

# Suburbanisation and Urban Growth: Revisiting the Life Cycle Hypothesis

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# Suburbanisation and Urban Growth: Revisiting the Life Cycle Hypothesis

## Abstract

This article illustrates the recent phases characterizing the urban development in Athens in combination with the development of the Greek economy after the second world war II era, in the light of the theory of spatial cycle. Since the beginning of the post-war period (1951-1981), greater Athens has been going through massive urban growth. Recently (1981-2011) the investigated area has shifted from relative to absolute decentralization, facing depopulation, unemployment, and economic depression. Since differences among western, southern and northern suburbs are important to explain the spatial pattern in urban growth, a municipal scale analysis was carried out in order to identify the direction of urban evolution through time. The recent decline in suburb's growth together with the emergence of urban centers outside greater Athens, provides some evidence that the investigated area is towards disurbanization.

**Key words:** Suburbanization, Reurbanization, Urban gradient, Municipalities, Mediterranean city.

## **Introduction**

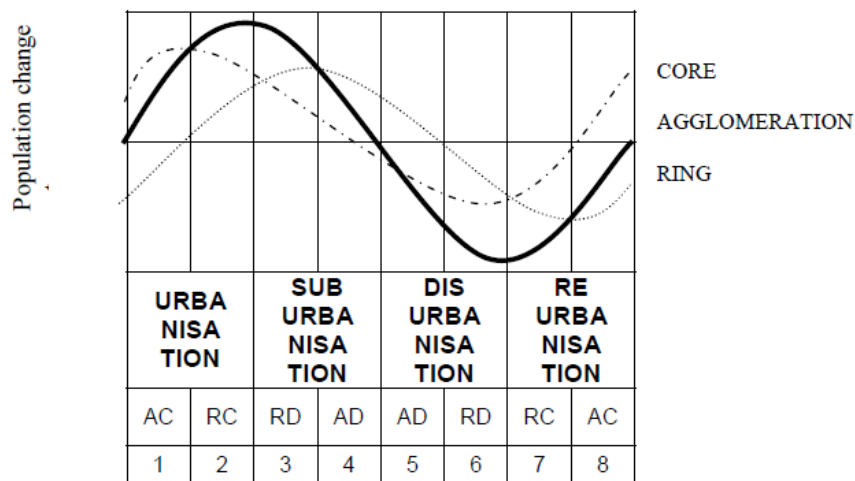
The high level of urbanization observed globally is a relatively recent phenomenon. As a matter of fact, at the end of the 19th century the extension of the world urbanization was rather limited. According to Weber (1899) only Britain, western Europe and the USA population were classified for more than 25% as urban. The increasing levels of urbanization is the result of population growth and rural-to-urban migration. The two major processes reinforce each other, although their relative importance varies. As an example, Findley (1993), found that, for 24 developing countries, the average contribution of migration to urban growth was only 54% between 1975 and 1990, but other studies attribute an increasing role of migration in the demographic expansion of urban regions.

However, according to many studies, such as Fielding (1982), Champion (1989), and Cross (1990), indicators of urbanization should not be taken to mean that urbanization is a unidirectional (low to high) process. In advanced countries the level of urbanization stopped increasing between 1965 and 1990 and this phenomenon is now acknowledged to indicate a process of population redistribution at the regional scale.

The Theory of Spatial Cycle (SCT), introduced by Klaassen et al (1981) and firstly adopted by Van den Berg et al. (1982), aims to explain the different stages of urban development with a regional-wide perspective. A cycle defines the time period during which a demographic phase at a defined spatial unit (i.e. an urban region) emerges and declines, while a transition is the time period between two cycles. A cycle is based upon the fact that a system, once in place, works according to a relative stability of its parameters and their dynamics in time and space (Rodrigue et al. 1997). According to SCT, the development of an urban region may be described using four phases:

- (i) the urbanization phase, when certain settlements grow at the cost of their surrounding countryside,
- (ii) the suburbanization (or ex-urbanization) phase, when the urban ring (commuter belt) grows at the cost of urban core,
- (iii) the dis-urbanization (or counter-urbanisation) phase, when the population loss in the urban core exceeds the population gain in the ring, resulting in overall population decline,
- (iv) the re-urbanisation phase, when the core city starts re-attracting population while the suburbs still experience demographic decline.

