

## An Analysis of Recent Migration Trends in the Tokyo City Core 3 Wards

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### Abstract

This paper examined recent trends in in- and out-migration in the 3 core wards of Tokyo, and clarified their contributions to net migration changes in the late 1990s. Data of *Tokyo-to Jumin Kihon Daicho Jinko Ido Hokoku* revealed that in Chuo and Minato, especially in the former, a rise in in-migration played the major role in increasing net migration in the late 1990s. This tendency was less conspicuous in Chiyoda. When we focused on the situation of Chiyoda at the end of the 1990s and after, however, an increase in in-migration basically contributed to an increase in net migration more than a decrease in out-migration did. It is implied that in the recent *Toshin Kaiki*, the massive construction of apartment houses in the core of Tokyo - a major socio-economic determinant of the recent increase in net migration -has functioned to attract migrants from outside, rather than to absorb potential out-migrants and suppress their outmove from the ward.

**Key Words;** *Toshin Kaiki*, net migration, Tokyo, the late 1990s

### Introduction

Since the latter half of the 1990s, “*Toshin Kaiki*” - or reurbanization<sup>1</sup> - has been drawing wide attention in the Tokyo metropolitan area<sup>2</sup>. As is well known, for a long time since the 1960s, rapid suburbanization had caused a serious population decline in the central part of the Tokyo metropolis (23-ward area). Especially in the core of 23-ward area (Chiyoda, Chuo and Minato wards), population drain was intense in that these 3 wards lost more than 40% of population in the 1960-1990 period. This situation, however, has changed since the collapse of “Bubble Economy”, and in the late 1990s, net migration started to show positive values in these city core areas. For example, the number of net migration in the 23-ward area dropped to -176,641 in 1973, but it recovered to +50,386 in 2001. The same tendency has been observed also in the 3 core wards<sup>3</sup>. The number of net migration in Chiyoda, Chuo and Minato wards, for instance, changed from the lows of -2,402 (1987), -2,781 (1988), and -8,191 (1987) to +476, +3,472, and +3,173 in 2001, respectively.

To clarify the characteristics of such population changes, various studies have been undertaken and have so far pointed out some distinct features of the *Toshin Kaiki*. First, it has been indicated that in the 23-ward area, a rise in net migration has been produced not by an increase in in-migration but by a decrease in out-migration (Ministry of Land, Infrastructure and Transportation 2002, Tokyo-to 2002b). Second, overall revitalization of housing market in the core areas, exemplified by the massive

construction of apartment houses, has been counted as the main socio-economic determinant of the *Toshin Kaiki*. The booming housing market has been influenced by such factors as 1)the disposition of non- and under-utilized land in the core areas by private corporations (Ministry of Land, Infrastructure and Transportation 2002), 2)a decline in the price of land and of apartment houses (Tokyo-to 2002a), and 3)low interest rates for housing loans and various policy incentives for housing acquisition, e.g. tax reductions for housing loan (Tokyo-to 2002b)<sup>4</sup>. Third, surveys on the residents of newly-built apartment houses revealed that the majority of these residents moved from other parts of the same ward or from neighboring wards (Ministry of Land, Infrastructure and Transportation 2002). From a viewpoint of migration studies, these outcomes provide us with some interesting implications for the relative significance of in- and out-migration in the recent *Toshin Kaiki*. For example, these studies indicate that while *Toshin Kaiki* literally means “back to the city center,” people do not seem to be coming back. Hence we would have to focus on out-migration rather than in-migration. Furthermore, the coincidence of the growing number of housing construction and the decline in out-migration may suggest that out-migration decreased possibly because a number of potential out-migrants in the city core could find places in the newly-built apartment houses, and decided to remain in the same area. This notion of out-migration decrease would be especially important for the city core areas, because the out-migration

of residents and subsequent decay of community functions have been one of the most crucial issues of these areas (Taira 1990, The Tokyo Institute for Municipal Research 1991).

On the other hand, while declining out-migration and its contribution to the recovery of population is worthy of note, it should be recognized that the above studies have some shortcomings. The first problem is on the definition of the city center of Tokyo. Many of the previous studies used the 23-ward as an object of analysis. Nevertheless, the narrower and more specific definition of “the city core of Tokyo” is the 3 core wards, although the limitation of ward-level migration data poses some difficulty on detailed examination. The second point concerns with the baseline year of comparison. An evaluation of a migration trend, such as a “decrease” or “increase”, is usually affected by what year or period is selected as the reference point of comparison. In the present context, the examination of a longer-term change from the mid 80s and that of a shorter-term change from the mid 90s would result in a different conclusion. However, this point is not always articulated in the foregoing studies. The third is on the choice of migration index. Most of the previous studies employed crude numbers to measure migration trends. But migration rate is sometimes a more appropriate indicator under the situation where the size of population is changing considerably (as in the core areas). This is especially true for the evaluation of out-migration, since the number of out-migration is directly determined by the size of population at origin. The notion of declining out-migration thus needs to be explored not only by crude number of migration, but also by migration rate.

The purpose of this paper is to examine recent migration trends in the Tokyo city core, and see if the recovery of net migration has been really caused by a decrease in out-migration. Based on the above re-examination of the previous studies, we take the following procedures of analysis. The geographical areas of analysis are the 3 core wards in Tokyo. In the present analysis, migration trends are observed ward by ward. The periods in focus are the 1990s and 2000s, especially the late 90s when the term *Toshin Kaiki* started to gain popularity. In the handling of data, not only the crude number of migration but also the crude rate of migration are examined. Data used in the analysis stem from *Tokyo-to Jumin Kihon Daicho Jinko Ido Hokoku* (Report on migration in Tokyo derived from the basic resident registers). This report provides us with the number of in- and out-migra-

tion by ward so that it is possible to explore trends in migration at a scale smaller than the 23-ward<sup>5</sup>. In the next section, additional data on population changes in the 3 wards are presented. In- and out-migration trends are then analyzed, followed by the presentation of some results of a demographic decomposition, which is to determine statistically the effects of in- and out-migration on net-migration changes.

## **1. Population in the 3 Core Wards**

Chiyoda, Chuo, and Minato wards are, as shown in Figure 1, located in the core area of the Tokyo metropolis. While the growing congregation of various public and business functions has created the largest national socio-economic center in these 3 wards, their population and residential function, as mentioned above, have been declining for decades. Figure 2 illustrates trends in population in the 3 wards. It is clearly shown that at least until the mid 1990s, population rapidly had decreased in all 3 wards. Numbers of factors have been pointed out to induce such changes. Some of their examples are; an overall decrease in youngsters' in-migration from outside Tokyo, the outmove of younger generation at the time of their independence from parents, the ongoing separation of housing from workplace and out-migration of resident population, and the expansion of business sectors into residential areas and subsequent destruction of housing functions (see Kawabe 1983 p.1; Okuda 1993 p.108). It should be also noted that the main actor of this change has been young people and their decrease in number. The overall population decline has thus been accompanied by the rapid aging of population.

This trend, however, has changed since the mid 1990s. Population in the 3 wards has been growing for the recent few years. For example, Chiyoda ward gradually alleviated its population decline in the mid 90s, and after population hit a low of 39,297 in 2000, it started to increase. The trends in the other two wards also followed a similar path, although the low point of population came earlier (Chuo ward in 1997, Minato ward in 1996). Recent vital statistics have generally demonstrated low fertility rates and tendencies of natural decrease for these wards. It is hence easily imagined that this population increase has been produced basically by the recovery in net migration.

## 2. Trends in In- and Out-Migration

### 2-1. Observation by number

We examine trends in migration firstly by using the crude number of migration.

Figures 3-5 show the number of in-, out-, and net migration in the 3 wards. While their migration patterns differ by ward and by period, we can point out at least two features of migration in the 1990s and after. The first point is that in Minato and Chuo wards, a rise in net migration in the late 1990s does not seem to have been caused by a decrease in out-migration. This is salient in Chuo ward. Figure 4 illustrates that net migration in this ward turned positive in 1997 and has rapidly incremented its level since then. This change was obviously produced not by a decrease in out-migration but by an increase in in-migration: out-migration remained almost at the same level (around 6,500 to 7,000) in the late 1990s, or even increased in the 1998-2001 period. On the other hand, the number of in-migration increased from less than 6,000 in 1994 to more than 10,000 in 2000. As a result, the graph line of net migration shows a very similar pattern to that of in-migration in the latter half of the 1990s and in the 2000s. In Minato ward, in-migration has also exhibited an increasing trend, though its number highly fluctuated in the late 90s and after. In the case of Chiyoda ward, a different trend was observed. Its in- and out-migration in the late 90s did not demonstrate marked changes. It should be at least noted, however, that in the late 1990s, the trend in out-migration in Chiyoda ward showed a relatively similar pattern to those in the other two wards.

