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Metropolitan Aging Transition and Metropolitan Redistribution: of the Elderly in Italy

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1. Introduction

Since the late 1960s or the early 1970s, a period of remarkable and largely unexpected changes in the general patterns of population redistribution has taken place in advanced Western countries. These countries recorded a slowdown in the rate of population concentration, or a complete reversal of the migration trends affecting their core regions and larger metropolitan areas. Many studies have demonstrated the reversal, not only in the traditional migratory exchanges between the sparsely populated peripheral regions and the densely populated core regions (Vining and Kontuly, 1978; Vining and Pallone, 1982), but also in the internal development of population trends for the inner (core) and outer (ring) parts of each metropolitan area.

One of the most significant aspects of these new trends can be observed in the internal transformation of the urban systems and in the new patterns of intrametropolitan redistribution (i.e., between central city and suburban rings). Hall and Hay (1980) demonstrated that in Europe, where population was concentrating in the cores of metropolitan areas in the 1950s, these same metropolitan areas during the 1960s were experiencing a decentralization from cores to rings, even in istances where the entire metropolitan area were still growing. During the 1970s this decentralization process accelerated, so that the cores ceased to grow and the rings accounted for more than the overall net gain of the entire metropolitan population. In some larger metropolitan areas, however, the absolute growth of the peripheral parts was not large enough to compensate for the population losses sustained by their cores.

In the study of metropolitan demographic transition and its implications, two major aspects should be investigated. First, the changes in the social and demographic structures of the metropolitan sub-populations principally due to the high intensity and selectivity of migration. The age selectivity of metropolitan migration has a strong influence on the age composition of the local metropolitan populations. The structural impact of migration results, at first, in a disproportional change of the young adults and, later, because of the aging-in-place of these cohorts, in a corresponding variation of the elderly population. In other words, one should take into account another transition associated to metropolitan demographic growth transition from the historical concentration trends to the new deconcentration patterns, that is the metropolitan aging transition.

The second aspect attaches to the hypothesized different role played by the elderly and the nonelderly people in the metropolitan shifts. Indeed, detailed studies of migration in several type of metropolitan regions have confirmed the importance of analysing age-

selective movements, and have provided a promising direction for explanation of urbanization and counter-urbanization patterns.

Kontuly et al. (1986) revealed that in the Federal Republic of Germany during the 1970s, counter-urbanization movement patterns characterized the 50 years and older age group of pre-retirement and retirement movers, whereas urbanization movement patterns characterized those aged 18 to 29 years. However, age-specific internal migration patterns changed between 1970 and 1984 (Kontuly and Vogelsang, 1989). The 30-49 and the under-18 years old age groups, which include primarily family migrants, moved in a counter-urbanization direction, as did retirement and pre-retirement movers (those in the 50 years and over age groups). In the more recent period, 25-29 year-olds also began to approach a counter-urbanization pattern.

In France, the Paris region (ZPIU) recorded a migratory loss for all but 15-24 year-olds during the 1975-1982 period, with especially high net out-migration by people around retirement age and by family-rearing age groups and their children (Winchester and Ogden, 1989). In the U.S. the counter-urbanization related migration of the elderly in the late 1960s was not shared by the 25-34 year-old population. "The migration patterns of the latter population were generally consistent with the long-standing urbanization model (...). By the later 1970s the patterns for the 25-34 year-olds had changed in such a way that both elderly and "prime age" populations exhibited counter-urbanization-related patterns then" (Frey, 1989).

As far as the Italian case is concerned, the main changes seem to be those affecting the two Northwestern metropolitan areas of Turin and Milan. These areas are experiencing increasing population losses of their central cities and a marked decentralization process from cores to rings, but the extent to which the metropolitan shift depends on the deconcentration trends of the elderly and non elderly, has not been documented suitably until now.

In conclusion, changes in migration patterns are not the only major factor responsible for the spatial shift in metropolitan demographic growth, but because of the age selectivity of migration and the differences in age migration propensity according to the direction of metropolitan flows, migration also play an important role in differentiating the aging process across the metropolitan system.

This chapter consists of two parts. The first is devoted to an analysis of metropolitan population dynamics and metropolitan aging transition over time in the major Italian metropolitan areas. Before dealing with the metropolitan dimension a brief discussion of the regional differences in the aging process seems in order. The second part is focused on the metropolitan areas of Turin and Milan and deals with the age

selectivity of migration between central cities and suburbs (intrametro mobility) and between the metropolitan areas (and each of their elements) and other parts of the country (extrametro mobility). This will allow us to explore the links between population redistribution across a national settlement system and developments within each element of it.

2. Regional differentials in the aging process

According to the demographic theory, pre-transitional populations may be regarded as traditional. In such populations the effect of the "natural increase" component is prevailing, whereas mobility may be regarded as of a lesser importance. Indeed, this is a purely theoretical framework. A part from unpredictable and traumatic events, like wars, famines or epidemics, two main additional factors may cause the real situation to be rather different: the level of external migrations (outmigration for Europe, immigration for America and Australasia) and the degree of internal demographic dishomogeneity of a country. External migrations may significantly affect the age structures and their pace of change. On the other hand different internal dynamics may lead to demographic imbalances and start the basis for increasing internal mobility.

External emigration from Italy has been huge for near a century, but, surprisingly, it may be regarded as a source of territorial imbalance less important than expected, for it was not as geographically selective as often taken for granted, but affected over time the whole national territory (including the North and the Centre). Conversely, relevant subnational differences in the natural dynamics intrinsecally take part in the background demographic behavior of Italy and should be taken into account in describing the metropolitan transitional process. Geography plays a major role in the description and interpretation of many aspects of the Italian socio-economic situation. Although that is in general true for every country, the territorial dimension is especially important when dealing with Italian data, because of the high variability in regional characteristics.

The interpretation of the demographic trends is not an exception. In particular, the aging process is the result of two interacting factors that vary very greatly from region to region. The "natural increase" component of aging has changed according to the typical demographic transition pattern, some timing lags nothwitstanding, in all regions. Nonetheless interregional variability is high and shows great stability. This is particularly true for fertility transition patterns. Since fertility is a major factor in determining the pace of aging, this had led to a quite stable fundamental aging hierarchy across the Italian regions that can be considered, to some extent, to be a historical feature of the Italian

demographic framework. If the bottom and the top values are considered, the ultimate fertility of cohorts born 1920 was respectively 1.7 and 1.5 in Piedmont and Liguria, whereas approximately the double in Campania (3.3): this gap, still surviving despite the well-known decline in levels, is the major reason for the background differentials in aging.

During the transitional phase, internal long-distance mobility has become the other important factor contributing to the determination of territorial differentials in the aging process, both at regional and, especially, sub-regional level. In selected restricted spatial environments mobility has completely reversed the background age patterns and has changed the related age structures. An indirect contribution attaches to past cohorts of working-age migrants, who progressively enter the retirement age. In addition, elderly migrants have direct effects on origin and destination age structures. The former factor has brought on large interregional redistribution of young labour force along the South-North direction, and it represents an important component of the subsequent aging-in-place process in the destination regions. The influence of the latter seems to be acting in the opposite direction, because the previous major labor force destination regions have become the major origin regions for elderly migration.