Figure 1. Population changes according to the Spatial Cycle Theory.



A=Absolute, R=Relative

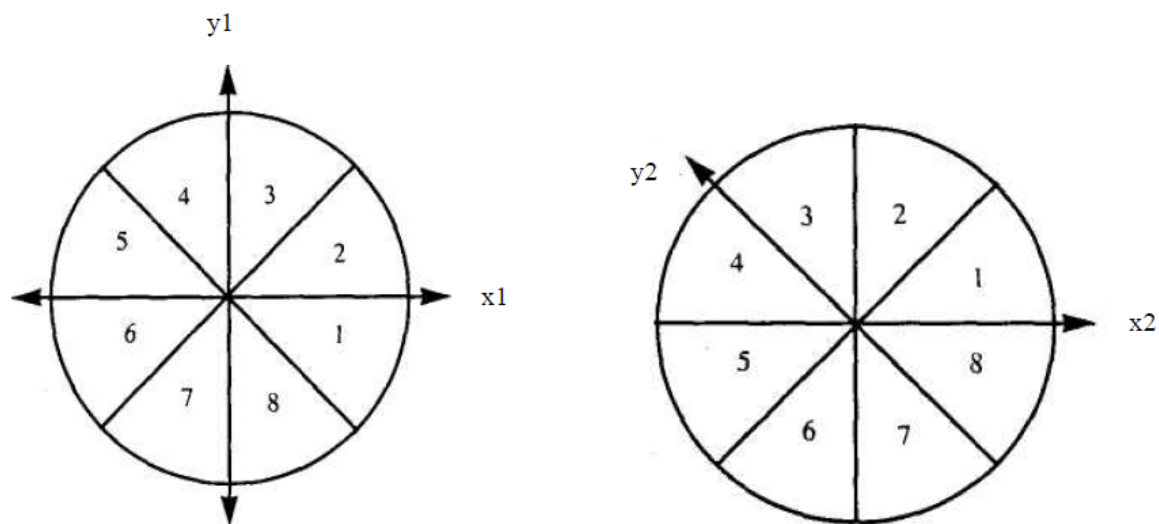
C=Centralisation, D=Decentralisation

Source: A. Champion (2000)

As Figure 1 indicates, the model is based on changes in direction and rate of population movement between core and ring. The two types of change are absolute shifts when the directions of population change in the two zones differ, and relative shifts when change occurs in the same direction but at different rates. The urban centres' development, according to the theory of spatial cycles, is shown in Figure 2. The stages of the spatial cycle are presented in the areas of the

cycle which are enumerated as following (Kawashima, 1986): (i) the stage of the urban centre development (urbanisation phase) is presented in sectors 1 and 2, (ii) the stage of the suburbs development (suburbanisation phase) is shown in sectors 3 and 4; (iii) the stage, where decentralisation trends towards the satellite urban centres (disurbanisation phase) appear, is shown in sectors 5 and 6, (iv) the stage, where the original urban centre presents a new development phase (reurbanisation), is shown in sectors 7 and 8. Each of the 8 sectors represents a certain stage indicated at Figure 1.

Figure 2. Stages of the spatial Cycle Hypothesis.



$x_1$  = the absolute change of population in central city

$y_1$  = the absolute change of population in the suburbs

$x_2$  = the change coefficient of population in central city

$y_2$  = the change coefficient of population in the suburbs

At the urbanization stage, there is an intense movement of population and economic activities from the suburbs towards the inner city. The development of the secondary and tertiary sectors in the urban area in combination with other factors such as the promotion of new life-style patterns, the increasing of the

financial and institutional power of metropolis, the infrastructural development, creates the proper conditions for urbanization.

With the growth of resident population and economic activities within the city centre, the negative external economies of urbanization (traffic, pollution, crimes, poverty) are getting importance. Households of medium- and especially high-income thus move to the suburbs with high environmental quality and favorable conditions of housing. Thus, suburbanization, the second phase of the spatial cycle, emerges. According to Bourne (1996), suburbs were interpreted in various ways: (i) as a mechanism to escape social and environmental problems common in the central city, (ii) as a macro-economic policy tool for generating local employment and promoting capital accumulation, (iii) as a means of individual utility maximization, (iv) as a means of socio-political strategies assuring social homogeneity, recapturing an assumed-rural way of life, without completely losing the advantage of urban living.

