

The transect of happiness and community's capability in urbanizing Yogyakarta

RWD Pramono

Regional Planning Studies, Department of Architecture and Planning, Universitas Gadjah Mada, Yogyakarta, Indonesia

E-mail: pramono.wid@ugm.ac.id

Abstract. The idea of this paper is that happy-friendly city is it that able to support capability. In addition to factors affixed to an individual, an important element determining someone's happiness is the quality of a place. This research tries to explain the role of quality of place formed by urbanization process by taking Yogyakarta case as the sample. The importance of variation of particular area caused by urbanization is revealed using transect method. This method showed the shifting gradation from the very center of the city that first experienced urbanization up to the peripheral that experienced it last. The initial result of this clustered-multistage random sampling shows a gradation in capability. It also describes the similar tendency regarding self-evaluation against happiness although not very clear. Further analysis is conducted to define influencing factors. They consist of 40 capability assets that belong to Individual Tangible Asset, Public Tangible Asset, Individual Intangible Asset, Social Institutional Asset, and Economic Institutional Asset. However, the focus of analysis will be on variables included in Public Tangible Asset, Social Institutional Asset, and Economic Institutional Asset called as place-attached assets.

1. Introduction

The advance of community's well-being and the quality of life has been an emerging issue in regional development planning practice. It drives a shift of development objective from increasing income quantitatively into the achievement of higher well-being. Similar to the sense of qualitative-perceptual, happiness as a goal has to be achievable and measurable [1]. Income level alone cannot be used as an indicator of well-being, moreover of happiness [2]. Empirical studies show that higher income was not systematically accompanied by greater happiness [3] and income growth (still) has low impact regarding of increasing happiness over the long term [4].

However, it is still not easy to develop strategies for increasing well-being and happiness in the practice of urban and regional development planning. The problem is well-being, as well as, happiness, is subjective and is idiosyncratic.

One of the theoretical approaches getting more acceptable as a framework to achieve the level of quality of life and happiness is Capability Approach [5]. A capability mainly translated as a freedom to choose [6] has been accepted to be the major purpose of development. From approach offered by Sen, development objective in term of well-being can be interpreted as a level of privilege that someone has which comprises of freedom at the basic level, namely free from 'fear' of unmet basic needs, disasters, illness, crime, and ignorance. Further, the higher level is related to the opportunity to



choose methods of fulfilling a variety of needs, such as choosing sorts of foods, house locations, education alternatives or kinds of jobs.

Researching in Magelang Region, Central Java, Indonesia, [7] we find out that asset availability and accessibility determine the capability. An asset can be physical and non-physical, private and public. Some goods and situation can be considered as an asset to someone as long as she can access benefits out of their existence so that they help the fulfillment of material and immaterial needs. Whereas happiness was observed as a feeling rising when someone can accept a situation (level of well-being related to the assets availability) that he experiences at the moment. When someone has a higher acceptance of his/her well-being, he will be happier even though his well-being is not so high. Ultimate happiness comes when someone is experiencing changes to a better condition, not when he is at their peak of prosperity. Being in the peak of well-being will not make someone happy if he does not experience advancement anymore and cannot accept the situation.

Previous research on quality of life or well-being [8] concludes that future studies should be front and center in the process of evaluating people's relationship to their environment. Environment quality considered as ultimate place's asset is one of the important aspects forming capability, and thus happiness. Theoretically, the schematic relation among those four aspects is as follows:

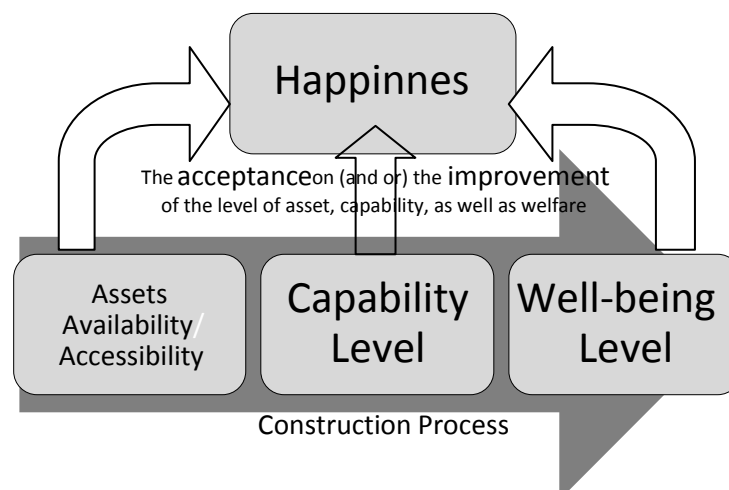


Figure 1. Assets, capability, happiness and well-being conceptual relations.