The second point is that changes in net in-migration in the early and mid 1990s have different characteristics from the one discussed above. As the figures show, the numbers of net migration were recovering also in the period between the late 80s and the mid 90s (though they were still less than 0)<sup>6</sup>. However, such recoveries seemed to be caused not by increases in in-migration but by decreases in out-migration. For example, when net migration increased in Chiyoda ward in the 1993-1996 period, a decrease in out-migration was more prominent than an increase in in-migration: out-migration decreased from 4,959 to 3,865 but in-migration increased only from 3,481 to 3,838. In the other two wards, the timing of out-migration decreases and the pattern of in-migration changes were different. But the strong contribution of an out-migration decrease to net migration in the early 1990s seems

to be common to all three wards<sup>7</sup>.

The above two points suggest that the evaluation of the effects of in- and out-migration changes on the *Toshin Kaiki* depends on how we define its period. In the discussions on the present *Toshin Kaiki*, the foregoing studies generally counted the recent increase in population or the occurrence of positive net migration as its main feature. It could thus be defined as a phenomenon in the late 1990s, consequently indicating that, unlike the case of the 23-ward as a whole, a decrease in out-migration was not the major factor of the *Toshin Kaiki* at least in Chuo and Minato wards.

As for more details on the migration trend, in- and out-migration could be examined by its spatial pattern, i.e., intra- and inter-prefectural migration<sup>8</sup>. The characteristics of this aspect of migration are summarized as follows:

In Chiyoda ward, trends in inter-prefectural moves show that the levels of in- and out-migration were both generally stable in the period between 1996 and 1999. Only in 2000, changes such as an increase in in-migration and a decrease in out-migration became salient. In intra-prefectural migration, in-migration has gradually increased while out-migration has remained almost at the same level since the late 1990s. Net migration has been positive in inter-prefectural migration since the second half of the 1990s, but it remained negative until 2001 in intra-prefectural migration. Regarding the recovery of net migration in the early 1990s, a decrease in out-migration seemed to be the main factor for both inter- and intra-prefectural migration.

In Chuo ward, trends in inter- and intra-prefectural migration in the late 90s were both similar to that of the total migration mentioned above. In-migration increased considerably, but out-migration also increased to a certain degree. Moreover, at least in the late 1990s, net migration became positive for both inter- and intra-prefectural migration. A major difference between inter- and intra-prefectural migration was the timing of their changes. In the former, in- and out-migration kept decreasing until the mid 90s. In the latter, in- and out-migration seemed to stop decreasing around 1992. On the other hand, net migration in the former clearly increased during the early 90s. Net migration in the latter changed less between 1992 and 1997.

In Minato ward, inter- and intra-prefectural migration display some contrasting features. As for trends in in-migration, basically the same characteristics have

been observed for both inter- and intra-migration. Despite some irregular fluctuations, the direction of the change has been basically upward since 1992. On the other hand, out-migration decreased in the inter-prefectural stream but basically increased in the intra-prefectural one during the late 90s. Consequently, net migration in the late 90s was positive in inter-prefectural migration, but it fluctuated around 0 in intra-prefectural migration. Similar changes occurred between 1992 and the mid 90s, when the number of net migration increased for both inter- and intra-prefectural migration. During that period, in-migration increased in both streams. Out-migration decreased in the inter-prefectural stream but remained relatively stable in the intra-prefectural one.

## 2-2. Observation by rate

A trend in migration rate differs from that in crude number, when population is either increasing or decreasing. In the case of the 3 wards, total population was decreasing for most of the time concerned here. It suggests that in the calculation of migration rate, the number of migration is to be divided by smaller population in the later period. Therefore, if the number of migration is the same, the level of the rate consequently becomes higher in the later period. In an extreme case, it may be possible that the rate remains stable or even rises while the crude number decreases.

Figures 6-8 show trends in in-, out-, and net migration rate for each ward<sup>9</sup>. While the basic trends are the same as in Figures 3-5, the graph lines in the 80s and the early 90s look much flatter in Figures 6-8, meaning that changes in migration rate during these periods were smaller than those in crude number. As for the contribution to net migration, the relationship between in- and out-migration in the late 90s seems basically similar to that in crude number: an increase in in-migration rate played a more important role at least in Chuo and Minato wards. Around the turn of the century, however, a decrease in out-migration rate seemed to strengthen its positive contribution, even though at a low level. This was conspicuous in Chuo ward. In this area, the crude number of in- and out-migration both increased. The rate of in-migration, however, almost leveled off, and that of out-migration slightly decreased. Such differences resulted from the recent recovery of population. Population in Chuo ward grew more than 15% between 1997 and 2002, and this large increase functioned to suppress the level of migration rate.

These outcomes suggest that the evaluation of the relationships between in-, out-, and net migration rate requires the examination of population change. Especially in the late 1990s, when population stopped decreasing and started to grow, the contributions of in- and out-migration rates to a change in net migration rate would differ from those in the time of a population decrease. And as far as population continues to grow, it becomes more probable that the positive effect of an increase in in-migration rate shrinks while that of a decrease in out-migration rate rises, since the migration rate is more likely to be lower in the later time.

Regarding the trends by spatial pattern of migration, relationships between the crude number and the rate remained basically the same as in the case of total (inter- + intra-prefectural) migration. For both inter and intra-migration, a relatively large difference between the trend in crude number and that in rate was observed, for instance, in Chuo ward at around the turn of the century.

## 3. Decomposition of Net Migration Change

To summarize the above results in a more quantified way, a change in net migration is decomposed into changes in in- and out-migration. Decomposition is based on the relationship among in-, out-, and net migration shown below.

$$\begin{aligned} NM_{t+n} - NM_t &= (I_{t+n} - O_{t+n}) - (I_t - O_t) \\ &= (I_{t+n} - I_t) - (O_{t+n} - O_t) \\ &= (I_{t+n} - I_t) + (O_t - O_{t+n}) \end{aligned}$$

t, t+n: year, NM: net migration, I: in-migration, O: out-migration

The right sides of the equation denote the effects of changes in in-migration and out-migration. It should be noted that changes in in-migration and out-migration have opposite effects on net migration. Namely, an increase in in-migration has a positive effect, while that in out-migration has a negative one. In the present analysis, the calculation of a change in out-migration is rearranged as in the third expansion so that a positive value indicates a positive effect for both in- and out-migration.

As was mentioned earlier, the evaluation of migration trend depends on a baseline year selected for comparison. In our analysis, 3 cases are examined, i.e., comparison to previous year, to 1990 and to 1995<sup>10</sup>. For the actual decomposition, the 3-year moving average of migration rates is used to attenuate the effect of temporal

oscillations in migration rate. Because of space limitation and convenience for inter-ward comparison, only the results of migration rates are shown in the following tables.

Tables 1-3 show the contribution of in- and out-migration by absolute value of a rate change and by its percentage to a change in net migration. Since the present *Toshin Kaiki* is a phenomenon in the late 1990s and 2000s, the following description focuses on this period.

In Chiyoda ward, the contributions of in- and out-migration changes are both generally positive in the table of “compared to previous year” (Table 1(1)). In the periods of 1995-96, 1996-97 and 1997-98, decreases in out-migration rate placed larger effects on net migration than increases in in-migration rate. Especially, decreases in inter-prefectural out-migration explained more than half of the total net migration changes. In the last three periods, however, increases in in-migration rate contributed more to positive net migration<sup>11</sup>. In the period of 1998-99, for example, 96.7% of the change in net migration resulted from the increase in in-migration. In regard to the types of migration stream, inter-prefectural and intra-prefectural in-migration had the similar level of contribution (46.2% and 50.4% in 1998-99, respectively).

On the other hand, comparisons to the situation in 1990 give us a different picture. Table 1(2) shows that the rate of in-migration had been lower than that of 1990 for most of the 1990s, and finally surpassed the level of 1990 in 1999 (+0.25 in “1990-99”). But the rate of out-migration remained constantly lower than the level of 1990 (positive values in “out-migration total”). These facts indicate that if we select 1990 and, for instance, 1999, and examine the change of net migration between these two time points, that change would be explained mostly by a decrease in out-migration. In fact, the contribution of the decrease in out-migration was more than 90% in “1990-99” (Table 1(2)).

