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THE SPATIAL DISTRIBUTION OF FIRE SERVICES IN IZMIR, TURKEY

Zeynep Elburz

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ABSTRACT

During the recent decades, the transformations in the global economy, technology and economic development have stimulated the growth of service sector, especially the growth of producer services at the international level. The producer services support the growth of economy and investment and contribute to a great extent to the restructuring of mega-cities in developed and developing countries. Especially, in some of the developed countries, suburban sub-centers have more producer services than the center of the city. This study investigates the spatial distribution of FIRE services employment and firms in Izmir which is the third most important city of Turkey and has been integrated with international trade for centuries. Free trade policy and globalization increased trade with other countries. Service sector covers more than fifty percent of employment in Izmir as one of the characteristics of a post-modern city. The growth of service sector follows the growth pattern in Turkey.

Spatial distribution of FIRE firms is investigated according to the concentric zones. The results of the analysis reveal that FIRE firms are mostly concentrated in the core area of Izmir as in the large cities of developing countries, due to highly educated people who they need, high quality cultural and public services demanded by these people, their customers and their linkages with the other firms are mostly found in or near the core area. This trend is within the concept of central place theory. However, there are recently developing two suburban sub-centers which cover one third of FIRE firms due to their higher income background. Also, the distribution of FIRE firms is investigated with respect to sub-sectors. According to these results, while the ratio of financial and insurance firms are higher in the core area, the ratio of real estate firms is higher in the intermediate zone and in the periphery due to large amount of construction going on in these areas. Thus, this trend stimulates multi-center development of the city to some extent as one of the major characteristics of a post-modern city.

Key words: Service sector; FIRE service employment; FIRE firms; Space economy; Izmir

JEL codes: D39 G21 G22 L84 L85

1. INTRODUCTION

After 1980s', the transformations in the global economy, and technological and economic development have stimulated the growth of service sector, especially the growth of producers services at the international level (Schettkat and Yocarini, 2006). The producer services support the growth of economy and investments (Coffey and Polese, 1989) and contribute to a great extent to the restructuring of large cities in developed and developing countries. Large cities play an important role for attracting producer services since they are advantageous in having comprehensive facilities, convenient transportation, easy access to information, skilled workers, large markets, and high investment return. The growth of office buildings to accommodate the growing demand for producer services and headquarters began to change the appearance of the cities (Daniels, 1991; Hall, 1996). In certain large cities, the CBD still maintains its predominant economic position; in other metropolitan areas growth is shared between the CBD and suburban downtowns; and in yet other types of urban areas, the CBD is losing ground relative to growing sub-centers (Shearmur and Coffey, 2002). Therefore, there is a considerable interest in the intra-metropolitan location of these activities. Since the 1980s, it has been observed that the ratio of services is increasing in Turkey due to introduction of national neo-liberal policies (Turkstat). The present study investigates especially the growth and spatial distribution of FIRE firms in Izmir which is the third largest city of Turkey and historically has a long international business background.

There are several studies about the functional and spatial transformation of mega-cities with respect to changing employment composition in developed and developing countries. Most previous studies on the location of FIRE firms are focus on market economies and can be characterized with some dispersion at the regional and metropolitan levels. In the European and North American market economies, these services are mostly concentrated in the selected regions and metropolitan areas, and especially in the major global cities (Sassen, 2001). The paper by Pandit (1991) explores the relationship between service sector composition and economic development and the impact of urban population size on this relationship in 48 countries. Urban population size is seen to impact service sector composition differently with respect to development levels of the countries. According Coffey and Bailly (1992), producer services are mostly concentrated in the large cities in Canada since highly educated people who they need, high quality cultural and public services demanded by these people, their customers and their linkages with the other firms are mostly found in the large cities. Because of high income dependency of many services, the service sector starts to increase only after