1.1. Urbanization for higher capability

Urbanization is one of the phenomena that influences and changes the attributes of a place. Urbanization is a process of the production of space [9] which determines the formation of people's way of life and finally determines their quality of life. Urbanization affects place's assets which are shaped by physical and non-physical attributes affixed to it. In Lewicka's article [10] the characters of environment attributes are called place's attachment. It is formed and shifted intensively by urbanization. Different levels of urbanization bring up different characters of a place regarding, for example, facilities distribution, road network system, and transportation modes. It also causes different building density and landscape characters. Transect can generally demonstrate this difference.

1.2. Transect

Talen [11] states that transect approach is a planning strategy that seeks to organize the elements of urbanism--building, lot, land use, street, and all of the other physical elements of the human habitat--in ways that preserve the integrity of different types of urban and rural environments. Zyberk [12] further establishes it as a framework to define the variety of six habitat zones in an area from the most natural up to the urbanest. They are: T-1 for natural zone, T-2 for rural zone, T-3 for sub-urban, T-4 that forms

general urban area, T-5 for urban center, and T-6 for urban core which has densely populated or characterized by highrise buildings.

The research for this paper focuses on four zones; T3, T4, T5 and T6 because in those three areas infrastructures and community characteristics are expected to give distinctive traits of urbanization intensity. This study will focus on the correlation between facilities forming the quality of place and community that became the object of the capability and happiness improvement. A similar study in urban-rural happiness gradient using macro approach has been conducted by Berry & Kozaryn [13]. They conclude that the consequences of size, density, and heterogeneity to its highest levels in the rural-small- town periphery mark urban-rural happiness gradient that increases outward from central cities is marked. But the foundations for further explanation regarding the elements determining the gradients have not been sufficiently explained. Using the concept of an asset, this paper will try to fill in the gap.

2. Method

2.1. Data collection

The primary data are collected from survey against citizens of that city. The analysis of them results in the description of capability level and people's happiness by transect in Yogyakarta. The data were gathered using questionnaire and turned into a collection of people's perception toward availability and accessibility of a set of set of 40 elements of tangible and intangible assets that they sensed as being helpful or constraining in fulfilling their needs. Respondents were asked to evaluate their existence/accessibility for the past five years by mentioning whether they were better, the same, or worse. They were also required to assess whether their availability was very helpful, helpful, don't know/in doubt, or even constraining, or very constraining. Here is the list of 40 assets in the questionnaire.

Table 1. List of assets supporting capability.

No Assets	Components/Assets	Category
1	Space/land to reside	Tangible Individual Asset
2	Space/land for business/ farming	
3	Owning transportation means (bikes, motorbikes, cars)	
4	Owning communication means (telephones, cell phones)	
5	Owning devices to access information (newspaper, magazines, radio, TV, and internet)	
6	Income/ Daily needs fulfillment	
7	Saving	
8	Environment quality (cleanliness, water, air, public park)	Tangible Public Asset
9	Productivity/ quality of farm land	
10	Safety against disasters (natural, fire, flood, etc)	
11	Government/community readiness for disaster management	
12	Availability of public transportation	
13	Quality of public transportation	
14	Availability of education facilities	
15	Availability of health facilities	
16	Availability of market facilities	
17	Easy access to clean water	
17	Availability of recreation facilities	
18	Availability of public library	
19	Availability of internet for community	

Continued...

Table 1. Continued.

No Assets	Components/Assets	Category
20	Level of people's education	Individual Intangible Assets
21	Quality of people's health	
22	Capability of speaking foreign language	
23	Creativity and innovation of goods/services	
24	People's fighting spirit to get a better life	
25	Kinship/social/cultural organization	Social Institutional Assets
26	Trust among society including mutual respect	
27	Cooperation by members of community regarding social, cultural, and economic matters	
28	Discussion forum	
29	Easy access to get bank credit, etc	Economic Institutional Assets
30	Easiness to get jobs	
31	Opportunity to start business	
32	Opportunity to channel aspiration or participating in development activities	
33	Easiness to get daily consumption goods	
34	Easiness to get raw material	
35	Easiness to market products	
36	Opportunity to get governmentaid/subsidies for health, education or business	
37	Easiness to get health insurance	
38	Capability to pay education fee	
39	Capability to buy/get/or rent a house	
40	Transportation cost	

Respondents were chosen using *multistage random sampling*, among population object, i.e. family units in Yogyakarta classified to form a transect.

Figure 2.2 is a map showing the division of the region(transect) selected as sample area, while table 2 describes the difference of each transect as well as the number of families in each district and sub-district chosen as respondents.

