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A STUDY OF SPATIAL PATTERN OF SUBURBANIZATION PROCESS : -- A CASE STUDY IN JAKARTA SUBURB--[1]

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As well as urbanization trends in many other countries, the pattern of urbanization in Indonesia has two dominant trends. First, on the national scale, there is an increasing concentration of people and production in one or a relatively few places in the form of large metropolitan agglomerations. The ultimate form of this process is the megalopolis. However, the pace of transformation is dangerously, while it lacks the capital and physical resources and sometimes also necessary experience and skills. Second, in the metropolitan regions themselves, the trend is inverted. The more affluent classes are moving into the surrounding countryside to escape the social and environmental consequences of excessive concentration; the physical congestion and the breakdown of urban services and amenities. In both cases, however, the population and activities in the metropolitan regions continue to grow, although their central cities may be decaying and losing both.

Studies carried out in Asia, Latin America and Africa in the early 1980s found that towns in densely-settled rural regions located away from metropolitan and frontier region were growing at roughly equal to natural population growth, indicating that employment creation for their hinterland labor force has been close to nil in most cases (Matheur, 1982; Kammier and Swan, 1984).

Suburbanization is a process involving the systematic growth of fringe areas at a more rapid than that of care cities, and as a lifestyle involving a daily commuting to job places in the city. Being significantly different from the urbanization and suburbanization processes in USA and Europe, recent studies on Asian countries have stressed that the continuing outward expansion of the biggest metropolitan region has eroded the longstanding distinction between rural and urban. The demographic magnitude of urban transformation in Asia is unusual, due to rapidly expanding urban systems arising within densely populated countryside. This trend has been driven by economic expansion and has resulted in extended areas of mixed land use on city peripheries.

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[1] Paper presented in IGU-LUCC Pre-Congress Meeting in Tsukuba, 8 August 2000

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The notion of rural-urban continuum has recently passed out of use, mainly because there no longer seem to be significant differences between urban and rural ways of life. It gradually became clear that a contrast dichotomy between urban and rural societies was to simple; there were graduations of urban and rural. Furthermore, McGee (1987) argued there was a distinctive Asian variation of the usual pattern of suburbanization called as *desakota* region. A *desakota* region is a complex entity. It encompasses both the city itself, with typical urban land use and associated compact and densely settled on sprawling areas that are closely enmeshed with the urban economy. During this process, the countryside is urbanized without the hinterland population necessarily moving into the city. Rural economics and lifestyles become submerged under the expansion of urban economic activity and culture, but do not disappear altogether. This idea of *desakota* seeks to identify characteristic regions of Asia that are neither urban nor rural, and to combine some of the features of both types of region into a continuously changing symbiotic relationship. McGee describes *desakota* regions as previously agriculture areas with an intense mix of settlement and economic activity, comprising agriculture, industry, housing development and other land use.

This paper focuses on describing the process of urbanization and sub-urbanization process in Jakarta metropolitan or so-called Jabotabek region, which mainly influenced by in-and out-migration process as well as its natural growth. This development results on a distinctive spatial pattern on many aspects of social economic activities in the region.

General trend of urbanization/suburbanization in Indonesia

The urbanization as a general physical phenomenon in Indonesia is still recent. In 1930 only 7.5% of the total population lived in cities and towns. In 1961, 15% of the Indonesian population lived in cities and towns. The urban growth in Indonesia increased after World War II mainly caused by the push factor of the insecurity in the rural areas. Many related studies show that a rapidly growing rural population in the country exceeding its limit and resources of support continues to provide a "rural rush" which is far greater than the "urban pull" excerpted by social and cultural amenities and economic opportunity. Population growth and urbanization in Indonesia since the end of World War II result primarily from a stalk or slowly declining birth rate and rapidly declining death rate.

In the early stage of urbanization in Indonesia, the push factor from rural areas, especially in Java could not find a complementary pull factor in the urban areas, in the sense of a demand of industrial labor force. In fact, apart from this over employment, there is greatly disguised unemployment, not officially registered. So, the conclusion has to be that the push factor towards urbanization, caused by the unemployment in the rural areas, does not actually find a real complement in a pull factor, consisting of demand for labor force. Nevertheless these push factors are working and lead to migration into the cities, because there is an acute need for many people to meet in their villages, supporting hopes, that they will find better opportunities in the city. The lack of employment in the primary sector (agriculture) and industrial sector causes a strong push factor. The effect is that many migrants forced to enter the tertiary sector of trade, service and transport, characterized by a structural over-employment. In the meantime, powerful social pull factors are working from the towns, but still more from the cities, because the poor villager hopes to find a new and better way of life.

Since the last three decades, there have been some interesting and not always anticipated shifts in urbanization patterns, from 1961 to 1971 the average of city growths anointed to 3.6 % per year, 68 % of which resulted from natural increase, while the remaining 32 % was the result of net migration. From 1971 to 1980, the average rate of city growth increased to be 4.0 % per year, 48 % of which was the contribution of natural increase and 52 % was the contribution of net migration. In 1980, the total population lived in urban areas (cities and towns) reached 22.3 % of total population. From 1980 to 1990, the average rate of city growth increased to be 5.37 % per year and the urban population reached 30.9 % of the total population, but between 1990 and 1995 this had fallen to 4.8% per year, while the 35.9% of population lived in urban areas has reached 35.9% of total population. Due to such trends, it believed that the future of demographic structure of Indonesia would be more characterized by population mobilization and urbanization process rather than population growth and birth control problems. Table 1 shows the negative trends in fertility rate of Jakarta City as well as national level. It figures out that the decreasing trend of fertility rate of Jakarta City is faster than national average.