As an example, suburbanization in Germany was slowly but continuously increasing everywhere since the last fifty years (Mäding 2004). The degree of suburbanisation of the population was greater than that of employment. In the 1960s and 1970s commuter distances increased. In the 1980s and 1990s inter-regional migration and the establishment of companies progressively strengthened the suburban areas. Settlement axes were grown according the extension of road and railway network while 'employment suburbanisation' was concentrated in places with transportation facilities. Shopping and leisure facilities areas were appearing to a great extent in surrounding areas, which were easily reached by car. Even surprising "spatial" connections were found *e.g.*, those who lived to the south of an inner city, often moved to a southern suburb in the same urban region.

The suburbanisation wave reaches its greatest extension in the phenomenon of massive ex-urbanisation. In the USA, Nelson (1992) identified four principal

factors to explain ex-urbanisation: (i) continued deconcentration of employment at the rise of exurban industrialization; (ii) the latent anti-urban and rural location preferences of US households, (iii) improved technology that makes exurban living possible and finally, (iv) an apparent policy bias favoring exurban development over compact development.

Exurbia tend to be dominated by middle-class residents, many of whom commute long distances to work in city or in the newer suburbs, but other groups are also present, including retirees and young households seeking social status, free land and new housing at a lower cost than it was available in the suburbs. Davis et al. (1994) found that in the USA, exurban development has captured as much as 25% of recent country population growth and 60% of recent manufacturing investment. For this heralds a 'post-suburban' era characterized by inner suburban population loss and relative income decline, an increase in suburban employment, a reduction in population and income, and increased farmland conversion to urban use (Lucy and Philips, 1997).

With the re-establishment of companies and the over-concentration of population into the suburbs, the previous stage is completed and the disurbanisation stage begins. Households and businesses have vacated a big part of the centre of the metropolis. This evolution has two consequences: in the core city, the economical activity is shrunk and the abandoned spaces are occupied by marginal social groups. In 2000 the 50% of the USA population leave at the suburbs. According to Gareau (1988), the functions of the suburbs range from undifferentiated residential areas to a more recent mix. This mix includes specialized retail corridors, high-technology industrial clusters, and high-density office and commercial nodes or "edge cities". These consequences mainly result into the gentrification of the inner city.

According to Mäding (2004), the negative external effects have an impact on public property and social objectives are endangered. This will be explained

briefly with regard to the attitude of high- and middle-class households to leave the inner cities and look for areas of preferential single family housing. Population growth, changes in household structure, income growth and the higher demand for housing resulting from it, increase the demand for settlement areas progressively further away from the core cities.

All these factors result in the disurbanisation stage. This stage is completed by the appearance of adverse conditions in saturated suburbs and the movement of households in new cities or settlements of high environmental quality and better standards of living. According to Pacione (2005), signs of a population reversal in rural areas were first identified in the USA, but similar trends were soon detected in other advanced nations, including Canada, Australia, Western Europe and Britain. Counterurbanisation in United Kingdom started since the early 1960s when for the first time areas located further away from the urban influence began to grow faster than the main conurbations and their dependent regions. Population growth in rural Britain was particularly strong in the late 1960s and early 1970s but has continued over recent decades, with net out-migration from the main metropolitan areas to the rest of the country averaging 90,000 people per year with a rate of 0.5%. The reasons for this reversal of long established trends are multifaceted and site-specific and any attempt to apply a unique explanation to so widely diverse changes in different regions would result simplistic.

Findings from a range of studies provide an useful inventory of contributory factors to the Life Cycle Theory. These include: (i) continuing growth of metropolitan centers and their spillover into adjacent non-metropolitan counties, (ii) decentralisation of manufacturing in pursuit of lower land and waste costs, (iii) increased pursuit of leisure activities at all ages, (iv) narrowing the traditional gap between rural and urban lifestyles with extension of access to modern facilities, (v) more long-distance commuting and lower cost of living in rural



areas, (vi) residential preference for lower density rural living and finally, (vii) government decentralisation policies.