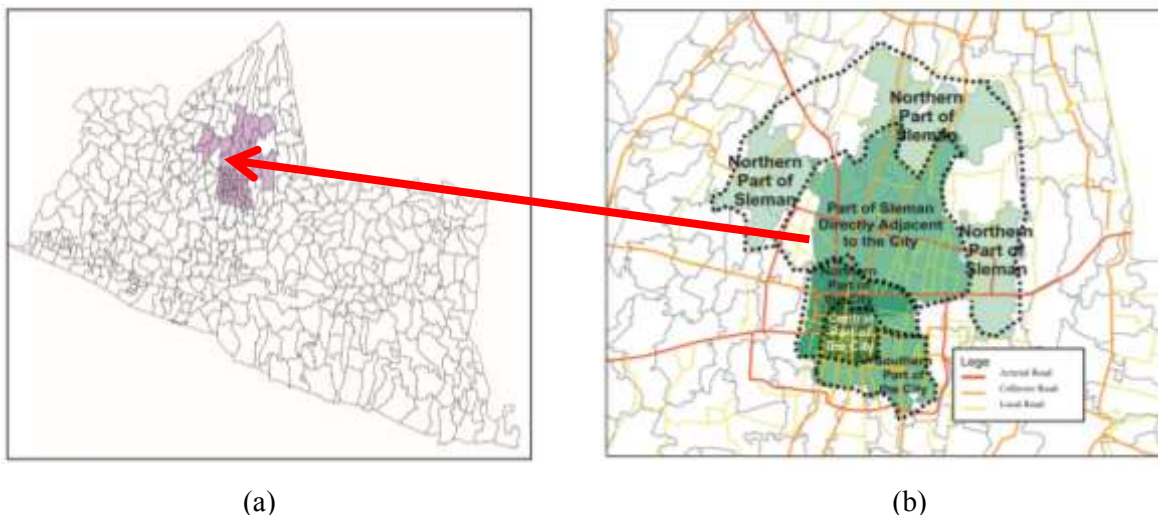


Figure 2. Position of research area in Yogyakarta Region (a) and the division of transects selected as sample area(b).

Table 2.Description of Characteristics of Transect Areas

Area Division	Land use	Variety of Facilities	Population Density and Urban Solid	Brief History	District	Sub-District	Nu. of Family Sample	Nu. of Sample per transect
Northern Part of Sleman (T-3)	Dominated by farming both irrigated technically and non-technically. There are some settlements agglomerated toward the central of the City.	Since most of the land is used for farming and housing, facilities availability are the basic ones for the local citizens and not as many as others.	The population density is 19.44 people/ha. It's the lowest among other transect. The urban solid is around 20 %.	Developing toward phase 4 stimulated by rapid growth of supporting education sectors, making this area attractive to be a place to live in. People from outside, put their investment here by building commercial housing for students or a house for their kids studying in the City.	Mlati	Sumberadi	8	56
						Tirtoadi	8	
						Tlogoadi	8	
					Ngaglik	Donoharjo	8	
						Sardonoharjo	8	
						Sukoharjo	8	
					Depok	Maguwoharjo	8	
Sleman Area Adjacent to the City (T-4)	Dominated by settlement with moderated density, but some land are used for farming both technically and non-technically irrigated.	It has quite various facilities compared to the Northern part. They are related to the needs of high education students.	It is a lot denser than the Northern part. Excluding temporary residents, the population density is 37.87 people/ha. Urban solid is 30 -40 %	Developing in phase 3. In 1949 Gadjah Mada University – the big and reputable state-owned university-- was officially established here driving the surrounding areas to be developed toward urbanity. There are many other high education facilities which attract an intensive investment.	Mlati	Sendangadi	8	56
						Sinduadi	8	
					Ngaglik	Sariharjo	8	
						Minomartani	8	
						Sinduharjo	8	
					Depok	Condongcatur	8	
						Caturtunggal	8	
Northern Part of the City (T-5)	Dominated by settlement with moderated density, but there are still a very few farms.	Variety of facilities in this transect is lower than the one in Central Part. However, it can still adequately provide the needs of its people.	It's denser toward the central. The population density reaches 129.63 people/ha. 60 % of land is solid urban.	Developing in phase 2 as the overflow of city center. Since this area does not have many cultural heritages, it is more flexible in receiving investment. Until today, this area keeps on developing and is also driven by the expansion of education center.	Tegal Rejo	Karang Waru	23	105
						Bener	31	
						Tegalrejo	26	
					Wirobrajan	Wirobrajan	25	
Central Part of Yogyakarta City (T-6)	Almost the whole land is used for settlement with very high density.	This transect has a great number of various facilities compared to other areas such as trade, health, service, hotels, restaurants, and many others. It is the center part of the city and tourism destination.	It is the most heavily populated with 177.18 people/ha, and solid urban of more than 80 %	Developing in phase 1, starting from the constitution of Yogyakarta Palace in 1756 by the First Sultan, Pangeran Mangkubumi I, located in the center of Yogyakarta. Currently its growth is slower than the other parts.	Gedongtengen	Sosromeduran	25	151
						Pringgokusuman	25	
					Ngampilan	Notoprajan	25	
					Kraton	Panembahan	26	
					Mergangsan	Wirogunan	25	

Continued...