Table 1. Trends of Total Fertility Rate (TFR) of Jakarta City and National Level

Fertility Rate	Period					
	1967-1970	1971-1975	1976-1979	1981-1984	1986-1989	1991-1994
TFR of Jakarta	5175	4780	3990	3250	2326	1925
TFR Growth of Jakarta	-7.6	-16.5	-18.6	-28.4	-17.2	
TFR of Indonesia	5605	5200	4680	4055	3326	2802
TFR Growth of Indonesia	-7.2	-10.0	-13.4	-18.0	-15.8	

Note: TFR is number of birth for every 1,000 women

The Growth of Jabotabek Region

Since 1970s the growth rate of Indonesia's largest city, Jakarta, has slowed down. Between 1971 and 1980 it grew at 3.9% per year, but between 1980 and 1990 this had fallen to 3.1% per year, and between 1990 and 1995 are 2.1% per year. However these mean that growth rate of the urban population within the boundaries of Jakarta has slowed; a lot of the new growth is concentrated just outside the boundaries of the city. The development of Jakarta's suburbs is the result of the suburbanization process, especially through the expansion of new housing and industrial areas. This is because urban areas of the Botabek[3] region are absorbing more than their share of the growth of the city (Jakarta City) especially due to the accelerated growth of Tangerang and Bekasi in the last two decades. This hinterland zone grew by 107% between 1980 and 1995 (Table 2).

Jakarta City had a population of 9.55 million in 1999. The urban facilities and infrastructure of Jakarta have largely supported industrial activity growth in Bogor, Tangerang and Bekasi. The growing concentration of socio-economic activities in Jakarta and its surrounding areas has attracted many people, particularly from rural areas, to the metropolitan region. All the kabupaten surrounding Jakarta City experienced population increases. During the period 1971-1980, there is a gradual shift of population growth from Jakarta City to its suburbs. During this period, the population growth of Jakarta and its suburbs are almost similar. During the period 1980-1995, the population growth of Botabek Region passed out the population growth of Jakarta City.

[3] Jabotabek is the Jakarta metropolitan region which consists of the following local administrations: Jakarta, Bogor, Tangerang and Bekasi, whereas Bogor, Tangerang, and Bekasi administratively belong to the Province of West Java, located within the immediate vicinity of Jakarta (the hinterland of Jakarta).Botabek is the above region without the Jakarta City.