Comparisons to the rate in 1995 reveal a result different from that in Table 1(2). Between 1995 and the early part of the late 1990s (i.e., 1996 and 1997), the rate of in-migration changed little while that of out-migration decreased considerably. At the end of the 1990s and after, however, in-migration recorded a dramatic increase (a rise of +1.23% between 1995 and 2000 (Table 1(3)), while out-migration remained almost stable. In the five-year interval of “1995-00” as a whole, the degree of the in-migration increase surpassed that of the out-migration decrease, and therefore the former was to play a more significant role in determining the level of the net migra-

tion increase in this period. In fact, the contribution of the increase in in-migration reached 94.2% in 1995-00 (Table 1(3)).

These results would suggest that in a longer-term comparison to examine the trend in the 1990s as a whole, a decrease in out-migration was to contribute more to an increase in net migration in Chiyoda. Nevertheless, short-term changes in net migration in the late 1990s were often determined by increases in in-migration, and their effects were especially high at the turn of the century.

Compared to Chiyoda, net migration in Chuo ward has been more dominated by an increase in in-migration. Table 2(1) shows that the contribution of in-migration has been over 90% since the period of “1995-96”. Both inter-prefectural and intra-prefectural in-migration have maintained the high levels of contribution, although the contribution of the former has been declining. On the other hand, the effect of out-migration is higher than that of in-migration when we compare 1990 with the mid 1990s (Table 2(2)). In the period of “1990-95”, for example, 91.1% of the change in net migration was explained by the decrease in out-migration. In an examination of the whole 1990s, however, an increase in in-migration contributed more to a change in net migration. In the comparison between 1990 and 2000, the contribution of the in-migration increase was 73.8%. This means that the increase in in-migration in the late 90s overwhelmed the effect of the decrease in out-migration in the early 90s. In regard to the table of “compared to 1995”, the result corresponds well to the above interpretation of Table 2(2). In “1995-00”, for example, the contribution of the increase in in-migration amounts to 98.6%. It is thus suggested that whether we focus on the whole 1990s or short-term changes in the late 1990s, the increase in in-migration have placed greater impacts on the change in net migration.

Net migration in Minato ward was also affected considerably by a trend in in-migration, but the situation was somewhat different from that of Chuo. Table 3(1) shows that in the late 90s, the contribution of an increase in in-migration was generally much higher than that of a decrease in out-migration. In “1997-98”, for instance, the contribution of the increase in in-migration was 102.4%. A difference from the case in Chuo ward is a drop of the contribution of in-migration in the last period (32.5% in “1999-00”). But we should be careful to determine whether this is the evidence of a new trend or just a temporal irregularity. Differences between Chuo and Minato are also evident in Table 3(2). It shows that whether we

compare 1990 with 1995 or with 2000, the contribution of in-migration is around 60%. This has been caused by the fact that in Minato ward, the recovery of in-migration occurred much earlier than in other two wards. The table of “compared to 1995” also shows stronger contributions of in-migration. In “1995-00”, 66.5% of the change in net migration was caused by in-migration, but this value was much lower than in the other two wards. Either from a longer- or shorter-term viewpoint, it would thus be true that as in Chuo ward, the major part of the change in net migration in Minato was produced by the increase in in-migration, as long as we concentrate on migration in the late 90s. However, the contribution of the decrease in out-migration seemed to be generally higher than in Chuo ward.

In sum, the above tables reveal that the levels of in- and out-migration contribution have differed by ward and by the length of period to examine<sup>12</sup>. In the analyses of annual changes in net migration, the contributions of in-migration in the late 90s were sometimes at a similar level in all three wards (e.g. 96-97% in “1998-99”). In a longer-term comparison (such as between 1990 and 2000), the effect of an in-migration increase was largest in Chuo and smallest in Chiyoda. Hence, it may not be impossible for us to focus on the longer-term change and apply the notion of an out-migration decrease, for instance, to the situation in Chiyoda ward. However, the major part of the effect of the out-migration change in the 90s has been created by migration changes in the early, not in the late, 90s. Therefore, as long as we focus on changes in migration during the recent few years, it seems proper to conclude that an increase in net migration have been mainly produced by an increase in in-migration, not by a decrease in out-migration in the 3 wards.

#### **4. Implications**

From a socio-economic point of view, the above-discussed changes in migration have been mainly produced by the breakdown of Bubble Economy in the early 90s and its influence on the housing market. If we take into account the fact that the present economic depression has affected not only the Tokyo city core but also other areas, and that migration in one area usually causes, or is caused by, migration in others, those changes in the Tokyo core area need to be evaluated in the light of a wider spatial connotation. To supplement the present examination of the *Toshin Kaiki* from such a viewpoint, two

of its interregional characteristics are briefly mentioned below.

The first point is related to a geographical difference of in- and out-migration patterns. The present analysis has already clarified some difference among the 3 wards<sup>13</sup>. But when we expand the geographical scope of analysis, a different picture could be drawn. Figure 9 illustrates the effects of in-migration on changes in net migration rate for all 23 wards (in percentage, compared to 1995). In this map, a difference between inner and outer wards, rather than that among the 3 wards, becomes salient; the positive contribution of an in-migration increase to an increase in net migration was generally higher in the inner areas than in some outer wards<sup>14</sup>. We have no space here to look into the causes of such a difference, but it would be at least important to note that a trend in migration in the total 23-ward, which has been discussed in the previous studies, has been actually produced by aggregating these different migration patterns. Although “*Toshin Kaiki*” is a commonly used term, it sometimes denotes a different phenomenon for each ward.

The second point is that the present *Toshin Kaiki* has possibly represented a change in the spatial pattern of intra-urban migration in Tokyo. As Tables 1-3 showed, increases in intra-prefectural in-migration contributed well to changes in net migration in the core 3 wards, despite the fact that these wards used to be the origins of out-migration to the suburban Tokyo. In the other wards, intra-prefectural in-migration displays a pattern of contribution basically similar to that of the total in-migration illustrated in Figure 9. This means that intra-prefectural in-migration has been decreasing in some outer wards. If we recall the result of a previous study - the majority of the new residents in apartment houses in the central 8 wards moved from the 23-ward area (Ministry of Land, Transport and Infrastructure 2001) -, these results seem to suggest that the *Toshin Kaiki* could be interpreted, to a degree, as a product of such changes in intra-urban migration flows and subsequent population redistribution within the central area of Tokyo. They would also imply that each ward has been changing its status in the spatial system of migration. Such characteristics were also observed in some cases of gentrification in the United States (Abe 2000, also see Yamaguchi 1983, Fujitsuka 1994). Attempts for the international comparison of reurbanization may thus provide more clues to the clarification of our *Toshin Kaiki* phenomena.

## 5. Summary and Conclusion

This paper examined recent trends in in- and out-migration in the 3 core wards of Tokyo, and clarified their contribution to changes in net in-migration in the late 1990s. The data of *Tokyo-to Jumin Kihon Daicho Jinko Ido Hokoku* revealed that a rise in in-migration played the major role in increasing net migration in the late 1990s in Chuo and Minato, especially in the former. This tendency was less conspicuous in Chiyoda, where a decrease in out-migration often exerted the larger effect. When we focused on the situation of Chiyoda at the end of the 1990s and after, however, an increase in in-migration basically contributed to an increase in net migration more than a decrease in out-migration did. It is hence implied that in the recent *Toshin Kaiki* phenomena, the massive construction of large-scale apartment houses in the core Tokyo - a major socio-economic determinant of the recent increase in net migration - has functioned to attract migrants from outside, rather than to absorb potential out-migrants and suppress their outmove from the ward.

Although the number of inhabitants has started to increase, the recovery of population would continue to be a major issue in the 3 core wards. On the phase of a population increase, not only the quantity of population but also the socio-economic and demographic profiles of the recent in-migrants are likely to pose a problem to local governments and communities<sup>15</sup>. Since the latest population census of 2000 provides information on various basic attributes of residents who moved between 1995 and 2000, analyses of those data are expected to reveal more details of the recent *Toshin Kaiki* and its effects on the local areas.