The extension to which each factor contributes to population change will depend on local conditions. Theoretically, there is a last phase (reurbanisation) where the core city shows a more slight decrease in population; in parallel, gentrification, which was observed in the previous phase start to disappear (Lever, 1993). The ability of ameliorating the housing conditions of the core city, where some old houses are demolished and restored, constitutes a primary factor of the above mentioned evolution. In the later period of this phase, the population living in the inner city increases again while suburbs' population decreases. In some cases, households start moving from the suburbs to the centre. Changes in the economic structure of the urban region are additional factors driving this phase. The development of high-technology tertiary sector as well as changes in the cost of energy and transportation, bring the economic activity back to the centre of the city (Lever, 1993).

However, the empirical evidence for reurbanisation is mixed. Cheshire (1995) found that in 241 functional urban regions (FURs) in Europe between 1981 and 1991 the proportion of urban cores gaining population reached 47%, compared with, only 22% over the period 1975-81. However, it was mainly the smaller FURs that exhibited reurbanisation, not the larger, older urban regions. In the UK reurbanisation occurred in only four of 36 FURs (Glasgow, Oxford, Cambridge and Canterbury), with only Glasgow confirming model expectations.

On the other hand, there is a growing body of case-study evidence that indicates a recovery of large cities since the 1970s. In the USA, the 1980s witnessed the re-emergence of the larger metropolitan areas as the fastest growing elements of the economic system. Overall, metropolitan areas with 1 million or more residents grew by 12% in the 1980s compared with 8% in the previous decade.

According to Pacione (2005), the population growth that has occurred in the central areas of US cities was fuelled by two distinct migration streams. First, new migrants, primarily from Latin America and Asia, moved into lower-value areas of cities such as New York and Los Angeles, as well as into other metropolitan areas on the west coast (San Diego and San Francisco), in the South-West (Houston) and Florida (Miami) that historically had attracted relatively fewer migrants. The second stream comprised a flow of 'baby-boomers' (those born just after the Second World War and during the 1950s and 1960s) investing in high-status residential areas. During the 1980s the strongest magnets for adult 'boomers' were metropolitan areas with expanding high-tech and defence-oriented economies, including coastal cities such as Boston and Seattle and sunbelt locations like Dallas and Atlanta. Australia and Canada also provide evidence of strengthening metropolitan areas and inner-city growth in the 1980s. In general, the empirical observations of Pacione (2005) suggest that there are widespread signs of renewed growth or reduced population decline for larger metropolitan areas, as well as a population recovery for some cores cities, and there is also a disagreement over the extent to which the inner-city revitalisation that took place in the 1980s will be able to continue and lead to fundamental changes in the form of developed urban regions.

The process of decentralisation, on the other hand, is likely to continue as a major feature of post-industrial urbanisation, though in a form very different from the suburbanisation phase observed after the second World War. Baker et al. (2000) replaced the model of inner and middle city decline and growth in the outer rings with a more complex pattern in which the positive correlation between population growth rate and distance from the city centre has been eroded. This is partly due to demographic factors. It has been shown in Australian cities that in the early post-war years of rapid population growth whole suburbs tended to be

initially settled by young families with children. As these groups have aged and their children left, the population declines.

However, as these original settlers die or move into aged care accommodation their houses come onto the market and are purchased by younger people. This often sees one occupant of a home replaced by two or three occupants causing population growth. However, it is also clear that other elements are also at work. On the one hand, local and state governments are encouraging urban consolidation.

There are some elements in the population who are showing a preference for urban-type lifestyles. This has undoubtedly caused increased population growth in inner and middle suburbs. On the other hand, suburban growth has certainly not ceased especially in the fastest growing cities. So, in recent decades however along with all the OECD nations, Australia has attempted to move toward more "sustainable" compact cities by changing land-use policy to encourage increases in population density in built-up areas.

The process of urbanisation at a local level was specified by Nordstrom who studied the settlement pattern changes in all the development phases of a given city. According to Nordstrom (1981), the settlement pattern of population and activities is seriously affected by the economic development, the time of its completion as well as the general social changes caused by it. He reported that, when a society develops, all the activities which affect employment - and consequently the settlement pattern - undergo changes which pass through various developing phases. Also, he points out the impact of the environmental conditions and the exercised policy function as basic parameters in the form of the settlement pattern in modern societies. The impact of the latter factor is stressed in other studies, too (Korcelli, 1986). At local level, the urban structure depends on two variables: the available space per inhabitant and the total number of inhabitants (Nordstrom, 1981).