the basic needs of the primary sector are met and most demands for manufactured goods are satisfied. Searle (1998) explores the distribution of producer services within Sydney in the context of globalization, technological change, and location of labor. It is concluded that globalization appears to have reinforced the traditional central city focus of Sydney's producer services sector; although it is observed that producer services here have dispersed away from the CBD itself. Another study by Park and Nahm (1998) illustrates that spatial and sectoral reorganization of producer services which has begun to change the urban structure of Seoul. Hong Kong experienced an important transformation of economic activities from an industrial state to a center of services, namely manufacturing-related producer services, in terms of employment and of contribution to GDP, as it is expected in most advanced economies (Tao and Wong, 2002). Although one of the earliest multi-center developments was observed in Los Angeles metropolitan area (Guiliano and Small, 1991), producer services were decentralized but mostly agglomerated relatively near the CBD. Producer services were decentralized in the Washington, DC region as well as Greater New York area (Muller, 1997). Technological developments and the residential preferences played an important role for this trend (Harrington and Campbell, 1997) as well as economic growth (Higgins et al., 2006). According to Shearmur and Coffey (2002), in certain US urban agglomerations, the CBD still maintains its role and its predominant economic position; in other metropolitan areas, growth is shared between the CBD and suburban downtowns; and in yet other types of urban area, the CBD is losing ground relative to growing edge cities. For instance, according to Boiteux-Orain and Guillan (2004), empirical studies of North American cities show that high order producer services tend to leave the CBD. As an example, Fujii et al. (1995) show three suburban centers in Atlanta each have more FIRE jobs than its CBD as already illustrated by Coffey (2000). Garreau (1991) indicates that in New York, despite the existence of an excellent office center, there is more office space in edge cities than the whole of midtown Manhattan. Despite this decentralization trend of producer services in the major cities of the developed countries, their location patterns are found to be complex in the Paris region, each sector behaving differently and each sector displaying combinations of concentration and dispersal (Shearmur and Alvergne, 2002).

Developing countries differ from developed countries with respect to spatial distribution of producer services. In the developing countries or recently developed countries, producer services are mostly located in the center of the large cities in order to be close to the headquarters of the important firms. Globalization has resulted in concentration of

headquarters in the core area, resulting in concentration of producer services in the CBDs (Han and Qin, 2009). Han and Qin (2009) show that producer service firms in Shanghai are concentrated in a large inner core. Three factors explain the spatial distribution of producer service firms in Shanghai. The first is the historical legacy. Similar to other Asian cities, the inner city offer a wide range of service facilities and it is prestigious. The second is the state planning and the third is market institutions. Aguilar et al. (2003) study reveals that while the population of the core of Mexico City is decreasing, a mixed use development is taking place in the periphery of the city including producer services. However, despite the multi-center development of the city the greatest ratio of services is taken place in the center of the city (Suárez and Delgado, 2009). Berköz (2000) illustrates that three quarters of FIRE firms are located in the intermediate zone in Istanbul, which has accessibility to the both historical core as well as the sub-centers in the periphery. Comparison of these results with the previous study by Dokmeci and Berköz (1994) reveals the decentralization of FIRE companies to a large extent from the core to the intermediate zone between 1990 and 2000 in Istanbul due to lack of development of convenient office space in the historical core of the city.

This paper examines the way the location and growth of FIRE services have responded to the restructuring process of Izmir. The organization of the paper is as follows. Background information about its population and employment growth, the division of labor according to the sectors and their spatial distribution according to the concentric zones and revitalization of waterfront projects are given in the second section. In the third section, the spatial distribution of FIRE firms is explained according to the concentric zones and districts. Final section is devoted to a conclusion and suggestions for further research.

2. BACKGROUND INFORMATION

The evolution of Metropolitan area of Izmir is conditioned by the historical development of the spatial structure as one of the important port of the Aegean Sea. In 17th century, the most important trade center in the Eastern Mediterranean was Izmir (Braudel, 1984). Ottomans provided the security for the development of international trade in Izmir starting in the 17th century (Holt, 1973; Goffman, 1990). It was an international seaport and it provided integration of Ottoman economy with European dominated world economy (Eldem, et.al.,1999; Faroqhi, 2004). Izmir engaged in trade capitalism in the seventieth century and to industrial capitalism in the nineteenth century (Faroqhi, 1984) by exporting agricultural products from its rich hinterland. This city and its hinterland experienced major changes,

especially by developing a pattern of export-oriented economic structure. These changes also caused the transformation of social and spatial pattern of the city. Consequently, Izmir has gained a colonial structure that reflected itself in the urban structure. As a result of this spatial development, a new type of residential pattern appeared, namely, the ‘Anglo-Saxon suburbs.’ The upper income groups of foreign managers excluded themselves from the rest of the city (Sonmez, 2009). On the other hand, banks, office buildings, hotels and post offices were built in the city center in order to provide modern office space for the international business relationships. During the second quarter of the 20th century, industrial and economic development increased. By the 1970s, large-scale housing projects, organized industrial sites and campus-type office complexes started to develop.