If one relaxes the assumption that movers acquire the same propensities natives enjoy and instead assumes that non-native elderly have a higher propensity to move than do the native elderly, a model may be built, in which current elderly mobility depends, although only in part, directly on working-age mobility over prevoius years. According to such a model elderly mobility would be related both to previous general mobility and to other amenity variables. The first-type of elderly mobility should result in the non-native elderly flows back (to their native areas), while the second-type of elderly would give rise to the "Florida effect". Table 1 contains regional values for the index of elderly compositional concentration. The set of these values for 1951 may be looked at as a rough measure of the regional aging hierarchy arising from historical discrepancies in regional fertility, mortality and migration trends.

Although the main feature of the hierarchy (the North-South dychotomy) has not varied substantially, significant changes have occurred mostly over the decades since 1951, mainly due to large migration flows and their geographical and age selectivity. Piedmont, the "oldest" region in 1951, before the largest immigration waves started, takes the second place in the hierarchy in 1961, the fourth in 1971 and the fifth in 1981. Given the fertility and mortality differentials have not changed radically in intensity, it is reasonable to conclude that mobility must have played a remarkable role in modifying the hierarchy of elderly compositional concentration over the 1951-1981 period, but not

Table 1 - Index of elderly (65 and over) compositional concentration and tempo of aging (65 and over) in the Italian regions (per thousand)

REGIONS	Elderly concentration				Tempo of aging		
	1951	1961	1971	1981	1951/61	1961/71	1971/81
Piedmont	114	127	137	156	10.6	8.0	13.1
Val D'Aosta	90	98	115	139	8.2	16.4	19.0
Lombardy	82	93	106	125	14.2	13.3	16.7
Trentino A.Adige	82	88	108	129	7.3	19.7	17.8
Veneto	77	91	108	129	17.5	16.9	17.5
Friuli V.Giulia	92	114	142	170	21.8	21.5	18.2
Liguria	106	128	155	188	19.2	18.6	19.2
Emilia Romagna	87	107	130	163	20.6	19.6	22.3
Tuscany	98	119	143	168	19.2	18.4	16.1
Umbria	82	101	124	156	21.0	20.2	23.0
Marche	81	99	121	153	19.3	20.4	23.3
Lazio	70	81	94	116	15.6	14.1	21.4
Abruzzi	83	99	123	145	17.2	21.9	16.7
Molise	82	97	130	156	16.6	28.9	18.4
Campania	65	74	87	97	12.2	17.4	10.4
Puglia	71	80	93	105	11.7	15.4	12.3
Basilicata	66	75	102	125	12.1	31.2	20.5
Calabria	68	79	101	118	14.8	25.0	15.2
Sicily	80	90	109	123	11.6	19.1	12.6
Sardinia	78	88	102	111	11.4	15.3	8.4
ITALY	82	95	113	132	15.1	16.7	16.1

enough to bridge the gap between the older North and the younger South. Liguria and Campania illustrate this gap. Liguria always takes the first or second place of the hierarchy, whereas Campania always is in the last place.

Introducing the concept of "tempo" to measure the pace of compositional concentration may be helpful, as it illuminates comparisons between different trends. Such an approach (Rogers, 1989) combines two values of annual growth rates, providing thereby a dynamic relative measure. Since the index of elderly compositional concentration is a ratio of one population to another, its annual growth rate can be expressed as the difference between the annual growth rates of these two populations, that is

$$TA(i, 65+) = r(i, 65+) - r(i,0+) \quad (1)$$

where

r(i, 65+) annual growth rate of i-th region's elderly population

r(i, 0+) annual growth rate of i-th region's general population

The values of this rate are set out in Table 1 and measure regional differentials in aging over the observed time-interval, integrating the interpretation of the regional framework provided by the compositional indices. The aging pace of Piedmont is indeed one of the slowest, while that of Umbria and each of the other five North-East and Center regions (Friuli, Emilia-Romagna, Tuscany, Liguria and Marche) is the fastest. More generally, over the highest period of mobility (1951-1971) the in-migration regions experienced relatively lower paces of aging, due to relatively high general population growth rates; this is not only the case for Piedmont, but also for Lombardy and Lazio. Conversely, for some out-migration regions, the general population growth was relatively low, resulting in higher tempos af aging.

3. Metropolitan population dynamics

If the regional dimension of analysis may be sufficient in describing the "natural increase" background dynamics, it appears largely inadequate when a global view of demographic changes is required. The need for an integrated approach, in exploring relationships and synergies between natural components and mobility, calls for multistate tools on a methodological side and for metropolitan scales on a dimensional side. With this regard, the metropolitan level of analysis should be considered an invaluable tool to describe and interprete the territorial demographic patterns. The major and most significant transformations in the trends of spatial demographic growth are observable at

metropolitan scale, not only in relationship between metropolitan and non-metropolitan areas, but also between central cities and suburban rings within metropolitan systems.

Migration flows from the South to the North were particularly intensive over the 1951-1961 and 1961-1971 decades. The largest parts of these flows were directed at the Northwestern metropolitan areas of Turin, Milan and Genoa, as well as at the metropolitan area of Rome, in the Center of the country. To further analyse these metropolitan dynamics a prior and crucial first step is the definition of the area and its internal territorial composition.

Despite the increasing consciousness of the importance of the metropolitan level of analysis in population redistribution, efforts to define a reliable nation-wide classification of metropolitan and urban areas, taking into account both socio-economic and geographical variables, have not been completely successful. Local-oriented attempts have generally stressed distance and commuting intensity, while nation-wide classifications have mainly emphasized social and economic variables. As a result an official and widely accepted classification of metropolitan areas does not exist.

This problem was resolved in this chapter by choosing the most recent and nation-wide attempt (Vitali, 1990), which followed a distance approach for defining urban and metropolitan area. Comparing to other methodologically more refined alternatives, this classification has the advantage of its ability to distinguish concentric rings inside such areas. Given the distance is supposed to influence mobility behaviors and patterns, including those of the elderly, a method providing successive distance-rings ad reference areas was adopted, as a first-approximation regionalisation. Another advantage of the method is comparability over time, given a particular distance range. Conversely, a clear disadvantage is the total lack of sensitivity of the method to accomodate changes both in the internal homogeneity in each area and in the inter-areal dishomogeneity. However, linking changes in general population or age-pattern to variables other than distance would mean introducing subjective matters and would lead to judgemental conclusions.

Our territorial classification results in the following definitions:

1. Core
2. First Ring (first ting municipalities) (R1)
3. Second Ring (second ring municipalities) (R2)
4. Third Ring (third ring municipalities) (R3)
5 Fourth Ring (rest of the region) (R4)

The results provided by the analysis on metropolitan scale, concerning both general population and aging dynamics, provide quite convincing evidence that the distance-approach adopted for defining the internal structure of metropolitan areas works

reasonably well, despite its apparent limitations. In short, it seems to provide a good capability for describing the mobility transition associated with the metropolitan dimension, with regard both to the general population and the aging dynamics.

A historical perspective of these changes is provided by the 80-years-long time serie (Table 2), based on census observations, for the five major Italian metropolitan areas (cores and related rings), spacely located along the North-South axis: Turin, Milan and Genoa in the North-West, Rome in the Centre, Naples in the South. The wide territorial range and the long time-interval considered give a good picture of the changes occurred across space and over time. Anyway, for a better interpretation of these trends, some additional historical and geographical background information are required.