Table 2. Continued.

Area Division	Land use	Variety of Facilities	Population Density and Urban Solid	Brief History	District	Sub-District	Nu. of Family Sample	Nu. of Sample per transect
Southern Part of the City (T-5)	Dominate d by settlement .	Facilities in this part is less various than in the central part. However it is sufficient for its people since the population is not as high.	In this part, the density goes lower again, even lower than the part adjacent to the City although they both are in T5 category. The population is 99.48 people/ha. However, its urban solid is higher, around 65%	Developing in phase 2, but not as intensive as the Northern Part. It does not have education hub as the main generator. It will probably expand after the northern part is saturated.	Mantrijeron	Mantrijeron	21	122
						Suryodiningratan	25	
					Kotagede	Purbayan	26	
						Rejowinangun	25	

2.2. Method of data analysis

The collected data are analyzed quantitatively by scoring. There are three scores to categorize the answers from respondents regarding aspects of 'asset availability' and 'assets benefits', namely; 2 for "better" asset availability, 0 for "the same" and -2 for "worse." Meanwhile, five scores define the respondents' perception regarding benefits of the assets, i.e. 2 for "very helpful" asset, 1 for "helpful", 0 for answer stating that respondent did not receive either positive or negative impact, -1 for "constraining", and score -2 for "very constraining".

The result of scoring would be the input for calculating Capability Index (CI). The higher index shows people can choose and utilize wider variety of assets. The index can prevail against individual or a group of society in a particular place.

Community Capability Index is organized in scale as a mean to indicate quantitative well-being which is abstract and relative. This index would help regional planning professionals to measure discrepancies between existing situation and the ideal one. Also, the data from the perception survey that is used to evaluate CI could also be utilized to measure the value of place's asset. It can draw the conformity of a place in facilitating for creating an opportunity to choose and perform a variety of expected *functioning* (capability level). Using the data from perception survey on asset availability and accessibility (A) and on asset benefits (F), formula to calculate capability index is:

$$Capability\ Index = \frac{1}{8} AF^2 \quad (1)$$

where A = mean of perception score on asset availability /improvement and F = mean of perception score on asset benefits

A and F are interconnected and mutually strengthen capability. Adding the square helps to express that opportunity offered by assets are exponentially important to capability, although the scores are proposed to be limited in scope (-2 to 2). More importantly, squaring F also helped this variable to be positive (F² could not be negative), so asset availability (A) determines the direction of the overall capability score (CI). The formula, therefore, emphasizes that an upward or downward trend in the availability of assets defines the overall meaning of community capability.

Measuring perception on the level of happiness was performed more simply. It applies scoring using scale 1 as "the happiest" up to 10 "the unhappiest" to answer the question "How happy are you in general in the last five years."

3. Result and Discussion

So far, theoretic discussion has not integrated architectural/ urban planning premises on quality of a place and psychological, philosophical approach on quality of life. The main aim of this paper is to consolidate those two. Although this is still very frontier, therefore, the analysis result of perception data will correlate capability and happiness with the quality of a place through quantification process of those data and the difference of transect characteristics. The basic rationale of this is that features of a place are the source of assets.

3.1 Cappability index

The following figure presents perception index on asset availability and benefits. Also, it demonstrates the capability index of each transect showing variation of transect in five locations in Yogyakarta city.

Table 3. Scale of perception evaluation on asset availability and benefits.

Transect	Area	Average Score A	Average Score F	Average Capability Index
T3	Nothern part of Sleman	1.08	0.893	0.122
T4	Part of Sleman directly adjacent to the City	1.12	0.934	0.142
T5 (Northern)	Nothern Part of the City	0.94	1.21	0.262
T6	Central Part of the City	0.68	0.931	0.140
T5 (Southern)	Southernpart of the city	0.74	0.891	0.089

This figure reflects the pattern of perception differences among transects.