## Notes

<sup>1</sup> Literally speaking, "*Toshin Kaiki*" would be translated as "back to the city center". In the recent context, however, it generally means the recovery of residential function and population in the core area of a city.

<sup>2</sup> Yamagami (2003) proclaims that reurbanization has been observed not only in the Tokyo metropolitan area but also in the Osaka and Fukuoka metropolitan areas.

<sup>3</sup> Nevertheless, long-term migration data are not abundant at a ward level. See also note 5).

<sup>4</sup> Yabe (2003) conducted a questionnaire survey on the recent in-migrants in Minato and gained similar evidence.

<sup>5</sup> On the other hand, information provided in this report is

rather limited. Sex is the only information on migrants' basic attributes. Data are collected only from Japanese nationals. Before 1982, the number of within-Tokyo out-migration was not tabulated in the report. It should be also noted that the number of migration used in the present analysis does not include the number of international in- and out-migration, because the latter is not given in the report. The number of migration with "previous residence not reported" is also excluded.

<sup>6</sup> This implies that although the *Toshin Kaiki* drew attention only recently, there may have existed a decade long process of population recovery in the core wards.

<sup>7</sup> The recovery of net migration between the late 80s and the early 90s was created, to a considerable degree, by a time lag between in- and out-migration change. This lag is caused by the fact that a change in in-migration usually produces a change in out-migration several years later, because the major part of migrants are youngsters from the non-metropolitan areas, most of who come to Tokyo to acquire education and job, but return home several years later (see Abe 1994).

<sup>8</sup> In the data of the Tokyo Metropolis, the origins of in-migration are divided into 2 categories for intra-prefectural migration ('ward area', 'other municipalities'), and into 46 prefectures for inter-prefectural migration. In regard to out-migration, however, we could obtain only two categories of destination, i.e., inside and outside of Tokyo.

<sup>9</sup> We used the following equation to obtain the rate of migration:  $M_t / ((P_t + P_{t+1}) / 2)$ , where  $M_t$  was the number of migration during year  $t$ , and  $P_t$  was the number of registered population on January 1, year  $t$ .

<sup>10</sup> In the latter two comparisons, we need to be careful to evaluate the difference of contribution between periods, because the contribution of migration in one period is often affected by the contribution in other periods (e.g. the change in in-migration in 1995-00 contains in itself the effect of the change in 1995-96).

<sup>11</sup> In the case of 1997-98, the change in net migration was negative (-0.14). Therefore the percentage of the in-migration change also became negative (-164.6%), even though the absolute value of the in-migration change was positive (+0.23).

<sup>12</sup> We should also keep in mind that these results would be partly modified if we examine migration trends by crude number. In a period of population decrease, for example, the effect of an in-migration increase becomes larger in the examination of rate than in the examina-

tion of crude number. Also see the examination of migration rate in 2-2.

- <sup>13</sup> From a socio-economic point of view, differences among the 3 wards seem to be basically explained by geographical differences in the recent supply of apartment houses per inhabitants. In the 1996-2000 period, the number of apartment house constructions per capita was largest in Chuo ward and smallest in Chiyoda ward (see the graph in Tokyo to 2002, p.79).
- <sup>14</sup> For all 23 wards, changes in net migration were positive in all periods concerned here. Therefore, negative in-migration contributions in some outer wards indicate that the effects of out-migration decreases were positive there.
- <sup>15</sup> Friction between old and new residents has been one of the issues long discussed by the scholars of urban studies (eg. The Tokyo Institute for Municipal Research 1991 pp.46-47). This is also a crucial topic for local governments in the city core, since the recovery of population, their main policy objective, is unlikely fulfilled without in-migration of new residents. For example, local government's attitude to this problem is revealed in the latest housing plan of Minato ward, in which Minato ward government, against the backdrop of the recent *Toshin Kaiki*, emphasizes a necessity to recognize the multi-facet nature of the present inhabitants, and accordingly create a new community to promote the sustainable settlement of those residents (Minato-ku 2002a, Minato-ku 2002b).

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(Masato Shimizu  
IPSS)

Table 1. Contributions of in- and out-migration changes to net migration changes in Chiyoda ward

(1) compared to previous year

	(a) change in migration rate							(b) % to change in net migration rate					
	in-migration			out-migration			Net migration	in-migration			out-migration		
	total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.		total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.
1982-83	-0.60	-0.30	-0.30	1.03	0.21	0.81	-1.62	36.9	18.5	18.4	-63.1	-13.0	-50.1
1983-84	-0.70	-0.52	-0.19	-1.26	-0.67	-0.59	0.56	-125.7	-92.2	-33.5	-225.7	-119.3	-106.3
1984-85	-0.40	-0.17	-0.23	0.48	0.07	0.42	-0.89	45.4	19.5	25.8	-54.6	-7.5	-47.2
1985-86	0.10	0.28	-0.18	1.10	0.10	0.99	-0.99	-10.4	-28.4	18.0	-110.4	-10.2	-100.2
1986-87	-1.87	-1.04	-0.83	-0.42	0.01	-0.43	-1.45	129.2	71.7	57.5	29.2	-0.7	29.9
1987-88	-0.04	0.15	-0.19	-0.74	-0.01	-0.73	0.70	-5.2	21.7	-26.9	-105.2	-1.7	-103.5
1988-89	0.18	0.14	0.04	-0.35	-0.19	-0.16	0.53	34.6	26.9	7.7	-65.4	-35.4	-30.0
1989-90	0.49	-0.09	0.58	-0.13	-0.21	0.08	0.62	79.1	-14.5	93.6	-20.9	-34.5	13.6
1990-91	-0.54	-0.27	-0.27	0.65	0.19	0.46	0.11	-484.6	-239.7	-244.9	584.6	169.6	415.0
1991-92	-0.77	-0.36	-0.41	0.51	0.12	0.39	-0.26	299.3	141.3	158.0	-199.3	-46.5	-152.8
1992-93	-0.02	-0.16	0.14	0.69	0.14	0.55	0.67	-3.3	-24.2	20.8	103.3	21.4	81.9
1993-94	0.34	-0.06	0.41	0.27	0.17	0.09	0.61	56.2	-10.2	66.5	43.8	28.6	15.2
1994-95	0.45	0.10	0.35	0.68	0.36	0.33	1.13	39.6	8.8	30.8	60.4	31.4	29.0
1995-96	0.02	0.03	-0.01	0.14	0.17	-0.02	0.17	14.1	18.8	-4.7	85.9	100.8	-14.9
1996-97	0.05	0.05	0.00	0.16	0.12	0.04	0.21	24.0	25.2	-1.3	76.0	58.0	18.0
1997-98	0.23	0.03	0.20	-0.37	-0.09	-0.28	-0.14	-164.6	-18.4	-146.2	264.6	61.9	202.7
1998-99	0.48	0.23	0.25	0.02	0.10	-0.08	0.50	96.7	46.2	50.4	3.3	20.5	-17.1
1999-00	0.44	0.16	0.28	0.12	0.16	-0.04	0.57	78.3	28.6	49.6	21.7	28.1	-6.4

1. prefec.=prefecture.

2. Figures in the table are rounded off.

3. For the calculation of a change in migration rate, see the text.

Source: Tokyo to jumin kihon daicho jinko ido hokoku

(2) compared to 1990

	(a) change in migration rate							(b) % to change in net migration rate					
	in-migration			out-migration			Net migration	in-migration			out-migration		
	total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.		total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.
1990-91	-0.54	-0.27	-0.27	0.65	0.19	0.46	0.11	-484.6	-239.7	-244.9	584.6	169.6	415.0
1990-92	-1.31	-0.63	-0.68	1.16	0.31	0.85	-0.15	892.7	429.8	463.0	-792.7	-210.0	-582.7
1990-93	-1.33	-0.79	-0.54	1.85	0.45	1.40	0.53	-252.8	-150.5	-102.3	352.8	85.9	266.9
1990-94	-0.99	-0.85	-0.13	2.12	0.63	1.50	1.14	-86.7	-75.1	-11.6	186.7	55.1	131.6
1990-95	-0.54	-0.75	0.22	2.80	0.98	1.82	2.27	-23.7	-33.3	9.6	123.7	43.3	80.4
1990-96	-0.51	-0.72	0.21	2.95	1.15	1.80	2.43	-21.1	-29.7	8.6	121.1	47.2	73.9
1990-97	-0.46	-0.67	0.21	3.11	1.27	1.84	2.65	-17.5	-25.3	7.8	117.5	48.1	69.4
1990-98	-0.23	-0.64	0.41	2.74	1.19	1.55	2.51	-9.2	-25.6	16.4	109.2	47.3	61.9
1990-99	0.25	-0.41	0.66	2.76	1.29	1.47	3.00	8.2	-13.8	22.0	91.8	42.9	48.9
1990-00	0.69	-0.25	0.94	2.88	1.45	1.43	3.57	19.4	-7.0	26.4	80.6	40.5	40.1

1. prefec.=prefecture.