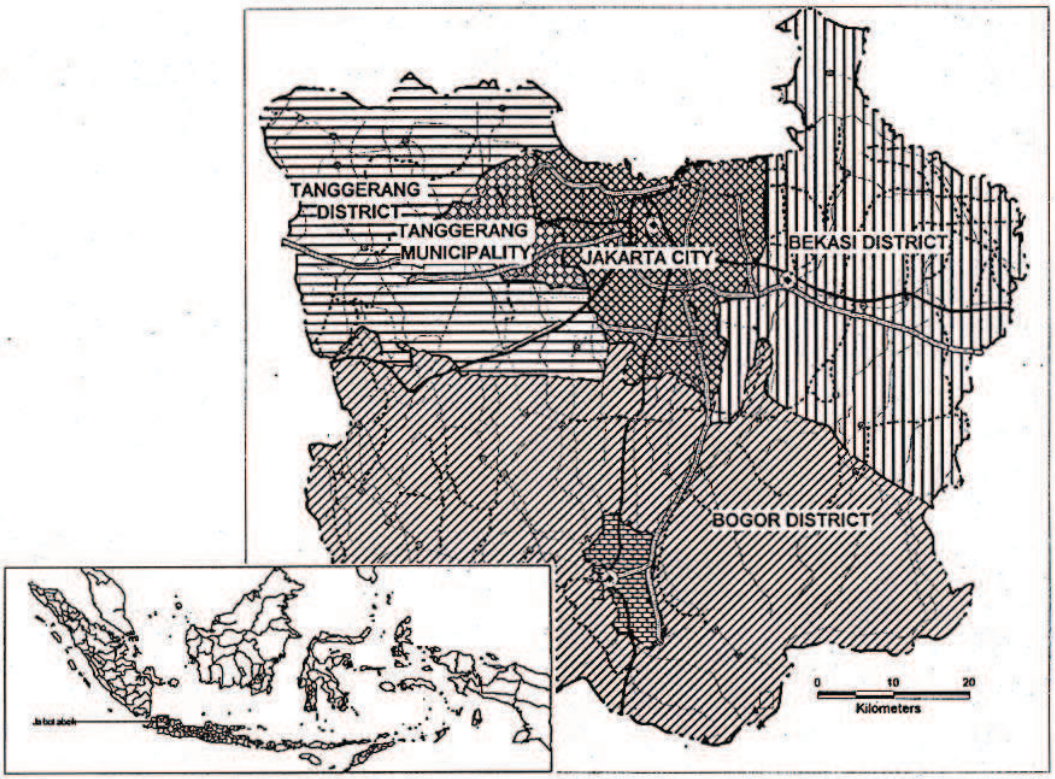

Figure 1. Jabotabek Region

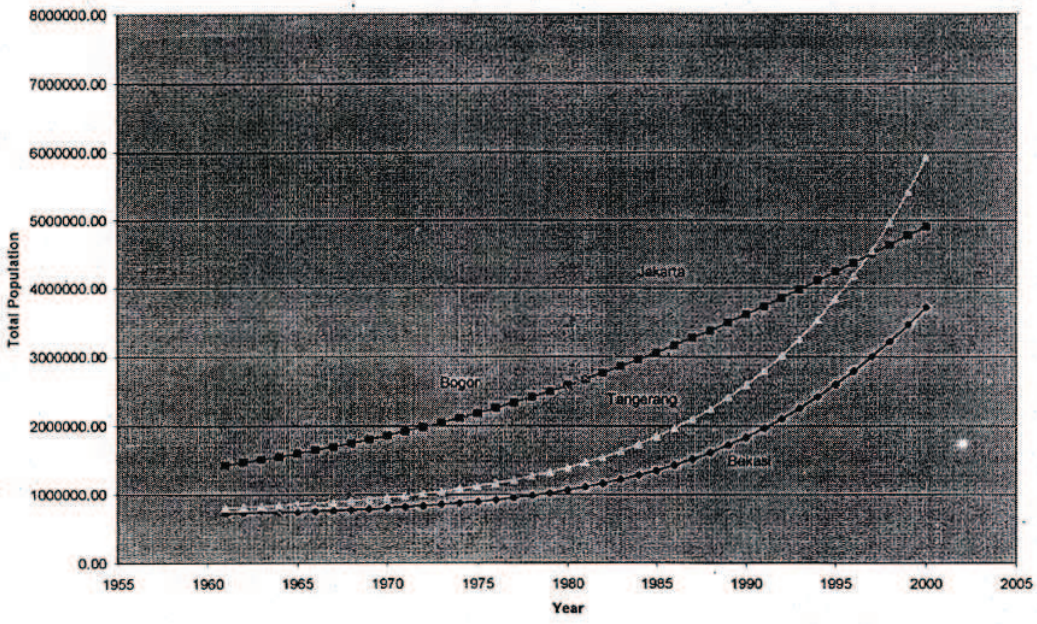

Figure 2. Population growth curves of Jakarta, Bogor, Tangerang and Bekasi from 1960 to 1998

Table 2. Population, population density of Jabotabek Region 1960-1995

Year	Indicator	Unit	Jakarta I	BOTABEK (II)				Total JABOTABEK I+II
				Bogor	Tangerang	Bekasi	Total II	
1961	Population		2906533	1468248	850390	692817	3011455	5917988
	Population Density	pop/km^2	4909.68	486.17	641.80	433.01	506.55	905.31
	Area	km^2	592	3020	1325	1600	5945	6537
1971	Population		4576009	1864652	1066695	830721	3762068	8338077
	Population Density	pop/km^2	7795.59	617.43	805.05	519.53	632.92	1276.69
	Area	km^2	587	3020	1325	1599	5944	6531
1980	Population		6503227	2741013	1529072	1147516	5417601	11920828
	Population Density	pop/km^2	9883.32	907.32	1154.02	893.70	962.27	1895.81
	Area	km^2	658	3021	1325	1284	5630	6288
1990	Population		9456477	4038806	2764988	2104392	8908186	18364663
	Population Density	pop/km^2	14306.32	1195.27	1976.40	1418.05	1422.58	2652.70
	Area	km^2	661	3379	1399	1484	6262	6923
1995	Population		9160500	4716784	3771526	2720174	11208484	20368984
	Population Density	pop/km^2	13858.55	1362.05	2939.61	1833.00	1799.11	2955.88
	Area	km^2	661	3463	1283	1484	6230	6891
1961 -1971 pop growth		%	**57.4**	27.0	25.4	19.9	24.9	40.9
1971 -1980 pop growth		%	42.1	47.0	43.3	38.1	44.0	43.0
1980 -1995 pop growth		%	40.9	**72.1**	**146.7**	**137.0**	**106.9**	70.9

The dynamics of spatial variation of population distribution in Jabotabek Region has strong relation with spatial variation in economics growth. The Table 3 shows current status (1990, 1993 and 1996) of population, administrative area, and economic growth of Jabotabek Region. Tangerang and Bekasi are the highest dynamic areas in the region. Their population and economic growth have reached more than 4% and 90% per year, respectively the highest in the country.

Table 1. General description of Jabotabek Region

Region	Indicator	Year			Growth (%/year)
		1990	1993	1996	1990-1996
Jakarta	Number of desa	260	265	265	
	Number of kecamatan	43	43	43	
	Total Area (km^2)	661.26	661.26	661.26	
	Population (1000)	7108.36	7395.00	7625.79	1.18
	Population Density	10750.00	11217.00	11526.00	1.17
	GDRP (Rp. billion)	13664.72	51106.46	66164.80	8.64
	GDRP/capita (Rp. 1000)	1922.35	6910.95	8676.45	7.37
	GDRP/km^2 (Rp.mill)	20664.67	77286.48	100058.68	8.64
Bogor	Number of desa	552	552	555	
	Number of kecamatan	34	39	40	
	Total Area (km^2)	3366.43	3462.28	3553.46	
	Population (1000)	3991.84	3932.04	5122.55	1.05
	Population Density	1185.78	1135.68	1441.57	0.17
	GDRP (Rp. billion)	1862.58	5378.24	7510.75	5.79
	GDRP/capita (Rp. 1000)	466.60	1367.80	1466.21	4.83
	GDRP/km^2 (Rp.mill)	553.28	1553.38	2113.64	4.91
Tangerang	Number of desa	360	395	395	
	Number of kecamatan	21	25	25	
	Total Area (km^2)	1398.57	1407.60	1414.08	
	Population (1000)	2764.99	3352.77	3624.14	4.69
	Population Density	1977.01	2381.91	2562.90	4.49
	GDRP (Rp. billion)	1179.42	4438.16	10055.04	21.38
	GDRP/capita (Rp. 1000)	426.56	1323.73	2774.46	16.00
	GDRP/km^2 (Rp.mill)	843.31	3153.00	7110.66	21.13
Bekasi	Number of desa	237	237	237	
	Number of kecamatan	20	22	22	
	Total Area (km^2)	1484.37	1484.37	1484.37	
	Population (1000)	2104.39	2159.87	2944.15	6.02
	Population Density	1417.70	1455.07	1983.44	6.02
	GDRP (Rp. billion)	808.81	4359.19	8915.83	26.42
	GDRP/capita (Rp. 1000)	384.34	2018.27	3028.32	19.10
	GDRP/km^2 (Rp.mill)	544.88	2936.73	6006.47	26.42
	Rice field land ratio	0.46	0.45	0.41	
BOTABEK	Number of desa	1149	789	1187	
	Number of kecamatan	75	86	87	
	Total Area (km^2)	6249.37	6354.25	6451.91	
	Population (1000)	8861.22	9444.68	11690.84	3.39
	Population Density	4580.49	4972.66	5987.90	3.87
	GDRP (Rp. billion)	3850.81	14175.59	26481.62	15.97
	GDRP/capita (Rp. 1000)	434.57	1500.91	2265.16	12.16
	GDRP/km^2 (Rp.mill)	616.19	2230.88	4104.46	15.38

