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Surveys

Retail location and urban resilience: towards a new framework for retail policy

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Abstract *This article reviews the literature on the interactions between retail activities and urban economic resilience with a primary focus on the U.S. The social, economic and environmental impacts of large-scale retail outlets on existing retail and urban systems and their sustainability have been extensively discussed in the urban planning literature. However, the survival of retail venues as a major land use, in a competitive, dynamic urban environment, has been discussed less. In particular, the adjustment of traditional city-center retailers facing an influx of new shopping venues is a timely issue. The literature offers a wide range of examples, from their disappearance to their role in the successful revitalization, vitality and viability of city centers, and their increased economic resilience. At the same time, the number of dead malls has been increasing in developed and developing countries, and in particular in the U.S., showing that large-scale shopping venues also need strategies for adaptation and change. This review explores the issues and policies that have altered urban dynamics in favor of traditional retailers and contributed to their resilience, identifies the role of the public sector in supporting city center revitalization, and develops a framework for the effective integration of retail planning into urban policy to enhance urban economic resilience.*

Keywords: Retail Planning, Urban Policy, Urban Economic Resilience, Shopping Centers, City Centers.

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1. INTRODUCTION

The development of large-scale retail outlets, such as shopping centers, big-box stores, power centers, and retail parks, along with suburbanization and new developments at city fringes, has altered urban form and development worldwide. As Lang (2003) points out in the context of the edgeless city, residences and retail stores are the first activities to decentralize, and are therefore the major pillars of the built environment and the urban economy. The retail sector is essential because it: provides goods and services to urban residents and visitors; employs a substantial share of the workforce, generating income for the local economy and taxes for local governments; promotes local development and supports local property values; supports a sense of urban life vitality closely related to the flow of people in retail areas (Mazza & Rydin, 1997); and influences the growth of urban areas.

Population growth has caused cities to expand toward their fringe, but the fate of city centers is less clear. In some cities, new revitalization schemes have been adopted, but in others market dynamics have reshaped the retail scene, with retailers attempting to increase their adaptive capacity through innovative strategies. Three types of urban resilience have been identified: ecological, engineering and economic (Pendall *et al.*, 2010; Pike *et al.*, 2010; Davies, 2010). Equilibrium and evolutionary approaches have also been used to characterize resilience. The equilibrium approach has been used to define ecological and engineering resilience, and the evolutionary approach to define economic resilience, which is connected with the resilience of retail units. The latter involves adaptive capacity and regional economic realignment, and embodies the 'Schumpeterian creatively destructive' potential of systems to provide new configurations and trajectories of growth (Wrigley & Dolega, 2011). This idea has a strong connection to market relations in retail

systems. Erkip *et al.* (2014) define the resilience of an urban retail system as the ability of different types of retailing, at different scales, to adapt to changes, crises or shocks that challenge the system's equilibrium without failing to perform their functions in a sustainable way. This can include both city center retailers and large-scale shopping centers, both evolving over time. Most city center retailers have suffered from the impact of large-scale retail outlets, which represent the new consumption spaces. On the other hand, the number of dead malls around the world has been increasing, in particular in the U.S. and the U.K. Such malls also need to adapt to market dynamics and increase their economic resilience.

The major actors in this process are local governments and private-sector decision makers. They have opposite goals, the former trying to maximize public welfare and economic resilience, the latter trying to maximize profit. Such a situation can be beneficial to both parties when retail planning strategies and programs are carefully developed. If private-sector decision makers become aware of the economic, social and environmental benefits of retail planning to increase economic resilience, and collaborate with public sector decision-makers, then sustainable urban development will be enhanced. However, many local governments only focus on issues of appearance, aesthetics, and tax generation, which they are better able to regulate. Retail planning and policies have often been ignored in urban policy-making.

The literature covers specific retail sustainability issues, such as the deprivation of city centers and inner-city neighborhoods, fast-paced development of shopping centers and outward expansion of cities, the 'death' of old malls because of poor performance, and the redevelopment of greyfield areas. The potential impacts of planned retail developments and revitalization on urban resilience, however, have been covered less.

This paper analyzes locational issues in retail planning and development and provides a policy framework to build economic resilience and achieve sustainable retail and land-use planning. Its primary focus is on the U.S. However, the retailing context in other countries is also occasionally discussed. Its premise can be framed by the following questions: What are the existing social, economic and environmental issues in retail planning? How can public sector and retail planning policy contribute to urban resilience? How can policy and planning tools be developed for an effective integration of retail planning and urban policy?

The remainder of the paper is organized as follows. Section 2 discusses issues in retail planning linked to economic, social and environmental resilience. Section 3 reviews the existing qualitative and quantitative policy tools to support resilient retail development. Section 4 concludes the paper by offering a framework for integrating retail policy and urban resilience.

2. RETAIL PLANNING AND URBAN RESILIENCE

The overall goals of an effective retail policy should be to attain the economic, social, and environmental goals of urban sustainability regarding:

- the loss of trade in city-center stores;
- the inequity due to lesser access to out-of-town shopping outlets for mobility-impaired and low-income households;
- physical deterioration, including long-term vacancies and failure to refurbish or modernize existing stores; and
- replacement of good-quality or mass-market retail offerings by low-quality discount stores (Guy, 2007; Guy, 1998).