Indeed, also for a better understanding of the demographic dynamics, history is important. Italy exists only since 1861 and Rome takes part of it only since 1871. The five major Italian towns were formerly capitals of four different smaller kingdoms (Turin, Milan, Rome and Naples) or simply owned to them (Genoa took part of the Turin kingdom). Due to their political and economic history, the demographic-size hierarchy of these towns was completely different at the dawn of Italy. Naples was the largest one (around 500 thousand inhabitants) in Italy and one of the largest in Europe. That time Turin was 170, Milan 270, Genoa 240 and Rome (not taking part of Italy yet) only 180 thousand inhabitants large. At the end of the century their hierarchy had not substantially varied, despite a general increase in size.

Geography is important as well. Naples and Genoa, for example, have always been prominent Mediterranean ports and their metropolitan development has followed the typical spatial shape of towns located on sea, also according to the relatively mountainous conformation of their hinterland. Conversely, Milan is located in the middle of plains (whereby its name), which has favoured a typical circular and regular growth of its metropolitan area. For historiacl reasons, the municipality of Rome is the most extensive in Italy. This means a relatively long distance between town and nearest villages and has determined, comparing to other metropolitan areas, an unusual spatial discontinuity between the inner and the outer part of the area.

These factors have played a not negligible background role in determining the related metropolitan dynamics, concurring with the prevailing effect of the strictly demographic components, mainly fertility and mobility. As far as fertility is concerned, it is worth noting that Turin and Genoa own to regions whose fertility has always been the lowest in Italy, Milan and Rome approximately equal the national levels, whereas Naples and its region head the list over the entire period regional data are available. Such natural dynamics have been partly counterbalanced by northwards internal migration flows,

Table 2 - Population (thousand) in the five major Italian metropolitan areas (cores and rings). 1901-1981

TURIN	1901	1911	1921	1931	1936	1951	1961	1971	1981
CORE	330	416	500	591	629	719	1026	1168	1117
R1	45	50	57	80	81	99	148	291	320
R2	67	69	67	72	71	82	106	195	224
R3	76	76	74	72	70	73	78	110	145
Rest Region	2801	2803	2740	2643	2567	2545	2557	2668	2672
PIEDMONT	3319	3414	3439	3458	3418	3518	3914	4432	4479

MILAN	1901	1911	1921	1931	1936	1951	1961	1971	1981
CORE	538	701	818	961	1116	1274	1582	1732	1605
R1	38	51	59	86	99	123	233	409	458
R2	136	159	167	190	203	240	334	527	623
R3	163	184	193	220	230	271	362	497	537
Rest Region	3438	3793	3949	4139	4190	4658	4895	5378	5668
LOMBARDY	4314	4889	5186	5596	5836	6566	7406	8543	8892

GENOA	1901	1911	1921	1931	1936	1951	1961	1971	1981
CORE	378	465	542	591	634	688	784	817	763
R1	4	4	5	5	5	5	5	6	7
R2	38	39	39	41	41	42	40	44	47
R3	-	-	-	-	-	-	-	-	-
Rest Region	666	698	752	786	787	831	906	987	991
LIGURIA	1086	1207	1338	1423	1467	1567	1735	1854	1808

ROME	1901	1911	1921	1931	1936	1951	1961	1971	1981
CORE	422	519	660	931	1151	1652	2188	2782	2840
R1	11	13	14	15	16	20	24	29	34
R2	-	-	-	-	-	-	-	-	-
R3	18	19	23	27	31	42	64	99	126
Rest Region	1135	1220	1300	1376	1457	1627	1682	1779	2001
LAZIO	1586	1771	1997	2349	2655	3341	3959	4689	5002

NAPLES	1901	1911	1921	1931	1936	1951	1961	1971	1981
CORE	621	751	860	832	866	1011	1183	1227	1212
R1	137	150	169	201	216	274	337	480	609
R2	195	211	227	257	273	345	408	483	574
R3	104	112	126	143	155	195	220	235	262
Rest Region	1857	1877	1962	2076	2186	2521	2613	2634	2806
CAMPANIA	2914	3102	3343	3509	3697	4346	4761	5059	5463

particularly intense over the 1951-1971 period, but remarkable also over the twenties and the thirties. Among the five areas concerned, just Naples may be regarded as as out-migration area, while the four remaining are typical in-migration poles. As far as 1921, Naples remains the largest town in Italy. Meanwhile, strong regular net migration flows to Milan and even stronger (but less regular and very intense especially since 1921) to Rome progressively change their rank in the list. Between the two world wars Milan is on the top. After the second war the overwhelming demographic increase leads Rome to the top, nearly doubling the population of Milan. Comparing the growth paces (Table 3) of the five cores (the national growth rate being the reference value) it is possible to define two subgourps. An higher-growth group (Turin, Milan and Rome) and a lower-growth group (Genoa, Naples), despite remarkable differences in intensity and patterns over time. Naples, as well as Genoa, hardly doubled its population over 80 years, differently than Rome - whose size in 1981 was six times more than in 1901 - Milan and Turin - around three times more.

The analysis of trends on metropolitan scale shows a clear saturation of the Milan core around 1961 (when migrations were very intense and still increasing). While the share of the metro population has regularly increased from 1901 (20% of the total regional population) to 1971 (37%), a significant internal redistribution has occurred over time from core to rings: the core-share declined from 61% (1901) to 50% of metro-population (1981), after reaching 66% in 1951. In each ring of the area, and particularly in the first one, the annual growth rates over the fifties (64 per thousand) and the sixties (56 per thousand) have been extremely high, due to huge immigration flows settling further from the saturated core.

Nor surprisingly, the historical trends concerning the Turin metropolitan area are quite similar to those of Milan. Nonetheless interesting differences both in intensity and spatial redistribution may be noted, comparing the two major Northwestern areas. The prewar increment in the Turin metro area is much weaker than in Milan and mainly limited to the core, apart from 1921-31 decade. The outer parts of the metro area start to increase only after the war. Another important difference with Milan is that the saturation of the core occurs a decade later (1951/61) as well as the growth in the more external part of the area (R3).

The population of the metropolitan area of Rome also increases (from 28% out of the regional total in 1901, to 60% in 1971) and, differently than other areas, becomes a prevailing part of the regional population since the postwar years. Moreover it has historically settled nearly totally inside the core: 90% at the start of the century, 95% in 1981. This basically depends on the wide extent of the core itself. Unfortunately, the

Table 3 - Annual growth rates (per thousand) in the five major Italian metropolitan areas (cores and rings): 1901-1981

TURIN	1-11	11-21	21-31	31-36	36-51	51-61	61-71	71-81
CORE	23.2	18.4	16.7	12.6	8.9	35.5	13.0	-4.4
R1	11.7	11.9	35.2	1.1	13.2	40.4	67.7	9.8
R2	2.0	-1.8	7.1	-4.5	9.6	26.0	61.2	13.7
R3	.6	-2.1	-4.0	-4.1	2.9	5.4	35.3	27.4
Rest of Region	.1	-2.2	-3.6	-5.8	- .6	.5	4.2	.2
PIEDMONT	2.8	.7	.5	2.3	1.9	10.7	12.4	1.0

MILAN	1-11	11-21	21-31	31-36	36-51	51-61	61-71	71-81
CORE	26.4	15.4	16.1	29.9	8.8	21.7	9.0	-7.6
R1	30.3	13.4	38.3	27.1	14.9	63.7	56.3	11.4
R2	15.6	5.0	12.7	12.9	11.3	33.0	45.7	16.8
R3	12.2	4.5	13.2	8.5	11.1	28.9	31.7	7.8
Rest of Region	9.8	4.0	4.7	2.4	7.1	5.0	9.4	5.2
LOMBARDY	12.5	5.9	7.6	8.4	7.9	12.0	14.3	4.0

