

# INFORMAL HOUSING IN GREECE: A QUANTITATIVE SPATIAL ANALYSIS

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## Abstract

During the last 50 years in Greece growing demand for urban (residential and industrial) space has resulted in unplanned residential development and informal dwelling construction to the expense of agricultural and forest land uses. Despite the fact that the post-war challenge faced by the state in providing minimal housing for their citizens has been met the informal settlements phenomenon still proceeds. This situation tends to become an acute problem with serious economic, social and environmental implications. Impacts are great and pressuring ranging from aesthetic deteriorations of landscape qualities, biotic diversity threats, desertification and forest and open land "squeeze" to increased vulnerability to human settlements. In this article, the issue of informal settlements is approached in an integrated manner although some emphasis is placed upon its spatial dimension. In particular, by using official data we carry out a comparative analysis regarding the Greek prefectures. The most problematic areas are identified and the major driving forces that fuel the phenomenon of informal development are described. The article concludes by commenting on likely policy action to be taken in order to contain or eliminate the problem.

**Keywords:** urban development, informal housing, land use change, correlation analysis, Greece

## 1. Introduction

In recent decades, land use and land cover changes (LUCC) have attracted considerable attention within the scientific community initiating an international debate among scientists, experts, policy-makers, non-governmental organisations and various economic and institutional players with some interest at or involvement in land use allocation (Parker et al. 2003; Verburg and Veldkamp 2005). A rapid and unprecedented transformation of the landscape is under way in almost all over the world. Urban development is consuming land and natural resources at an increasing rate (Geoghegan et al. 1998; Lambin et al. 2000; Wilson and Lindsey 2005), raising serious concerns about the sustainability of current economic-growth patterns, the quality of urban space and the state of natural environment (Briassoulis and van der Straaten 2000; Walker 2004a). Agricultural land, forests, natural areas and open space are given to urban development and poorly planned (if at all) urban patterns appear threatening the quality of life in numerous ways (Fekade 2000). However, ignoring past and current urban sprawl trends is not sensible, especially when those trends affect the foundations of human socio-

economic system. Greece has experienced urban sprawling processes for some decades so far (Leontidou et al. 2001).

Land use changes in Greece have been the outcome of combining forces with mostly economic, socio-cultural and institutional origin (Leontidou et al. 2001; Potsiou and Ioannidis 2006; Xinomilaki-Papaelia 2004). During the last 50 years, growing demand for urban (mostly residential and industrial) space has resulted in unplanned residential development and illegal dwelling construction to the expense of agricultural and forest land uses. This situation, tends to become an acute problem with serious economic, social and environmental implications (Karathanassi et al. 2003; Tounta 1998). Impacts are great and pressuring ranging from landscape aesthetic deterioration, biotic diversity threats, desertification and forest and open land “squeeze” to increased vulnerability to human settlements and local water contamination.

The negative environmental costs and externalities threaten people's health and urban and regional development perspectives. If we were to obtain monetary estimates of the externalities due to informal settlements, then the phenomenon could justify the adoption of upgrading schemes (Ferguson 1996) and the initiation of a land use planning process to reduce land invasion pressures (Abbott 2002).

Efforts to contain sprawl and revitalize older neighbourhoods through smarter growth practices, legislative initiatives and land use planning schemes have been contentious especially during the last three decades (YPEHODE 2006). The most well-known initiative was that of “The Urban Renewal and Reconstruction Project” carried out from 1983 to 1994 in a national scale. This initiative was an enormous project targeted at identifying the real urban space all over Greece. Moreover, the ultimate purpose of the project was to integrate informal settlements into the existing urban plans providing at the same time, the necessary public infrastructures and social services. Around the country, from the large metropolitan concentrations of Athens and Thessaloniki to the smaller rural municipalities, numerous land use planning initiatives attempted to lower the pace of urban sprawl (Katochianou and Theodori - Markogiannaki 1989) and integrated unlicensed residential constructions to the existing urban system. Concurrently with the planning initiative, several pieces of legislation were introduced in order to discourage further expansion of illegal housing. However, the results of such a policy do not seem to have been encouraging. Till now, the illegal housing phenomenon proceeds at a high pace, so that about 3.000 new unlicensed buildings each year (almost the size of a small town) get legalised and integrated into the existing urban system (NSSG 2000). Moreover, the annual number of illegal buildings that do not get into the legalising process is believed to be much higher (Potsiou and Ioannidis 2006).

Various studies have focused on proposing driving factors and theoretical schemata that underpin and explain the dynamics of illegal housing phenomenon (Costa et al. 1991; Gottdiener 1994; Kellett and Garnham 1995; Leontidou et al. 2002; Potsiou and Ioannidis 2006; Tounta 1998; Xinomilaki-Papaelia 2004). However, they are usually descriptive in nature and they can not stand for complex systems analysis. This article discusses the issue of illegal housing in a quantitative manner employing for this reason correlation analysis. By doing this, we want to introduce some mathematical precision and objectivity into the analysis of the results and formulate more coherent conclusions. The concern is on urban patterns that have predominated since the end of World War II. This is because, of a total of about 4.000.000 building in Greece only 600.000 have been constructed before the World War II (NSSG 2000). The great majority of buildings are post-war structures mainly constructed during the 60s, 70s and 80s.

Following on from this, the paper provides a mental framework for the empirical analysis by reviewing the urban land use theoretical schemata that describe the process of urbanization and that - at least to some extent - provide guidance and explanations as to why illegal housing practices occur. Then, we move on to discuss the urban land use planning system in Greece and the processes which have created the present buildings stock in the country. The possible proximate and underlying causes of illegal housing phenomenon are also commented upon. The middle sections are devoted to the spatial analysis of illegal housing and legalisation processes in Greece. Finally, the last section formulates the final conclusions drawn from the precedent investigation.

