Step-Wise Migration: Evidence from Indonesia

Elda L. Pardede, Philip McCann, Viktor Venhorst

Abstract

The objective of this paper is to study multiple internal migration trajectories in Indonesia, with special attention to step-wise migration. Step-wise migration involves moves with smaller steps from village to nearby small town, to larger town, and then to big cities rather than a direct move from village to urban centres. The availability of migration histories in Indonesia Family Life Surveys 1993, 1997, 2000, 2007 provides an excellent opportunity for examining these various under-researched issues, which importance would appear to be central to the processes driving economic development in Less Developed Countries. By employing sequence analysis method, it is expected that step-wise migration is evident, but not a predominant feature of internal migration trajectories in Indonesia. On the basis of the results of emerging internal migration trajectories from sequence analysis, multinomial regression model would be constructed to assess the relationships between step-wise migration and other type of migrations to individual, household, and geographical characteristics.

Introduction

The concept of step-wise migration was drawn from Ravenstein's "Laws of Migration" (1885:199, 1889:286) who depicted migratory movement as a gradual and step by step process. The objective of this paper is to study step-wise migration for the case of Indonesia. For this purpose, we address several research questions, which are: (1) To what extent is step-wise migration evident for the case of Indonesia? (2) What other internal migration typologies can be identified from the data? (3) To what extent is step-migration related to individual, household, and geographical characteristics? In Less Developed Countries (LCDs) in general, and in Indonesia in particular, there have previously been very few studies on this topic, such that at present we do not know the extent to which step-migration in LDCs reflects or differs with the observed patterns in more developed economies. With the availability of Indonesian Family Life Surveys, the data we have at our disposal provides an excellent opportunity for examining these various under-researched issues, which importance would appear to be central to the processes driving economic development in LDCs.

Step-wise migration was denoted by Lee (1966:48) as 'migration by stages' because step-wise migration involves moves with smaller steps from village to nearby small town, to larger town, and then to big cities rather than a direct move from village to metropolitan areas (White & Lindstrom 2005:317). It has been suggested to be one of the common and even a predominant feature (Plane *et al.* 2005:15313) and also considered as one of the substantive areas of research of internal migration in Less Developed Countries (LDCs) (White & Lindstrom 2005:316). One of the reasons for the lack of studies on this topic is that because this type of migration is usually poorly documented since it requires records of migration histories (Conway 1980: 10, Lucas 1997:730). Some findings in LDCs relied on census

(Riddel & Harvey 1972) or retrospective information only from migrants (Afolayan 1985, Korinek *et al.* 2005.

For Indonesia, although the link between migration with population redistribution stages associated with economic and social changes that accompanies development process was already studied by Wajdi *et al.* (2015), they relied on census and inter-censal surveys, which mask the occurrence of migration by steps. They concluded that Indonesia is currently in a phase of over-urbanisation with indicated among others by high preference for metropolitan regions (p. 402), but they also mentioned that it was not obvious from the data whether people directly migrate to the given destination or to move to other places first. Therefore, this study can assess further whether preference for metropolitan areas is the result of step-wise migration or the result of more complex migration process.

This study would add to a body of literature on migration that treat migration *not* as one-time event or once-and-for-all affair (Da Vanzo 1983:557; Da Vanzo & Morrison 1981:86). Potential migrant is viewed to calculate migration benefit over the life time as if one would stay permanently at destination (Sjaastad 1962) and that expected wage of rural-urban migration is considered as if the urban areas are the final destination of migrants (Todaro 1969, Harris & Todaro 1970). Schrooten *et al.* (2015) point out that this view is due to the fact that migration has traditionally been conceived of as a unidirectional, purposeful and intentional process from one state of fixity (in the place of origin) to another (in the destination), which means that most migration researchers rely on a static notion of migration. Therefore, this study may play a role in drawing attention to the complexities of migration.

Methodologically, the contribution of this study is to perceive migration as a trajectory of changing residential location, which is considered lacking (e.g. as opposed to topic of working histories, Billari 2001:448). Furthermore, this study goes further by inserting spatial aspect in defining the migration trajectory and analyse it as sequences in life course perspective, with the approach called as sequence analysis (Billari 2001, Gauthier et al 2014). Step-wise migration is thus defined as a life course step across urban hierarchy, from village to urban centres, which we believe is a relatively fresh way of formulating the migration process with its spatial component, and employing a quite recently developed method (cf. Billari 2001 & Gauthier *et al*. 2014). For this purpose, the conceptual framework for this study will be explained in the next section. It is followed by description of data and method used in the third section, and the last part will be the expected results from this study.