Building urban resilience is a significant strategy to diminish the negative impacts of suburban retail development.

2.1 ECONOMIC ISSUES

The capitalist economic system regulates supply and demand, allocates resources, and provides incentives for entrepreneurship and innovation, but has many flaws from an urban resilience perspective, because economic decision making fails to value social and environmental goods (human health, equity, and environmental quality) (Wheeler, 2004). Economic resilience is a concern for local governments, local retailers in inner-city neighborhoods, and poorly performing mall retailers in suburban centers. These two retail groups are most vulnerable to changes in retail networks. The literature suggests that a major goal of a local government retail policy should be to preserve the vitality and viability of city centers. Guy (1998) shows that most off-center developments, such as food superstores, regional shopping centers, and non-food superstores (big-box developments) have led to retail space closing, in particular local retailers in inner-city neighborhoods. Leeuwen (2010), evaluating the indirect effects of household shopping behavior changes, also shows that out-of-town retailing can cause significant losses for retailers in traditional centers. Ozuduru, Varol and Ercoskun (2014) analyze the impact of shopping center development on shopping streets, using a wide-ranging questionnaire, and explore the dimensions of retail economic resilience. They find that traditional retailers who design new strategies to compete with large-scale retailers survive and still attract customers. Central Place Theory's hierarchical principle (Christaller, 1933; Lösch, 1940) is central to changes in the retail network. Higher-order goods become scarce in the inner-city, and longer trips are therefore necessary to purchase these goods; at the same time, inexpensive 'lower-order' goods can also become attractive in these distant centers, as range and price allow large retailers to undercut the smaller and more dispersed retailers. This is the case of big-box retailers (O'Kelly, 2009), which explains why local retailers vanish in inner-city neighborhoods.

2.1.1 RETAIL DEVELOPMENT IN INNER-CITY NEIGHBORHOODS

The vanishing of local retailers drives retail employment to the urban fringe. Despite Wal-Mart executives' statements to the contrary, retail employment flees out of the city with the appearance of new retail outlets at the urban fringe. The displacement of existing retail workers and local businesses by large-scale outlets has been a common issue in the literature (Basker, 2005; Neumark *et al.*, 2006; Bernstein Research, 2005). Big-box stores displace up to six local businesses and destroy historical commercial areas, but also increase retail employment while substantially decreasing wage levels (Bernstein Research, 2005). The impact varies with time, distance and product category: employment increases within two kilometers of big-box developments, but decreases beyond four kilometers, and hardware, catalogue¹, lumberyards, fashion and general merchandise stores in proximity are most affected (Jones & Doucet, 2000). Big-box stores can become particularly problematic in rural areas, because their number is disproportionately high (Boarnet *et al.*, 2004; Hipler, 2007), and their impact on rural town main street businesses is much harsher than in metropolitan areas (Irwin & Clark, 2007; Artz & Stone, 2012). The arrival of big-box stores leads to the consolidation of rural and non-metropolitan retail activities, with a decline in retail/wholesale employment (Adamchak *et al.*, 1999). Retail has a lower multiplier effect than other sectors, and in the U.S. pays low wages and usually no benefits. The retail sector adds activity and vitality to a city, but it does not provide career paths and sufficient compensation for inner city residents. Many part-time and full-time retail workers in the U.S. do not earn enough to rise from poverty. The end result is that many retail workers are eligible for government payments and subsidies, which reduces the burden for retail employers to pay a living wage.

Policy-makers have tried to confront this trend and to strengthen retail markets in inner-city neighborhoods. One approach has been to promote new retail models. Although most revitalization strategies acknowledge that mass retailing is not essential for downtowns, festival marketplaces² have been built in downtowns in the 1970s and early 1980s. These places were heavily dependent on tourists and offered a unique shopping experience, attracting customers back to the city. Then, in the 1980s and 1990s, a few shopping centers were built in downtown areas, such as Circle Center in Indianapolis (Indiana) and City Center in Columbus (Ohio). Their scale was adjusted to account for the surrounding pedestrian spaces. They were planned to generate a vitality that would positively influence local retailers by creating additional jobs and sales tax revenues, restoring social and community spirit with heightened civic pride, and encouraging shoppers to visit other downtown stores and restaurants (West & Orr, 2003).

1 Catalogue retailers have built their business by having customers place orders after seeing products in a mailed catalogue.

2 A high share of festival centers' space is devoted to specialty restaurants and food vendors. Retail goods tend to emphasize impulse and specialty items. A strong ambient entertainment theme is often present, with regular informal events featuring street mimes, jugglers, dancers, strolling musicians, and others (Beyard & O'Mara, 2005, p.17).

However, the scale of and pedestrian access to these downtown malls had to be carefully designed to avoid harming local retailers by capturing all retail expenditures. CBD retail is valued for its role as an anchor for the city, promoting urban life and limiting sprawl, and as a source of good jobs for residents. The focus should be on both economic activity and the generation of good jobs.

