: 1997; UK: 1994; US: 1996). [c]World Bank (2001), Table 2, pp. 232-3. [d]Soumushou toukei kyoku, toukei kenshu jou (statistics bureau, govt of Japan), Sekai no toukei 2001, Table 8-2 (car ownership). [e]United Nations Statistics Division, social indicators homepage, indicators on housing (except as noted). [f]Sekai no toukei 2001, Table 13-6, p. 296 (rooms per dwelling), divided by Table 2-10, p. 32 (persons per household).

Table 5. OLS Regressions Explaining International Variation in Density of Stores

Dependent variable= lnSTORES				
Coefficients (t-statistics in parentheses)				
		Japan excluded		Japan excluded
Constant	3.4 (1.9)	3.5 (1.8)	5.6 (5.2)	5.6 (5.1)
URBAN	-0.4 (-0.4)	-0.4 (-0.4)	-1.4 (-1.7)	-1.4 (-1.7)
lnCARS	-0.3 (-1.0)	-0.3 (-1.0)	-0.6 (-2.9)	-0.6 (-2.8)
lnTRUCKS	0.5 (2.1)	0.5 (1.9)	0.5 (2.6)	0.5 (2.4)
lnLENGTH	-0.3 (-2.0)	-0.3 (-1.9)	-0.4 (-2.8)	-0.4 (-2.8)
lnCRWDG	0.6 (1.5)	0.6 (1.5)		
number of observations	23	22	28	27
R^2	0.40	0.39	0.40	0.41
Predicted value of STORES for Japan (and t-test statistic for difference from actual value (11.3))		11.8 (0.08)		11.7 (0.13)

Table 6. Changes in numbers of large stores in Japan 1985-99

Source: Census of Commerce of Japan.

	large stores	annual average pct change since prior census	all retail stores	annual average pct change since prior census
1985	13,286		1,628,644	
1988	14,632	3.3%	1,619,752	-0.2%
1991	15,511	2.0%	1,591,223	-0.6%
1994	17,643	4.4%	1,499,948	-1.9%
1997	21,892	7.5%	1,419,696	-1.8%
1999	23,897	4.5%	1,406,884	-0.5%

	large stores class 1	annual average pct change since prior census	large stores class 2	annual average pct change since prior census
1985	3,662		9,624	
1988	4,027	3.2%	10,605	3.3%
1991	4,429	3.2%	11,082	1.5%
1994	3,351	-8.9%	14,292	8.8%
1997	4,350	9.1%	17,542	7.1%

Table 7. Trends in Numbers and Sizes of Stores in Japan, 1985-1999.
Source: Census of Commerce of Japan