Note: Indonesia is administratively divided into 27 provinces. A province is subdivided into several districts. There are three types of districts: *kabupaten* (district), *kodya* (municipality), and *Kota administratif* (administrative municipality). A district is subdivided into several *kecamatans* (subdistricts), and a kecamatan consists of several *desas* or *kelurahans* (villages). Kabupaten and kotamadya are administrative units at the same hierarchy. Kabupaten (district) normally covering a wider area than kotamadya, and the rural areas dominate the region. Kotamadya (municipality) is dominated by urban areas, corresponding to the status of *Shi* in Japan.

Migration to Jakarta

Concerning the major determinants of migration from rural area to urban area, many scholars try to distinguish the determinants to be pull factors (from the urban area) and

push factors (from the rural) (Jansen and Paelinck, 1981; Mazumdar, 1987; Kaida, 1992), along with the improvements in communication between rural and urban areas (Jansen and Paelinck, 1981). The main pull factor is expectation of better chances of income improvement or wage (Jansen and Paelinck, 1981; Mazumdar, 1987). The main push factors are conditions in the rural area due to over population and low agricultural productivity (Kaida, 1992). Strong push and weak pull in the Asian countries caused rapid growth of the urban informal sector and resulted in expanded slums around big cities (Kaida, 1992).

Almost all migration researches in developed and developing countries come to a strong conclusion that the net effect of migration is an increase of the income of migrants on average and that gross migration flows are very sensitive to income differences. Migration is a response of individuals to better opportunities, and should in principle increase economic welfare unambiguously. Apparently, population change is closely related to employment change that industrialization is a driving force in the early stages of urbanization, and that service employment takes over the mantle of employment generation in the later stages although it may not be sufficient to stem total employment decline (Drewett and Rossi, 1981; Mazumdar, 1987).

In the early stage of urbanization in Indonesia, the push factor from rural areas, especially in Java could not find a complementary pull factor in the urban areas, in the sense of a demand of industrial labor force. In fact, apart from this over employment, there is greatly disguised unemployment, not officially registered. So, the conclusion has to be that the push factor towards urbanization, caused by the unemployment in the rural areas, does not actually find a real complement in a pull factor, consisting of demand for labor force. Nevertheless these push factors are working and lead to migration into the cities, because there is an acute need for many people to meet in their villages, supporting hopes, that they will find better opportunities in the city.

The lack of employment in the primary sector (agriculture) and industrial sector causes a strong push factor. The effect is that many migrants forced to enter the tertiary sector of trade, service and transport, characterized by a structural over-employment. In the meantime, powerful social pull factors are working from the towns, but still more from the cities, because the poor villager hopes to find a new and better way of life.

Leaf (1994) pointed out factors, which support the trend of recent and rapid growth of suburban enclave housing in Jakarta. These are in terms of ideology (the political

necessity of building a modern city) and economics (the expansions of corporate sector housing development). In 1970's the local government of Jakarta City declared the city as closed city for any migrants in attempt to control the population growth of Jakarta City. The policy has never been succeeds to stop in-migration to the city. The Figure 3 and 4 show the distribution of in-migration flow to four districts in Jakarta City. In-migration flows reach their peaks in the period 1982-1992. Migration South and East Jakarta District have been predominated in migration flows to Jakarta City, total number of in-migrants in both areas reach almost 64% of total in-number of migrants of Jakarta during 1976-1998. The central Jakarta has lost its attractiveness as migration destination earlier than the other districts of the city. Most of the districts have lost their attractiveness from about the beginning of 1990s. Since those years, the destination of in migration has shifted to the suburb of Jakarta City (Botabek Region).