## **2. Understanding informal settlements: a theoretical framework**

### ***2.1. Developed and Developing countries***

The morphology and evolution of land use patterns have been extensively studied and theorised by scientists of different disciplines (Briassoulis and van der Straaten 2000; Geoghegan et al. 1998; Irwin and Geoghegan 2001; Lambin et al. 2001; Verburg et al. 2004; Walker 2004a). Thus, a plethora of theoretical schemata have been developed so far in order to provide possible explanations regarding land allocation processes. As regards the illegal housing phenomenon the relevant international literature (Hall and Hay 1980; Leontidou et al. 2002; Sietchiping 2004) reports two major categories of theories. The main criterion of classification is the level of economic development of each country. Thus, in the first category belong the theories which apply to the developed countries and cities. This category comprises two broad theoretical perspectives:

- The Chicago School perspective which was formulated in the late '20s mainly by Burgess. He considered illegal housing as a result of income level differences of various ethnic groups who competed for urban land (Sietchiping 2004). In an updated version of this perspective Mike Davis (1992) introduces the concept of "the ecology of fear" which will probably become the natural order of the 21st-century city. He proposes that present cities shape themselves through struggles for control upon urban space by social groups. These struggles result in areas segregated into zones of protection and/or terror or otherwise zones of legal and illegal activities of all kinds. This is the factorial ecology perspective which suggests that illegal housing is the product of professional and social segregation in urban areas.
- The neoclassical economics theoretical schema by Alonso. He suggested that illegal housing was a reaction to the housing needs of the people who cannot afford to pay for a formal housing unit. However, Leontidou (2002) argues that this approach as well as the "life cycle" model of urbanization- suburbanization- disurbanization- reurbanization distorts the characteristics of Euro-Mediterranean urban development and therefore are inappropriate for analysing urban patterns in many Mediterranean cities.
- Two contemporary perspectives of globalisation. Firstly, the "new economic geography" put forward by Krugman, Fujita and Venables (Fujita 1993; Krugman 1993; Venables 1996) which assume that in a state of monopolistic competition the size of a city is determined by the action of centripetal and centrifugal forces and secondly the "global cities" concept by Saskia Sassen which refers to the cities that have the resources which enable firms and markets to be global (Sassen 1991).

The second category comprises the theories which can better explain illegal housing patterns in the developing countries (Sietchiping 2004). There are three main theoretical schemata in this category:

- The first theoretical perspective suggests that informal housing patterns arise as a result of structural inefficiency found in urban authorities' organisation, poor land management practices and inadequate urban planning schemes (Baharoglu and Leitmann 1998; Huchzermeyer 2003, 2004; Mahmud and Duyar-Kienast 2001; Pettang and Tatietsse 1998).
- The second theoretical view suggests that informal housing patterns are mainly caused due to political and historical factors (Leontidou et al. 2001). Therefore, it is argued that studies of illegal housing should pay greater attention to the historical contexts within which the social and economic forces operated in the past.
- The third theoretical schema, which applies to countries with economies in transition, proposes that during the process of transformations in the economy, deep socio-economic inequalities arise. Mortgage financing for constructing residential buildings is virtually non-existent in these economies

(Bonin and Wachtel 2003; MacDonald et al. 2000). As regards the housing sector, these inequalities result in the creation of illegal settlements.

## 2.2. *The Old and the New Theoretical Perspectives*

Following, it is given a selective representation of such theoretical schemata in light of the land allocation mechanism that each theory puts forward as well as the ability that each theoretical schema holds in explaining illegal housing practices. The purpose of doing this is to connect the underlying factors of illegal housing in Greece used in the analysis, with broader issues regarding economic functioning as well as social behaviour. In this respect the theories holding significant explanatory potential are the following:

- a) *The theory of the spatial divisions of labour*: In the debate about regional uneven development, cities and globalization Massey proposed the «theory of the spatial divisions of labour» (Massey 1995). Building upon Marxian approaches about the critical role of labour in producing spatial differences this theory focuses on the restructuring effects of labour markets and on the spatial division of labour, stressing the re-organization of production (Briassoulis and van der Straaten 2000). According to the theory, development accumulates in certain regions as new successive investments are applied and therefore, needs for urban space scale. The concentration of numerous low-income workers in certain places builds up pressure on land uses. As these people usually do not have the financial ability of acquiring a legal house soon get involved in processes of informal dwelling construction.
- b) *The theory of mass consumption*: The theory of mass consumption was employed by Sack in the late '80s in order to explain contemporary relationships between people and the natural environment (Sack 1988). This theory deals with the forms and ethics of social behaviour towards natural environment and states that present patterns of consumption adopted by humans have resulted in generating a chasm between people and the environment (Rappa 2002). According to Sack a place is often thought of as having exceptional characteristics at a unique location. But this is the case before this place enters the market and becomes “commercialized.” From that moment it loses gradually its unique qualities and becomes “consumed” (Sack 1988). Increasing patterns of consumption accelerate the rate of use of natural resources. Therefore, profound land use modifications appear. The high prosperity levels of certain social groups coupled with an insensitive attitude towards the environment (the chasm in human – nature relation) generate illegal housing patterns in the form of secondary or holiday housing. These forms of unlicensed buildings are usually of high quality as opposed to slums in less developed countries and they are frequently materialised into environmentally sensitive areas (coastal zones, forest edges etc).

- c) *The urban land use theory*: In 1960, coherent urban patterns led William Alonso to the formation of «urban land use theory». In his intra-area land use distribution approach, the leading mechanisms behind arising urban spatial patterns around a city's Central Business District are households' attempts - subject to a certain budget - to maintain a given satisfaction level (Leven 1999). Thus, the spatial distribution of land uses depends on households' financial budget and preferences, land parcels distances from the city centre and the location of employment areas. In this respect, land use allocation is close related to the individuals' utility maximization. However, as cities develop, a possible increase in rents may affect the working class. As a result, dwellers who cannot afford to pay for a formal dwelling turn to illegal building construction in the struggle to serve some of their basic needs.
- d) *The theories of human demography and movements*: The issue of population has always been crucial in the analysis of land use patterns. There have been proposed several population-related theoretical schemata in order to describe the influence of population on land uses since the Malthusian perditions of detrimental effects of increasing population on the natural resources. Boserup (Bilsborrow and Geores 1994) states that large populations increase the creativity and ideas potential. In this way, pressures on the environment are temporary because new technologies will ultimately alleviate them. In this respect, the problem of informal settlement is transitional and will disappear. Zelinsky suggested the existence of certain stages in migration according to the state that a society is (Sell and Dejong 1978). One of these stages involves the emergence of considerable rural-urban migration flows. This stage mainly corresponds to the societies experiencing developing processes. During this stage, the migration flows increase considerably the demand for urban space, resulting sometimes to the rapid creation of illegal settlements. This may had been the case in Greece in the period shortly after the World War II. This period was characterised by massive rural-urban migration movements. Following the theory suggests that as the countries get into the developed stage, rural - urban migration may continue but at a reduced rate. In advanced societies people's mobility continuous but in the form of inter- or intra- urban migration. Technological breakthroughs are expected to reduce this kind of migration. According to Johnson (2002) it is already in place the processes of "rural rebound", a significant departure from historical demographic trends. There are net migration gains in non-metropolitan areas. Part of the rural population growth is spillover from nearby urban concentrations. The factors that influence the process of "rural rebound" are complex and numerous and include crime, pollution and traffic congestion in urban areas but also improved infrastructure in rural locations, high quality social services, new job opportunities etc. However,

this process has generated great pressures for housing in amenity-rich areas (Johnson 2002) and on valuable farm land.