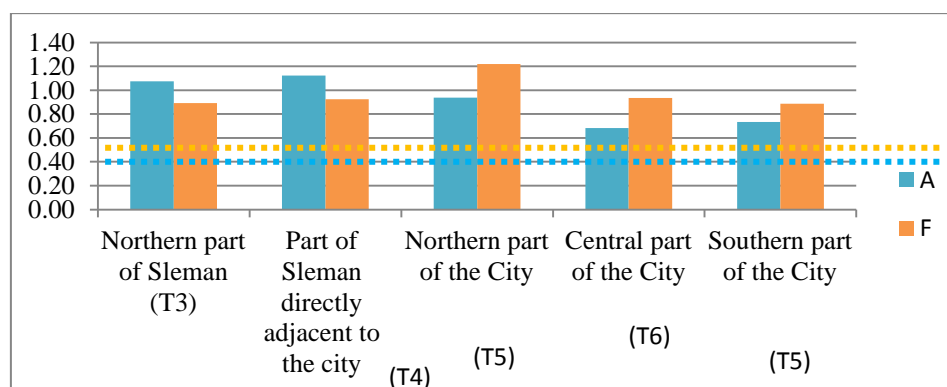


Figure 3. Index of asset availability and benefits per region based on transect in Yogyakarta 2017.

The figure above describes the variation of index regarding asset availability (A) and asset benefit (F) in the five transects. The conclusion is transects with high asset availability (A) do not necessarily have a high index of asset benefit (F), and vice versa. It means the facility available in a transect is not necessarily perceived as providing benefits to its society.

Perception of asset availability is even higher in the peripheral, mainly toward Sleman. In the city center, people feel that asset availability does not satisfy their expectation. However, the perception of asset benefit is relatively the same, except in T5 (Northern part of the city). Therefore, the pattern of the northern part and the southern part of the city is different. In the northern, the perception of availability is higher than it on benefit. It is probably related to the history of area development where the central and northern parts developed before the others and now are relatively stagnant. Meanwhile, the northern, especially Sleman area is now growing. To sum up, the perception of benefit tends to go in line with reality rather than the perception of asset availability or increase. Intensive growth out of the worse situation will be sensed positively rather than a slow increase in higher quality.

Capability index based on the perspective of asset availability and benefit shows a different pattern. Capability index presents its gradation with the peak at T5 and decreasing at the central part of the city and its periperal (see figure 2). It reflects that T5 is indeed in development as expected by its community. In contrast, T6 (city center) seems to be stuck. High-density population and intensive economic activities have distracted people's capability, while the growth of facilities is relatively stagnant.

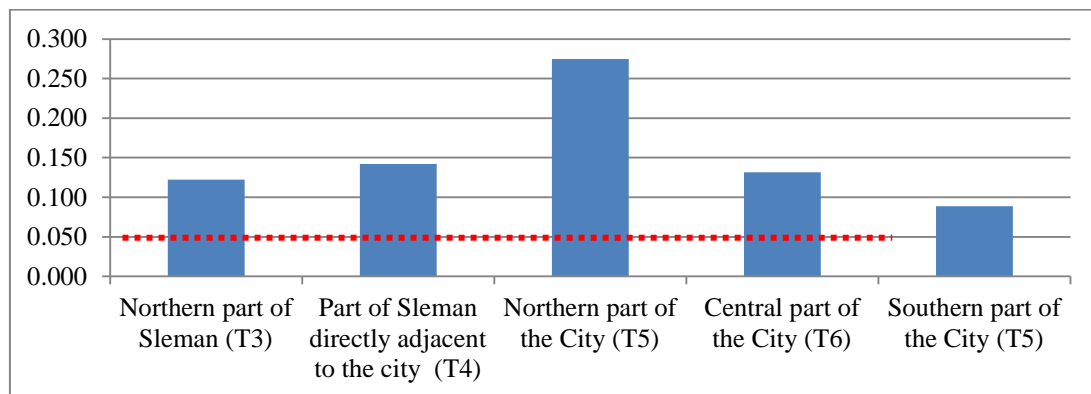


Figure 4. Capability index per region based on transect in Yogyakarta.

Indeed the capability index is relatively small (between 0.089 to 0.262 of scale -1 to 1). However, if it is in the quadrant, those five transect areas have above 0 (positive) index and lies in quadrant 1. It means they are experiencing capability development. the value of index shown in the figure as the vector value describes the speed of growth. In this case, T5 in the northern part is the one developing in phase 2 and keeps on improving for high capability index.