In the frame of the empirical analysis of the urban centre development and according to the theory of the spatial cycle, the usual variables can be the absolute or relative change of population in the geographical units of interest (Kawashima, 1986; Korcelli, 1986) or their population density (Nordstrom, 1981; Schwizer, 1985; Alperowitz, 1983). Regardless of the choice of variable or the analysis level of the urban development, a systematic empirical implementation of the spatial cycle is succeeded through the division of the city into districts or communes and municipalities and then clustering according to their distance from a central point of the core city. Next step consists of examining the development of these clustered areas or communities within a given period of time.

In an implementation of this method, Nordstrom (1981) performed a zoning of the city of Gothenburg according to parishes by clustering them according to their distance from a central point. Then he studied the evolution of the population density for these grouped parishes within a certain period of time (1910-1975). Kawashima (1986), in one of his studies about the development stages of the Tokyo Metropolitan Area, divided it into zones of cities and villages according to their distance from a central point of the city of Tokyo and studied the population changes in these zones during the period 1960-1985. The mean distance from the centre of the core city is widely used as an indicator of suburbanization (Mordridge and Parr, 1997).

The basic conclusion of the empirical applications, relative to the spatial cycle, for a given zone, is that: the longer the distance from the central point is, the shorter it appears the highest value of the variable used (either density of population or population change). In the present study the theory of the spatial cycle, based on the techniques which are in accordance with the ones mentioned above, is applied to a case study encompassing the Athens Metropolitan Area. New data derived from the recent population censuses provide the relative evolutions in the greater urban area in Greece during 1991-2011. That is the reason why we believe that it is

worth studying again the spatial cycle approach in Athens Metropolitan Area. Additionally, the recent empirical results worldwide that are reviewed above are making the paper more informative. Next to this introduction, the methodology and the implementation of the specific technique used are developed, while in the following a discussion and some basic conclusions about the stages of the urban evolution in Athens are provided.

## **Material and methods**

The analysis covers the time period encompassing 1951-2011. The study could not be extended before 1951 because of the decade 1941-1951, when the changes in the settlement patterns were a result of other factors different from the ones matching with the theory of the spatial cycle. Those radical changes in the population and the economic relations resulted from exceptional external factors as a consequence of the World War II and the following civil war in Greece. The time limitation does not permit the use of the population density as a variable because, according to the spatial cycle analysis, it is used in case of studying long-term population changes. The metropolitan region of Athens (AMA) was considered as the investigated area. According to the administrative system enforced in law in Greece, the AMA is divided into greater Athens (including both central city and suburbs) and the rest of the Attica region. To this region belongs some towns and villages more or less economically independent from the core city of Athens.

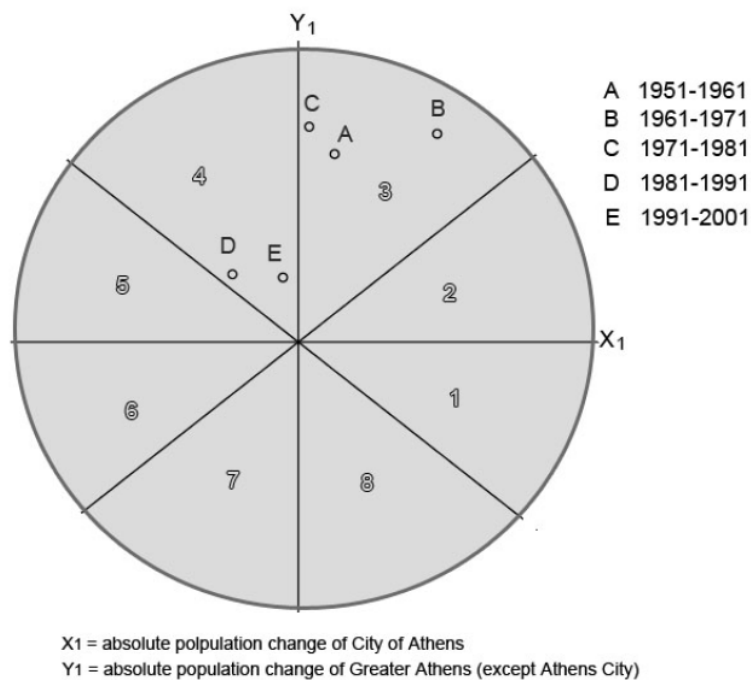
## **Results**

Based on the circular diagram of the spatial cycle, we initially study the population changes in the investigated area during the period 1951-2001. X-axis counts the absolute difference of the Athens city population and the Y-axis counts