GENOA	1-11	11-21	21-31	31-36	36-51	51-61	61-71	71-81
CORE	20.9	15.1	8.7	14.3	5.4	13.0	4.1	-6.8
R1	3.7	.5	7.7	-4.4	6.2	- .2	7.3	20.0
R2	3.0	.9	4.9	- .2	1.9	-4.1	8.6	6.5
R3	-	-	-	-	-	-	-	-
Rest of Region	4.6	7.5	4.3	.2	3.7	8.6	8.6	.4
LIGURIA	10.6	10.3	6.1	6.1	4.4	10.2	6.6	-2.4

ROME	1-11	11-21	21-31	31-36	36-51	51-61	61-71	71-81
CORE	20.6	24.1	34.4	42.4	24.1	28.1	24.0	2.1
R1	16.8	11.3	6.0	17.2	12.6	20.6	18.8	13.8
R2	-	-	-	-	-	-	-	-
R3	8.4	17.2	15.4	26.2	21.9	41.7	43.3	24.2
Rest of Region	7.2	6.3	5.7	11.5	7.3	3.3	5.6	11.8
LAZIO	11.0	12.0	16.2	24.5	15.3	17.0	16.9	6.4

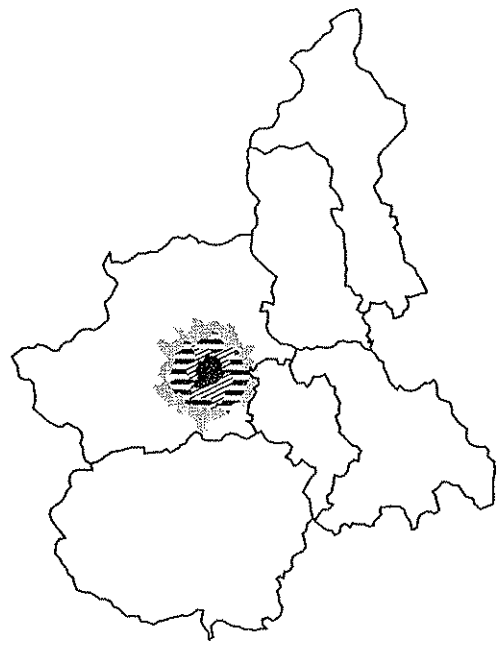
NAPLES	1-11	11-21	21-31	31-36	36-51	51-61	61-71	71-81
CORE	19.0	13.5	-3.3	8.0	10.3	15.7	3.6	-1.2
R1	9.1	11.8	17.2	14.6	15.9	20.7	35.4	23.9
R2	7.9	7.4	12.5	12.2	15.6	16.7	16.9	17.2
R3	7.7	11.5	12.6	16.6	15.3	11.8	6.9	10.6
Rest of Region	1.1	4.4	5.7	10.3	9.5	3.6	.8	6.3
CAMPANIA	6.2	7.5	4.8	10.4	10.8	9.1	6.1	7.7

Provincia di MILANO

LOMBARDIA

Provincia di TORINO

PIEMONTE



actual spatial and demographic dynamics occurring inside the metropolitan area are hidden by rough territorial measures based on municipality scale and this suggests caution in evaluating results.

Both Genoa and Naples, due to different reasons, appear rather static metropolitan areas comparing to the changes occurred in the areas of Turin, Milan and Rome. As far as Genoa is concerned the core shows relatively moderate increases, every period taken into consideration. The outer parts of the area include a negligible amount of population. The less intensive, comparing to Turin and Milan, immigration occurred over the fifties and the sixties, in addition to extremely low or negative natural balances, have been major factors for determining such weak dynamics, even at metropolitan scale. The spatial structure of the neapolitan area neither has deeply changed, the major factor of change being the strong natural increase, smoothed to a limited extent by negative net migration. Moreover, nor fertility neither out-migration have been significantly selective with respect to the spatial redistribution of population. Some evidences of differentail spatial dynamics appear only since 1961, when the growth rate stops in the core and rise in the first ring.

4. The metropolitan aging transition

In other words, the most significant and visible changes at metropolitan scale, as far as intensity and spatial selectivity are concerned, seem to have occurred in the areas of Turin and Milan. This is confirmed by the analysis of the aging process at metropolitan scale, over the 1951-1981 period. Table 4 set out elderly composition indices for, respectively, the population aged 55 and over and aged 65 and over, in each part (cores and rings) of the selected metropolitan areas. The values of the tempos of aging in Table 5 give a more definitive and esplicit picture of the related aging dynamics. One may note, in general, how different the aging patterns are over time in the central cities and in their surrounding rings, but one may also note how different the behavioral models of the five areas are.

In particular, the implications of the mobility transition on the intrametro spatial patterns of aging are extremely relevant in the metropolitan areas of Turin and Milan.This basically depends on the very strong immigration that such areas have suffered, in addition to their specific background territorial and demographic characteristics. Thus, although their differences, a specific common transitional model may be identified for these two areas.

As far as the Turin area is concerned, the index values for the core and the rings in 1951 are very similar each other: 216 per thousand in the core, 223, 230 and 233,

Table 4 - Elderly compositional concentration in the five major Italian metropolitan areas (per thousand)

Years	Core	R1	R2	R3	Rest of Region
55 and over					
		TURIN			
1951	216	188	223	230	233
1961	211	188	217	250	270
1971	219	160	173	228	295
1981	239	166	185	201	295
		MILAN			
1951	192	148	157	148	172
1961	214	140	166	158	201
1971	243	149	163	179	221
1981	266	152	165	183	230
		GENOA			
1951	218	218	230	-	220
1961	248	267	285	-	257
1971	280	308	318	-	299
1981	308	288	311	-	322
		ROME			
1951	148	155	-	130	149
1961	167	170	-	137	174
1971	189	201	-	152	206
1981	220	208	-	166	220
		NAPLES			
1951	147	124	121	123	133
1961	156	125	127	134	156
1971	177	126	137	153	193
1981	190	125	137	157	206
65 and over					
		TURIN			
1951	94	89	112	119	120
1961	100	87	110	127	140
1971	108	77	86	116	161
1981	132	87	100	116	181
		MILAN			
1951	82	56	68	65	82
1961	97	62	72	72	96
1971	118	65	74	77	111
1981	149	80	86	96	129
		GENOA			
1951	100	111	116	-	111
1961	122	136	150	-	134
1971	146	164	176	-	162
1981	179	169	191	-	195
		ROME			
1951	65	68	-	61	74
1961	77	86	-	63	88
1971	88	99	-	72	103
1981	115	112	-	83	119
		NAPLES			
1951	67	57	57	58	67
1961	76	61	61	65	77
1971	88	61	66	75	97
1981	97	60	68	80	112

Table 5 - Tempo of Aging in the five major Italian metropolitan areas (per thousand).