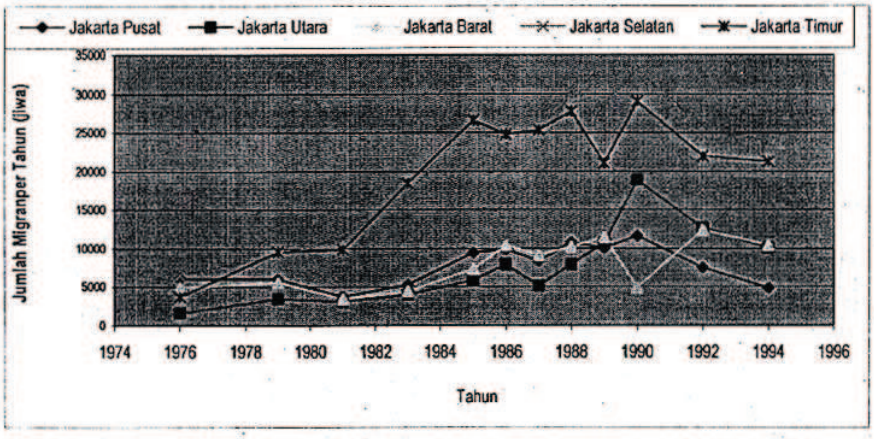

Figure 3. Migration flow to four districts in Jakarta City, from 1975 to 1994

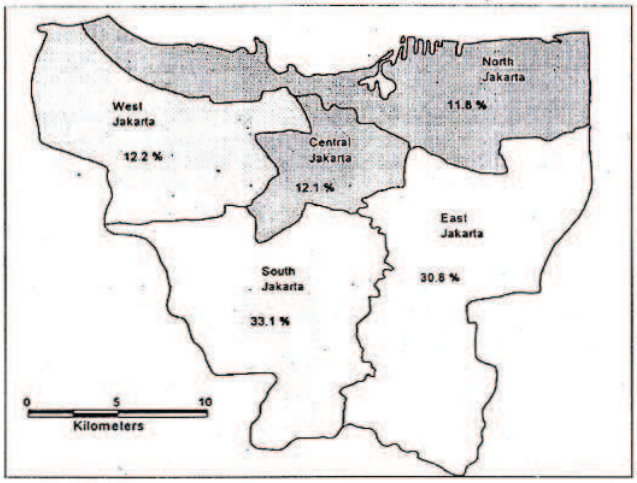

Figure 4. Distribution of total in-migrants to four districts of Jakarta City (%)

Table 4. Characteristics of migrants and non migrants in Jakarta City in 1995

Indicator	Jakarta City		
	Migrant	Non migrant	Total
% Male	43.7	50.6	50.1
Male by age group (%)			
0 - 9	5.5	18.3	17.6
10 - 19	18.1	21.8	21.6
20 - 29	47.1	21.3	22.7
30 - 39	20.7	16.3	16.5
40 +	8.7	22.3	21.5
Female by age groups (%)			
0 - 9	4.0	17.9	17.0
10 - 19	33.3	22.4	23.2
20 - 29	44.5	22.5	24.1
30 - 39	11.9	16.4	16.1
40 +	6.3	20.8	19.7
Population by age groups (%)			
0 - 9	4.7	18.1	17.2
10 - 19	26.7	22.1	22.4
20 - 29	45.6	21.9	23.4
30 - 39	15.7	16.3	16.3
40 +	7.4	21.5	20.6
Attending school (%)	12.5	31.9	30.6
Do not at school any more (%)	84.8	63.4	64.9
- Never/not completed Primary school	16.2	24.1	23.5
- Completed primary school	31.8	24.2	24.7
- Junior High School	17.9	18.4	18.4
- Senior High School	27.2	26.3	26.4
- More than High School	6.8	7.1	7.0
Illiterate	2.6	4.6	4.5
Economically active (%)	70.7	46.9	48.9
- working	91.9	87.5	88.0
- looking for work	8.1	12.5	12.0
Occupation			
- Professional/managerial	5.7	10.9	10.3
- Clerical workers	9.0	17.7	16.8
- Sales workers	20.6	26.4	25.8
- Services workers	34.3	12.4	14.9
- Agricultural workers	0.6	1.0	0.9
- Production workers	29.0	30.3	30.2
- Others	0.7	1.2	1.2
Reason to move			
- Occupation	22.5		
- Looking for works	32.4		
- Following family/relative	36.4		
- Others	8.7		

Table 4 shows characteristics of in-migrants of Jakarta City in 1995. In-migrants to Jakarta predominated by lower class (in term of economic and education level) and young generation within age group of 10-29. Number of female passed out number or of male migrants. Age group of female migrants mostly older than male migrants. Most of migrants are motivated to move by economic reason. About 71% of migrant are

economically active and working (91.9%), but many studies showed a significant number of disguised unemployment whereas informal services sectors is the main occupation.

According to the 1990 statistics for Jakarta City, and in spite of relatively high population growth, the amount of out-migration outpaced the amount of in-migration (Table 5). During period 1990-1995, the gap between out-migration and in-migration for Jakarta City widened. In the period, out-migration exceeded 823,045 (9.0% of Jakarta's population), while in-migration was 594,542 (6.5%). Throughout this period, the population growth for Jakarta City was 2.1% per year, down from the 3.1% growth experienced in the previous decade. Despite steady overall growth in the population of Jakarta City, Central Jakarta District experienced negative growth (-1.4%) in the period 1980 to 1990, while the population of Jakarta City's other districts continued to increase. The decrease in population in the center of Jakarta indicates a process of out-migration.

Table 5. Recent migration of Jakarta in 1980, 1990 and 1995

Migration Type	Year		
	1980	1990	1995
In Migration	746903	819571	594542
Out Migration	382326	993377	823045
Net Migration	364577	-173806	-228503

Recent migration: people conducted migration during last five years.

Suburbanization process

The flows of local migration from Jakarta City to its surrounding areas have not been followed by sufficient work place shifting, and this caused traffic congestion for commuter routes between Jakarta and its surrounding areas.

According Rustiadi study in one of Jakarta suburbs, Bekasi District, three stages can be identified in the development of suburbanization of Jakarta Metropolitan, namely: (1) pre-suburbanization process, (2) first stage of suburbanization, and (3) second stage of suburbanization (Rustiadi, 1999). These stages were determined characteristics of the spatial distribution patterns of the population and of urban and rice field areas; trend of in- and out-migration between Jakarta and its suburbs; and comparison of population and economic growth rates between Jakarta City and Bekasi District.