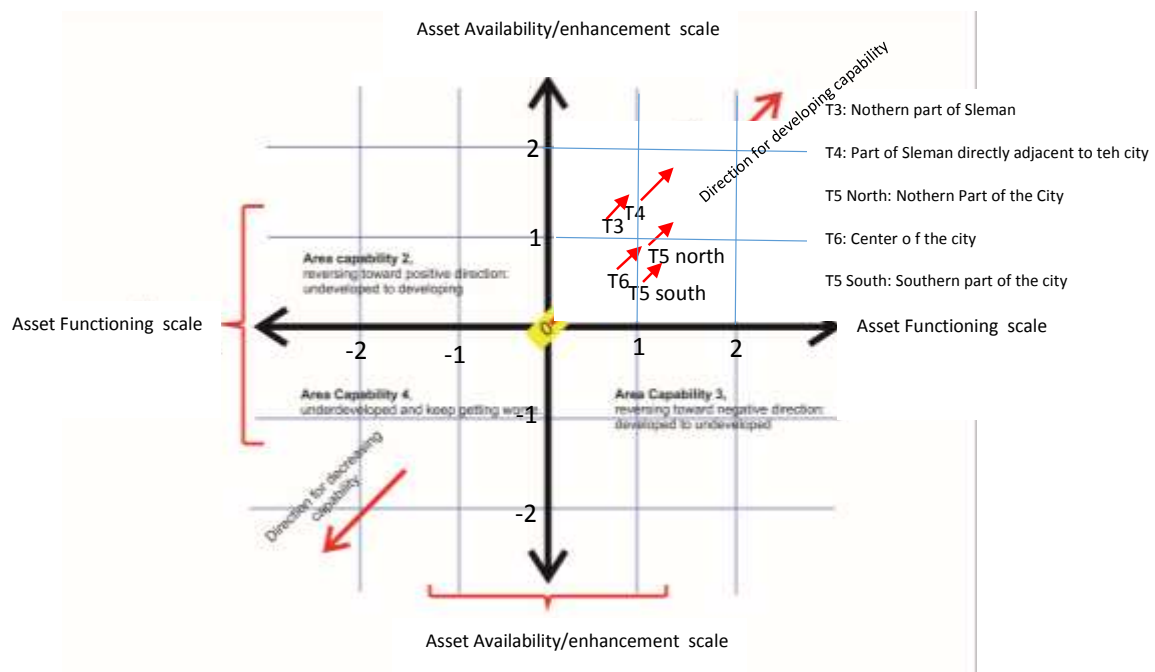


Figure 5. Quadrant for capability per urban region part in Yogyakarta.

3.2. Happiness Scale

Capability level of the people in all transects can be stated to be in the moderate category, only some points above zero, but it dynamically grows toward the positive direction (see figure 3.1). The interview survey shows that their scale of happiness is also in moderate level (6.563).

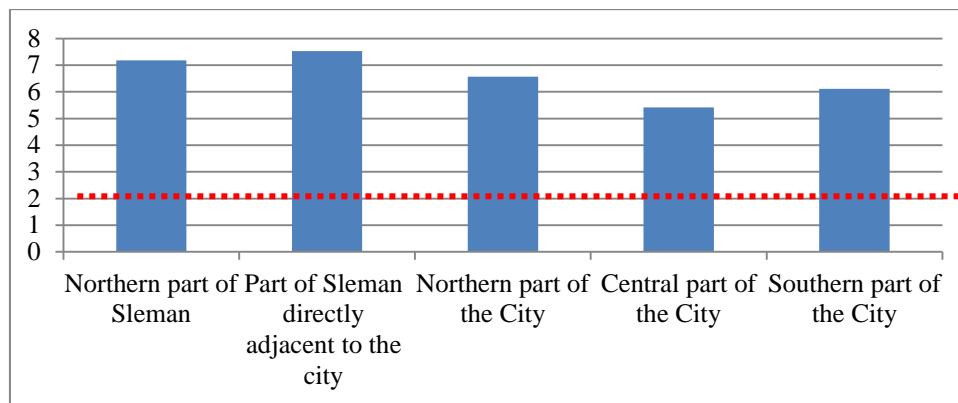


Figure 6. Happiness scale per urban region part in Yogyakarta.

In line with capability scale, people living in the part of Sleman adjacent to Yogyakarta City experience the highest happiness score (7.53). However, if capability pattern decreases in gradation equally toward North and South directions, with the peak in the northern T5, happiness sequence demonstrates that Sleman parts developing in phase 3 and 4 are the ones that provide the highest happiness to their community. Happiness scale in the central part of Yogyakarta growing in phase 1 is the lowest (5.41). At a glance, the table below may present initial indications regarding the correlation among perception of asset availability/enhancement, asset benefit, capability index, and evaluation on self-happiness.

Table 4. The rating of asset, capability and happiness.

Transect	Area	Rate for A	Rate for F	Rate for Capability	Rate for Happiness
T3	Nothern part of Sleman	2	5	4	2
T4	Part of Sleman directly adjacent to teh city	1	2	2	1
T5 (northern)	Nothern Part of the City	3	1	1	3
T6	Central Part of the City	5	3	3	5
T5 (southern)	Southernpart of the city	4	4	5	4

It can be seen that happiness is more strongly correlated to the perception of asset availability/improvement, while capability is to asset benefit. This finding affirms that ultimate happiness comes when someone is experiencing changes to better condition, moving up toward higher well-being, not when he is in their peak of well-being.