Years	Core	R1	R2	R3	Rest of Region
55 and over					
		TURIN			
1951-61	-2.2	- .2	-2.8	8.2	14.4
1961-71	3.3	-16.1	-22.4	-9.0	8.9
1971-81	8.8	3.5	6.3	-12.5	...
		MILAN			
1951-61	11.3	-5.5	5.6	6.6	15.2
1961-71	12.7	6.0	-2.1	7.3	9.7
1971-81	9.0	2.2	1.5	7.4	3.8
		GENOA			
1951-61	12.9	20.3	21.4	-	15.4
1961-71	12.1	14.3	11.1	-	15.2
1971-81	9.5	-6.5	-2.3	-	7.3
		ROME			
1951-61	11.8	8.9	-	5.0	15.0
1961-71	12.4	17.0	-	10.4	17.3
1971-81	15.5	3.4	-	8.5	6.6
		NAPLES			
1951-61	6.0	1.3	4.7	8.4	16.3
1961-71	12.5	1.0	7.7	13.3	21.2
1971-81	6.9	-1.2	- .1	2.5	6.2
65 and over					
		TURIN			
1951-61	5.5	-2.1	-1.9	6.7	15.5
1961-71	8.5	-12.3	-24.7	-9.3	13.5
1971-81	20.1	13.0	15.4	- .1	12.0
		MILAN			
1951-61	17.1	10.3	5.3	10.6	15.2
1961-71	19.6	3.5	2.8	5.7	14.9
1971-81	23.0	21.7	15.6	22.5	15.2
		GENOA			
1951-61	20.1	20.1	26.0	-	18.3
1961-71	17.5	19.0	15.7	-	19.4
1971-81	20.5	2.7	8.4	-	18.6
		ROME			
1951-61	15.9	22.9	-	4.1	17.3
1961-71	14.2	13.8	-	13.4	15.7
1971-81	26.8	12.7	-	13.4	14.3
		NAPLES			
1951-61	13.1	5.6	6.9	11.1	13.6
1961-71	14.1	.3	8.7	14.6	23.9
1971-81	10.3	-1.4	2.4	6.7	14.6

respectively, for the second ring, the third ring and the rest of Piedmont (R4). Only the first ring shows rather lower levels of aging (188 per thousand). However, the index values change remarkably over time because of changing mobility dynamics. The intrametro differentials may be clearly identified. During the thirty year period considered, the aging process was particularly marked in the central cities of the metropolitan areas of Turin and Milan, while in the surrounding rings the elderly compositional concentration index shows either a much slower increase, as in the case of Milan, or a decrease (rejuvenation process), as in the case of Turin. As a result of these opposite trends, the situation at the end of the period (1981) is remarkably different from that prevailing at the beginning (1951). The Turin area in 1981 presents a central city that is much older than the surrounding rings, particularly the more internal ones; while in 1951 the metropolitan periphery was older than the core. In the case of Milan, the rings were already younger at the beginning of the period, but they experienced an aging process that was slower than occurred in the central city, so that in the end the differences in the aging levels between core (older) and rings (younger) appear much larger.

It is clear that the "rejuvenation process" tends to move progressively over time from the core to the successive rings. The tempo of aging in the cores tends to increase over time for both metropolitan areas. The suburban rings present the lowest values, that is the lowest aging rate, as in the case of Turin, during the sixties. Note that in the more recent period (1971-1981) there is a remarkable acceleration of the pace of aging in the more internal metropolitan rings. Note also that the intensity of the aging process of the extrametro regional population (rest of Piedmont/Lombardy), tends to decline over time, particularly when the 55 and over age group is considered.

Conversely, mobility does not to seem to have played such a dominant role in modifying the aging and spatial dynamics of the three other areas considered. Differential spatial dynamics may be noted, but they are not as apparent as those occurred in the areas of Turin and Milan. As far as the areas of Genoa and Rome are concerned, one may observe a relative homogeneity in the intrametro aging levels, with the exception of the third ring of Rome. However, the difference between the tempos of aging in the cores and those in the rings tends to increase over time. Indeed, some caution in evaluating the related indicators is needed, in the cases of Genoa and Rome, due to the relatively low size of their intrametro ring population. Moreover, in the case of Rome, the unusual extent of the municipal territory is supposed to hide the actual intrametro spatial dynamics.

As far as the area of Naples is concerned, a rather different behavioral model, more "natural-increase" than "mobility" dominant, may be identified. In the core itself, although the elderly compositional concentration is higher than in the rings, the aging process still

appears at a relatively early stage. Even if the most recent decade is considered, the compositional index of the core is remarkably low, so as the tempo of aging is considerably slow and decreasing. Moreover, during the seventies, the aging paces in the core and in the rings do not diverge, but tend to move together. The related high fertility levels, as intense in the core as in the rings, are the main responsible for this. Outmigration, although declining over the seventies, is the other relevant factor. Given that (working-age) outmigration is less space-selective than inmigration, the decline of its intensity tends to bring out relatively uniform spatial effects, that is uniformly declining paces of aging. The combined effect of these factors results in modest changes in the intrametro aging patterns over time and across space.

The picture above provides reasonable evidence that mobility has played a principal role in modifying spatial aging patterns mostly in the two metropolitan areas of Turin and Milan. As a consequence, these two areas especially have experienced a deep internal transformation. Changes in the patterns of population redistribution, both in metro-nonmetro and intrametro movement, associated with different age selectivities of internal and external flows, are in the main responsible for this transformation. An examination of these patterns is, therefore, in order.

5. The mobility of the elderly in two selected metropolitan areas.

Although the differential patterns of aging across the territory of a country are mainly the consequence of the aging-in-place, the migration of the elderly has recently received considerable scholarly attention. An increasing mobility rate among the elderly is considered to be an important component of the modernization process. According to Zelinsky (1971), as societies enter the more advanced phases of the mobility transition, the importance of noneconomic motivations in the decision to migrate tends to increase and consumption-oriented migration tends to replace the traditional production-oriented migration. The mobility of the elderly is an important part of this nonproduction-oriented movement.

The major reason for the interest in elderly mobility resides in the fact that, as societies enter into their more advanced phases and as standards of living rise, one may observe not only an increase in the propensity to move among the elderly, but also remarkable changes in the patterns of their mobility. Recent research by Warnes and Law (1984) suggests that the evolution of the territorial redistribution of the elderly from traditional to modern societies could be described using a three-phase model, and it has

been hypothesized that various countries may occupy different stages in the elderly mobility transition (Rogers at al., 1990).