the absolute difference of the suburbs population during the censuses interval. In Figure 3 the points A, B, and C (referring to the decades 1951-1961, 1961-1971 and 1971-1981) are placed within the third class of the cycle; this fact implies that, during period 1951-1981, the AMA was at the development phase of suburbs around the core city of Athens (suburbanisation phase) and particularly at the stage 3, the so called stage of relative suburbanisation where both core and suburbs populations are increasing.

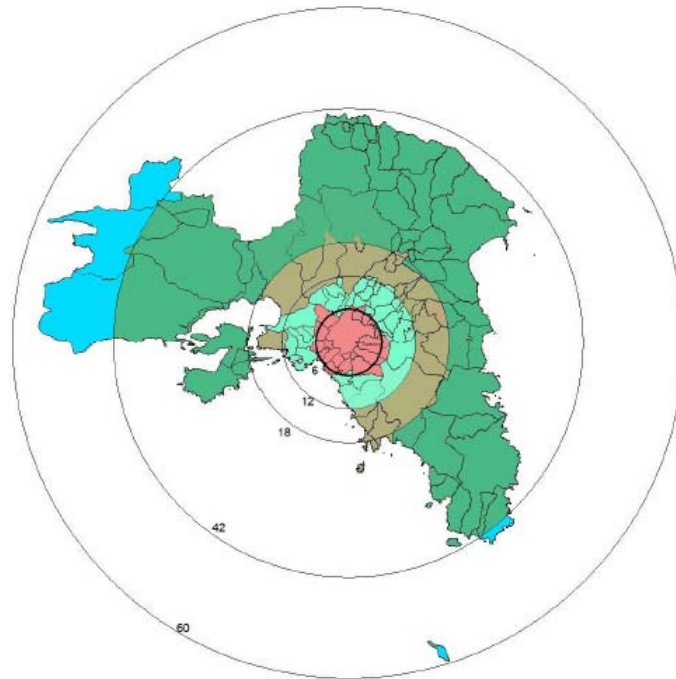
During 1981-1991, the population path (city of Athens change • the suburbs change) shifts to point D which is within the fourth class of the cycle. This evolution means that, even at the phase of suburbanisation, the differentiation is obvious: the population of the city of Athens decreases while the population of the suburbs increases slowly. In fact the AMA had passed to the stage of absolute suburbanisation. The urban centre as a whole (core and suburbs), however, continued to gain population. In 1991-2001, point E was stable in stage 4 but was changing direction closing towards class 3 again.

Figure 3. The Spatial Life Cycle diagram applied to Athens metropolitan area.



Next, we performed a classification of the Attica municipalities and communes into zones set up according to their distance from a central place in Athens (Syntagma Square: Figure 4). The aim is to examine the population variation in these distance zones and through these results, the time definition of the stages of the spatial cycle. It must be pointed out that the specific analysis is expanded to the whole AMA, which includes not only the greater Athens (core city and suburbs) but also the rest of Attica.

Figure 4. Classification of the municipalities in AMA according to the distance from the centre of Athens.