Conceptual Framework

It is essential to start a study on step-wise migration by discussing its definition due to what Conway stated as 'the evolution of ambiguity' and confusion in step-wise migration specification (1980:4). Ravenstein originally conceived step by step migration as a spatial displacement process from relatively short distance, which he described as 'the inhabitants of the country immediately surrounding a town of rapid growth, flock into it; the gaps thus left in the rural population are filled by migrants from more remote district'(1885:199) and 'the want will be supplied from immediate neighbourhood, and its effect will travel from province to province until it makes itself felt in the most remote among them' (1889:286). The usage of the words 'immediate surrounding/neighbourhood' and 'remote' imply that Ravenstein's thoughts about step-wise migration were in terms of distance, a movement nearer and nearer

to urban primacy, or in other words, were about spatial pattern of moves (Afolayan 1985:184; Conway 1980:4).

Conway (1980:4) further recognised that this spatial process of step-wise migration has been broadened to include the notion of movement across urban hierarchies or 'movement by hierarchical pattern up the settlement ranks', for instance, in terms of ranks according to population size (Afolayan 1985:184-185). Therefore, step-wise migration can be studied by definition of spatial process (concerning distance to urban centres), by definition of hierarchical process (concerning settlement ranks), or by combining both definitions. The combination of the two, which can be termed as hybrid, hierarchical-cum-spatial process of step-wise moves can capture step-wise migration as 'the spatial expression of sociocultural transition of an individual or family moving from a traditional-rural sector to the modern urban sector via intermediate small towns' (Conway 1980:6).

On the basis of these notions, we can immediately realise that a study on step-wise migration can be conducted at aggregate level by analysing the migration flows from across urban hierarchies such as internal migration in the US by Plane *et al* (2005:15314) and/or distances (Riddel & Harvey 1972), or as a micro-level phenomenon (Afolayan 1985). Following the definition from Conway (1980:8), this study is conducted at individual level, by conceptually defining step-wise migration as a 'process of human spatial behaviour in which individuals or families embark on a migration path of acculturation which gradually takes them, by way of intermediate steps, from a traditional-rural environment to the modern-urban environment'. In this sense, step-wise migration is a migration process and can be termed as one of migration trajectories.

As already pointed by Conway (1980:4), Ravenstein did not explicitly explain the causes of step-wise migration, although he mentioned that economic motive (as termed by Lee 1966) is the most prominent reasons to migrate (to 'better' themselves in material respects, 1889:286) and that development of industry and commerce may attract people to move from surplus-population areas. In this sense, migration, or mobility typology in general is associated with development because development involves changes in livelihood sources and structures in rural sector and in urban sector and internal migration in contemporary world is strongly linked with urbanisation (Gould 1999:157-158). Therefore, we may presume that following the course of development, step-wise migration occurs as part of the process of structural transformation. In developing countries, rural development, accompanied by industrialisation and urbanisation, is also accompanied by very substantial rural-urban migration (Gould 1999:160), which can be characterised by step by step migration from rural areas toward more urbanised areas and end up at urban centres.

How the process of development at macro-level influences migration decision-making at individual level is due to the results of interaction of individuals with place-related macro factors (Gardner 1981) that shapes individuals' preferences, opportunities, resources, and constraints (Mulder 1993) and thus structures their migration trajectories. In this way, step-wise migration can be seen as a result of development process influencing the way individuals organize their lives in a particular trajectory of residential relocations.

While elaboration of the explicit mechanism on step-wise migration at individual level is lacking, what may cause migration by steps can be inferred from studies about repeat, return, or onward migration, especially from the field of economics. The phenomenon of

repeat migration, return or move onward, can be explained by the role of information and location-specific capital (Da Vanzo & Morrison 1981, Da Vanzo 1983, Grant & Vanderkamp 1986). If the basis information of the initial move is better, the propensity for subsequent migration is lower. Because information prior to migration is imperfect, initial migration is a non-optimal decision, and thus the next migration step is taken as a corrective decision, which could be return or onward migration. Location-specific capital has the role to tie a person to a place, which may influence one's tendency to return or to move onward.

Specifically for return migration, Da Vanzo and Morrison (1981:99) stated that the propensity to return to an area should be greater the more location-specific capital that is left behind. Since location-specific capital depreciates in value, the propensity to return should be lower the longer a person stays away. Two explanations for return migration were also addressed by Lucas (1997:748). The first one is that migration perhaps temporary; staying in the destination is not for permanent residence because migrants with this behaviour can be seen as target savers, the ones who initially plan to return because of various reasons such as saving for capitals at home. The second explanation is that migrants return because their migration expectations failed to materialise, which is also proposed by Grant and Vanderkamp (1986).