Izmir is the third most populous city of Turkey. It is an industrial, business, cultural and tourism center. Izmir is a cosmopolitan city with its rich historical background and socio-cultural life. Each year it attracts many tourists due to its abundant historical sites and nice Mediterranean climate. With respect to growth pattern of employment and its sectors, between 1985-2000, total employment grew 41%, industrial sector 45 % and service sector 67% (see Table 1). The higher growth rate of services illustrates one of the post-modern characteristics of Izmir.

Table 1. Employment Changes in Turkey and Izmir Province (1.000)

	1985			1990			2000		
	Total Emp	Industrial Emp	Service Emp	Total Emp	Industrial Emp	Service Emp	Total Emp	Industrial Emp	Service Emp
Turkey	20.556	3.096	5.235	23.381	4.177	6.515	25.997	4.666	8.719
İzmir	902	228	348	1.080	287	431	1.281	331	582

For the spatial analysis of population and employment distribution, three zones are taken into consideration as in some of the previous studies (Dokmeci Berköz, 1994; Shearmur and Coffey, 2002) : (1) The core area has a 3 km radius and includes the district of Konak; (2) the First Ring radiates in a diameter of 7 km from the center and consists of the districts Bornova, Karsiyaka, Buca, Bayrakli, Karabaglar; and (3) the second ring includes the rest of districts Cigli, Gaziemir, Balçova, Narlıdere and Güzelbahçe in the periphery of Izmir (see Figure-1).

Figure 1. İzmir Metropolitan Area



Between 1980-2010, the spatial distribution of population according to the concentric rings reveals that while the population ratio of the core area was substantially decreased and that of the first and second rings were increased as in the many post-modern cities (Dokmeci and Berkoz, 1994). The second ring started to develop during the last decade of the 20th century and the ratio of its population was increased from 15.0 % in 2000 to 16,6 % in 2010 (see-Table 2). It is expected to continue to grow more due to construction of large housing projects in the periphery of the city (Sonmez, 2009). These changes in population and employment spatial distribution in İzmir illustrate its demographic and socio-economic transformations which represent the characteristics of a post-modern city.

Table 2. Distribution of Population in İzmir Metropolitan Area Zones

	1980		1985		1990		2000		2010	
core	843.525	66,1%	995.745	64,3%	874.597	49,1%	782.309	34,4%	405.580	14,6%
1st ring	432.736	33,9%	553.182	35,7%	905.879	50,95	1.150.670	50,6%	1.907.655	68,8%
2nd ring	-	-	-	-	-	-	340.409	15,05	460.868	16,6%
total	1.276.261		1.548.927		1.780.476		2.273.388		2.774.103	

Then, since the 1980s, the re-emergence of suburbanization and development of sub-centers in counter of decrease of inner city population were observed due to macro-economic changes, development of alternative transportation modes and telecommunication, and globalization in İzmir (Sonmez, 2009) and as in other countries (Gordon et al.,1986). During the last decade, a waterfront redevelopment project was proposed by the municipal government between Turan and Alsancak, to transform a former factory and warehouse site to a new CBD area. This project is based on an International Competition organized by the

Municipal Government in 2001, and won by architect Jochen Brandi. According to this project, along the waterfront, offices, retail facilities, hotels, administrative buildings, social and cultural centers, entertainment and residential buildings were proposed. The role of the new CBD is to provide the business and cultural backbone of the city between the different districts. Although this project has not yet been completely implemented, service sector is flourishing in Bornova due to construction of a large mega-mall in this district and stimulating the growth of the second most important sub-center in Izmir.