	1985	1988	1991	1994	1997	1999
All Retail Stores (number of stores)	1,628,644	1,619,752	1,591,223	1,499,948	1,419,696	1,406,884
average number of employees	3.9	4.2	4.4	4.9	5.2	5.7
average area (m^2)			79	93	105	111
average annual sales (millions of yen)	62	71	88	96	104	102
Department Stores	438	433	455	463	476	394
average number of employees	431	446	456	444	392	427
average area (m^2)			15,063	16,340	17,133	19,134
average annual sales (millions of yen)	17,762	20,930	25,086	22,981	22,416	24,633
General Merchandise Super Stores	1,389	1,478	1,549	1,804	1,888	1,670
average number of employees	138	136	142	151	160	192
average area (m^2)			5,659	6,316	7,166	8,020
average annual sales (millions of yen)	4,258	4,491	5,268	5,175	5,274	5,299
Specialty Super Stores	5,873	6,397	7,130	9,354	11,656	14,455
(New definition)			(20,827)	(25,171)	(32,209)	(35,531)
Clothing Specialty Super Stores	520	571	618	849	(4,549)	(4,780)
Food Specialty Super Stores	4,707	4,877	5,185	6,231	(17,623)	(18,707)
Living Specialty Super Stores	646	949	1,327	2,274	(10,037)	(12,044)
average number of employees	37	38	37	39	(24)	(29)
average area (m^2)				1,207	(731)	(840)
average annual sales (millions of yen)	983	1,000	1,122	1,115	(635)	(668)
Convenience Stores	29,236	34,550	41,847	48,405	33,167	37,025
(New definition)			(23,837)	(28,226)	(36,631)	(39,628)
average number of employees	7	9	8	10	(11)	(14)
average area (m^2)			(94)	(98)	(99)	(103)
average annual sales (millions of yen)	116	145	167	172	(143)	(155)
Other Super Stores	59,643	53,834	67,473	80,036	103,273	67,476
(New definition)			(72,027)	(84,878)	(120,721)	(86,367)
average number of employees	6	7	6	6	(4)	(6)
average area (m^2)				128	(89)	(110)
average annual sales (millions of yen)	124	144	143	132	(83)	(98)
Specialty Stores	1,004,883	1,007,756	1,000,166	930,143	839,969	920,277
Clothing Specialty Stores	149,246	151,370	154,656	147,478	126,383	134,329
Food Specialty Stores	290,789	293,203	283,570	263,681	230,163	249,287
Living Specialty Stores	564,848	563,183	561,940	518,984	483,423	536,661
average number of employees	3	4	4	4	4	5
average area (m^2)			53	61	63	63
average annual sales (millions of yen)	47	51	65	66	71	68
Semi-specialty Stores	524,885	513,338	470,289	429,108	385,748	319,685
Semi-specialty Clothing Stores	74,232	78,608	76,903	65,733	62,882	54,928
Semi-specialty Food Stores	271,593	253,352	224,756	185,509	154,736	131,465
Semi-specialty Living Stores	177,644	179,715	166,740	175,857	168,130	133,292
average number of employees	3	3	4	4	4	4
average area (m^2)			62	69	74	76
average annual sales (millions of yen)	47	54	67	76	82	75

Table 8. Composition of Total Sales Across Formats of Stores, 1985-99.
Source: Census of Commerce of Japan

	1985	1988	1991	1994	1997	1999
Department Stores	7.6%	7.9%	8.1%	7.4%	7.2%	6.7%
General Merchandise Super Stores	5.8%	5.8%	5.8%	6.5%	6.7%	6.2%
Specialty Super Stores	5.7%	5.6%	5.7%	7.3%	(13.8%)	(16.5%)
Convenience Stores	3.3%	4.4%	5.0%	5.8%	(3.5%)	(4.3%)
Other Super Stores	7.3%	6.8%	6.9%	7.4%	(6.8%)	(5.9%)
Specialty Stores	46.0%	45.2%	45.9%	42.6%	40.4%	43.5%
Semi-specialty Stores	24.0%	24.2%	22.4%	22.9%	21.3%	16.7%
Other Stores	0.2%	0.1%	0.2%	0.0%	0.2%	0.3%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

(.) Note changes in definitions of Specialty super stores, Convenience stores, and Other super stores in 1997.

Table 9. Changes in Passenger Cars per Thousand Persons in Japan 1965-98

	Passenger Cars per thousand persons	annual average pct change in previous interval
1965	22	
1970	85	30.7%
1975	154	12.7%
1980	202	5.6%
1985	230	2.6%
1990	291	4.8%
1995	360	4.4%
1998	394	3.1%

Source. Japan Statistical Yearbook.

Table 10. Changes in Japanese Dwellings 1965-98.

	Dwelling rooms per dwelling	Persons per dwelling	Persons per room	Area of floor space per dwelling (m2)	Floor space per person (m2)	annual average pct change in floorspace per person since previous census
1963	3.82	4.43	1.16	72.52	16.36	
1968	3.84	3.96	1.03	73.86	18.63	2.6%
1973	4.15	3.63	0.87	77.14	21.26	2.7%
1978	4.52	3.47	0.77	80.28	23.17	1.7%
1983	4.73	3.35	0.71	85.92	25.69	2.1%
1988	4.86	3.21	0.66	89.29	27.86	1.6%
1993	4.85	3.02	0.62	91.92	30.46	1.8%
1998	4.79	2.83	0.59	92.43	32.70	1.4%

Source. Japan Statistical Yearbook.

Table 11. Changing Population Density in Japan 1965-95.