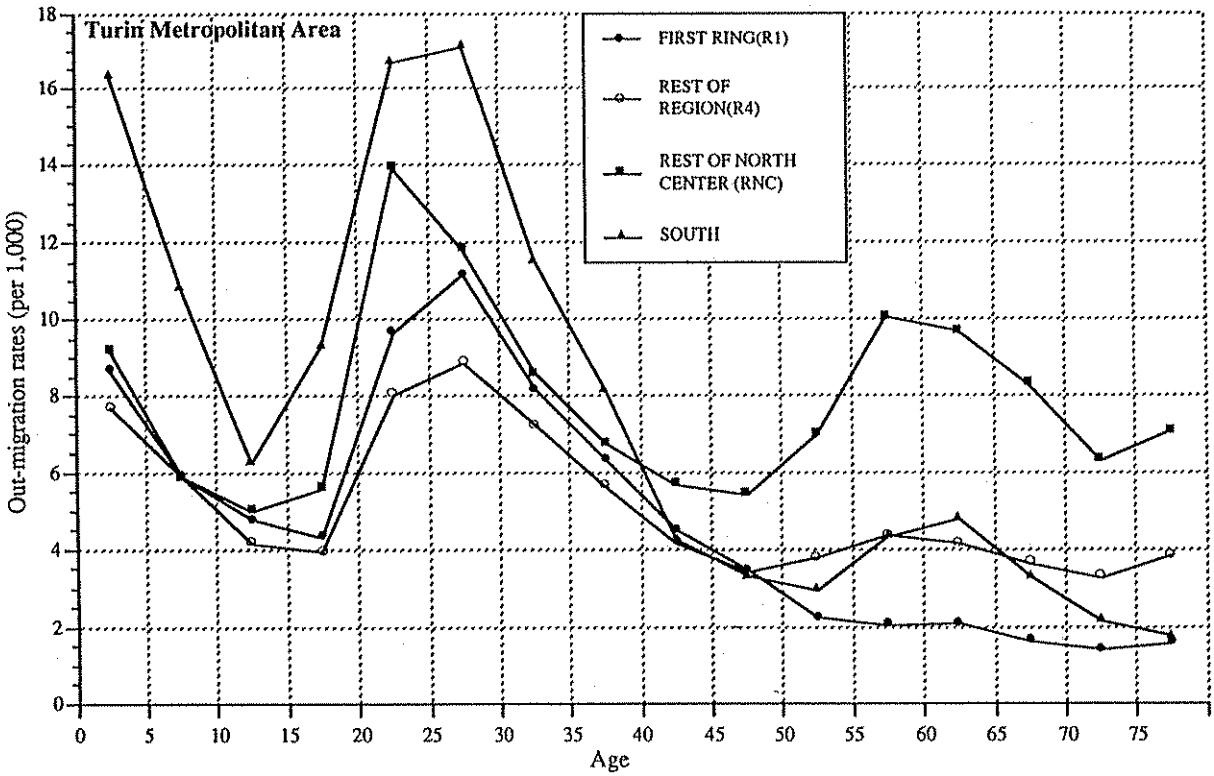
According to the transition view, elderly migration in the first stage is characterized by return migration of former rural-urban migrants to widely dispersed areas of origin. This stage is an immediate reflection of the rapid process of urbanization. Later, during the second stage, fewer links exist between the urban population and the rural areas of origin, and retirement migration becomes more oriented towards particularly attractive areas, with the choice of destination guided more by the desire for improved residential conditions. That is the stage characterized by migration towards the warmer, amenity rich areas of the country. This concentrated phase ends when "the spread of public utilities, improved roads and telecommunication increase the attractiveness of rural and remote areas" (Warnes and Law, 1984, p.52)

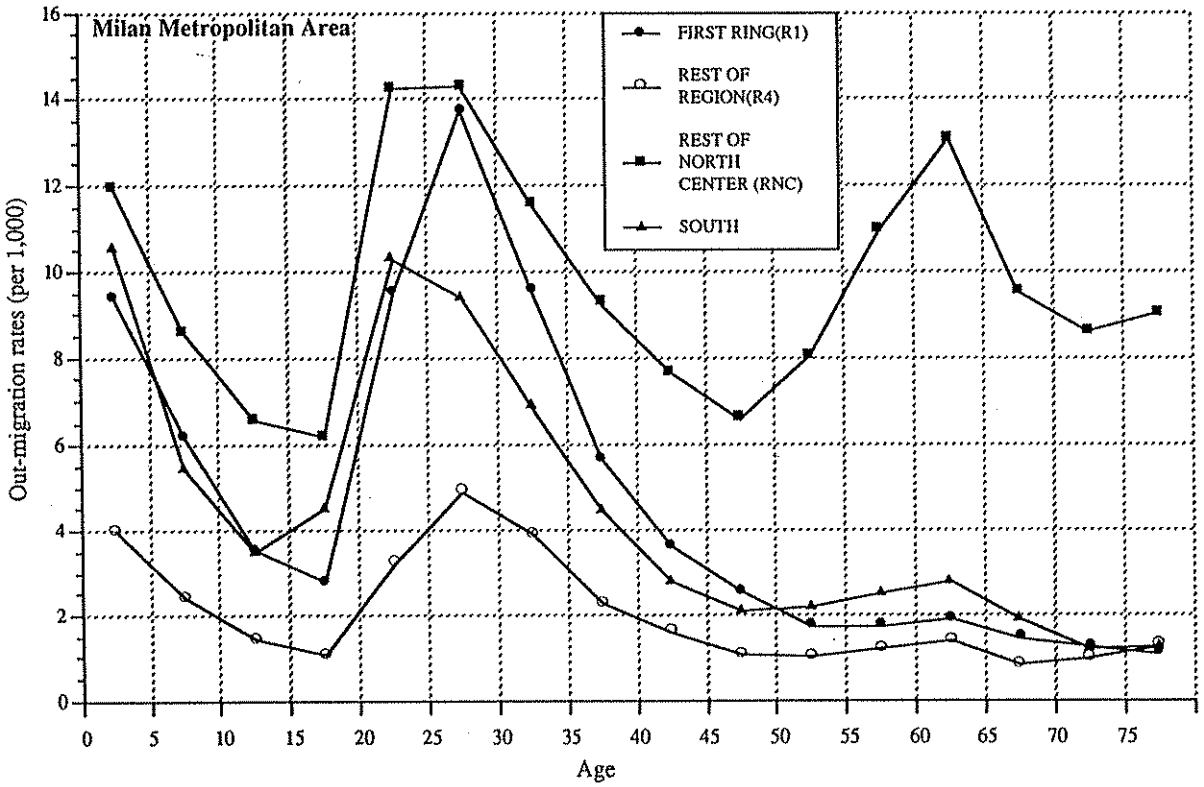
It is difficult to examine the elderly mobility transition phenomenon within this perspective and to assess the stage occupied by a given country during a particular period. Appropriate time-series data on migration collected over a long period would be necessary for any attempt to carry out such an analysis of elderly migration patterns. Yet, special processing of official statistical data on migration and new significant locational dimensions -- for instance, the metropolitan scale -- make it possible to highlight new configurations of elderly spatial mobility patterns and to help those seeking further illumination of such patterns.

Using data on age-specific patterns of population movement within the metropolitan system (intrametro mobility), and between each part of it and the rest of the country (extrametro mobility), we can test various assumptions about the age selectivity of metropolitan migration. An 'ad hoc' processing of individual movement register data provides us with the information necessary to study the metropolitan mobility in the two selected areas of Turin and Milan.

As mentioned in Section 3, the regional territory in which the metropolitan area is situated (metropolitan region) -- in our case Lombardy and Piedmont -- has been divided into a central city or core (municipality of Milan/Turin) and four suburban rings according to their distances from the center (core). The rest of Italy has been divided into Rest of North-Center and South. In Figure 2 we present the age profile of the movement from the central city to four destinations (surrounding first ring, rest of metropolitan region, rest of North-Center and South) for our two metropolitan areas. The migration rates were calculated by relating the movements of 1981 to the 1981 census population. The migration age curves produced in Figure 2 clearly document the influence of distance on metropolitan age mobility.