Regarding urbanization characteristics, temporary happiness can increase psychological comfort in a short term, but not necessarily in a long run to improve capability. Understanding this is important to set up development priority target; is it the temporary happiness or long term well-being that is measurable with capability?

3.3. Role of asset composition

Capability and happiness is influenced by asset composition. Therefore, it is important to be taken into account. Concerning types of the assets and its value, composition in those five transects are more or less the same (see figure 7).

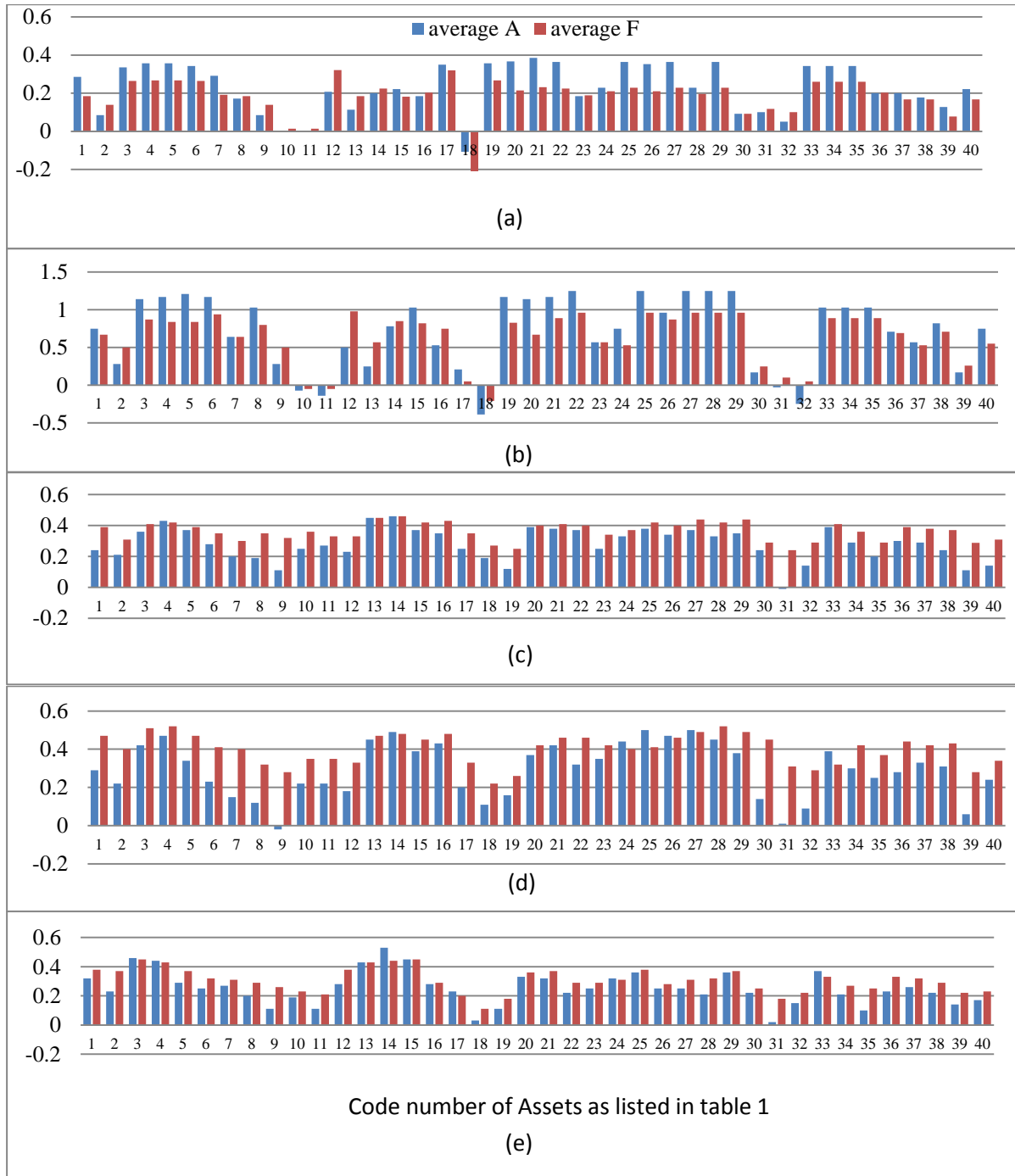


Figure 7. Average Index of Asset Availability (A) and Benefits (B) of 40 assets element in (a) Northern part of Sleman, (b) Part of Sleman directly adjacent to the city, (c) Northern Part of the City, (d) Central Part of the City, (e) Southern part of the city.

However in two transects in Sleman developing in final phase, score A is always higher than F. Meanwhile, in the transects developing in initial phase, score F tends to be higher than or the same as score A. It can be inferred that in transects with mature development, gap between perception on availability and perception on benefits smaller. In this case, it is assumed that the gap between happiness and capability is smaller, too.