Other significant policies in the U.S. have included integrating distressed city centers with National Main Street programs, specifying Business Improvement Districts (BIDs) in city centers, and offering Centralized Retail Management Schemes (Robertson, 2007). National Main Street programs, proposed in the 1970s to prevent the deterioration of downtown neighborhoods, have initiated many downtown and neighborhood business district revitalization attempts. Their major approach was to combine historic preservation with economic development in a grassroots setting. These programs were adopted in more than 2000 communities, from small rural towns to urban neighborhoods³. The advantages of Main Street programs include flexibility, emphasis on cumulative incremental change, and heavy reliance on volunteer efforts and local private funding. Existing financial incentives and technical assistance for businesses have been integrated into Main Street programs. In small communities, however, program emphasis has been placed on small-scale redevelopment projects, such as façade improvements, preservation of old, traditional buildings, etc. One common feature is physical redevelopment via beautification projects. The main challenge has been to eliminate physical decay.

BIDs, on the other hand, offer a different scope for retail development and city center growth. They were initially adopted in Canada, and have been transferred to the U.S. in the 1960s. BIDs are time-limited, flexible funding mechanisms for improvement of commercial areas, and involve the commercial taxpayers in the designated area. They require an additional levy to be paid by these taxpayers, and give them managerial control and responsibilities for such attributes as cleanliness, safety, and image of the place, which all influence business success (De Magalhaes, 2012). BIDs involve private sector investments and collaboration. The goal is to stop and reverse the dramatic decline in the economic health and environmental quality of American cities by offering 'clean, green, and safe' services, such as CCTV and street cleansing, and place-marketing initiatives (De Magalhaes, 2012).

The policies adopted in the U.K. support retail vitality in inner city neighborhoods. The 'sequential approach' and 'town centers first policy' force local authorities to first assess all suitable town center sites for retail development. The conversion of edge-of-center sites, district and local centers, and out-of-center sites, are considered next (Guy, 2007). Town Center Management, also known as Centralized Management Scheme in the U.S., helps preserve retail units in city centers by offering a management team that organizes social activities and programs to help rebuild community spirit. A

study conducted in five contrasting town center management schemes in the south of England shows that strategic approaches, such as developing market plans and concepts, and introducing promotional techniques, help improve the physical conditions of city centers (Stubbs *et al.*, 2002). Jones and Hillier (2000) show that retail-led urban regeneration programs can be helpful because they serve as catalysts for (re)development of town centers. Most businesses act more creatively when local governments enforce such programs, which include physical, economic, and social interventions (appearance improvement, provision of land for new or relocated activities, employment opportunities, and community facilities). Strom (2008) indicates that several abandoned CBDs have been recently redeveloped as centers of entertainment and culture or as residential districts, with the increasing participation of the nonprofit sector, the real estate industry, and the community. Coca-Stefaniak *et al.* (2009) show that, across Europe, informal place management schemes or hybrids of formal and informal schemes can be effective.

Wrigley and Dolega (2011) offer empirical insights into the impact of two factors for the resilience of city centers: 'diversity' of a center's preexisting retail structure; and entry of corporate supermarkets into town centers/city streets. Their findings suggest that the diversity of small and independent retailers builds an essential mix of interdependent retail businesses, which is vital for the economic viability of city streets. In addition, the corporate supermarkets have a positive spillover impact on other retailers and, in contrast to the common view, nondetrimental impacts on small retailers. Besides these two factors, U.K. retail planning policy has been dominated by two major approaches, 'town-centers first' and 'sequential test'. These two approaches support infill development in town centers before considering other sites. For this reason, they support the economic resilience of town centers. Retail policies have been more restrictive in other Western European countries, in particular Belgium, West Germany, the Netherlands and Scandinavia, followed by France, Spain, Portugal and the UK. Initially, Italy, Switzerland, and Austria banned large-scale retail developments because of the opposition of local chambers of commerce and local legislative bodies (Davies, 1995).

Whether such policies are best to increase the economic resilience of city centers is a significant question, because it is not always best to offer a plan or project or program for city center development. For example, the city center of Istanbul has been recently the focus of such development, and an open-air shopping center was proposed to be built right at the heart of the city center in Taksim Square. Citizens objected to the idea, and the proposals by politicians (not urban policy makers) have been fiercely opposed. Sometimes, spontaneous planning should be given incentives and policy makers should let the idea survive in a competitive market without any intervention. In such cases, resilience can be improved by the adaptation of traditional retailers to competitive market environments with innovative strategies. In Turkey, for

3 <http://www.preservationnation.org> [accessed on 20 June 2012].

example, retailers offer 24/7 service reaching homes with one phone call. Other strategies have been the offering of specialized products such as organic grocery items or dairy products, the offering of black market goods at reasonable prices, or the clustering of small, independent retailers selling specialized goods and services. Such strategies make these outlets more unique and preferable when compared to organized retailers, and 'spontaneous policies' help retailers survive without any government intervention. The level of resilience increases with such strategies.