In 2003, New City Center master Development Plan was prepared by the Metropolitan Municipality of Izmir and this plan predicts that CBD of Izmir will expand along the Izmir Bay and incorporate Bayrakli District. However this proposal was not expected to be implemented in a short time because of lack of demand for a new CBD.

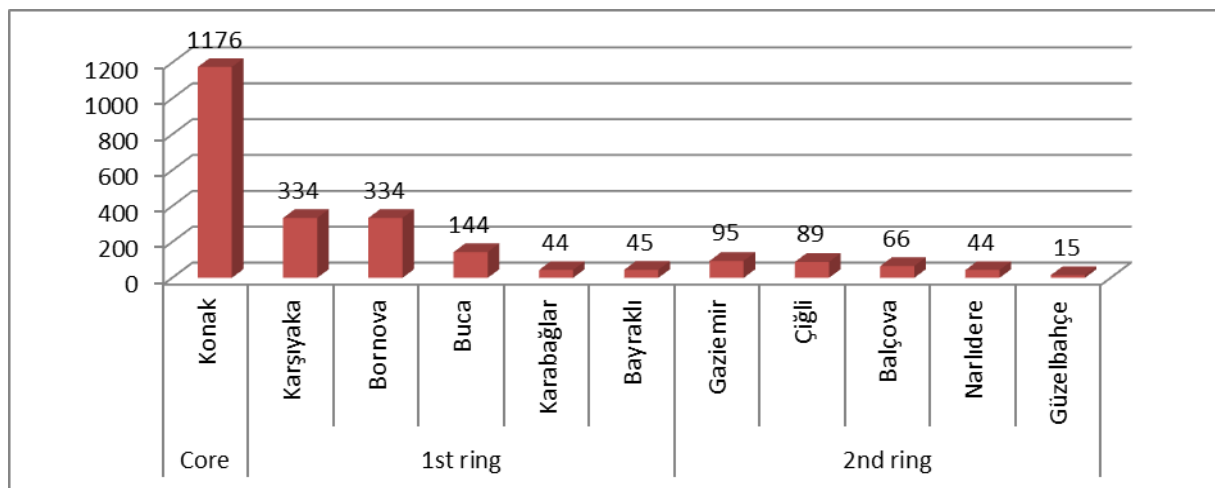
Despite the sub-centers developments in Karsiyaka and Bornova and many new commercial and industrial establishments along the highways in Izmir, many new different types of land uses were observed in the core area of Izmir. Thus, the inner city is not declining as in some metropolitan areas of other countries (Pomeroy and Webster, 2007). Revitalization of the inner city is provided by the government regeneration projects. There are also transformation projects from squatters to quality apartment buildings in the suburbs (Sonmez, 2009) which can stimulate further relocation of employment relative to population growth and economic development. Thus, Izmir has a dynamic urban structure and historically integrated with international business networks, and it can be useful to investigate the trend and distribution of FIRE services which play an important role for its globalization and economic development.

3. SPATIAL DISTRIBUTION OF FIRE FIRMS IN IZMIR

After 1980s, Turkey has experienced constant urban development stimulated by free trade policy and new industrialization frequented by population decentralization and formation of new transportation networks. New urban developments play an important role for the modernization of industry, commerce and services and advantages in having comprehensive facilities, convenient transportation, skilled labor and large markets. Following this trend, the spatial distribution of growth of services is mostly a function of spatial redistribution, driven by the sectoral relocation of labor and employment and by differences in each sector's spatial orientation.

In this study, for the spatial analysis, the necessary data about the number and addresses of FIRE firms is taken from Izmir Chamber of Commerce. In 2011, there were 2386 FIRE firms in the Metropolitan Area of Izmir. Investigation of spatial distribution of FIRE firms according to concentric rings reveals that 49% of the FIRE firms (1176 firms) were located in the core area (see Figure 2) as in some of the Canadian large cities (Shearmur and Coffey, 2002) and developing countries cities (Berkoz, 2000; Aguilar et al. 2003). One of the reasons of their agglomeration in the core area is to be close to their major customers to facilitate face-to-face contact and due to existence of improved organization of markets clustering in the same urban space to reduce communication and transportation costs (Fujita and Tisse, 2002). Similar to other metropolitan areas of developing countries, the core area attracts more FIRE firms due to its historical and prestigious background and infrastructure advantages (Han and Qin, 2009).