For the case of onward migration, location-specific capital also plays a role in reducing the tendency to migrate, although its effect on onward migration is not as strong as its effect on return migration (Da Vanzo 1988:555). The role of information on onward migration can be assessed from the effect of age and education. People whose initial move conducted at younger age tend to immediately return or to move onward with stronger effect for return migration, usually due to less experience in decision-making, less information about opportunities, and less efficiency in processing information. Education has positive effect on immediate onward migration but negative effect on immediate return migration (Da Vanzo 1988:556). We can infer from this that step-wise migration, moving onward to places with higher urban hierarchy might be more pronounced for more educated individuals compared with other individuals starting from the same level of urban hierarchy. It should be noted, however, that Grant and Vanderkamp (1986:299) pointed out that onward move that occurs shortly after the initial move can also be explained by less successful experience after migration.

Therefore, we conclude that migration by steps can be explained by the role of information and location-specific capital on the initial move and throughout migration trajectories. The process of development, which is characterised by industrialisation and urbanisation, influence this process by shaping individuals' preferences, opportunities, resources, and constraints, moving people from traditional rural areas step by step, closer to urban centres and step by step higher up the urban hierarchy.

Data and Method

This paper will use the Indonesian Family Life Survey 1993, 1997, 2000, and 2007 data sets. The respondents are adults who were at least 15 years old at the time of survey, selected to be interviewed in adult books. They were asked retrospectively about their life histories, including migrations since age 12. The surveys recorded respondents' place of birth, respondents' residence at age 12, and then whether they ever migrated at least across

desa/kelurahan or village administrative areas. The definition of migration used in this record is any move that involves staying at the destination for at least six months. The number of panel observations from 1993-2007 are around 8,000. Less than half of them never migrated after age 12 according to the previous definition. The number of moves an individual conducted varies from 1 up to 16 moves.

Identification of step-wise migration from this data is by employing the subjective self-reported types of areas, in combination with the available provincial codes. It is due to the fact that the information on the rural-urban category available in this data for migration history is only based on respondents' answer to the question of the area type, which are *desa* (village), *kota kecil* (small town), and *kota besar* (big city). While one may argue that these responses may not provide objective indicators of rural-urban hierarchy, but these responses may actually capture the urban hierarchy as they were perceived by the respondents and thus providing a more 'realistic' depiction of migration process. Furthermore, if there are changes in urban classification of an area, self-reported classification may capture the dynamic of the place better than assuming constant characteristics of a locale.

The first step of this study is to capture and analyse the complexity of migration trajectories, to map the internal migration typology in Indonesia. Because the interest in this paper is step-wise migration, a step-wise migration trajectory is not the act of migration per se, but the sequence of the type of residence. It means that a step-wise migration trajectory from the data can be defined as an act of move starting from village (*V*), small town (*T*), and big city (*C*). If a person migrates four times, a step-wise sequence is a particular order of *V* to *T* to *C*: *VVTC*, *VTTC*, or *VTCC*.

In this way, one type of residence trajectory is perceived as a life course trajectory. A proposed method to analyse this trajectory is employing sequence analysis. Sequence analysis captures chronological sequences within a holistic conceptual model (Gauthier *et al* 2014:1), which is usually used to depict individual's trajectory, defined as a string of states of specific nature, with specific durations and a specific order. It is a departure from an event history analysis that is stated by Billari and Piccareta (2005:81-82) as lacks 'the possibility to study life course as meaningful units, from a holistic point of view as a career'. The 'usual' event-history analysis looks at each state as an atomistic thing. With this approach, although it may constitute many moves, this paper sees a move up or down of urban hierarchy as a life course trajectory and that each hierarchy is considered as one state. While this method has been used in DNA analysis and in some social research, the method employed is beneficial to map the migration trajectories for Indonesians.

Depart from mapping the trajectories, it is also stated that the results from mapping these trajectories can be later used in the usual regression analysis (Billeri 2001, Gauthier *et al* 2014). Because a step-wise migration is the main trajectories of interest, some other migration typology will be considered. Therefore, we propose a multinomial logistic regression model to link individual, household, and geographical characteristics with the migration typology. For this purpose, the sample will be divided into two groups, respondents who were born in rural areas (village) and respondents who were born in urban (small towns/big cities) areas. The importance of separating respondents based on area type is that step-wise migration is defined as a phenomenon of migrations starting from rural areas, following a certain pattern

of migration before ending up in big cities: only individuals who start from rural areas can have step-wise migration trajectories.