2.1.2 SUBURBAN RETAIL CENTERS

The other issue related to the economic resilience of retail is the poorly performing malls, which are also referred to as 'white elephants' (Evans-Cowley, 2005) or 'dead malls' (Parlette & Cowen, 2011). A new shopping center incurs high land development costs for municipalities, because developers select large sites at the urban fringe, where land is cheaper, large lots are available, and stores are close to consumers in the suburbs. Municipalities have to provide infrastructure and pay for traffic-related costs (Irwin & Clark, 2007). When these centers do not perform well, high vacancy rates, low consumer traffic, and poor management become costly to both the owner and the community. Mall owners or public officials then either tear down the building and redesign the area, or adapt the existing building to another use, such as office spaces, hospitals, or recreation centers. In fact, big-box power centers have replaced post-war suburban malls, thus further changing the shopping center phenomenon (Parlette & Cowen, 2011).

In order to decrease the number of such centers, government officials should consider obsolete industrial zones and infill opportunities for shopping center investments (Evans-Cowley, 2005; Guy, 2007; Banister, 1997). Infill development, re-urbanization of traditional centers, new mixed-use suburban enclaves, and edge cities, combined with efficient mass transit, coordinated regional planning of transportation and land use, congestion pricing, and parking cash-out programs, would all offer viable solutions to retail-related traffic problems (Cervero, 1996). Demolition bonds, white elephant ordinances (*i.e.* obligation to remove or reuse the facility within twelve months of its closure), and adaptive reuse can also revive these centers (Evans-Cowley, 2005). When developing a shopping center, the focus should not only be on shopping, but also on leisure, tourism, and cultural/entertainment activities (Jones & Hillier, 2000).

After the 2008 global crisis, shopping centers have re-invented their business models and managers have focused on centers' competitive qualifications. For example, new design schemes for shopping centers, such as themed shopping streets or open-air design, have increased the survival of shopping centers. The recession did not have the same impact on retailers in shopping centers as compared to city-center retailers. Unquestionably, the general revenues of all retailers have declined, but center managers have offered certain exemptions to their retailers to sustain their business

and prevent vacancy rates from increasing (Haughney, 2009). Another strategy during the economic recession was to determine the tenant types for the centers. Pentecost and Andrews (2012) show that the tenant mix is particularly important to consumers' purchase intentions during recessions, as consumers tend to spend less on leisure, catered food, and apparel.

Communities in the U.S. increasingly object to off-center retail developments⁴ and point to losses that exceed gains. They have: adopted size limits (store size cap); limited the sales of nontaxable items (no more than 5-10%), which prohibits superstore and warehouse club formats, where 30% or more of the square footage is devoted to food; introduced new taxation policies at the state level, for example a special tax of 1% on retailers with sales over \$20 million annually; set design and site guidelines, such as pedestrian friendly buildings contiguous to streets; and instituted a \$5 per square-foot mitigation fee (Bernstein Research, 2005). Such measures help communities control the spatial distribution of large-scale retail developments. Infrastructure costs are mitigated by maximizing the efficient use of existing infrastructure.

2.2 SOCIAL ISSUES

Locating retail outlets requires knowing what customers want, where they are located, and whether their incomes match the price and market segment of the goods (O'Kelly, 2009). For this reason, most shopping centers are built in proximity to the target consumers, mostly at out-of-town locations. However, these centers exclude some segments of the community, such as the elderly, lower-income households, and households without cars. This exclusion implies the marginalization of these social groups. Social sustainability, which is a fundamental strategy to support economic resilience, suggests that location disadvantages are a form of social exclusion and should be minimized (Manzi *et al.*, 2010). Many traditional shopping spaces in city centers have lost attractiveness for consumers as shopping destinations and for retailers as a location for their outlets (Teller, 2008). Therefore, a major goal of an effective retail policy should be to enhance social inclusion and sustain social vitality in local shopping spaces. Two major issues are in need of investigation: the appearance of food deserts in inner city neighborhoods; and the privatization of public spaces. They are discussed in the following sections.

2.2.1 FOOD DESERTS

Effective accessibility and adequate transportation services can provide connectivity to key activities, including shopping (Lucas *et al.*, 2010; Paez *et al.*, 2010). The accessibility to retail facilities and the unfair treatment of marginalized social groups, such as the elderly, disabled, unemployed, lone parent households, low-income households, and households

⁴ According to Bernstein Research (2005), 35 big-box stores were blocked by local communities in 2004, and this number was expected to increase to 90 in 2009 in the U.S..

without cars, are important issues (Guy, 1998, 2007), because an increasing number of shopping centers can only be accessed by private cars. Even households with cars may prefer not to pay for the associated fuel costs. In the inner-city neighborhoods of cities in developed countries, such as the U.K., the U.S. and Canada, the number of supermarkets or large grocery stores has decreased and few independent stores, small supermarkets or discounters remain. These outlets offer less varied and affordable healthy food (Larsen & Gilliland, 2008; Cummins & Macintyre, 2002; Wrigley, 2002). The accessibility to such food has decreased for specific groups, and people have to travel outside their neighborhood for assorted, cheaper goods (Larsen & Gilliland, 2008). Such inner-city neighborhoods are referred to as *food deserts*, and have become the topic of recent research that identifies social exclusion and health inequalities in urban areas.