Figure 2. Distribution of Total FIRE Firms in Izmir Metropolitan Area

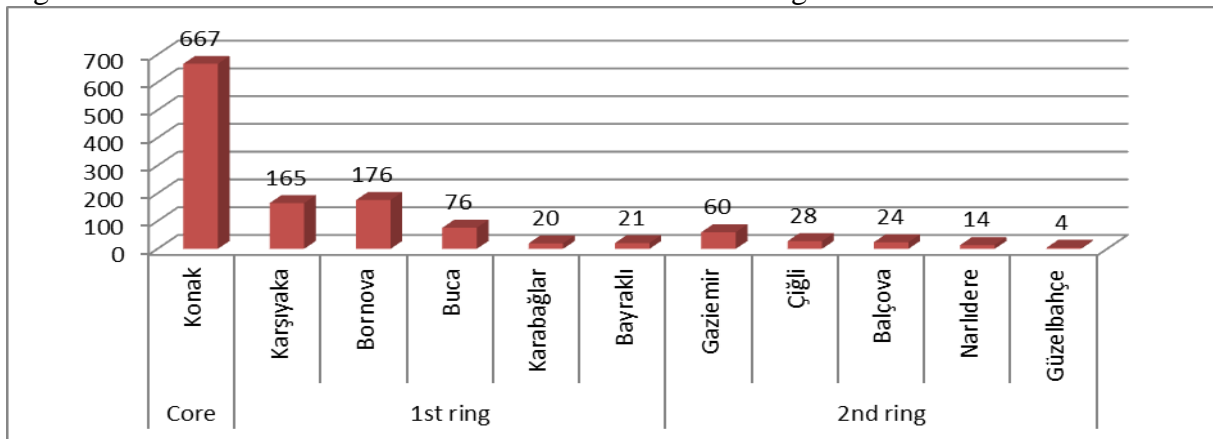


The first ring comprises 38% (901 firms) of FIRE firms. Two third of these firms are located just in two districts, Bornova and Karsiyaka which are both higher income districts as Gordon and Richardson (1996) claim for US cities that initial movement of suburbanization followed by the decentralization of firms to increase their access to labor pools. At the same time, development of telecommunication and transportation systems has contributed to this hierarchical decentralization as in some other cities (Esparza and Kremeneç, 1996; Ingram, 1998). The major development of these districts started as the summer home settlements of the European merchants in the 19th century (Issawi, 1980) and provided socio-economic infrastructure for the leap-frog development of sub-centers which is common for the historical cities since their core areas do not allow necessary space for the growing service sector. The second ring has started to develop in the periphery of the Izmir Metropolitan area during the

last decade of the 20th century. In 2000, only 13% (309 firms) of FIRE firms form smaller aggregations in the second ring, following the expansion of the city and development of peripheral sub-centers. Thus, location of FIRE firms displays an essentially monotonic distance decay pattern with a strong central area.

The spatial distributions of the types of FIRE firms according to the concentric zones are also investigated. There are 1255 insurance firms in Izmir metropolitan area and their distribution according to the concentric rings shows the following pattern. 53% (667 firms) of them are located in the district of Konak which is the core area as in several cities (Bailly, 1995; Shearmur and Coffey, 2002; Gaschet, 2002; Suarez and Delgado, 2009; Yi et al.,2011). 37% (458 firms) is located in the first ring in which as major sub-centers, Bornova comprises 14% (165 firms) and Karsiyaka 13% (165 firms) of insurance firms are located (see Figure 3).