- e) *Effective land management perspectives:* These theoretical perspectives stress the importance of designing land management policies in advance that result in supplying adequate and affordable buildable space. One such perspective is the “New urbanism” perspective formed in the early 1980s. This perspective aims at restructuring urban planning practices and creating places of sufficient supply of affordable housing as well as human-scale neighborhood (Emily 1999; Song and Knaap 2003). Similar to new urbanism is the “smart growth” theoretical perspective of urban planning (Danielsen et al. 1999). This perspective proposes the concentration of growth in the existing boundaries of a city in order to contain urban sprawl. It supports the creation of compact urban neighborhoods, with mixed land uses, open space, affordable housing and bicycle-friendly and highly accessible by means of public transportation. An alternative to smart growth planning perspective, applicable to poorer regions and cities of the world, is the “intelligent urbanism principles” movement stressing the importance of efficiency in carrying out functions and projects (Benninger 2001). At least to some degree, most of the aforementioned planning movements have been influenced by the “garden city movement” founded by Ebenezer Howard in 1898. Common to these approaches is that the planning policies do not start or end with the production of land use allocation maps and drawings. Instead, they suggest that amongst the crucial issues to be considered are: the administrative mechanism in charge of the proposed planning policy, the issue of political stability, corruption matters and quality planning. Corruption in land administration and land management may be critical for illegal housing construction but because of the hidden nature of the phenomenon is hard to get a reliable estimate (van der Molen and Tuladhar 2006). Lack of taking into account these issues may lead to illegal housing construction.
- f) *The “new economic geography” and globalisation perspectives:* The “new economic geography” theoretical schemata suggest that interregional or spatial inequalities in income are the consequence of trade costs and market size, plus either labour mobility or input-output linkages. Krugman’s primary contribution is to incorporate external scale economies and increasing returns into traditional models of interregional trade. The industries which are characterised by increasing returns to scale concentrate in the larger initial market, while the periphery specialises in other industries. Generally speaking, the process of accumulating economic activities operates under the pressure from a certain mechanism. This mechanism encompasses forces of “affinity” and forces of “repulsion”. According to the theory of NOG, the geographic distances in conjunction with the urban or economic concentrations influence the intensity of spatial economic interdependence and the size of regional inequalities. These factors determine the size of centripetal and centrifugal

forces. They also configure the spatial distribution of economic activities contributing to regional development. NOG although not explicitly a model of regional growth per se, does offer static predictions about the forces that lead to the emergence of industrial clusters. However, agglomeration economies are important in increasing labour mobility. Housing and city sizes are affected by the scaling needs for construction of settlements for the employed (Brakman et al. 2004; Fujita and Krugman 2004; Tabuchi 1998).

In addition to the “new economic geography” concept, in the early 1990s, Saskia Sassen proposed the term of “global city” to describe the impacts of globalisation on cities’ structure through the movements of labour and capital, new technologies and firm locational decisions (Sassen 1991). Globalisation has social, political, cultural and economic impacts on people. The migratory workforce of global economy has changed the traditional migration patterns. Nowadays, flows of people are complex and more dynamic. Saskia Sassen argues that globalization and information technology have changed the way people respond to problems. She sets an example of “The Society for the Promotion of Area Resources” organisation in India that helps slum dwellers in Bombay to get housing (Sassen 2003). Although its purpose is local (i.e. organise local people in a locality) it has established multiple networks with other similar groups in a lot of countries. The individual organisations in the net do not gain power or material resources from this global networking, but they gain strength for themselves.

Informal settlements phenomenon in Greece is far from static. The underlying causes of illegal housing phenomenon have not remained constant over the year. However, informal-settlement way of thinking has become a permanent idiosyncratic feature of many people across the country. The reasons change, the process remains. To fully explain the emergence and expansion of illegal housing during the last 50 years one must take into account the different historical, political, social and economic contexts. A plethora of explanations and theoretical schemata may be appropriate in different spatiotemporal frames. However, past rural-urban migration patterns, poor urban land planning schemes and regulations, bureaucracy and corruption as well as the ethics of mass consumption era, the social division and the division of labour all seem to have contributed to the illegal housing phenomenon.

### **3. Ineffective land planning strategies in Greece: The need for realistic approaches**

Urban sprawl is usually assumed to refer to the unplanned growth of cities, particularly around their edges or peripheries. This ceaseless conversion of rural to urban and suburban land in light of insufficient land use planning often results in significant negative externalities (Leontidou et al. 2005; Munoz 2003). Thus, the emerging land use patterns are usually characterised by lack of public facilities, poor accessibility to existing facilities in the inner city and low build and environmental quality.

In Greece, the central body for state administration regarding urban land use policy and planning is the Ministry for the Environment, Physical Planning and Public Works, (YPEHODE). Strategies designed within YPEHODE are been foreword to the Greek Parliament for approval. Sequentially, the strategies are pursued through implementation mechanisms at the prefectural and municipal levels in about 156 Local Urban Planning Offices which cover the whole country.

Within YPEHODE, the Directorates of Regional Planning and Environmental Planning are responsible for issues such as planning and management of land resources, spatial structure planning and sustainable spatial development. Separate Organisations for land use planning and environmental protection have been established for the major Metropolitan Areas of the country namely Athens and Thessaloniki. The Ministry, as the main body for handling urban land planning policy issues, has launched a broad range of projects over the years to deal with the problem of illegal housing.

For several decades, the mainstream planning opinion had been the minimal state intervention in the housing market. During this period, the limited legislative initiatives were only partly-materialised and until recently the construction of residential units was almost exclusively financed by the private sector. In Greece, the turning point for urban planning legislation and illegal settlement construction can be traced back to 1983. In 1983, a significant piece of legislation was introduced for dealing with wider urban land planning and management issues as well as the phenomenon of informal housing (L.1337/83 1983). The law made provision for integrating informal settlements into the existing urban system and for lowering the pace of urban sprawl through the introduction of urban land use zones. As a result, a great effort was made to survey and organise unregistered urban units that had emerged since the post-war period (especially after 1955, a point that the Greek state introduced a certain procedure for constructing a buildings through the requirement for issuing a building license). By 1995, most of the «first generation of informal settlements» had been legalised. However, it had already started the process of creating the «second informal settlement generation» (Potsiou and Ioannidis 2006).

In 1997 and 1999 two important legislative initiatives were introduced with the purpose of improving, rationalising and broadening the scope of urban planning system. These were (a) the Sustainable Urban Development Law 2508/97 which provided the necessary guidelines for urban renewal and smart development programmes, housing development as well as secondary and holiday housing planning and (b) the «Spatial Planning and Sustainable Development» Law 2742/1999 which set the framework of land use planning on a national and regional scale. Through the Law 2742, planning is dealt with on (a) a spatial basis (National and Regional Frameworks for Spatial Planning and Sustainable Development) (b) on a sectoral basis (Frameworks for Spatial Planning and Sustainable Development

of the Aquaculture Sector, or the Renewable Energy Sector) and (c) on a land category basis (Framework for Spatial Planning and Sustainable Development of the coastal zone and the mountainous areas).