The goals of research on food deserts are to: identify their characteristics (Bitler & Haider, 2011); analyze related government policies (Larsen & Gilliland, 2008; Wrigley, 2002); locate actual food deserts (Bader *et al.*, 2010; Hallet IV *et al.*, 2011; Larsen & Gilliland 2008; Smoyer-Tomic *et al.*, 2006); and measure accessibility to food (Paez *et al.*, 2010). British policy and programs suggest that improving accessibility and introducing alternate means of transportation are keys to tackle social exclusion in inner-city neighborhoods (Wrigley, 2002). Larsen and Gilliland (2008) suggest that municipalities introduce financial incentives, change zoning and parking regulations in downtown areas, and enforce inner-city development and revitalization strategies.

Various Geographical Information Systems (GIS) applications and accessibility indicators have been used to assess food deserts. Bader *et al.* (2010) use kernel density and distance to measure disparities in food environments, analyzing vehicle ownership rates, public transit access, and impediments to pedestrian travel. The findings show that not only physical distance but other characteristics, such as high crime rates and hazardous traffic, deter consumers from shopping at local stores. Smoyer-Tomic *et al.* (2006) use minimum distance and coverage methods to assess supermarket accessibility at the neighborhood level. Larsen and Gilliland (2008) investigate spatial equity by using a network-based GIS method for both walking and public transit accessibility in London, Ontario. Paez *et al.* (2010) compare the accessibility of retail food and fast-food locations, and use the spatial expansion methodology to specify distance travelled as a function of customer characteristics (age, income levels, and household structure). They find that fast food restaurants located in the suburbs are more accessible than retail food outlets, and that Montreal has several food deserts, particularly near the center of the city and in some isolated parts of the periphery.

2.2.2 PRIVATIZED PUBLIC SPACES

Shopping centers have become the new public spaces of both suburban areas and downtowns (Ghosh & McLafferty, 1987; Garreau, 1992; Banerjee, 2001). However, they are owned by private entities and are not, in fact, public spaces. Erkip (2003)

shows that the urban poor are excluded from those spaces in Turkey, because they are privately owned and serve only people with disposable income. Staeheli and Mitchell (2006) show that mall owners do not consider these spaces as gathering places or a new kind of downtowns, and do not allow for all the user rights that a really public setting would offer. They suggest that shopping centers are purposefully built to limit access, and are designed to attract a certain market niche, providing a feeling of safety and comfort to the targeted consumers. They also suggest that youth access is restricted because of their challenging and disruptive behavior. On the other hand, youth are regarded as important customers, spending 50% of their earnings on clothing, entertainment, and fast food. Consumer behavior is controlled in shopping centers, in contrast to most public spaces, and the major task is to consume. Retailers design these spaces to enhance consumption, but not social activities.

Southworth (2005) considers various types of suburban public spaces and analyzes their implications for urban design in terms of pedestrian connectedness, comfort, visible and accessible transit alternatives, places for social activities serving people of various ages, ethnicities, and social groups, mixed-use characteristics, street scale for comfortable pedestrian crossing, controlled or uncontrolled automobile access, parking, scale and design. His findings, based on a field survey and in-depth interviews, imply that the new forms of suburban public spaces have attributes similar to those of main streets. Shamsuddin and Ujang (2008) define place attachment as the bonding established between people and places, using field surveys, in-depth interviews and systematic field observations. They identify influential attributes, such as accessibility, vitality, and diversity/choice, and conclude that only traditional shopping places have such attributes. Therefore, new retail areas are deliberately designed to resemble traditional shopping streets.

2.3 ENVIRONMENTAL ISSUES

Aside from the preservation of natural ecosystems, the general goals of environmental sustainability and ecological resilience are to minimize air and water pollution, use energy resources effectively, and establish efficient solid-waste disposal systems involving recycling (Bromley *et al.*, 2005). Properly-controlled retail center development may contribute to these goals in two ways: by decreasing water pollution, energy consumption and the urban heat island; and by reducing negative traffic impacts. The following sections focus on these two goals and identify the specific impacts of retail units. Other issues, such as raw material usage, waste management and the volume of packaging and recycling (Bobe & Dragomir, 2010), are classified as retail managerial issues independent of location, and therefore are not included in this review.

2.3.1 NONPOINT SOURCE WATER POLLUTION, ENERGY CONSUMPTION, AND THE URBAN HEAT ISLAND

Developers have built more off-center shopping centers,

predicting that suburbs would absorb this new retail space. However, residents, environmentalists and planners argue that excessive retail development has been accompanied by impervious parking areas that increase both storm water runoff—washing nitrogen, heavy metals, and sediments into urban streams—and local urban heat island (UHI). Enhanced UHI requires more energy for cooling in the summer. The reliance of consumers on cars encourages developers to build larger parking lots, creating stand-alone shopping centers surrounded by a sea of parking (Beyard & O'Mara, 2005). For example, a typical shopping center requires four parking spaces per thousand square feet of Gross Leasable Area (GLA)⁵, and, as a result, large impervious areas are built for parking. In addition, the box-like structure of the buildings increases their negative impacts on the UHI. These boxes are built to be economically efficient and functional, but not environmentally friendly. Wal-Mart has begun building solar panels on the roofs of their big-box stores, which reduces the negative impacts of these buildings on the UHI.