2. Figures in the table are rounded off.

3. For the calculation of a change in migration rate, see the text.

Source: Tokyo to jumin kihon daicho jinko ido hokoku

(3) compared to 1995

	(a) change in migration rate							(b) % to change in net migration rate					
	in-migration			out-migration			Net migration	in-migration			out-migration		
	total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.		total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.
1995-96	0.02	0.03	-0.01	0.14	0.17	-0.02	0.17	14.1	18.8	-4.7	85.9	100.8	-14.9
1995-97	0.07	0.09	-0.01	0.31	0.29	0.01	0.38	19.7	22.4	-2.8	80.3	76.8	3.6
1995-98	0.31	0.11	0.19	-0.06	0.21	-0.27	0.24	126.7	46.1	80.5	-26.7	85.4	-112.1
1995-99	0.78	0.34	0.44	-0.05	0.31	-0.36	0.74	106.5	46.2	60.3	-6.5	41.7	-48.2
1995-00	1.23	0.50	0.73	0.08	0.47	-0.39	1.30	94.2	38.6	55.7	5.8	35.8	-30.0

1. prefec.=prefecture.

2. Figures in the table are rounded off.

3. For the calculation of a change in migration rate, see the text.

Source: Tokyo to jumin kihon daicho jinko ido hokoku

Table 2. Contributions of in- and out-migration changes to net migration changes in Chuo ward

(1) compared to previous year

	(a) change in migration rate							(b) % to change in net migration rate					
	in-migration			out-migration			Net migration	in-migration			out-migration		
	total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.		total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.
1982-83	0.47	0.23	0.24	0.21	-0.13	0.34	0.26	181.2	89.6	91.6	81.2	-51.0	132.2
1983-84	-0.13	-0.06	-0.07	-0.31	-0.04	-0.28	0.18	-70.7	-35.0	-35.8	-170.7	-20.7	-150.0
1984-85	-0.67	-0.25	-0.42	0.43	0.10	0.33	-1.10	60.8	22.3	38.5	-39.2	-8.8	-30.3
1985-86	-0.26	0.04	-0.30	0.53	-0.08	0.62	-0.79	32.8	-4.8	37.6	-67.2	10.5	-77.7
1986-87	-0.03	0.17	-0.20	0.48	0.51	-0.03	-0.50	5.0	-34.3	39.3	-95.0	-101.0	6.0
1987-88	-0.23	-0.22	-0.01	0.38	0.53	-0.15	-0.61	38.1	35.7	2.4	-61.9	-86.2	24.3
1988-89	0.11	-0.22	0.33	-0.46	-0.31	-0.15	0.57	19.2	-38.6	57.8	-80.8	-54.3	-26.5
1989-90	-0.18	-0.05	-0.13	-0.04	-0.02	-0.02	-0.14	126.2	34.4	91.8	26.2	12.8	13.4
1990-91	-0.04	-0.10	0.06	0.50	0.17	0.33	0.46	-8.1	-21.8	13.6	108.1	36.8	71.3
1991-92	0.13	-0.12	0.25	0.47	0.24	0.23	0.60	21.5	-19.6	41.1	78.5	39.5	39.0
1992-93	-0.40	-0.19	-0.21	0.42	0.23	0.19	0.02	-1879.4	-883.6	-995.8	1979.4	1088.7	890.7
1993-94	0.19	-0.06	0.25	0.09	0.24	-0.15	0.28	67.2	-20.0	87.2	32.8	86.1	-53.4
1994-95	0.27	0.01	0.25	0.08	0.23	-0.15	0.35	76.8	4.2	72.6	23.2	66.1	-42.9
1995-96	0.50	0.24	0.26	-0.08	0.16	-0.24	0.42	119.2	57.4	61.8	-19.2	37.0	-56.2
1996-97	0.74	0.43	0.32	0.03	0.03	0.00	0.77	96.7	55.5	41.2	3.3	3.3	0.0
1997-98	1.23	0.58	0.65	0.00	0.02	-0.02	1.23	100.2	47.1	53.1	-0.2	1.4	-1.6
1998-99	1.17	0.43	0.74	0.04	-0.02	0.06	1.20	97.0	35.7	61.3	3.0	-1.7	4.7
1999-00	0.78	0.24	0.54	0.08	0.04	0.04	0.86	90.3	27.8	62.5	9.7	4.9	4.9

1. prefec.=prefecture.

2. Figures in the table are rounded off.

3. For the calculation of a change in migration rate, see the text.

Source: Tokyo to jumin kihon daicho jinko ido hokoku

(2) compared to 1990

	(a) change in migration rate							(b) % to change in net migration rate					
	in-migration			out-migration			Net migration	in-migration			out-migration		
	total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.		total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.
1990-91	-0.04	-0.10	0.06	0.50	0.17	0.33	0.46	-8.1	-21.8	13.6	108.1	36.8	71.3
1990-92	0.09	-0.22	0.31	0.97	0.41	0.56	1.06	8.7	-20.5	29.2	91.3	38.3	53.0
1990-93	-0.30	-0.40	0.10	1.39	0.64	0.75	1.08	-28.1	-37.3	9.2	128.1	58.8	69.3
1990-94	-0.11	-0.46	0.35	1.48	0.88	0.60	1.36	-8.4	-33.7	25.4	108.4	64.5	43.9
1990-95	0.15	-0.45	0.60	1.56	1.11	0.45	1.71	8.9	-26.0	34.9	91.1	64.8	26.3
1990-96	0.65	-0.20	0.86	1.48	1.26	0.21	2.13	30.6	-9.6	40.2	69.4	59.3	10.1
1990-97	1.39	0.22	1.17	1.50	1.29	0.21	2.90	48.1	7.6	40.5	51.9	44.5	7.4
1990-98	2.62	0.80	1.82	1.50	1.31	0.20	4.12	63.6	19.4	44.2	36.4	31.7	4.7
1990-99	3.79	1.23	2.56	1.54	1.29	0.25	5.33	71.1	23.1	48.1	28.9	24.1	4.7
1990-00	4.56	1.47	3.10	1.62	1.33	0.29	6.19	73.8	23.7	50.1	26.2	21.5	4.7

1. prefec.=prefecture.

2. Figures in the table are rounded off.

3. For the calculation of a change in migration rate, see the text.

Source: Tokyo to jumin kihon daicho jinko ido hokoku

(3) compared to 1995

	(a) change in migration rate							(b) % to change in net migration rate					
	in-migration			out-migration			Net migration	in-migration			out-migration		
	total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.		total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.
1995-96	0.50	0.24	0.26	-0.08	0.16	-0.24	0.42	119.2	57.4	61.8	-19.2	37.0	-56.2
1995-97	1.24	0.67	0.57	-0.05	0.18	-0.24	1.19	104.6	56.2	48.4	-4.6	15.2	-19.8
1995-98	2.47	1.24	1.23	-0.06	0.20	-0.25	2.41	102.4	51.6	50.8	-2.4	8.2	-10.6
1995-99	3.64	1.67	1.96	-0.02	0.18	-0.20	3.62	100.6	46.3	54.3	-0.6	4.9	-5.5
1995-00	4.41	1.91	2.50	0.06	0.22	-0.16	4.48	98.6	42.7	55.9	1.4	4.9	-3.5

1. prefec.=prefecture.