However, in spite of the aforementioned legislative reforms the informal housing phenomenon continues to grow. Combining factors and forces such as low political commitment and will, corruption, inadequate administrative structures and failures in the functioning of real estate market seem to have played a decisive role.

Historically speaking, shortly after the Second World War there was a rapid increase in migration of rural population to Greek major cities seeking employment or due to political reasons. The flows of new residents towards the cities were of such a magnitude that the state authorities were unable to cope with the demand for residential land (Leontidou 1989; Leontidou et al. 2002; Maloutas 2000). The lack of available housing plots in the central places of cities meant that the population had to be accommodated elsewhere. These flows were accommodated outside the official city plan boundaries upon prime agricultural and forest land. This trend to outward growth was due to the limited financial resources of the migrants to acquire a proper house within the city plan, the availability of low-cost undeveloped land in peri-urban areas and the loosely established property rights on land. It was later on that the growth of the cities created congested urban cores with poor quality housing in the inner city that made suburbs attractive to the middle and upper social classes.

In the beginning, public service provision to informal settlements was poor or even totally absent. Vital services such as electricity, road infrastructure, fresh water supply, drainage and solid waste disposal were dealt with by the settlers in various ways (self-origination approach) without the governmental intervening (Emmanoul et al. 1996). This approach changed in the 1970s as the politicians realised that there were important political gains ahead by legalising the underserved by urban infrastructure dwellers. Several election campaigns since the 1970s have raised the issue of informal settlements promising abolition, legalisation, incorporation into the existing urban plans and new high quality urban infrastructure.

Over the years, this political approach to informal settlements has become permanent, so that although in the last two decades there are hardly any flows of poor rural migrants that increase the demand for urban land by coming into the cities, still the phenomenon of informal housing proceeds. Moreover, the state's legalisation schemes continue with the last one launched just before the 2004 elections. In some respects, this opportunistic approach to informal settlements has fed and sustained them. It has also led to a great transformation of the phenomenon itself. The new generations of informal settlements are not

the homes of the poor (Potsiou and Ioannidis 2006) but the result of land speculation activity by an amalgam of actors such as middle class individual land owners, land investors, building societies, investors in tourism infrastructure and upper and middle class owners of luxury vacation houses. Therefore, the informal settlement phenomenon has been transformed from an “obtaining a shelter” issue to an act of speculation.

In addition, remarkable changes have also occurred to the spatial distribution of illegal housing. Whereas in the past most of the informal settlements were placed in peri-urban areas close to the major urban centres of the country, nowadays the majority of them are developed in distant areas of great environmental value, close to the coastal zone or on the islands. This is evident in the data from the NSSG about the distribution of unlicensed buildings that each year get legalised in Greece. For instance, in the insular prefecture of Evia with a population of 215.000 people, in 2001 there were 283 such units whereas in the Great Prefecture of Attiki with a population some 3.7 million people there were recorded only 392 such cases.

#### **4. The proximate and underlying causes of informal housing**

Informal settlements in Greece form a complex issue. These groups of housing units are associated with a diverse population of a wide variety of social and economic backgrounds. Therefore, informal housing units do not have the same characteristics everywhere. In fact the individual cases have distinctive characteristics and can be classified into certain general categories. One such category concerns houses created by low-income households and they are scattered all over the country both close to urban centres and in ex-urban areas. A second category is made up by luxury vacation or secondary houses, placed close to the coastal zone or to remote rural locations. Finally, a third category encompasses the remaining cases such as illegal business building of the primary sector (e.g farm buildings), the secondary sector (e.g small family manufacturing companies) as well as the tertiary sector (tourism-related building all over the country).

To describe accurately land use changes and understand well enough the underlying causes of the processes as well as to predict land patterns' composition into the future assisting policy makers in the design of potential interventions, is a complex task. Sustainable land allocation policies seem to require the integration into decision making of all critical aspect involved in land use change issues (Briassoulis and van der Straaten 2000; Geoghegan et al. 1998). A wide variety of approaches and techniques have emerged for this reason, namely to rationalise decision-making about land use matters. How and to what extent existing LUCC techniques have reached satisfactorily this target is also a matter of

research. Amongst the various techniques employed in the field of land use change research, statistical methodologies have been widely used for uncovering the dynamics of land patterns formation.

TABLE 1: CLASSIFICATION OF PROXIMATE AND UNDERLYING CAUSES OF ILLEGAL HOUSING UNITS

Economic Factors	Administrative Factors	Demographic Factors	Socio-Political Factors
Real Estate Market – Land prices	Bureaucracy	Population changes	Human behaviour
Labour Market Structure	Complex and insufficient legal framework	Migration fluxes	Consumption Patterns & Lifestyle
Sectoral Composition	Inappropriate planning and land use allocation provisions and procedures	Household composition	Low political will and commitment
Income levels	Poor Governance	Educational levels	Land speculation
Investments	Shortage of available urban land	Age composition of the population	Housing policy
Taxes and subsidies	Low security in land tenure	Ratio of Urban to Rural Population	Historical socioeconomic facts and events
New Infrastructure development	Insufficient control mechanisms		Low quality of the environmental conditions in the CBD
Cost of housing			Corruption
Informal economy			

As it was argued earlier in detail, the process of informal housing is close related to the benefits acquired by individuals and stakeholders involved as well as to the socio-economic characteristics of these individuals. The nature of benefits can be an indicator of the proximate and underlying causes which underpin the phenomenon. For a proper analysis of this complex issue, data requirements are high. Amongst others, there is a need for data concerning the demographic and socio-economic characteristics of the stakeholders involved, the characteristics of the constructed dwellings (use, volume and size) as well as the particular characteristics of the areas that receive this kind of development. However, data on informal settlements are scarce, discontinuous and of questionable validity (Potsiou and Ioannidis 2006). In Greece, the process of informal housing has not been monitored in a systematic way. This is a critical issue which may affect the analysis of the phenomenon, the conclusions drawn upon the analysis and, therefore, the policy proposals and the subsequent technical and institutional solutions put in place for dealing with the problem.

An overview of the current research on illegal housing in Greece and elsewhere, allows for identifying the most commonly employed explanatory variable to deal with the problem (Huchzermeyer 2003; Karathanassi et al. 2003; Leontidou et al. 2001; Potsiou and Ioannidis 2006; Sietchiping 2004). Even though there is an extensive literature on illegal housing, one should always bear in mind that the evolution of the phenomenon in Greece has its own particularities. Table 1 gives a selective

representation of some proximate and underlying causes found in the literature which could be relevant with the course of the phenomenon in Greece.