These impacts can be reduced by such policies as the 'sequential approach' and 'town centers first' adopted in the U.K. (Doak, 2009), because they promote the development of traditional city centers, urban regeneration plans and programs, and brownfield redevelopments, leading to compact cities. Such cities decrease the ecological footprint of urban areas and reduce energy consumption and pollution, because they encourage walking, have improved public transport access (Bromley *et al.*, 2005), and involve smaller land parcels and buildings with smaller parking facilities. Green roofs on big-box stores also help reduce the UHI. New Urbanism offers new parking designs, such as "lining a parking deck with tiny retail spaces occupied by offbeat and artsy businesses"⁶, and encourages traditional mixed-use city centers with smaller retail stores, more landscaping elements, and less parking spaces. There are no quantitative studies assessing the energy consumption, water pollution, and UHI created by retail developments.

2.3.2 TRAFFIC-INDUCED ENVIRONMENTAL ISSUES

Retail centers built at the outskirts of cities on major traffic arterials or transit interchanges achieve high visibility and accessibility, but attract heavy traffic, which congests the transportation network and also generates a high number of accidents due to the necessarily large number of turns. In addition, the use of cars, instead of public transit, increases energy consumption and pollution emissions (Mazza & Rydin, 1997), and therefore airborne pollutant concentrations (carbon monoxide, nitrogen oxides, hydrocarbons, and ozone). Banister (1997) points to a 36% increase in car ownership across Europe between 1980 and 1990, with transport accounting for over 25% of CO₂ (greenhouse gas) emissions in the U.K. An effective retail policy should minimize the use of private cars, promote developments readily accessible by public transportation, promote clustered units attracting

multi-purpose trips (Guy, 2007), and adopt an integrated retail and transport development policy, such as in Singapore (Ibrahim, 2002).

The importance of local shopping and the decrease in shopping travel have been a focus in Europe. Banister (1997) investigates the impacts of density, settlement size, and employment location, and suggests that shopping areas should be promoted at higher density locations to reduce trip lengths and the number of car trips, with easier access to public transportation. Local shopping is to create a sense of community and to enhance neighborhood quality of life. However, Handy and Clifton (2001) suggest that increasing local shopping opportunities in a typical U.S. city is not an effective strategy for reducing automobile use, because people make trips to multiple stores and do not always choose the closest stores. They find that most residents walk to local stores only occasionally. Bartlett (2003) analyzes the economic viability of 'local walk-to shopping' in newly designed 'traditional neighborhood developments' in the U.S., with data on household expenditures, sales, and the population density necessary to support establishments in various categories. He finds that neighborhood retail districts are unlikely to survive on local walk-to shoppers alone.

Construction of a retail center creates several traffic-related strains on the environment. Retail centers increase the traffic load in the vicinity, particularly during evenings and weekends, and congestion can occur without warning. Boarnet *et al.* (2004) show that the construction of a supercenter, such as Wal-Mart, generates traffic and circulation problems, with impacts on trip length and frequency. While the average distance traveled to a super center is longer, the number of trips may be smaller, but this is not easily assessed due to cross shopping. For this reason, the use of total vehicle miles traveled (VMT) as an indicator of traffic impact is ambiguous. Retail centers cause many changes in the transportation system of an urban area. For example, the total number of accidents around major shopping centers is greater than in nearby non-retail areas (Cuyahoga County Planning Commission, 2000). Boarnet *et al.* (2004) show that travel-related supercenter costs per mile for time, fuel, parking and accident risk imposed on the driver, and the external costs, such as traffic delays and air quality impacts, are high⁷. In the Bay Area (California), they find that the personal cost of motor vehicle travel is \$0.71 per mile, and the external cost ranges between \$0.30 and \$0.60. The additional cost of traffic due to a supercenter may range from \$33 million to \$256 million.

Cervero (1996) tests, with a discrete choice model, the relationship between mixed-land uses and non-auto commuting, with a focus on neighborhood retail activity, and finds that the likelihood of non-auto commuting increases significantly with neighborhood density and mix. The quality of the transportation mode is also an important factor. Gautschi (1981) analyzes the impact of transportation modes on consumers patronizing different retail centers, and finds

⁵ <http://www.cnu.org/node/1360> (accessed 08/23/2007).

⁶ <http://www.cnu.org/node/1360> (accessed 08/23/2007).

⁷ For estimated values of the costs, see Boarnet *et al.* (2004).

that consumers consider a combination of retail center attributes (assortment, center design, hours of operation) and transportation mode characteristics (travel time, cost, performance, safety). The application of such patronage models could assist policy makers in allocating budgets for transportation improvements. Ibrahim (2002) finds that, in addition to conventional distance, travel time and travel cost, shoppers consider transport mode/travel attributes, in particular comfort, effort, and tension⁸. Comfort accounts for 15.3% of the variance, tension for 12.9% and effort for 12.9%.