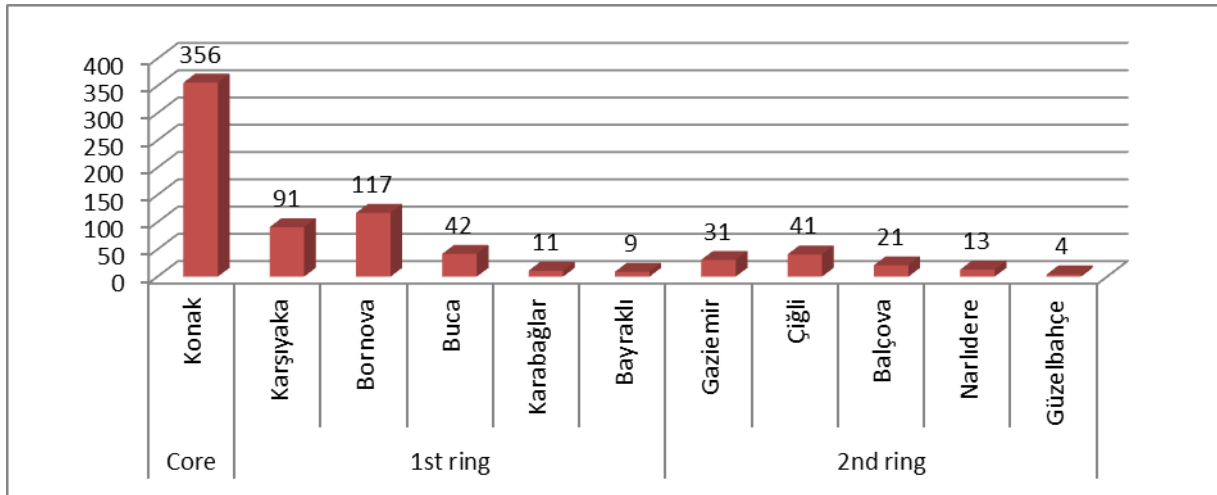
Figure 3. Distribution of Insurance Firms between Urban Rings in Izmir



The rest of the insurance firms are located in the other peripheral districts with much lower ratios. Thus, spatial distribution of insurance firms according to the concentric rings displays a pattern of monocentric distance decay from the center with a strong central area.

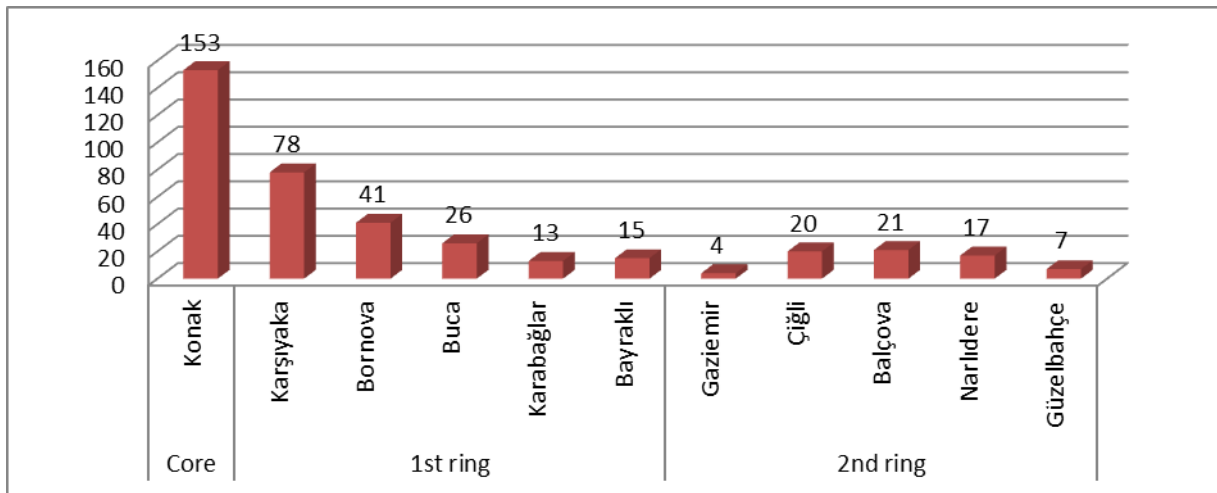
There are 736 financial firms in Izmir and 48% of them (356 firms) are concentrated in the core area (Konak district) (see- Figure 4) where the major business firms are located. 37% (270 firms) of financial firms are located in the first ring in which Bornova has 15.8% (117 firms) of financial firms and Karsiyaka has 12.3% of them (91 firms). These are the higher income districts. The rest of the financial firms are spread in the peripheral districts with much lower ratios. Thus, spatial distribution of financial firms according to the concentric rings displays a pattern of monotonic distance decay from the center similar to the distribution of insurance firms.