Although strategies of development to achieve happiness is separable from capability, the direction of long-term development expectably can narrow the gap between those two. Researches and studies of practical development must find out the elements of assets contextual to each particular region. Effective intervention againsts them then can improve happiness as well as capabilities in a long run.

As a case study, focusing on the low asset elements only, we can see that asset composition of the five transects seem to be similar. Further details can be found in those figures above (the list of asset number is presented in table 1). All transects have low score for asset number 2 (Space/land for business/ farming), number 10 and 11 (regarding disaster management), number 17 and 18 (the availability of recreation facilities and library), number 30, 31, and 32 (opportunity to get a job and run business). Asset number 39 (housing) is also always in low scale. Although not very, transportation service (number 12 and 13) in several transects are low, too.

Examining each transect, we can find more specific results, for example, transect in central part of Yogyakarta, has the lowest index (-0.02) for the availability of space/land for business. Consequently, it causes decreasing opportunity for its people to grow their business. Development of Yogyakarta city especially in the central part does bring about high competition in business expansion. However the society still holds traditional values and therefore cooperation spirit in this city is quite high and it's specific to this region.

Regarding the aspect of easiness to get jobs, the northern and southern parts of T5 are low in score (-0.01 and 0.017 respectively). It indicates that competition for jobs takes place in the areas developing most intensively. Score for disaster management is low for all transects, but it is lower in the area closer to Merapi Volcano. Regarding getting houses, the closer to the central part of the city, the lower the score. As for availability of recreation facilities and libraries, the closer it is to peripheral, the lower it gets. The score for transportation facilities is lower toward the north where development is reaching final phase.

Thus, essential theoretical comprehension of this Yogyakarta case is that urbanization does not necessarily improve the quality of a place homogeneously. Any time and in every place, the direction of urbanization shall go toward producing assets suitable with the phase of social-economic development of its society.

4. Conclusion

Degree of urbanity is reflected in the availability of various facilities and due to changes that have been taking place for a long time, it has many important factors for community's level of capability. City center that is developed earlier and has more facilities provide higher capability. However, changes that recently have slowed down in this area is seen as stagnation and contribute to lower happiness level. Meanwhile, suburbs that are intensively developing and rapidly improve various facilities can give higher happiness level to its people. In the developing areas, the gap between capability and happiness is quite big, while in mature area, the gap is diminishing. Going toward the center of the city, the problems usually relate to land affordability and competitions for job or business. Going farther to the peripheral, the problems are mostly about the availability of infrastructure. Specific to Yogyakarta though, social capital is still strong since its traditional atmosphere is well maintained. Friendly city is it that provides high capability and happiness feeling of the people and in the same time produces minimum gap between those feeling.

Acknowledgments

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References

- [1] Hitokoto, Hidehumi, Uchida Yukiko 2015 Interdependent Happiness: Theoretical Importance and Measurement Validity *Journal of Happiness Studies* vol 16 Issue 1 pp 211–39
- [2] Easterlin, R A 2015 Happiness and Economic Growth: The Evidence *Working Paper* no 14-03
- [3] Beja, Edsel 2014 Income growth and Happiness: Reassessment of the Easterlin Paradox *International Review of Economics* vol 61 issue 4 3290346
- [4] Clark, Andrew E. and Flèche, Sarah and Layard, Richard and Powdthavee, Nattavudh and Ward, George 2017 The key determinants of happiness and misery *CEP Discussion Papers, Centre for Economic Performance* (London, UK: London School of Economics and Political Science)
- [5] Layard, Richard 2012 *Big ideas: wellbeing and public policy* (Centrepiece) **16** (3) pp 2-5
- [6] Sen, A K 2000 *Development as Freedom* (Oxford University Press)
- [7] Pramono, R W D 2016 *Capability Approach for well-being Evaluation in Regional Development Palnning: Case Study in Magelang Regency. Central Java, Indonesia* (Yogyakarta: UGM Press)
- [8] Ballas Dimitris 2013 *What makes a 'happy city'?* *Cities* vol 32 supplement 1 S39- S50
- [9] Brenner, N 2013 *Theses on, urbanization* (Public Culture, Duke Univ Press)
- [10] Lewicka, Maria 2010 Place Attachment: How far we come in the last 40 years? *Journal of Environmental Psychology* **31** (2011) 207-30
- [11] Talen, Emily 2009 *Urban Design Reclaimed: Tools, Technique, and Strategies for Planners* American Planning Association Planner (USA: Planner Press)
- [12] Zyberk 2009, *Smart Code Version 9.2* 28-58
- [13] Berry and Kozaryan 2011 An Urban-Rural Happiness Gradient *Journal of Urban geography* vol 32 no 6