3. TOOLS AND MODELS FOR RETAIL PLANNING

Retailing has unique characteristics, because its goals are both profit making and public urban service, hence the clash between public and private sectors. Public sector leaders try to eliminate retail saturation and offer an equally accessible, efficient retailing network that will have a minimal impact on the urban transportation network. Private sector leaders, on the other hand, try to maximize their profits and absorb all of the disposable income available in the urban area. A balance between these two goals is necessary for effective and sustainable land use development and urban growth. Therefore, the relationship between retailing unit attributes—such as size, number of stores, tenant mix, design, visibility, and access—and trade area characteristics—such as population size, income and age structure, housing, employment patterns, and distance to the center—gains importance in analyzing existing retail planning strategies and policies. Decision makers must answer the following questions: 1—Where do customers come from? 2—What is the interaction between distance and retail center attraction? 3—What is the probability that a customer from a given residential area will patronize a store at a specific location?

Retail planning considers two major approaches to answer such questions. The qualitative approach involves a set of plans, strategies and development schemes, whereas the quantitative approach involves trade area models. The former provides specific steps to overcome the detrimental effects of urban decentralization, and the latter is used to assess the existing distribution of retail supply and demand so that new strategies and policies can be designed and adopted. The two approaches are intertwined and can be used simultaneously to achieve urban resilience.

Retail trade area models provide a good approximation of real-world retail interactions, and help policy formulation for future retail and urban development. With available demographic, socio-economic and physical data, and geographic information systems, trade area models can become effective tools for location analysis, site selection, and shopping center design, and can be applied to commercial zoning, design ordinances, and land use regulations.

Trade area models are useful for local governments designing

retail policies, such as inviting or banning large-scale retail centers. Using a multivariate model of local development incentives, Lewis (2002) finds that retail is the land use most likely to benefit from financial incentives or zoning changes. Wassmer and Edwards (2005) point to the links between local government reliance on sales tax and the likelihood of zoning vacant land for retail: 1—a fiscal surplus is generated by non-residents paying local sales taxes, and 2—lower levels of public services are provided to retail centers, as compared to other land uses. Lewis (2001) shows that, while trying to attract retail development, local governments discourage non-retail developments that do not generate sales tax revenues. In addition to favorable zoning, some local governments welcome supercenters with tax subsidies or infrastructure assistance [Boarnet *et al.*, 2005].

The cost of providing additional infrastructure and public safety services, the softening of revenues from existing businesses, and the costs of environmental mitigation, can all be burdens for local governments. The preferences of local governments in accepting or rejecting retail centers shape the pattern of retail development. There is a downside to accepting retail activities, as they lead, in some cities, to urban sprawl and retail decentralization. Some local governments, being aware of these effects, control for the development of very large retail centers by introducing size caps, which can be estimated by trade area models. Big-box stores are the specific object of these regulations, making the development of supercenter and warehouse club stores difficult. Limiting the space devoted to nontaxable goods has been another strategy for controlling the development of big-box stores (Bernstein Research, 2005). Trade area models, in particular multivariate regression models, can also be used to determine the maximum amount of space devoted to nontaxable goods.

The construction cost per square foot decreases with the increasing size of a shopping center. Thus, building a larger retail establishment is economically more advantageous for developers. Clauretie and Jameson (2002) estimate a hedonic price model and find that federal tax laws encourage the construction of smaller centers, despite the economies of scale available with larger properties. The effects of urban growth policies on retail must also be assessed. Nelson *et al.* (2004), using regression analysis, find that urban containment policies do not restrict retail/warehouse construction. However, Wassmer (2006), also using regression analysis, finds significant impacts of land taxation and urban growth boundaries (UGB) on retail activity outside central cities. For every 10% increase in the number of years that the UGB has been in place, retail activity at the urban fringe declines by 0.2%. Therefore, UGBs appear useful in reducing retail decentralization. Wassmer (2002) suggests that retail decentralization is undesirable when costs are higher than benefits for the whole metropolitan region, and shows that reliance on property taxes, instead of general sales taxes, can reduce retail decentralization.

Trade area models can also be used to assess the effectiveness of selected policies, by including policy variables in regression

⁸ For a detailed description of these factors see Ibrahim (2002: 286).

models. Benjamin *et al.* (1998) include four indices of land-use regulation⁹, land availability and cost of capital, and find that the supply of retail space is negatively affected by stricter land-use regulations and less land availability, while capital costs do not have a significant impact. Liu (1970) measures the impact on retail sales of total local government expenditures (LGE) and per capita local government revenues (LGR), derived from non-property taxes. He finds that LGEs, in particular on police and fire protection, have the third strongest positive impact on both total retail sales and retail sales per capita, after population and income. In contrast, LGRs have a negative impact on retail sales. Liu suggests that these findings are of practical importance to local governments with respect to tax rate changes and revenue collection.