2. Figures in the table are rounded off.

3. For the calculation of a change in migration rate, see the text.

Source: Tokyo to jumin kihon daicho jinko ido hokoku

Table 3. Contributions of in- and out-migration changes to net migration changes in Minato ward

(1) compared to previous year

	(a) change in migration rate							(b) % to change in net migration rate					
	in-migration			out-migration			Net migration	in-migration			out-migration		
	total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.		total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.
1982-83	-0.74	-0.42	-0.32	0.34	-0.03	0.37	-1.08	68.7	39.4	29.3	-31.3	2.6	-33.9
1983-84	-0.10	0.13	-0.23	-0.15	-0.30	0.15	0.06	-169.7	230.2	-399.9	-269.7	-530.5	260.8
1984-85	-0.52	-0.36	-0.17	0.43	0.18	0.25	-0.95	55.0	37.6	17.4	-45.0	-18.5	-26.5
1985-86	-0.38	-0.01	-0.37	0.23	0.10	0.13	-0.61	62.2	1.6	60.6	-37.8	-15.9	-21.9
1986-87	-0.62	-0.38	-0.24	1.01	0.55	0.46	-1.63	38.1	23.5	14.6	-61.9	-33.8	-28.0
1987-88	-0.21	0.00	-0.21	-0.20	0.00	-0.20	-0.01	1687.3	-5.8	1693.1	1587.3	-19.1	1606.4
1988-89	0.01	0.02	-0.01	-0.76	-0.37	-0.39	0.77	1.1	2.2	-1.1	-98.9	-48.3	-50.6
1989-90	-0.16	-0.21	0.05	-0.39	-0.19	-0.20	0.24	-66.2	-88.6	22.4	-166.2	-81.7	-84.5
1990-91	-0.16	-0.14	-0.02	0.60	0.19	0.41	0.44	-35.7	-32.1	-3.7	135.7	42.0	93.7
1991-92	0.25	-0.03	0.28	0.44	0.16	0.29	0.70	36.4	-4.3	40.7	63.6	22.3	41.3
1992-93	0.54	0.06	0.48	0.27	0.06	0.20	0.81	66.9	8.0	58.9	33.1	8.0	25.1
1993-94	0.69	0.17	0.52	-0.03	0.06	-0.10	0.66	105.3	26.3	79.0	-5.3	9.4	-14.7
1994-95	0.89	0.23	0.66	0.14	0.13	0.01	1.03	86.5	22.2	64.4	13.5	12.5	0.9
1995-96	0.16	0.09	0.07	0.04	0.14	-0.11	0.20	81.6	46.2	35.5	18.4	73.8	-55.4
1996-97	0.32	0.09	0.23	0.18	0.15	0.02	0.49	64.5	17.3	47.2	35.5	31.1	4.4
1997-98	-0.37	-0.07	-0.30	0.01	0.10	-0.09	-0.36	102.4	19.3	83.1	-2.4	-27.3	24.9
1998-99	0.68	0.16	0.51	0.03	0.12	-0.09	0.70	96.4	23.4	73.0	3.6	17.0	-13.4
1999-00	0.09	0.04	0.06	0.20	0.14	0.05	0.29	32.5	12.4	20.1	67.5	48.8	18.7

1. prefec.=prefecture.

2. Figures in the table are rounded off.

3. For the calculation of a change in migration rate, see the text.

Source: Tokyo to jumin kihon daicho jinko ido hokoku

(2) compared to 1990

	(a) change in migration rate							(b) % to change in net migration rate					
	in-migration			out-migration			Net migration	in-migration			out-migration		
	total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.		total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.
1990-91	-0.16	-0.14	-0.02	0.60	0.19	0.41	0.44	-35.7	-32.1	-3.7	135.7	42.0	93.7
1990-92	0.10	-0.17	0.27	1.04	0.34	0.70	1.14	8.4	-15.1	23.5	91.6	29.9	61.6
1990-93	0.64	-0.11	0.74	1.31	0.41	0.90	1.95	32.7	-5.5	38.2	67.3	20.8	46.5
1990-94	1.33	0.07	1.26	1.27	0.47	0.81	2.60	51.1	2.5	48.5	48.9	17.9	31.0
1990-95	2.22	0.29	1.93	1.41	0.60	0.82	3.63	61.1	8.1	53.0	38.9	16.4	22.5
1990-96	2.38	0.38	1.99	1.45	0.74	0.71	3.83	62.1	10.0	52.1	37.9	19.4	18.5
1990-97	2.70	0.47	2.23	1.62	0.89	0.73	4.32	62.4	10.9	51.5	37.6	20.7	16.9
1990-98	2.32	0.40	1.92	1.63	0.99	0.64	3.96	58.7	10.1	48.6	41.3	25.1	16.2
1990-99	3.00	0.56	2.44	1.66	1.11	0.55	4.66	64.4	12.1	52.3	35.6	23.9	11.7
1990-00	3.09	0.60	2.49	1.85	1.25	0.60	4.95	62.5	12.1	50.4	37.5	25.3	12.1

1. prefec.=prefecture.

2. Figures in the table are rounded off.

3. For the calculation of a change in migration rate, see the text.

Source: Tokyo to jumin kihon daicho jinko ido hokoku

(3) compared to 1995

	(a) change in migration rate							(b) % to change in net migration rate					
	in-migration			out-migration			Net migration	in-migration			out-migration		
	total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.		total	inter-prefec.	intra-prefec.	total	inter-prefec.	intra-prefec.
1995-96	0.16	0.09	0.07	0.04	0.14	-0.11	0.20	81.6	46.2	35.5	18.4	73.8	-55.4
1995-97	0.48	0.18	0.30	0.21	0.30	-0.09	0.69	69.4	25.5	43.8	30.6	43.2	-12.6
1995-98	0.11	0.11	0.00	0.22	0.40	-0.18	0.33	32.4	32.4	0.0	67.6	122.1	-54.5
1995-99	0.78	0.27	0.51	0.25	0.52	-0.27	1.03	76.1	26.3	49.8	23.9	50.4	-26.4
1995-00	0.87	0.31	0.57	0.44	0.66	-0.22	1.31	66.5	23.2	43.3	33.5	50.0	-16.5

1. prefec.=prefecture.