## 5. Spatial analysis of informal housing

### 5.1. *Rationale and Methodology*

In some respects, the course of informal housing reflects the way in which the regional problem in Greece has developed. Rapid economic growth of the major urban centres and economic and demographic shrinkage of rural, less-developed areas, forced an important part of the population to move to the main urban areas. Shortly after the Second World War till the early '80s, the economic and organisational conditions which had been created encouraged the rapid growth of a few large urban centres. (Katochianou and Theodori - Markogiannaki 1989).

At that time, the policy adopted by the Greek state for managing urban land uses was not particularly successful in delivering the desirable results. The urgent and pressuring needs for residential development in the urban areas combined with large population movements from distant rural or semi-urban areas to the main urban centres increased dramatically the demand for urban land. However, the relevant state concern for a well-planned, proportional offer of urban land to compensate the increased demand was absent. Land speculation phenomena emerged as a consequence of the frontier movement (rural-urban migration), and a large share of land passed from state into private ownership. As a result, there was a great instability in land prices, making urban land inaccessible for the low-income social classes. Virtually the great majority of settlers who moved to the urban areas of Athens and Thessaloniki acted as speculators. However, in a neighbourhood where most of the people live in informal houses, the concept of illegality is meaningless.

Spatially speaking, the urban –rural interface and a number of newly formed, informal industrial areas were the first to experience informal settlements construction processes - the first generation of informal houses. Another important informal housing category that mainly emerged in the mid '80s was that of secondary housing and vacation residences. These housing units were usually constructed in the coastal zone or close to other types of recreational destinations (e.g mountainous areas, wetlands, forests e.t.c). This category of informal housing is still growing across the country although formal data are difficult to obtain. Our current understanding of the characteristics of high-quality informal housing is that the social classes that choose to follow an illegal attitude are in the middle or higher income levels. On the one hand, the lack of a proper policy for providing suitable land to serve this kind of high quality

housing demand and on the other hand, the environmentally - insensitive social ethics of the mass consumption era, are driving a “new generation of informal settlements”.

According to Potsiou and Ioannidis (2006) the most common forms of informal settlements are:

- Squatting on state-owned land construction. This practice has been fuelled in Greece by the lack of a proper way of recording rights to land through titles and deed that are linked to a cadastre.
- Housing development on agricultural land by changing the land use.
- Building on ineligible land in terms of parcel size.
- Constructing without obtaining a building certificate.
- Putting in place larger structures than the ones provided for by the legal planning framework.

Potsiou and Ioannidis (2006) suggest that during the period 1945-1966 about 380,000 informal settlements were created in Greece. According to Costa et. al. (1991) the informal constructions in Athens up to 1984 amount to some 150,000 units. YPEHODE which deals with the urban planning legal framework has attempted to legalize informal houses by expanding the boundaries of urban plans. Since 1983 the organisation of these areas in order to become functional parts of the urban system with networks, technical and social infrastructure, has resulted in the integration of some 60,000 ha into the urban land use system (Xinomilaki-Papaelia 2004).

Following, we attempt a spatial, quantitative analysis of the informal housing phenomenon in Greece, using the existing statistical data acquired by official sources and relevant studies. The methodology adopted is correlation analysis concerning informal housing and a number of relevant explanatory variables. The scale of analysis is that of the prefectural administrative level. By performing correlation analysis in the sub-regional scale we can investigate possible relationships between informal housing patterns and the explanatory variables and at the same time maintain a certain level of spatial explicitness. In addition to estimating the correlation coefficients, there are also constructed certain diagrams for improved supervision of the results.

Figure 1 depicts the number of illegal houses per 1000 people which were legalised during the period 1997-2006 in a prefectural level (i.e. the new generation of illegal houses). It also presents the legalized areas per 100 people during the period 1985-2003 in the prefectural level as well. This diagram was constructed by using statistical data acquired by the Ministry for the Environment, Physical Planning and Public Works, (YPEHODE 2006) and the National Statistical Service of Greece (NSSG 2000). By analysing diagram 1, there can be observed important differences amongst the Greek prefectures concerning both the intensity of informal housing phenomenon and the distribution and sizes of legalized areas. An interesting observation drawn from figure 1 is the fact that the informal housing

phenomenon continuous with an increasing pace in the prefectures that have already had extensive areas legalised. It is worth mentioning that the great majority of areas were legalized during the period 1985-1995. However, in the prefectures with high rates of legalized areas integrated into the urban system, the informal housing phenomenon seems to continuous uninterrupted. This leads to two suggestions: (a) The legalized areas integrated into the urban system were not sufficient in meeting the existing demand for urban land and (b) The state control and monitoring system in the housing sector were ineffectual.