Sequence analysis can be performed by viewing life course trajectory as a sequence of events or sequence of states. As described by Billari (2001:442), perceiving a trajectory as a sequence of events has the advantage of simplicity and compactness. Nevertheless, one loses the account of time. To define a step-wise migration, let say that a sequence of events is six consecutive movements: VVTTTC, which can be simplified by representing these events as moving up of urban hierarchy as: VTC. We do not know, however, how long one stays in the first village and then move to the second village. Therefore, looking at migration trajectories as sequences of states, which are the types of residence, instead of sequences of events, we can capture the length of time of each state. If an individual stays 1 year and 3 years for each village, 1 year for each town, and 2 years for the big city, the sequence representation of this individual migration trajectory is (each for 6 months): V_1-$V_2V_2V_2$-T_1-T_2-T_3-C_1C_1. As a trajectory of urban hierarchy, these sequences can be depicted as VVVVTTTCC because V_1 and V_2 are at the same level of hierarchy.

The explanatory variables that will be used in multinomial regression models are individual characteristics such as sex, age, education, birth cohort, length of stay in one type of area prior to initial migration, and distance to Jakarta prior to initial move because of its role as urban primacy (Van Lottum & Marks 2012) in order to capture whether migration trajectories of Indonesians are getting closer to the largest metropolitan area. Descriptive results will be obtained by identifying migration typology for certain period of time, which is the year 1990-2007; and to compare across cohorts who have reached age 55 years old by various characteristics with sequence analysis. The most obvious migration trajectories will be used for multinomial regression analysis of migration after age 12. Because we analyse migration trajectory, the relevant age variable would be age at initial move after age 12. Some household characteristics such as home ownership and assets are used to capture location-specific capital. It should be noted, however, that these variables are available only at the time of survey. Therefore, the initial condition prior to first move cannot always be measured and some assumption should be made on the roles of these capitals on migration trajectories.

Expected Results

It is expected that step-wise migration can be identified as one of the internal migration typology in Indonesia, with some variations, but it does not constitute the only type of migration: we expect multiple migration trajectories. Following the work of Afolayan (1985), it may not be the predominant type of migration as he found that circuitory migration is more pronounced than step-wise migration for the case of Africa. A specific sequence of move to higher urban hierarchy is expected but only to some extent, which is similar to the African experience. Referring to the case of developed economies, one study for internal migration in the US shows that people move up as well as down of urban hierarchy, which does not fit into the basic idea of Ravenstein regarding step-wise migration, which is shifting towards urban areas (Plane *et al* 2005). As found by Wajdi *et al*. (2015), Indonesia shows weak indications of sub-urbanisation, which means that people move down of urban hierarchy as well, but may not be as strong as the US case. Furthermore, Hugo (1982, 1988) has already pointed out that

internal migration in Indonesia is much more complex than what is shown by the usual censuses and inter-censal surveys, which could be mapped by this study.

According to individual characteristics, based on studies on return and onward migrations, we expect that the internal migration trajectories will be more complex for people with younger initial age of moving and with higher education (Da Vanzo 1983). Because younger and higher educated persons are more likely to conduct onward migration, it is expected that among the rural origin individuals, these characteristics might be related to more complex mobility patterns, and thus could possibly following a step-wise process. According to sex variable, repeated migration is more pronounced for males, which means that females have higher tendency to have less complex migration trajectories (Grant & Vanderkamp 1986: 319, Lee *et al.* 2011). Therefore, it seems plausible to presume that males are more likely to follow step-wise migration path than females, especially because females are more likely to conduct return migration than onward migration (Korinek *et al.* 2005).

Household ownership and assets may tie individuals to a specific location; therefore, we expect negative relationship between these location-specific capitals and repeated migration. Thus, individuals with more assets would have less complex migration trajectories, and consequently less likely to follow a step-wise process. Length of stay prior to first migration after age 12, however, could also measure ties to location-specific capital such as done by Da Vanzo (1983), to assess its relationship with migration by steps.

The relationship of the last variable, distance to Jakarta, with step-wise migration cannot be simply presumed due to the fact that Ravenstein (1885) has already stated that migrants from far away tend to move *directly* to urban centres. Step-wise migration is possibly more pronounced to individuals who live relatively closer to Jakarta prior to migration. Furthermore, individuals who tend to move for longer distance possibly search for more information prior to migration, which reduces uncertainty because the cost of corrective movement from after a long distance migration in the form of moving onward or return is possibly higher.

References

Afolayan, A. A. (1985). Is there a step-wise migration in Nigeria? A case study of the migrational histories of migrants in Lagos. *GeoJournal*, 11(2), 183-193.