	Percent of densely inhabited districts to whole area (%)			
	Population	Area	Density of population (per sq. km)	annual average pct change in density since previous census
1965	48.1	1.23	10,263	
1970	53.5	1.71	8,678	-3.3%
1975	57.0	2.19	7,712	-2.3%
1980	59.7	2.65	6,983	-2.0%
1985	60.6	2.80	6,938	-0.1%
1990	63.2	3.11	6,661	-0.8%
1995	64.7	3.24	6,630	-0.1%

Source. Japan Statistical Yearbook.

Table 12. OLS Log Linear Regressions Explaining Numbers of Stores of Different Kinds Per Person, with Fixed Effects for Each of Japan's 47 Prefectures

(All variables in natural logs except fraction of population residing in densely inhabited districts. Sample = five successive census of commerce reports 1985, 1988, 1991, 1994, and 1997, by prefecture. Coefficients on prefecture dummies are not reported).

Dependent variables-- numbers of stores (per th. persons)	Coefficient estimates and t-statistics							
	All stores	Department stores	General merchandise super stores	Specialty super stores*	Convenience stores*	Other super stores*	Specialty stores	Semi-specialty stores
Passenger Cars per Thousand Persons	-0.17 (-7.99)	0.57 (1.99)	0.19 (1.06)	0.46 (3.24)	0.72 (4.66)	0.89 (4.21)	-0.23 (-7.07)	-0.35 (-8.64)
Dwelling Floor Space per Person (m^2)	-0.01 (-0.09)	-2.92 (-1.51)	3.05 (2.51)	-0.15 (-0.15)	0.74 (0.65)	-0.83 (-0.54)	0.45 (2.03)	-0.60 (-2.16)
Th. Persons per km^2 in Densely Inhabited Districts	-0.37 (-4.12)	2.68 (2.22)	0.00 (0.00)	-0.29 (-0.44)	0.73 (1.02)	0.32 (0.33)	-0.67 (-4.85)	-0.62 (-3.58)
Fraction of Population Residing in Densely Inhabited Districts	-0.36 (-2.09)	0.42 (0.18)	-2.21 (-1.52)	2.27 (1.74)	2.11 (1.47)	-2.75 (-1.40)	0.25 (0.94)	-0.45 (-1.37)
Number of Class 1 Large Stores per Th. Persons	0.01 (0.88)	0.23 (1.48)	-0.04 (-0.41)	-0.16 (-1.61)	0.06 (0.57)	-0.21 (-1.39)	-0.01 (-0.81)	-0.01 (-0.62)
Number of Class 2 Large Stores per Th. Persons	-0.10 (-6.57)	-0.18 (-0.85)	0.39 (3.01)	0.42 (3.37)	0.02 (0.17)	-0.08 (-0.43)	-0.19 (-7.89)	-0.11 (-3.84)
R^2	0.98	0.71	0.84	0.98	0.98	0.96	0.96	0.98

*No observations for 1997.

Number of observations (except for specialty super stores and convenience stores) = 235 = 47 prefectures X 5 years of observation.

Table 13. Regulations that distort distribution sector resource allocation

Regulation	Nature of effect on distribution sector–comment
Large Store Law 1974-2000.	Severely limited the number of stores with large floor space including department stores and general merchandise super stores, contributing to the survival of small traditional stores. The law was repealed in 1998 but remained in effect until April 2000.
Large-Scale Retail Store Location Law 2000-	Enacted with repeal of the Large Store Law. The new law vests prefectures and municipalities with authority to limit large stores, where the Large Store Law was administered by the national government. Supposedly the criteria for evaluating applicants to open large stores (1000m2 or greater) is to be confined to environmental factors such as noise and traffic only, but skepticism is warranted.
automotive inspection (shaken)	The Road Vehicles Act (rev. 1995) mandates comprehensive safety inspections of private passenger vehicles every two years beginning with the third year that the car is in operation. These usually entail the purchase of numerous replacement parts. The cost of these inspections inhibits car ownership and thus helps perpetuate the advantage of small neighborhood stores that are close by over larger more distant stores .