The literature does not provide direct applications of retail trade area models to assess social and ecological sustainability. However, trade area models can be helpful to monitor social change in local retail areas when new retail facilities are opened. In-depth interviews and surveys with users, shop owners and local authorities, on consumption habits and trends, mobility patterns, shopping experience and expectations, and relevant policies, can be useful to assess this change. In particular, comparing local shopping spaces in the public realm with shopping malls can be helpful. Gorter *et al.* (2003) assess, through a survey in the Netherlands, the impact of a new shopping center on shopping behavior. Using a logit model, they analyze the nature of shopping trips and the size of retail market areas, and assess whether shopping center visits reduce visits to city center local shopping spaces. They find that city centers are not adversely affected by out-of-town centers in terms of *fun shopping*, but that some customers abandon these centers in cases of *run shopping*, when predetermined goods must be bought quickly, and economic efficiency is the primary driver. Thus, when the allocation of shopping centers can be controlled, traditional shopping areas can survive and enhance social sustainability. Teller (2008), discussing generic similarities and conceptual differences between shopping malls and main streets, measures the attractiveness of the two forms of retailing by using structural equation modeling, including such factors as accessibility, parking, retail and non-retail tenant mix, merchandise value, personnel, atmosphere, orientation and infrastructure. He finds that the set of retail tenants and the atmosphere are the most important factors in all cases, with accessibility and personnel of secondary importance.

4. CONCLUSIONS

This paper has explored the economic, social and environmental aspects of city center and large-scale retail developments in relation to urban resilience. It has described the issues and policies related to a more sustainable retail development. This review has pointed out that the

most important tasks for retail planning and policy are the preservation of traditional shopping environments and solving the problem of 'death malls'.

Increasingly, however, suburban malls at the urban fringe are gaining importance in the retail hierarchy. They offer a retail environment for specific social groups, but exclude the elderly, low-income households, and households without cars. Ideally, all types of retail outlets should be integral parts of the retail hierarchy. However, trends in suburbanization and edge city development, consumer mobility, retail chaining and decentralization, and zoning regulations, all encourage out-of-town developments.

Shopping centers have a significant impact on the local and national economy. Their share of the retail market is relatively high (*i.e.* higher than traditional street retailers, bazaars, *etc.*) and, increasingly, they have become sources for land rent revenues, because, once they are built at a given location, they support local development and growth. Local authorities prefer such developments because of the taxes they collect and the ease of monitoring shopping center sales. Central authorities also prefer such developments because they demonstrate how much an area has developed and urbanized, which is a sign of progress and advancement. Together with the global spread of the consumption culture, these large-scale venues reinforce the need, in one's daily life, to spend time for consumption. Today, in many countries, the share of gross domestic product occupied by retail activities is high when compared to earlier decades. This large-scale, global organization of the retail sector provides unique opportunities for chain stores located within these centers. These retailers enjoy the benefits of agglomeration economies, ease of access, the marketing power of a larger venue, and pedestrian traffic. For the traditional retailers on city streets, however, the situation is reversed, and these retailers face economic instability. Their competitive power is smaller and their ability to adapt is more erratic. Central business districts appear in danger of losing their most important actors, the independent traditional retailers.

Public authorities face a complex problem. Their major goal should be to organize and foster economic stability through various programs and policies. They should follow Jacobs' (1961) advocacy planning spirit in developing these programs and policies. For shopping centers, these advocates are the center managers, who need to consider profit making for their tenants and themselves. However, for traditional retailers, these advocates should be public authorities. Along with making profits, they need to consider the economic vitality and viability of the most important part of the city, the central business district. They need to explore new methods to improve and increase the economic resilience of these retailers. Town Center Management Schemes and Business Improvement Districts could be exemplary programs for city centers. Cities with diversified economies have avoided the effects of recession, and diversity of shopping venues should similarly be beneficial for economic resilience. A careful consideration of the tenant mix of city centers and shopping

⁹ The four indices are: 1—the index of The American Institute of Planners (AIP), 2—Wharton Index to assess the level of land-use regulation, 3—the Segal and Srinivasan (1985) Index as a measure of the percentage of land made unavailable by regulation, 4—the Rose Index (1989) to gauge land availability in the presence of water restrictions. See Benjamin *et al.* (1998) for details.

centers will help all stakeholders, and public authorities are in a position to control, monitor and sustain such programs.

Jacobs (1961) suggested that to be sustainable, cities should have a critical residential density. A critical density should be fostered for commercial areas as well. Fostering mixed-use planning strategies, developing walkable areas, and enhancing mass transportation will encourage people to visit city centers, and therefore to shop at street retailers more frequently.

Trade area models can be used to eliminate or mitigate some of these problems and maintain the retail hierarchy, thus attaining a balance between retail supply and demand. For example, when trade area boundaries are determined, regression models can be used to estimate retail supply and demand levels in each trade area, and these estimates can help limit the amount of supply both in inner city neighborhoods and urban fringes. Further, their integration into urban policy would help set supply standards and preserve local retailing and public spaces, thus preventing food deserts and privatized and exclusionary public spaces.

The relationships between social and environmental sustainability and retail development have been explored less than that of economic sustainability, primarily because of the importance of profit making and the involvement of the private sector in retailing. While trade area models have been used for site selection, potential sales estimation, and decisions about new center developments, public sector officials may also use them for public policy and management. Further research should focus on integrating social issues into trade area models, and on assessing water pollution, energy consumption, urban heat island, and traffic externalities generated by retail centers.

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