The urban development of Bekasi District was mostly a result of out-migration from Jakarta. Initially, it was the result of the expansion of *kampung*-type housing in the area

closest to Jakarta's boundaries, and then followed by the development of real-estate-type housing and industry in more distant areas (Rustiadi and Kitamura, 1998; Rustiadi *et al.*, 1999).

Jakarta City is characterized by the presence of a market dualism between highly 'modern' areas and vast areas of low-income neighborhoods or urban kampung (McGee, 1991). The Jakarta kampungs are inhabited mainly by rural migrants, who are mostly absorbed by the informal sectors or the margins of the formal sectors of the local economy (Somantri, 1995). Kampungs are usually located adjacent to urban centers. Kampung areas surround each of Jakarta's urban centers, from the core to the much smaller tertiary centers. There has been a process of systematic demolition of kampung in Jakarta for many years, particularly in the central part of the city, forcing many of the former inhabitants to move to other areas. Most of the lower-classes have moved only short distances (intra-city migration), whereas the middle- and upper-classes have tended to escape from the kampung areas to more distant and less populated areas. Only the middle- and upper-classes can afford such a move, especially when it is to the suburbs (Somantri, 1995) and they become commuters as a consequence. The poor are prevented from moving into the suburbs by the high cost of suburban housing because of legally required minimum standards for structure size, lot size and building methods (Stanback, 1991). Consequently, the outward migration of the middle- and upper-classes dominate the process of sub-urbanization in the Jakarta metropolitan area.

The rapid population growth and economic development in these regions threaten national efforts to preserve prime rice-producing areas. During the last three decades, a substantial amount of prime agricultural land in Java has been converted for industrial use or into large-scale residential areas, especially in Jakarta and its suburbs. A rough estimate indicates that between 1981 and 1986, more than 37,000 ha of rice fields in Java and Bali were converted to other uses, 44% of that were non-agricultural. Of that amount, half (22%) was used for settlement (Nasoetion and Rustiadi, 1990). In Bekasi District, it is estimated that about 2% of existing rice fields are being converted every year, of which 60% is used for settlement (Kompas, 1997).

The conversion of rural land to urban use in the suburbs of Jakarta is mainly by land and building development in the private sector, and can be divided into formal and informal private development (Archer, 1994). Real-estate companies carry out most formal development. Informal private development of land, which is not held under a

registered title and is therefore outside the land use regulatory control system, takes place around existing kampung or urban settlements and along public roads. About 70% of the new construction in Jakarta's suburbs is developed informally by the owner's themselves.

In attempt to describe the spatial pattern of "in-migration and out-migration" process in Jabotabek region, the total area of Jabotabek region split to be three zone based on according to the accessibility the center of Jakarta City (Figure 5).

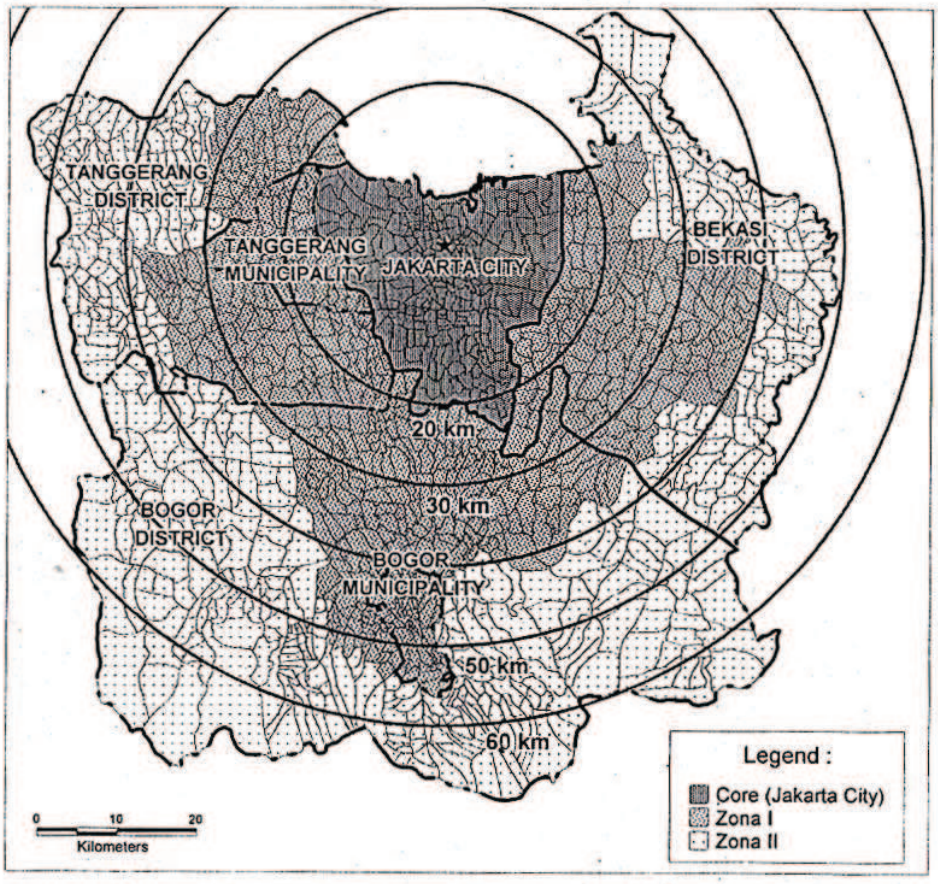

Figure 5. Three main zones of Jabotabek Region: Core, Zone 1 and Zone 2

The core region constitutes all areas within Jakarta City boundaries, zone 1 region consist of the most dynamic region, covered the closest Botabek's areas, and zone 2 region is the most remote areas in Jabotabek (outlayer region). Table 6, 7, and 8 describe some characteristics of the region and their socio-economy aspects.