2. Figures in the table are rounded off.

3. For the calculation of a change in migration rate, see the text.

Source: Tokyo to jumin kihon daicho jinko ido hokoku

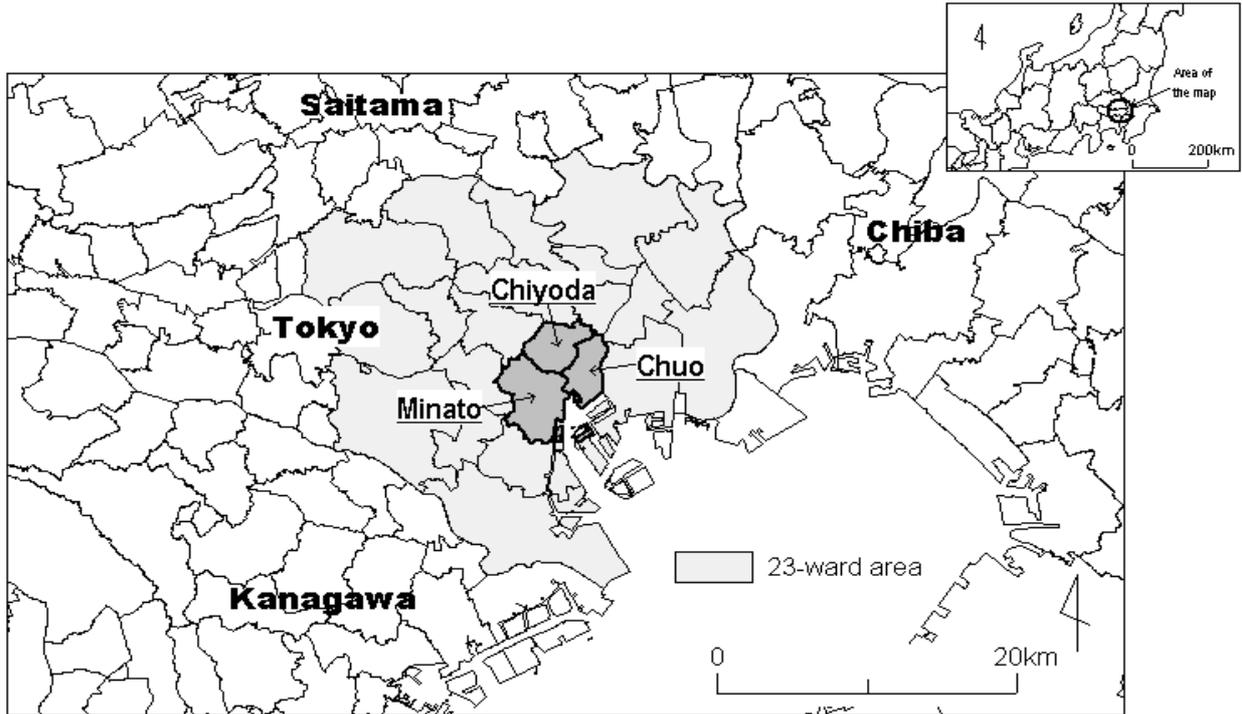


Figure 1. Study area

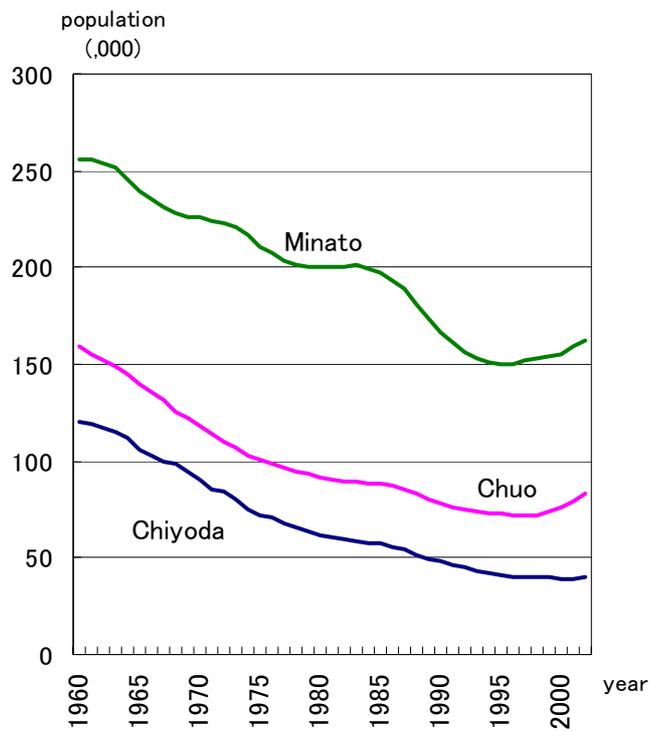


Figure 2. Population in the 3 core wards (1960–2002)

1. population as of Jan. 1

Source: Jumin kihon daicho ni yoru Tokyo to no setai to jinko

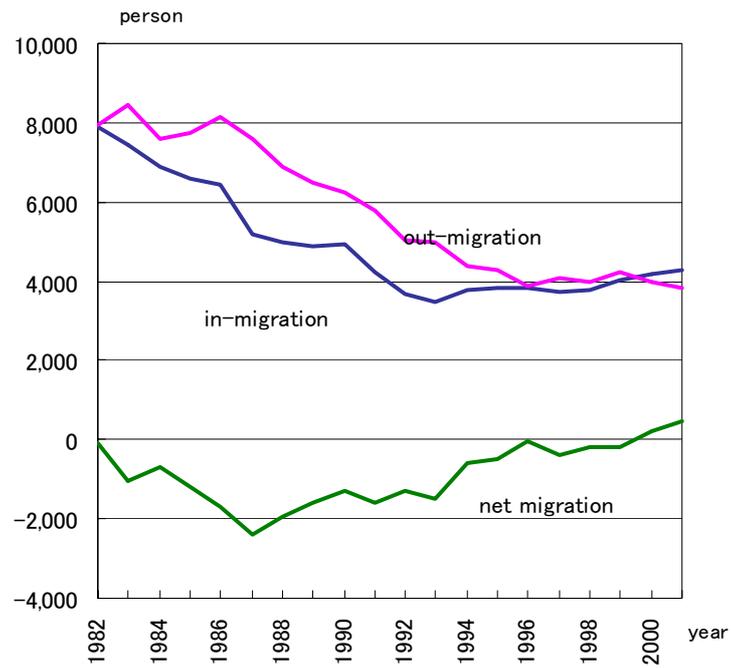


Figure 3. The number of migrants in Chiyoda ward  
Source: Tokyo to jumin kihon daicho jinko ido hokoku

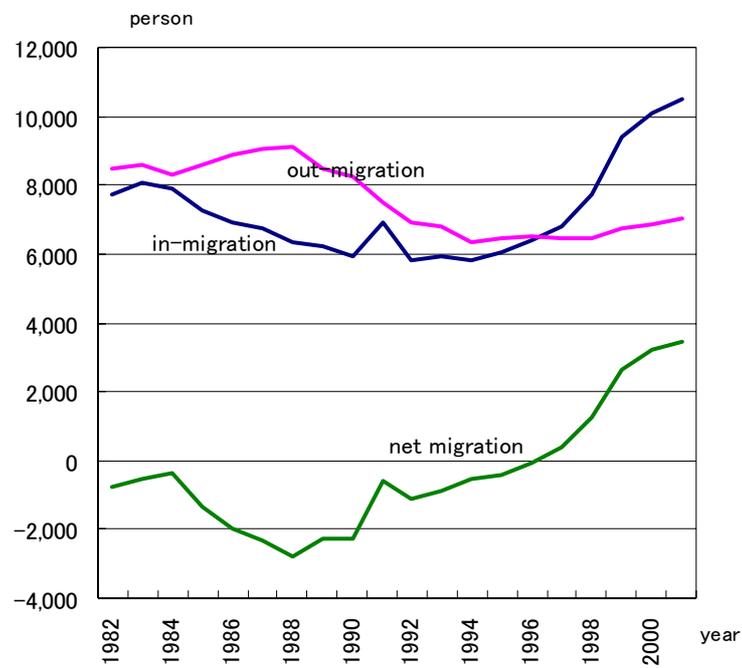


Figure 4. The number of migrants in Chuo ward  
Source: Tokyo to jumin kihon daicho jinko ido hokoku

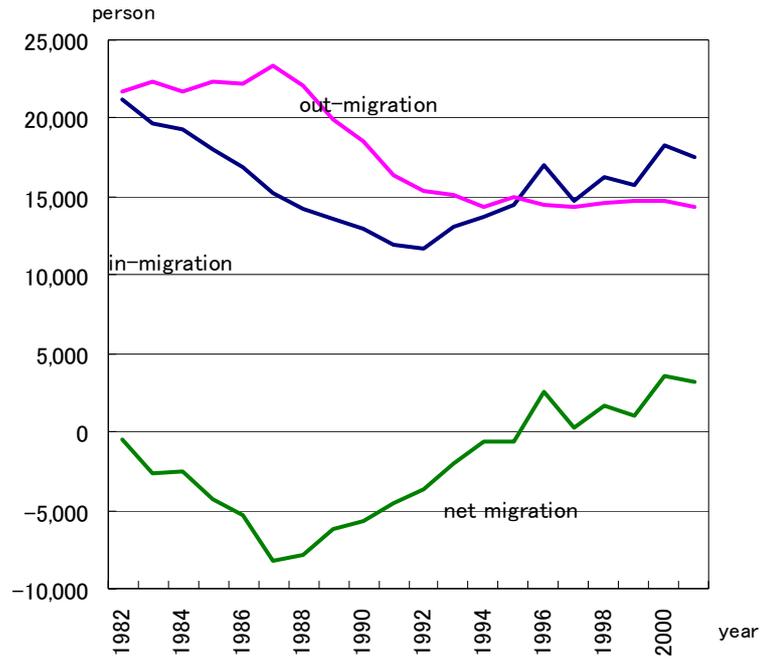


Figure 5. The number of migrants in Minato ward  
Source: Tokyo to jumin kihon daicho jinko ido hokoku

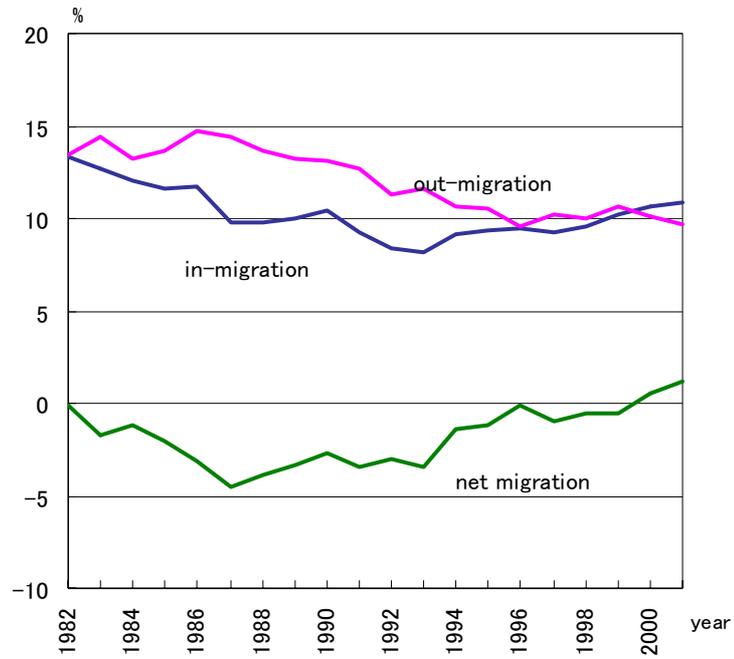


Figure 6. The rate of migration in Chiyoda ward  
Source: Tokyo to jumin kihon daicho jinko ido hokoku