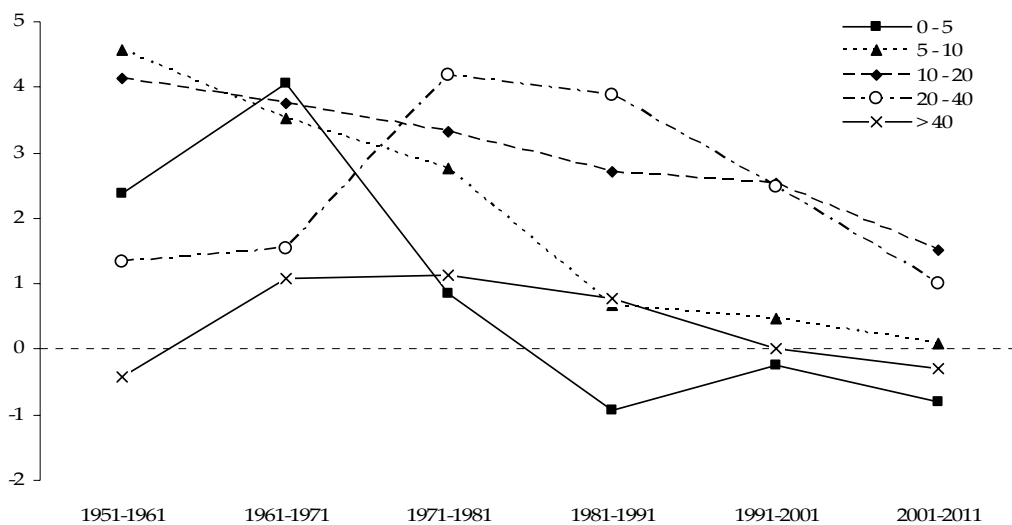


In Table 1, the population evolution of the municipalities and communes of the Attica Region was shown according to distance zones and years. Figure 5 illustrates the population change rates by distance zone and year. The resulting data provide indications about the metropolitan development in the biggest urban area of Greece.

Table 1. Population of AMA according to distance zone and year.

Distance (km)	1951	1961	1971	1981	1991	2001	2011
<i>Population size</i>							
0 - 5	677280	839042	1178572	1280226	1161668	1132183	1040600
5 - 10	581331	847208	1145222	1461876	1560340	1635299	1649424
10 - 20	169050	239134	328800	438342	557608	698426	804822
20 - 40	74725	84766	97806	138821	192769	240645	264608
> 40	14000	13415	14854	16529	17801	17840	17317
Total	1516386	2023565	2765254	3335794	3490186	3724393	3776770
<i>Population density</i>							
0 - 5	9018	11172	15693	17047	15468	15076	13856
5 - 10	2992	4360	5894	7523	8030	8416	8488
10 - 20	197	279	383	511	650	814	939
20 - 40	45	51	59	84	117	146	161
> 40	56	53	59	66	71	71	69
Total	501	669	914	1102	1154	1231	1248

Figure 5. Trends in resident population of the AMA by year and distance zone.



As the time goes by, we initially notice a shift of the maximum population change rate from the distance zones, which are next to the Athens centre, towards further zones. The maximum population change rate was observed in the zone of 5-10 km for the period 1951-1961, while in next periods the maximum index moves to the distance zone of 10-20 km from the centre of Athens. The fact that the suburbs belonging to the second ring developed faster during 1951-1961 and the suburbs



of the third zone developed faster in the following periods, confirms the previous analysis according to which, the AMA went through the stage of the suburbs development in 1951-1981. Nevertheless, we must note that the furthest distance zones showed a remarkable increase in population rates since 1971. The bigger the distance of the given zone from the central city of the given metropolitan area is, the later it reaches the maximum value (peak) of its population change and this result is in accordance with the initial hypothesis.

The appearance of the maximum change value of the Athens population and its closer suburbs during period 1961-1971 could possibly be attributed to an irregularity which occurred from the huge inflow of immigrants in the region of Athens. An irregularity is also appeared in the more distant zones, where the peak is coming back to the period 1971-1981.

## **Discussion**

Based on the spatial cycle approach, it is possible to explore the regional developing procedures in connection with the evolution of the settlement pattern. The empirical approach of the spatial cycle shows clearly that this region went through the suburbanization phase during period 1951-2001 while there are serious indications of development of new settlements and intense problems at the historical centre of the city. According to the results of the present spatial cycle's application, the whole post war era should be divided in two sub-periods. Firstly the period 1951-81 matches the stage of relative suburbanisation with both parts (core city and suburbs) to gain population and the later to gain more population than the former. Secondly, the period 1981-2001 is that of absolute suburbanization which is characterized by population loses for core city (Athens) and population gain for suburbs.

The population in the suburbs of Athens city presents a bigger growth in relation of Athens population during the whole post-war era. It is characteristic that the increasing rates of the population in Athens city were close to zero during period 1951-1961; this trend was reversed during period 1961-71 while the zero increase rates came back in the decade 1971-1981. Within the decade 1981-1991, the population of Athens city decreased. A weak decrease was observed for the decade 1991-2001 (only 1%).