Figure 4. Distribution of Finance Firms between Urban Rings in İzmir



There are 395 real estate firms in the İzmir Metropolitan area and 39% of them (153 firms) are concentrated in the Konak district, which is the core area due to higher amount of construction going on in this zone (Figure 5). 44% (173 firms) of the real estate firms are located in the first ring, which is more than the core area. Karsiyaka has 20% (78 firms) and Bornova has 10% (41 firms) of the real estate firms which is higher than the other districts in this zone due to their higher income background. The rest of the real estate firms are located in the other districts with much lower ratios.

Figure 5. Distribution of Real Estate Firms between Urban Rings in İzmir



In sum, while the ratio of insurance and financial firms is higher in the core area than that of the real estate firms, the ratio of real estate firms is higher than that of financial and insurance firms in the first and second rings. One of the reasons for the concentration of real estate firms in the first ring is to benefit from locational advantages due to higher amount of construction

in this ring and the periphery, and the other one is to be near the core for spatial interdependencies among FIRE services in the metropolitan setting which is also supported by the previous studies (Hewings and Parr, 2007).

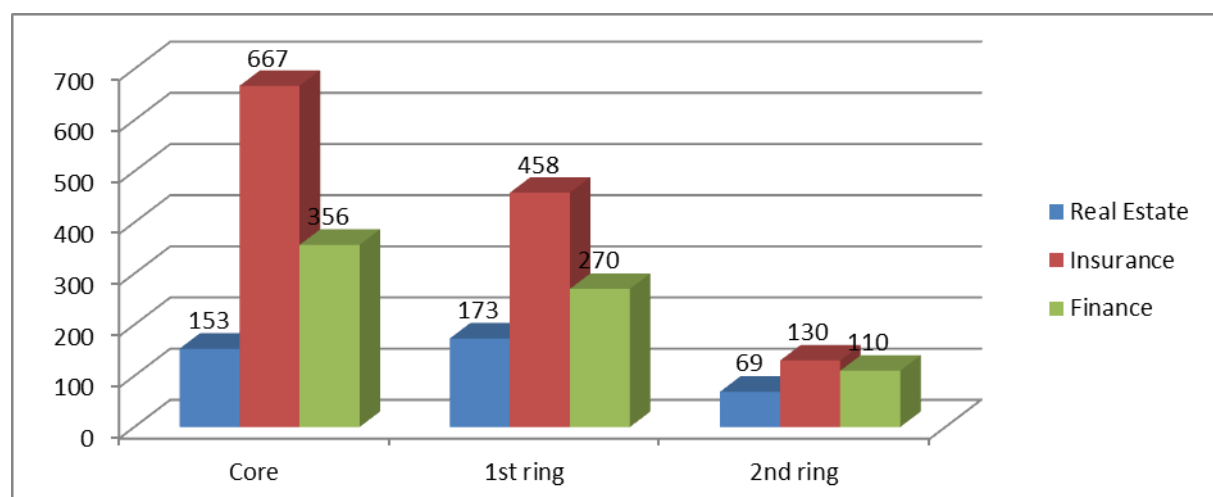
After clarifying the spatial distribution of FIRE firms in İzmir metropolitan area, the growth of these firms has been investigated. Distribution of percentage of FIRE firms in the metropolitan rings of Izmir from 1925 to 2011 shows that FIRE firms have preferred to locate in core area since 1925 (see Table 3). However recently it can be seen that core area has been losing its domination over all kind of FIRE firms.

Table 3. Percentage of FIRE Firms in Izmir Metropolitan Area between 1925-2011

	Insurance			Finance			Real Estate		
	Core	1st Ring	2nd Ring	Core	1st Ring	2nd Ring	Core	1st Ring	2nd Ring
1925-1950	-	-	-	100,0	-	-	-	-	-
1955-1970	100,0	-	-	63,1	26,2	10,8	50,0	50,0	-
1970-1990	78,8	12,1	9,1	52,8	34,5	12,7	-	100,0	-
1990-2000	65,1	23,7	11,2	56,8	24,0	19,2	42,7	44,0	13,3
2000-2011	48,8	35,1	16,1	41,0	39,1	19,8	36,9	35,1	28,0

Thus, the results illustrate that although the major concentration of FIRE firms is in the core area (Konak district), Karsiyaka and Bornova are developing as sub-centers and attracting more FIRE firms than the rest of the suburban districts (see Figure 6).