Fig.2 - The influence of distance on metropolitan mobility. Age profile (destination specific) of out -migration from the core (central city). 1981





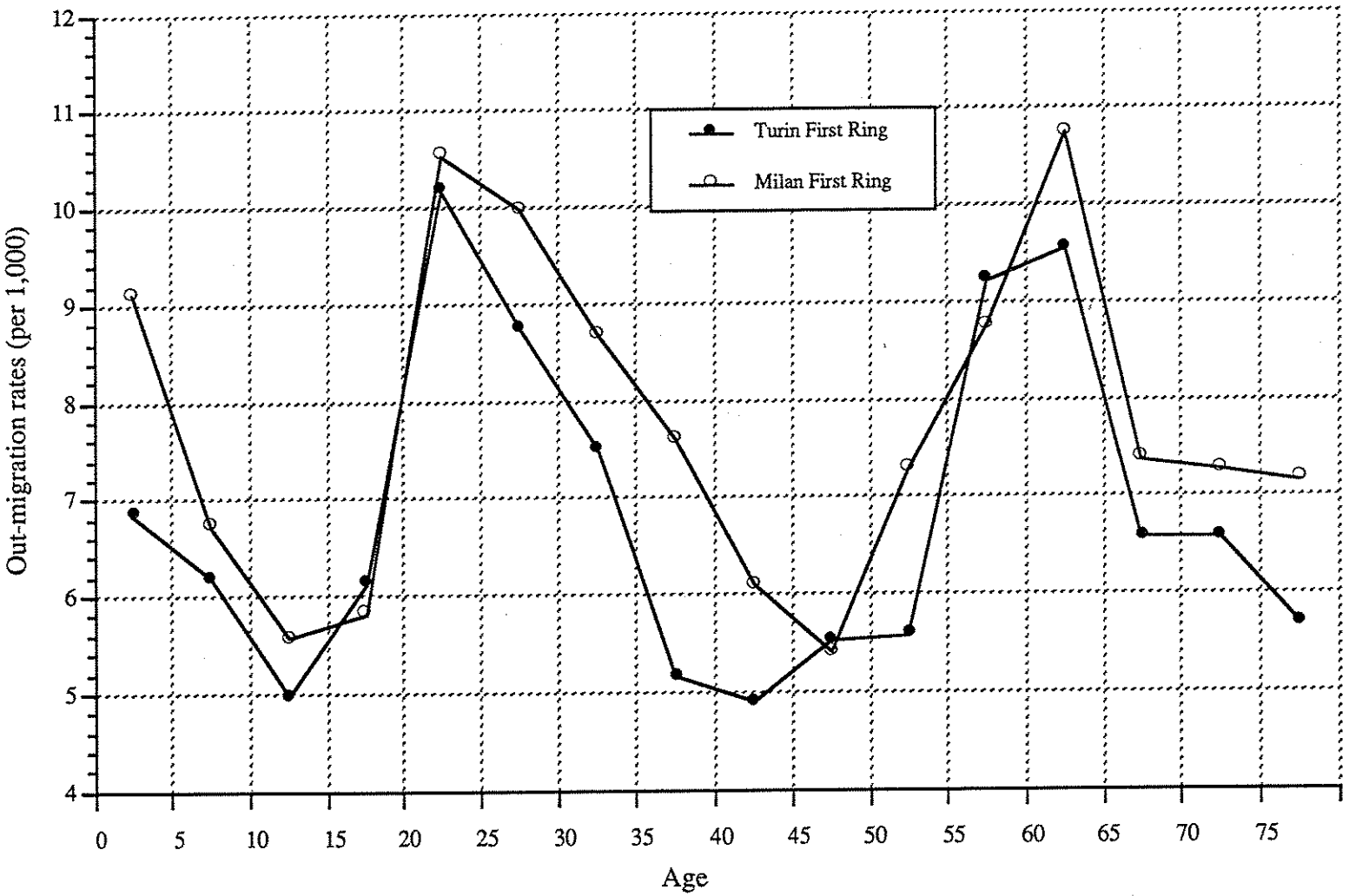
The age distribution of the specific rates of the very short distance migration from the core to the first ring depicts a typical labor dominant profile, that is, an age profile where the young labor force curve is clearly dominant, and where no particular surge in migratory activity is observable in the post-labor ages. This age profile contrasts with that of metropolitan longer distance mobility (to the rest of metropolitan region and the rest of the country). In this longer-distance migration one may observe a more or less remarkable pre-retirement or retirement-related component. This component is particularly pronounced in the out-migration rates from the metropolitan cores to the Northern and Central area of the country. Note that in the migration age profile from the central city of Milan to other Northern and Central regions the level of the curve associated with the migration of the elderly is approximately the same as that of the younger working ages.

A rise in the post-labor rates is also observable in the very long distance extrametro stream from the metropolitan cores to the Southern regions, but in this case the retirement peak is relatively less pronounced. The level of the migration curve associated with the pre-retirement and retirement ages, which characterizes the extrametro mobility patterns, tends indeed to be more pronounced in the metropolitan migration streams originating from the suburban rings. In Figure 3, which depicts the age profile of the movement from the first suburban ring to the Northern and Central area of the country, one may note that the retirement peak reaches or overtakes the level of the younger labor force peak.

In conclusion, an examination of the age profile of relatively short distance and long distance metropolitan movements in our two selected areas, clearly documents that finding that elderly people living in the metropolitan areas exhibit a particular propensity to relocate outside the metropolitan area. This first result seems to confirm the already observed differences in the redistribution patterns according to the age of population. The characteristics of elderly mobility in the two Italian metropolitan areas under examination may be associated, to some extent, with the final stages of the hypothesized 'elderly mobility transition'.

> "As societies enter the final stages of such a transition, noneconomic motivations and 'consumption-oriented' migration are likely to assume ever greater importance. For nonproduction-oriented individuals in such countries - for example, newly retired people, the freedom from the need to live within commuting distance of the place of work has introduced residential options that were not feasible prior to retirement" (Rogers, et al., 1990).

Fig.3 - Age profile of out-migration from the Turin and Milan first metropolitan rings to the rest of North-Center. 1981



6. Changes in metropolitan redistribution patterns.

Consider, next, changes in the intrametro and extrametro redistribution patterns during the 1977-78 to 1987-88 period. We will examine the gross origin/destination migration flows, and the age composition of the net flows. Tables 6 and 7 present the metropolitan migration flows (intrametro and extrametro) for the Turin and Milan metropolitan areas in the two periods considered. Over this decade the most significant changes in the spatial structure of metropolitan mobility were a rise in the internal (intrametro) short-distance mobility and a marked slowdown of external (extrametro) long distance mobility. In other words, there evolved a tendency towards a regionalization of metropolitan migration. This increase in the relative importance of intrametro mobility was mainly due to the increase in the movement towards the more peripheral parts of the metropolitan system (R3 and Rest of the Region) -- not only from the core, but also from the more internal suburban rings. These intrametropolitan centrifugal tendencies reflect an intensification of the decentralization process in the metropolitan population.

The new patterns of metropolitan population redistribution -- that is, the intensification of intrametro centrifugal trends and the reduction of the links between metropolitan growth and national system growth -- are more clearly observable if we consider the net migration figures.

Central cities experienced losses in the migrating exchanges with the peripheral components of the metropolitan region, as well as in the (medium distance) exchanges with the rest of the North and the Center. By contrast, a population gain is the result of the (long distance) exchanges with the South of the country and the Rest of the World. However, these latter positive balances compensate only partially for the intrametro losses sustained by the cores. The various regional zones of the metropolitan area experienced migration gains and losses, respectively, with the more internal and the more peripheral parts of the metropolitan system.