Zone 1 is the most dynamic region that characterized by its high population growth rate. Contribution of natural growth to population growth is relatively low (low rate of RNI) and the main source of growth come from migration process (high rate of RSI).

The core region is a typical relatively stabile region where the population density has reached its highest position and the population growth is not high anymore but still higher than zone 2. Core region predominated by service activities (including trading, finance, and official activities) and the most educated class. Zone 1 predominated by manufacturing activities and zone 2 predominated by agricultural activities.

Table 6. Basic population characteristics of Core, Zone 1, and Zone 2 of Jabotabek region, 1990 and 1995

Indicator	Core	Zone 1	Zone 2	Total
Total Population				
1990	8222515	5433670	3442268	17098453
1995	9112652	7276135	3770868	20159655
% Population				
1990	48.0	32.0	20.0	100.0
1995	45.0	36.0	19.0	100.0
Annual Population Growth Rate (%)	2.1	6.0	1.8	3.4
Total Area (km^2)	643.1	2405.5	3606.3	6654.9
% Total Area (km^2)	9.7	36.2	54.2	100.0
Population Density (pop/km^2)				
1990	12785	2259	955	15998
1995	14169	3025	1046	18239
Rate of Natural Increase (RNI) 1990-1995 (%)	16.5	17.1	20.5	17.5
Rate of Social Increase (RSI) 1990-1995 (%)	4.1	40.9	2.3	15.4
Number of Migrants	575208	730951	110021	1416180
% of Migrants to population	6.3	10	2.9	7

Table 7. Distribution of economic activities of Core, Zone 1, and Zone 2 of Jabotabek Region in 1995

Indicator	Core	Zone 1	Zone 2	Total
A. Type of Activity				
In labor force	48.6	50.4	48.9	49.3
1. Employed	42.8	45.5	42.2	43.6
2. Unemployed	5.8	4.9	6.7	5.7
Not in labor force	51.4	49.6	51.1	50.7
B. Main Industry				
1. Agriculture	0.8	3.3	27.4	6.1
2. Manufacturing	17.7	27.4	16.6	21.2
3. Trade	28.2	27.8	23.4	27.3
4. Finance	7.4	1.7	0.4	4.1
5. Service	31.9	22.8	15.4	25.7
6. Others	6.7	7.7	9.4	7.5
C. Main Occupation				
1. Professional	8.2	6.6	2.6	6.7
2. Administrative	2.1	1.3	0.3	1.5
3. Clerical	16.8	8.5	3.5	11.5
4. Sales	25.8	27.0	21.7	25.6
5. Services	14.8	8.5	6.3	11.0
6. Agricultural	0.9	3.6	27.8	6.3
7. Production	30.2	43.6	37.8	36.5
8. Others	1.2	0.9	0.0	0.9

Table 6. Spatial distribution of education performance of population in Core, Zone 1 and Zone 2 in Jabotabek Region, in 1995

Indicator	Core	Zone 1	Zone 2	Total
School Attendance 1995 (%)				
a. Has not/does not attended school	4.5	10.4	20.5	9.5
b. Attending school	30.6	28.4	26.1	29.0
c. Do not attending any more	64.9	61.2	53.4	61.5
Educational Attainment (%)				
a. Never/not completed primary school 1995	23.5	41.0	61.9	34.6
b. Primary school	24.7	26.8	26.9	25.8
c. Junior High School	18.4	15.6	6.8	15.3
d. High School	26.4	19.0	4.1	19.7
e. Academy/University	7.0	3.5	0.3	4.6
Illiterate level (%) 1995	4.5	10.8	19.7	9.5

Table 7. Number and percentage of recent out migration flow from Jakarta to its Suburbs (Botabek region) during 1990-1995

Place of Origin 5 years ago	Unit	Present Place of Origin in Botabek Region					
		Bogor District	Bekasi District	Tangerang District	Bogor Munic	Tangerang Munic	Total
South Jakarta	Migrants	136337	51385	70968	2394	31505.	292589
	% Migrants	4.016	1.513	2.090	0.071	0.928	8.618
East Jakarta	Migrants	44702	168511	15344	2850	9843	241250
	% Migrants	1.317	4.963	0.452	0.084	0.290	7.106
Central Jakarta	Migrants	88242	128742	33392	3306	47511	301193
	% Migrants	2.599	3.792	0.984	0.097	1.399	8.871
West Jakarta	Migrants	21146	18256	41708	1710	55377	138197
	% Migrants	0.623	0.538	1.228	0.050	1.631	4.070
North Jakarta	Migrants	23305	39042	18760	1710	8316	91133
	% Migrants	0.686	1.150	0.553	0.050	0.245	2.684
Jakarta City	Migrants	313732	405936	180172	11970	152552	1064362
	% Migrants	9.241	11.956	5.307	0.353	4.493	31.349
	Migrants/km^2	213.877	129.961	1764.316	64.062	134.720	2306.938
	Migrants/1000 pop	84.293	149.232	74.405	18.475	112.999	439.404
Other Provinces	Migrants	643474	744084	428304	75924	438922	2330708
	% Migrants	18.953	21.916	12.615	2.236	12.928	68.648
	Migrants/km^2	438.668	238.220	4194.125	406.337	387.617	5664.967
	Migrants/1000 pop	172.888	199.919	115.076	20.399	117.929	626.211
All Migrants	Migrants	957206	1150120	608476	87894	591474	3395170
	% Migrants	28.193	33.875	17.922	2.589	17.421	100.000
	Migrants/km^2	652.546	368.214	5958.441	470.399	522.337	7971.937
	Migrants/1000 pop	257.180	422.811	251.281	135.657	438.120	1505.050