The impact of intense population changes, during 1941-51, explains to a certain degree the irregular behaviour at the beginning of the post-war period. When Greece returned to the normal developing procedures of peace period, the evolution of the population changes in Athens and its suburbs came back to a normal tempo and the suburbs present obviously faster population increase rates. The huge accumulation of emigrants from the provinces to the capital during period 1961-71, leads quickly - and maybe prematurely - to the over concentration of population and activities in the city of Athens; as a consequence, a respectively big part of its new inhabitants was led to the suburbs-mainly in the Departments of Western Attica and Piraeus (Rontos, 1987). At the same time, the degradation of the life quality at the core city led part of the inhabitants, mainly of high income, to the northern and eastern suburbs within decade 1961-1971.

The later reason of movement becomes obvious from the big population change rates in the north-eastern suburbs which attracted the high-income inhabitants, like the municipalities of Kifissia, Amaroussio, Filothei, and Psychiko. We make the assumption of the high-income inhabitant movements in the intraregional level taking in account that it is rather impossible to have a remarkable population increase in expensive suburbs that could be justified from the flow of low- and medium-income immigrants, originating from the rest of the country.

During 1961-1971 negative external economies appear and they become even more obvious within next period 1971-1981. We should mention that Athens city

population almost stagnates during the decade 1971-1981 while the population of suburbs increased by the same absolute number as the ones in previous periods. The population movement from Athens to the suburbs played an important, determining factor in the change of settlement patterns within decade 1971-1981 since the impact of immigrants' flow was much lower compared to previous years (Rontos, 1987).

During 1976-1980, the inter-municipality demographic movements within the AMA reach approximately 250,000 inhabitants. Within the decade 1971-1981, the overpopulated – even saturated - city of Athens led the immigrants from the rest of the country to settle in the Athens suburbs. In addition, we should point out the accumulation of the public and private sectors' services in central areas of the city of Athens which functioned competitively to the housing needs and concurred to the movement of inhabitants towards the suburbs.

The centralized administrative system and the necessity to satisfy the need of services for a continuously increased population pushed the population to settle in the suburbs. The relation of environmental conditions to this change of pattern - from the city of Athens to the suburbs - has not been analyzed empirically but it must have played an important role in the decade 1981-1991.

However the last decade 1991-2001 presents an interesting situation leading to two different scenarios for the future. Initially AMA, remains at the absolute suburbanization stage (quadrant 4 of Figure 3). As a result an advance to the next stage of disurbanisation phase (5th or 6th stage) does not seem to occur. On the contrary, the Cartesian product approaches again stage 3. During 1991-2001 we observe a slow down of centre Athens population decrement in relation with 1981-1991. For the suburbs we observe that the excessive deceleration of population increase during 1981-1991 in relation with the previous periods (transition from points A, B, C to point D) during the last period present a stabilization of the population growth rate (from point D to E).

We can assume that if the increased deceleration of suburban population continues in conjunction with the centre population variation we should advance to stage 5. In case of a decrease of suburbs population we could advance to stage 6 or 7. The reason of this irregularity can be likely attributed to the foreign emigrants who definitively boost the Athens centre population. Rehabilitation and return of local population from the suburbs does not seem probable. A heavy concentration of foreign population in Athens (74% of Attica foreign population and 36% of Greece) can however influence the rehabilitation of the inner city.

Foreign emigrants choose to settle in Athens centre because of cheaper house rents, easier transportation, shared residence with other migrants from the same country, benefits provided by the state or local organizations, and rallying. During 1991-2001 we faced a similar situation with the 1961-1971 when the excessive internal immigration had caused irregularities to the spatial cycle evolution, as it is already mentioned above.

According to the obtained results, we can illustrate two possible scenarios for the future evolution of AMA: (i) if the Athens centre rehabilitation is temporary and in the future is discontinued (that means acceleration of core population decrease in combination with a deceleration of suburbs population increase) we will advance at stage 5 (absolute disurbanisation); (ii) if the suburbs population decreases we will advance at stage 6 or 7 (relative disurbanisation or relative reurbanisation stage). 2. In case the centre of Athens (core city) presents a population increase (continues the recent tendency) combined with a population decrease in suburbs we will advance at stage 8 (absolute reurbanisation stage).

Further research, including future population projections of cities and villages in AMA and intra-suburbs analysis, should be undertaken in order to gather new evidences for the future evolution of large Mediterranean cities.

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