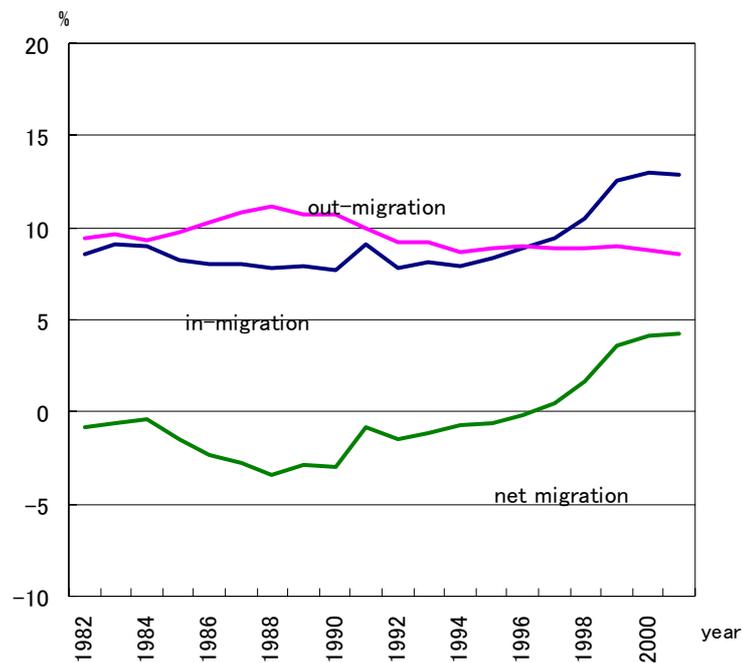


Figure 7. The rate of migration in Chuo ward

Source: Tokyo to jumin kihon daicho jinko ido hokoku

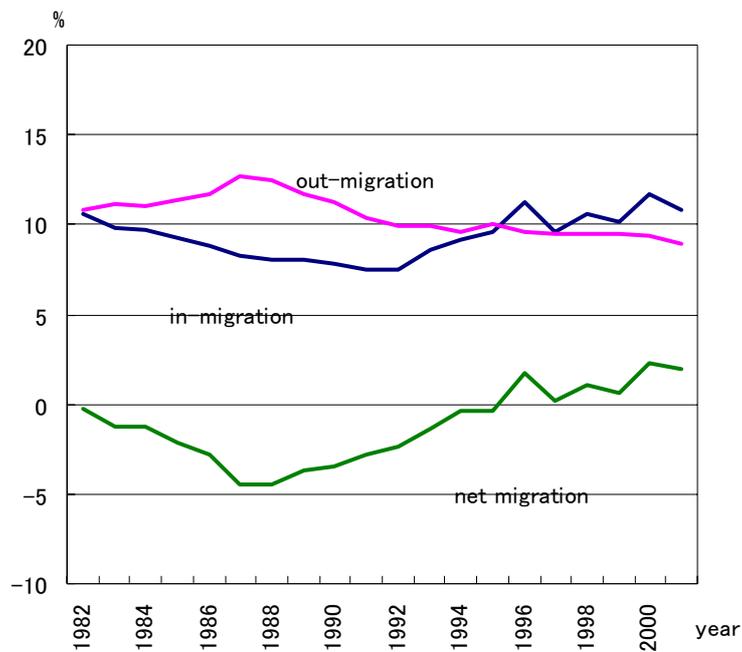


Figure 8. The rate of migration in Minato ward

Source: Tokyo to jumin kihon daicho jinko ido hokoku

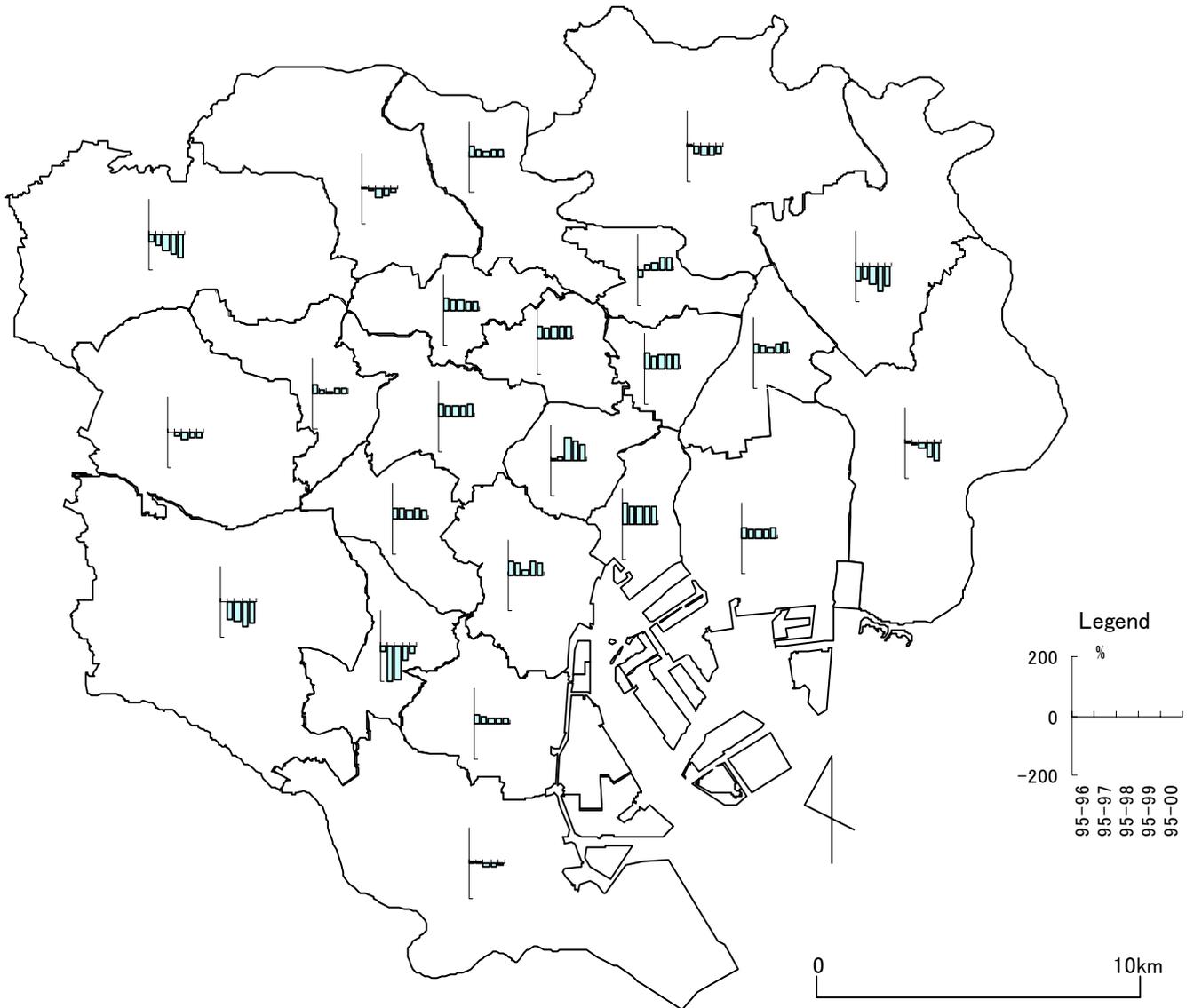


Figure 9. Contributions of in-migration changes to net migration changes (compared to 1995, %)

1. For a convenience of comparison, percentages over 200% and under -200% are denoted as 200% and -200%, respectively.

Source: Tokyo to jumin kihon daicho jinko ido hokoku