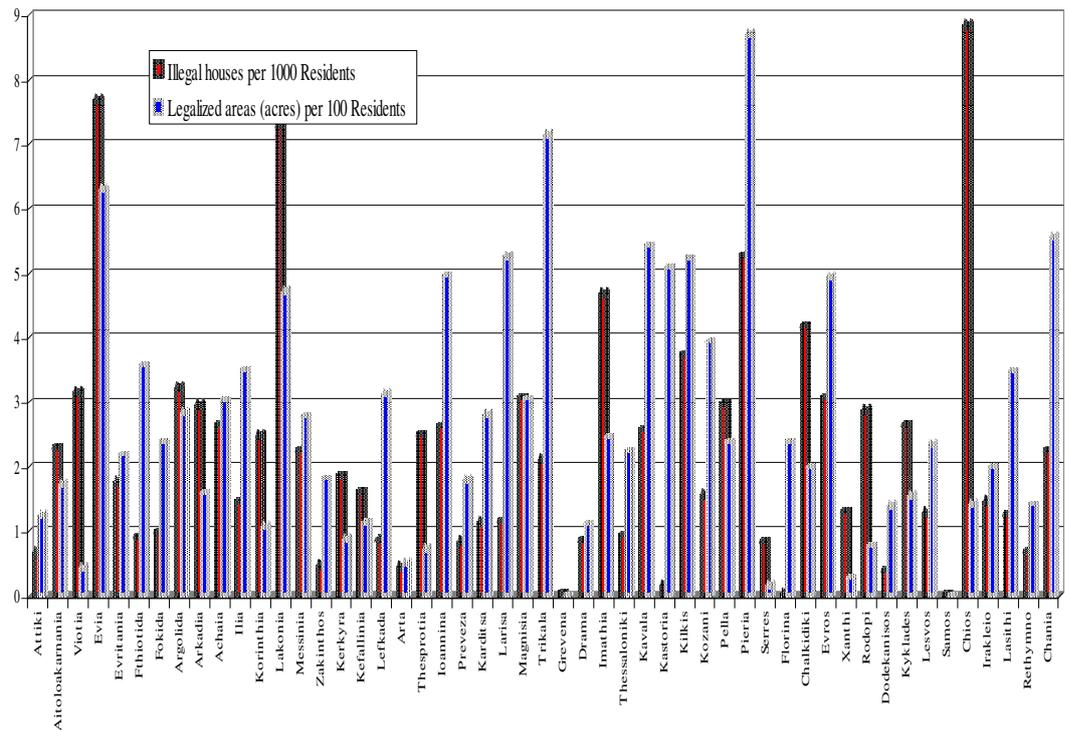


FIGURE 1: ILLEGAL HOUSES AND LEGALIZED AREAS IN GREECE

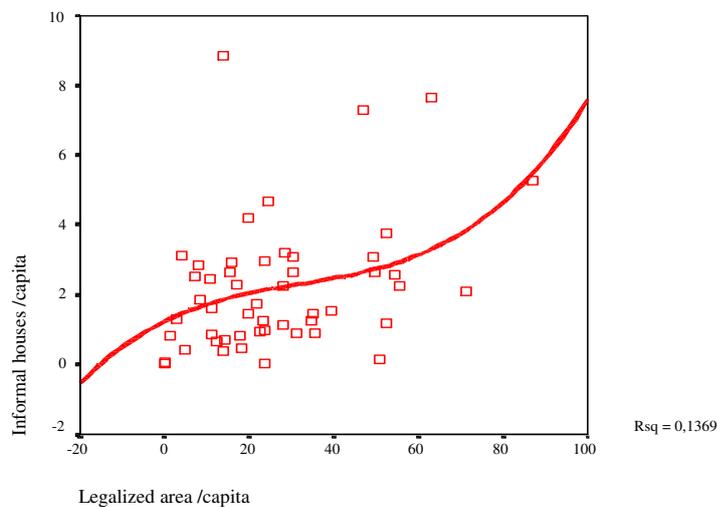


FIGURE 2: THE RELATIONSHIP BETWEEN ILLEGAL HOUSES AND LEGALIZED AREAS

Figure 2 depicts the relationship between the number of informal houses per capita and the legalized areas per capita in each prefecture. This diagram implies an analogous relationship between the number of illegal houses and the extent of legalized areas. In some respects, this means that the state policy regarding the integration of new space into the urban plans, virtually follows the informal housing process instead of going before. Thus, as it was mentioned before, the increase in urban space does not precede but follows the demand already met by the process of informal housing.

### 5.2. Definition of Variables and Data Source

Following, we estimate the correlations between on the one hand, (a) the “legalized areas per 1000 residents” for the period 1985-2003 and (b) the “illegal houses per 1000 residents” constructed during the period 1997-2006 and, on the other hand, some selective variables which represent certain economic and social characteristics of each prefecture (table 2). High correlation values in a statistically significant level show the influence of different regional characteristics to the intensity of informal housing and to the scale of legalized areas. The indicators used for the estimation of the aforementioned correlations are:

- a) *Level of prosperity in each prefecture:* The prosperity indicator has been estimated by using the official data for the Greek prefectures by Eurostat concerning the contribution of each prefecture to the GNP of Greece and to GNP per capita in € as well as in Purchasing Power Standards (PPS). Due to the fact that the per capita GNP cannot give a safe estimation of the prosperity in the NUT II & III levels, we have incorporated into the variable additional financial and development indicators concerning the levels of consumption and civil infrastructure in the prefectures. The data concerning this variable come from a previous study by Petrakos and Polyzos (2005). By using this variable we investigate whether the level of human prosperity in each prefecture is connected to informal housing or the informal housing phenomenon does not depend on the level of economic development of each prefecture. We investigate the correlation values, bearing in mind that high values of growth and prosperity ensure corresponding levels of housing activity. The data concerning this variable were acquired from a study by Petrakos and Polyzos (2005).
- b) *Indirect and total population potential:* The “indirect population potential” (IPP) shows the accessibility of each prefecture to large urban centres. Inhabitants of large urban concentrations may sometime build informal houses in adjacent prefectures. This tendency is known as secondary and/or vacation housing and happens across the country in many instances (e.g. dwellers from Thessaloniki build houses in Pieria and Chalkidiki and dwellers from Athens in Evia, and Korinthia). The total population potential (TPP) incorporates the indirect and the direct

population potential and shows the total accessibility of each prefecture. The TPP and the IPP are indicators of population agglomerations in each prefecture and of the total accessibility of each prefecture in relation to the other prefectures. These two figures are estimated by using the following formulas (Minetos et al. 2007):

$$TPP_i = \frac{P_i}{d_{ii}} + IPP_i \quad \text{or} \quad TPP_i = \frac{P_i}{d_{ii}} + \sum_{j=1}^n \frac{P_j}{d_{ij}} \quad (1)$$

where,

$P_i$  = is the population of prefecture  $i$ ,  $i=1, \dots, n$

$d_{ij}$  = represents the distances between the prefectures  $i$  and  $j$

- c) *Population quality*: The term "population quality" refers to the general characteristics of human capital in each prefecture and it is related to aspects such as the level of education, professional skills and specialization of labour force. In this study, we investigate whether or not this variable influences informal housing. Additionally, the social characteristics of the population are also looked upon in order to find possible connections with the informal housing phenomenon. As regards population quality, the data used in the estimations are taken from a study by Polyzos and Arambatzis (2006).
- d) *Rate of urban population*: As it was mentioned before, informal housing could be considered as the results of the pressure coming from urban growth processes and the concurrent shortage in urban land for city expansion. By investigating the relationship between on the one hand, the number of informal houses as well as the surface of legalised areas and on the other hand, the level of urban population in each prefecture, it is possible to identify whether the informal housing phenomenon is connected to the prefectures with high levels of urban population or is independent on this variable. The data for this variable are taken by the National Statistical Service of Greece (NSSG 2003).
- e) *Specialization in the primary, secondary and tertiary economic sectors*: The estimation of the potential relationships between informal housing and sectoral economic specialization in each prefecture, allows uncovering whether or not the economic character of each prefecture influences the informal housing phenomenon. The data for this variable are taken by NSSG (NSSG 2003).
- f) *Legal housing per capita 1980-2000*: Legal housing per capita is a measure of the housing activity in each prefecture. By employing this variable we want to investigate whether the informal housing activity has an analogous relationship with the legal (licensed) housing activity or they are uncorrelated. The data for this variable are taken by the National Statistical Service of Greece (NSSG 1980-2000).