Billari, F. C. (2001). Sequence analysis in demographic research. *Canadian Studies in Population*, 28(2), 439-458.

Billari, F. C., & Piccarreta, R. (2005). Analyzing demographic life courses through sequence analysis. *Mathematical Population Studies*, 12(2), 81-106.

Conway, D. (1980). Step-wise migration: Toward a clarification of the mechanism. *International Migration Review*, 3-14.

Da Vanzo, J. (1983). Repeat migration in the United States: Who moves back and who moves on? *The Review of Economics and Statistics*, 552-559.

Da Vanzo, J. S., & Morrison, P. A. (1981). Return and other sequences of migration in the United States. *Demography*, 18(1), 85-101.

Gardner, R. W. (1981). Macrolevel influences on the migration decision process. In De Jong, G. F., & Gardner, R. W. (1981). *Migration decision making: Multidisciplinary approaches to microlevel studies in developed and developing countries*. New York: Pergamon Press.

Gauthier, J. A., Bühlmann, F., Blanchard, P. (2014). Chapter 1 Introduction: Sequence analysis in 2014. In Blanchard, P., Bühlmann, F., & Gauthier, J. A. (Eds.). *Advances in Sequence Analysis: Theory, Method, Applications* (Vol. 2). Springer.

Gould, W. T. S. (2009). *Population and development*. London: Routledge.

Grant, E. K., & Vanderkamp, J. (1986). Repeat migration and disappointment. *Canadian Journal of Regional Science*, 9(3), 299-321.

Korinek, K., Entwisle, B., & Jampaklay, A. (2005). Through thick and thin: Layers of social ties and urban settlement among Thai migrants. *American Sociological Review*, 70(5), 779-800.

Harris, J. R., & Todaro, Michael P. (1970). Migration, unemployment and development: A two-sector analysis. *The American Economic Review*: 126-142.

Hugo, G. J. (1978). Population *mobility in West Java* (Indonesian population monograph series - Australian National University, Department of Demography, 2). Yogyakarta: Gadjah Mada University Press.

Hugo, G. J. (1982). Circular migration in Indonesia. *Population And Development Review*, 8(1), 59-83.

Hugo, G. J. (1988). Population movement in Indonesia since 1971. *Tijdschrift Voor Economische En Sociale Geografie*, 79(4), 242-56.

Lee, E. S. (1966). A theory of migration. *Demography*, 3(1), 47-57.

Lee, S. H., Sukrakarn, N., &Choi, J. Y. (2011). Repeat migration and remittances: Evidence from Thai migrant workers. *Journal of Asian Economics*, 22(2), 142-151.

Lucas, R. E. B. (1997). Chapter 13 Internal migration in developing countries. *Handbook of Population and Family Economics*, 1, 721-798.

Mulder, C. H. (1993). *Migration dynamics: A life course approach*. Amsterdam: Thesis Publishers.

Plane, D. A., Henrie, C. J., & Perry, M. J. (2005). Migration up and down the urban hierarchy and across the life course. *Proceedings of the National Academy of Sciences*, 102(43), 15313-15318.

Ravenstein, E. G. (1885). The Laws of Migration. *Journal of the Statistical Society of London*, 48(2), 167–235.

Ravenstein, E. G. (1889). The Laws of Migration. *Journal of the Royal Statistical Society*, 52(2), 241–305.

Riddell, J. B., & Harvey, M. E. (1972). The urban system in the migration process: An evaluation of step-wise migration in Sierra Leone. *Economic Geography*, 270-283.

Schrooten, M., Salazar, N. B., & Dias, G. (2015). Living in mobility: Trajectories of Brazilians in Belgium and the UK. *Journal of Ethnic and Migration Studies*, 1-17.

Sjaastad, L. A. (1962). The Costs and Returns of Human Migration. *Journal of Political Economy*, 70, 5, 80-93.

Todaro, M. P. (1969). A model of labor migration and urban unemployment in less developed countries. *The American Economic Review*, 138-148.

Van Lottum, J., & Marks, D. (2012). The determinants of internal migration in a developing country: Quantitative evidence for Indonesia, 1930–2000. *Applied Economics*, 44(34), 4485-4494.

Wajdi, N., Van Wissen, L., & Mulder, C. H. (2015). Interregional migration flows in Indonesia. *Sojourn*, 30(2), 371-422.

White, M. J., & Lindstrom, D. P. (2005). Internal Migration. In Poston, D. L., & Micklin, M. (2005). *Handbook of population*. New York: Kluwer Academic/Plenum.