From 1977-78 to 1987-88 these gains and losses tended to increase, such that the intrametro decentralization process accelerated. The more peripheral parts of the metropolitan areas improved their migratory position (positive balance) with respect to intrametro mobility. The revitalization of the metropolitan periphery was particularly evident in the case of Milan. The decentralized zones of this metropolitan area, not only experienced an improvement in their net migration (positive) with the more internal areas, but they also showed an improvement in the migratory balances (negative) with the North and Center regions, as well as in the balances (positive) with the Southern regions and the Rest of the World. Conversely, although the center of the metropolitan system (core) lost

Table 6 - Origin/Destination intrametro and extrametro migration for the **Turin** metropolitan area.

1977-78

O/D	Core	R1	R2	R3	R4	RNC	South	RW	Total
Core	0	5902	2739	1810	4054	9837	9869	1267	35478
R1	2879	0	1184	721	872	2104	2119	233	10112
R2	1290	744	0	779	706	1285	1468	176	6448
R3	683	256	429	0	872	761	790	61	3852
R4	1911	527	533	834	0	3235	2497	308	9845
RNC	5333	1111	875	521	2375				
South	11626	2233	1649	916	3163				
RW	1722	298	221	110	447				
TOTAL	25444	11071	7630	5691	12489				

1987-88

O/D	Core	R1	R2	R3	R4	RNC	South	RW	Total
Core	0	5959	3545	1847	4198	6995	4638	783	27965
R1	3342	0	1530	664	961	1517	1071	246	9331
R2	1362	858	0	793	779	941	740	117	5590
R3	910	315	583	0	1022	640	420	57	3947
R4	2096	572	619	918	0	2810	1614	310	8939
RNC	3959	805	621	412	2036				
South	5894	1167	868	494	2064				
RW	3310	440	246	142	567				
TOTAL	20873	10116	8012	5270	11627				

Legenda:
Core = Central city municipality
R1 = First Ring
R2 = Second Ring
R3 = Third Ring
R4 = Fourth Ring (rest of region)
RNC = Rest of North-Center
RW = Rest of the World

Table 7 - Origin/Destination intrametro and extrametro migration for the **Milan** metropolitan area.

1977-78

O/D	Core	R1	R2	R3	R4	RNC	South	RW	Total
Core	0	6188	7749	2316	2051	15038	6884	2516	42742
R1	3738	0	2281	1123	834	3457	2589	400	14422
R2	2468	1015	0	1942	1266	3732	2660	576	13659
R3	1851	756	1967	0	1953	3604	2293	224	12648
R4	1427	426	961	1449	0	5371	2355	359	12348
RNC	11248	2085	2803	2013	4021				
South	14518	3443	3828	2851	2919				
RW	2701	364	510	263	430				
Total	37951	14277	20099	11957	13474				

1987-88

O/D	Core	R1	R2	R3	R4	RNC	South	RW	Total
Core	0	6181	7896	3412	3231	11632	4880	1741	38973
R1	2890	0	2799	1672	1315	2737	1548	412	13373
R2	2556	1167	0	3023	1796	3364	2010	532	14448
R3	1340	816	1981	0	2429	2679	1359	200	10804
R4	1413	555	1104	1827	0	4238	1582	355	11074
RNC	8207	1619	2678	1998	3797				
South	7917	2453	3432	2336	2546				
RW	5303	805	1076	500	760				
Total	29626	13596	20966	14768	15874				

Legenda:
Core = Central city municipality
R1 = First Ring
R2 = Second Ring
R3 = Third Ring
R4 = Fourth Ring (rest of region)
RNC = Rest of North-Center
RW = Rest of the World

more in the short-distance movement exchanges with the metropolitan periphery, it gained less in the long distance movement exchanges with the farthest parts of the country.

However, as long as we do not consider the disaggregation of net flows by age, we cannot assess the impact of migration on the age structure of local metropolitan populations. In Table 8 we present the age composition of net migration between the core and some metro and extrametro zones for the 1977-78 and 1987-88 periods. The distribution by age of the net figures documents, first of all, that the losses of central cities (and the corresponding gains of the suburban rings) in the intrametro movement are concentrated in the young working ages (20-39), while the net losses of central cities in the movement with the rest of the North and the Center (RNC) of the country are concentrated in the pre-retirement and retirement ages (55 and over). Also, the migratory contributions of the Southern regions to the Northern metropolitan populations is nearly totally comprised of the younger labor force (15-29).

During the decade from 1977-78 to 1987-88 this different age selectivity of metropolitan migration seems to have become more pronounced. One may note an increase in the concentration rate, both in the young labor force for the positive migratory balance with the South, and in the late working and post-labor ages for the negative migratory balance with the North-Center. In the case of the municipality of Milan in 1987-88, the 15-29 age groups represented about 90% of the positive net migration with the South, while more than three fourths of the negative balance with the North-Center were concentrated in the 55 and over age group.

In conclusion, the Northern metropolitan systems receive, albeit to a lesser extent over time, the economically and demographically more significant populations from the traditional area of out-migration of the country, that is, the South. This 'production-oriented' migration is also the main component of intrametro centrifugal tendencies. Also, the metropolitan post-labor force population is subjected to a decentralization process, with a 'nonproduction oriented' migration that tends to occur over longer distances and with extrametro destinations.

The impacts of intrametro and metro-nonmetro migration patterns on the age structure of the metropolitan local population is, therefore, rather difficult to assess, because of the different influences of several components of the metropolitan mobility system. The gains of central cities in terms of long distance young age inmigrants is largely compensated for by the losses, in the same ages, arising from intrametro mobility. The high intensity of intrametro decentralization of the youngs and the relatively high level of elderly migration only in the extrametro flows may produce an accumulation of the elderly in the metropolitan cores. There is some evidence that the capability of the central

cities, both to attract new working-age populations from other parts of the country, and to retain such populations, is declining with time.

Conclusions

One of the most important aspects of the new developments and internal transformation of the urban and metropolitan systems in Italy is the metropolitan aging transition, that is the changes in metropolitan patterns of the aging process.

The intrametro spatial differentials in the aging levels are increasing over time, because of the metropolitan centers (cores) experience an aging pace much higher than that observed in the suburban rings. In some cases (Turin and Milan) the metropolitan peripheral areas show a reversal in the aging process, that is a rejuvenation process. This rejuvenation process tends to move progressively over time from the cores to successive rings. These internal changes were particularly noticeable in those areas characterized by an high in-migration level and an intense intrametro decentralization rate. The observed aging of the metropolitan central cities and the rejuvenation of the metropolitan periphery are the result of the combined effect of past and present metropolitan mobility. The earlier migration of large younger cohorts has steadily increased the relative size of the (at risk) population that later is aging in place. At the same time, the more recent propensity of young adults to move towards the suburban periphery may cause in this latter a slow-down of aging or a rejuvenation phenomenon.

One of the major conclusions of our study is that age variable plays an important role in metropolitan population redistribution patterns. Although the non-elderly represent the dominant component of the deconcentration process within metropolitan areas, the elderly have a great importance in the net shift of population from metropolitan areas. There is some evidence that this metropolitan age-selective shift is intensifying in more recent years.

In the metropolitan elderly migration behavior of Italians we have seen the presence of some characteristics which may be associated with the later stage of the elderly mobility transition model. This is suggested by an extremely high rate observed among the elderly in migration from metropolitan inner parts towards relatively distant and dispersed destinations offering a sufficiently high standard of living (other Northern and Central parts of Italy).

We must not forget the limitations of our analysis given the limited data and the rough definition of the spatial structure of metropolitan areas. Therefore, our results

should be accepted with caution. However, they are good enough to document the deep and structural changes occurred in the Italian metropolitan system.

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