- g) *Population changes during the periods 1981-91 and 1991-2001*: Changes in population can be used as a measure of new housing needs in each prefecture. Hence, we investigate if there is any relationship between on the one hand, an increase in the size of population in each prefecture during the periods 1981-1991 and 1991-2001 and on the other hand, the magnitude of informal housing and legalized areas. The data for this variable are taken by the National Statistical Service of Greece (NSSG 2003).
- h) *Change in urban population in the period 1991-2001*: Finally, the study investigates if there is a relationship between the informal housing variable and the changes in urban population in each prefecture. In this case we assume that informal housing concerns mainly the urban population and is directly related to the enlargement of cities. Data for this variable are taken by the National Statistical Service of Greece (NSSG 2003).

### 5.3. Results and Discussion

The results of the estimations are presented in table 2. We also construct diagrams 3-20 for better supervision of the results. These diagrams depict the relationships between the dependent and the independent variables in a pair-wise manner.

TABLE 2: CORRELATION COEFFICIENTS BETWEEN ILLEGAL HOUSING, LEGALIZED AREAS AND REGIONAL ECONOMIC AND SOCIAL CHARACTERISTICS

	Level of prosperity	Indirect population potential	Population "quality"	Rate of urban population
Illegal houses/1000 residents	-0,057 (0,690)	<b>0,378**</b> (0,006)	0,061 (0,669)	0,106 (0,461)
Legalized areas / 1000 residents	-0,040 (0,778)	0,169 (0,135)	0,107 (0,454)	0,146 (0,308)
	Specialization in primary sector	Specialization in secondary sector	Specialization in tertiary sector	Legal housing per capita 1980-2000
Illegal houses/1000 residents	0,054 (0,706)	0,114 (0,425)	-0,163 (0,253)	0,073 (0,612)
Legalized areas / 1000 residents	0,116 (0,416)	0,045 (0,756)	-0,194 (0,172)	0,070 (0,625)
	Total population potential	Change of population 1981-1991	Change of population 1991-2001	Change of urban population 1991-2001
Illegal houses/1000 residents	0,020 (0,887)	<b>0,193*</b> (0,094)	-0,126 (0,379)	-0,198 (0,163)
Legalized areas / 1000 residents	0,007 (0,961)	0,003 (0,981)	-0,064 (0,656)	-0,047 (0,754)

\*correlation is significant at the 0.05 level (2-tailed),

\*\*correlation is significant at the 0.01 level (2-tailed).

Some of the results do not verify our initial expectations, though these results lead as to useful conclusions with important land use policy implications. Firstly, we can observe that the statistical

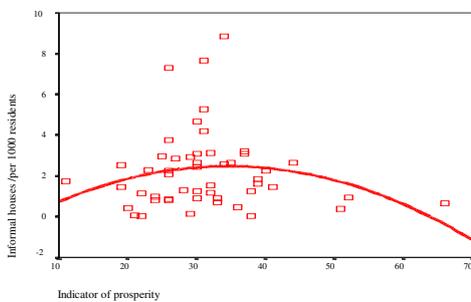
significance of the results is relatively low in certain cases. Secondly, the correlations between, on the one hand the illegal houses and the legalised areas and on the other hand the variables “specialization in the tertiary sector”, “level of prosperity”, “population changes in years 1991 to 2001” and “urban population changes in years 1991 to 2001” are negative. The remaining variables present positive correlations. The variables “indirect population potential” and “changes in population during the period 1981 to 1991” are statistically significant.

By using the abovementioned estimations, we pursue to unfold both the socioeconomic characteristics of the phenomenon as well as its spatial aspects. A general appraisal of these results leads us to the conclusion that the informal housing phenomenon in Greece is inconsistent and odd. For instance, “the increase in the size of population during the period 1991-2001”, “the increase of urban population” and “the level of prosperity” have a negative relationship with the number of informal houses. This may show that an increase in the size of total population and the size of urban population do not necessarily lead to informal housing. Therefore, informal housing in Greece during the ‘90s is not a direct result of urban growth and does not serve pressuring and urgent housing needs of human new-comers into the cities. The fact that informal housing has a negative correlation with the prosperity level in each prefecture implies that there is not a clear connection between economic growth in a prefecture and the level of informal housing in that particular prefecture. Hence, the spatial patterns of informal housing and economic growth do not match (Polyzos and Minetos 2008). The data used for the estimations refer to the last decade and concern the “second generation” of informal housing. Unlike, informal houses of the period from 1960 to 1980, that were connected to the movements of employment-seeking rural population to urban areas, the “new generation of informal housing of the last 10 to 15 years have different characteristics and spatial distribution. Population data of the 90’s show that there is a form rural-rebound as there are new opportunities for income generation in ex-urban areas because of tourism development that drive urban population to settle in the countryside.

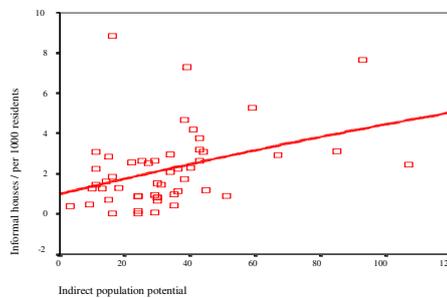
We also arrive at the same conclusion if we analyze the correlation estimates between informal houses and specialization of the prefecture in the economic sectors. The positive correlation values for the primary and secondary sectors and the negative for the tertiary sector, lead us to the conclusion that the prefectures which rely on the tertiary sector – being mainly the urban regions – do not have high numbers of informal houses. On the other hand, the prefectures whose economy is based on primary and secondary sector activities and are usually situated in the vicinity of large urban concentrations, have high values of informal housing. These results provide additional justification for the conclusion drawn above stating that the characteristics of informal housing in Greece have changed. Nowadays, informal housing is not targeted at meeting urgent housing needs of poor migrants. This type of

development derives from the economic behaviour of people of the middle and higher income classes who seek either some new source of income generation or simply to acquire vacation houses in the countryside.

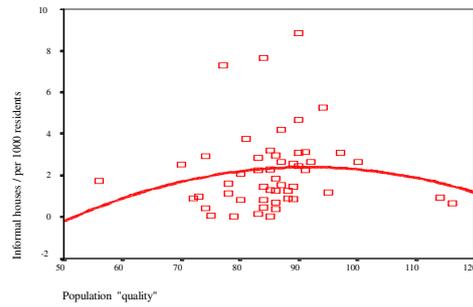
This conclusion is also confirmed by the existence of a positive and statistically significant relationship between informal housing and “indirect population potential”. As it was mentioned above, the indirect population potential is a measure of the accessibility of each prefecture to large urban centres. The results show that the prefectures with high values in indirect population potential attract informal housing. The official raw statistical data from NSSG suggest that there are relatively low values of informal housing in Attiki and Thessaloniki (the urban prefectures of the country) and much higher values in the prefectures of Evia, Magnisia, Imathia, Pieria and Chalkidiki. The latest prefectures have high values in indirect population potential because they are located in the neighbourhood of the major urban centres. This reinforces the conclusion that the residents of major urban centres construct informal buildings in neighbouring prefectures, and that it is highly possible that most of this housing activity concerns secondary and vacation residential units. Therefore, this housing activity is related to individuals who belong to middle and high income classes and live in urban areas. A further indication that justifies this conclusion is: a) the positive but statistically insignificant relationship in the period 1981-1991 and b) negative relationship in the period 1991-2001, between on the one hand the “informal housing” plus the “legalised areas” variables and on the other hand, population changes in a prefectural level. The population figures are those obtained by NSSG’s national censuses. In these censuses NSSG record the regular population in each prefecture and not the actual population that live in the prefecture in the high season period. Therefore, the observed increase in informal housing is not associated with a corresponding increase in population in each prefecture because most of the buildings are vacation houses of seasonal population.