Commuting pattern to Jakarta

Suburbanization process has strong relation with commuting phenomenon since most of populations living in the suburb areas are out-migrants or people who conduct business relation with Jakarta City. According to a survey conducted in 1991 (BPS, 1992), about 96.0% of population lived in Jakarta worked in Jakarta. Percentage of Botabek inhabitants working in Jakarta City and their area are 47.8% and 50.4% for Bogor District, 55.5% and 43.5% for Tangerang District and 59.83% and 37.8% for Bekasi

Descriptive zoning of Jabotabek Region

Zoning is a descriptive tool to summarize large data sets in a readily appreciated format and to facilitate description and illustration. Zonal arrangement method using factor analysis and cluster technique employed to make a grouping distance system of the smallest administrative unit of study area in attempt to describe the spatial pattern of

socio-economical activities. The method employs a number of variables, which consist of many aspects of physical and socio-economical characteristics of Jabotabek. From almost 71 factors represent distribution and number of population, spatial pattern of land uses, people occupations, quality of life indicators, settlement quality and development's funding resources for each desa, it was selected 23 principal factors that differentiate spatial pattern of Jabotabek. Plot of means of principal factors for each cluster was showed in Figure 1. The main characteristics that represent spatial pattern of Jabotabek can be explained from loading factors. Figure-1 showed that the factors that differentiate significantly is Factor-1, Factor-3, Factor-6, Factor-8, Factor-13, Factor-16, Factor-19 and Factor-21. Explanation for each factor is as follows:

- Factor-1 is a profile represent desa's status, distance to Central Business District, % of settlement area to total desa's area, % of female to number of population, % of farmer and percentage of household with tertiary/luxury goods.
- Factor-3 is a profile represent desa's income.
- Factor-6 is a profile represent population density.
- Factor-8 is a profile represent % of rice field area
- Factor-10 is a profile represent % of people work in informal sector
- Factor-13 is a profile represent % of people works in energy service (electricity, gas, and water) sectors.
- Factor-16 is a profile represent % of people works in industrial sector.
- Factor-21 is a profile represent % of idle land per total desa's area.

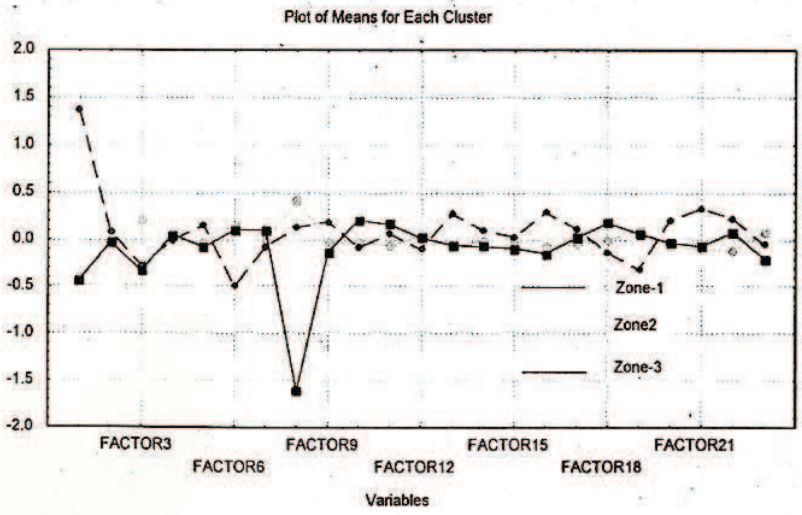

Figure 1. Plot of means of principal factors for each cluster

From those principal factors it can be identified three clusters of spatial pattern of Jabotabek region. Each cluster indicates the specific physical and socio-economical characteristic of zone. Main characteristics of each zone are:

- Zone-A is rural region, far from Central Business District (CBD), low % of settlement area, low % of female, high % of farmer, low % of household with tertiary/luxury goods, low desa's income, medium population density, high % of rice field area, high % of people work in informal sector, medium % of people works in energy service sector, medium % of people works in industrial sector, and medium to low % of idle land.
- Zone-B is rural region, far from CBD, low % of settlement area, low % of female, high % of farmer, low % of household with tertiary/luxury goods, high desa's income, medium population density, low % of rice field area, medium % of people works in informal sector, medium % of people works in energy service sector, medium % of people works in industrial sector, and medium % of idle land.
- Zone-C is urban region, close to CBD, high % of settlement area, high % of female, low % of farmer, high % of household with tertiary/luxury goods, low desa's income, high population density, medium % of rice field area, medium % of people works in informal sector, high % of people works in energy service sector, high % of people works in industrial sector, and high % of idle land.

Those zoning can be concluded as follows: (1) Zone-A represents agricultural zone, (2) Zone-B represents transitional zone, and (3) Zone-C represents urban zone. This zoning adds information for the last explanation related to sub-urbanization. Domestic income of desa's implied that transitional region (Zone-B) is the most dynamic area in Jabotabek.

Concluding Remarks

This paper has tried to describe the spatial pattern of urbanization and sub-urbanization process in Jabotabek region. The center (Core) of metropolitan tends to be center of service sector activities that shifts settlement areas and impact on negative net migration. The first layer (zone 1) or transitional zone is becoming the most dynamic area, characterized by high population growth, activities. The second layer, the remote region, characterized by agriculture activities, relatively low income and education level of inhabitants.

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