Figure 6. FIRE Firms in Izmir Metropolitan Rings



The development of sub-centers illustrates a leap-frog pattern since continuous growth between the core and sub-centers are prevented by the existing urban structure. The reasons of agglomeration of FIRE firms at these sub-centers are on the one hand, shortage of space for the new construction in the core area and provision of communication and transportation

systems at the metropolitan level, on the other hand, the higher income background of sub-centers supports the location of these firms. So, polarization of FIRE services will increase as income increases and suburbanization continues.

4. CONCLUSION

During the post-modern era, the growth of service sector is observed in the large cities of both developed and developing countries. FIRE services are an important section of service sector and play a crucial role in the restructuring of the economy and globalization of cities. According to the previous studies, while the FIRE firms are mostly concentrated in the core areas of the large cities in developing countries, they are decentralized according to the multi-center development of metropolitan areas in most of the developed countries. In this paper, the growth and spatial distribution of FIRE firms are investigated in the Metropolitan Area of Izmir, which is the third largest city and one of the important industrial and cultural centers of Turkey with along historical business background in the Aegean Sea. In Izmir, FIRE services have a historical past starting in the mid 19th century due to exporting agricultural products from its port and increasing international trade with European Countries. Its international trade activities have continued in the 20th century also.

For the analysis, first the spatial distribution of population and employment is investigated according to the concentric zones. According to the results of the study, during the last two decades, while the ratio of population of the core area was decreased, that of the first and second ring was increased. With respect to the distribution of total and service employment, a similar pattern to population spatial distribution is observed.

The analysis of spatial distribution of FIRE firms according to the concentric rings illustrate that they are mainly concentrated in the core area of Izmir, which is similar to the trend in the metropolitan areas of developing countries. Two factors explain the spatial distribution of FIRE services in Izmir. The first is the historical legacy, which traces back to Izmir's sea trade experiences in the East Mediterranean. Similar to other developing country cities, the inner city of Izmir offers a wide range of service facilities and the prestigious status associated with inner-city location. The second is market institutions. The spatial distribution of land prices, which is characterized by the location of the highest values in the core area and the lowest in the periphery of the city. The spatial distribution of FIRE firms displays a mono-centric distance decay function with a strong central area. While the spatial distribution of financial and insurance firms follow this pattern, real estate firms make a pique in the

intermediate zone. Thus, certain firms can not afford to be located in the core area; they are located in the periphery. In order to attract these firms to their districts, peripheral municipal governments need to provide necessary infrastructure to serve easy access to different parts of the city and appropriate physical environment for the development of modern office buildings.

FIRE services are an important economic sector in global cities. In this connection, this study contributes to the understanding of FIRE services development by assessing the spatial distribution pattern and explaining their development in relative to other sectors transformation of an important developing country port city. The growths of FIRE service firms stimulate the need for restructuring of CBD and development of new sub-centers due to limitations with respect to historical urban structure and insufficient infrastructure of the old CBD. The planning of waterfront revitalization projects between the CBD and the sub-centers by giving new functions to deserted factories, benefiting from sea-shore amenities and improving transportation infra-structure are expected to contribute to the development of both directions. As a result, a polycentric spatial structure is in the process of development by increasing urban-suburban interaction.

This study reveals a fundamental transformation of the space economy of large cities with respect to the development of FIRE services. Therefore, it can contribute to an understanding of urban restructuring process in large post-modern cities of developing countries. Finally, it is also important to remember that final urban output is the product of interdependency between their unique geography, institutional framework, culture, history and their economic forces.

The results of this study can be useful to urban and regional planners, policy makers, investors, and real estate developers in developing countries. Further research is suggested on the distribution of firm size and function, more focused on particular FIRE services and their impact on the restructuring of CBD's, their interdependence with production system and economic development.

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