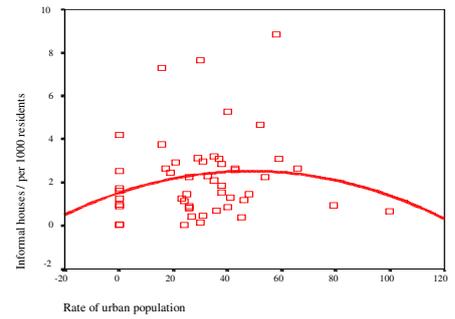
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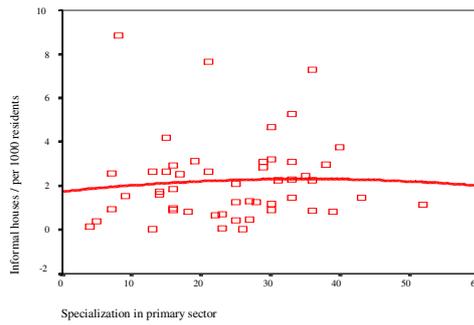
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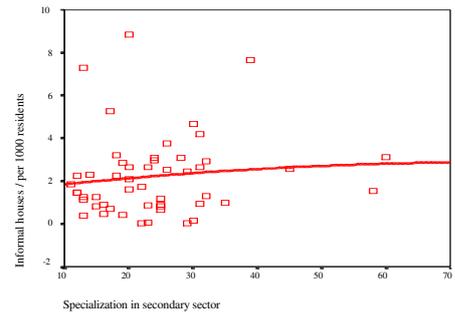
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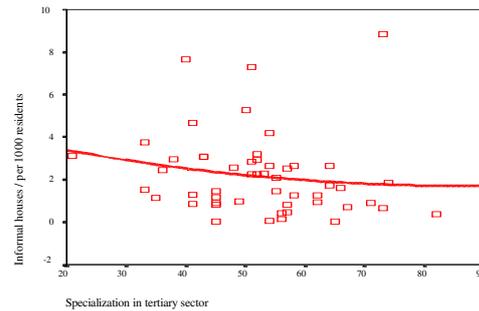
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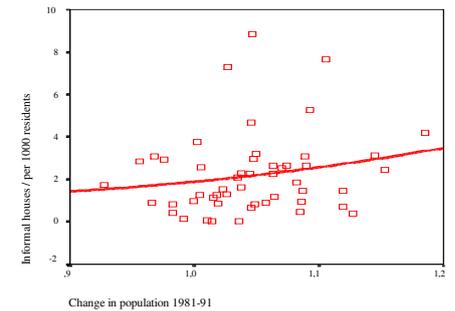
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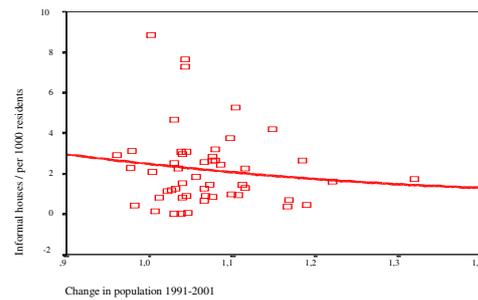
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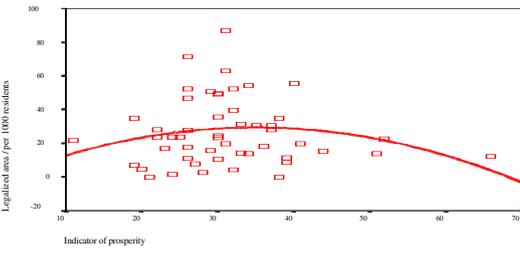


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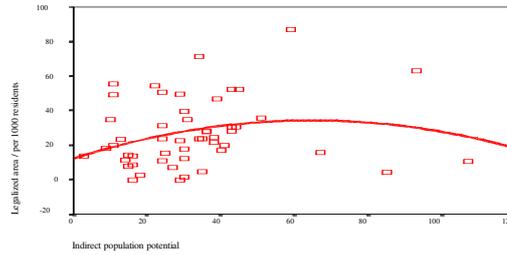


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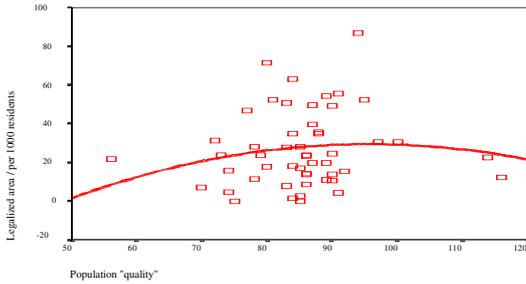
FIGURES 3-11 CORRELATION SCATTERGRAMS BETWEEN INFORMAL HOUSING AND THE INDICATORS



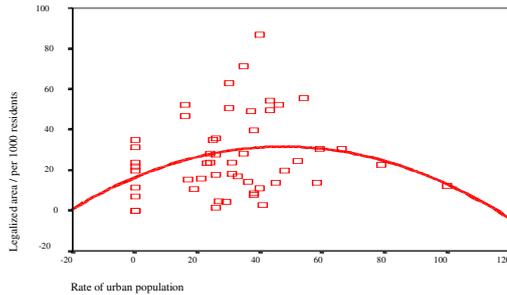
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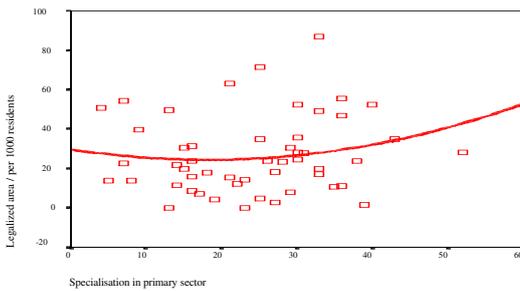
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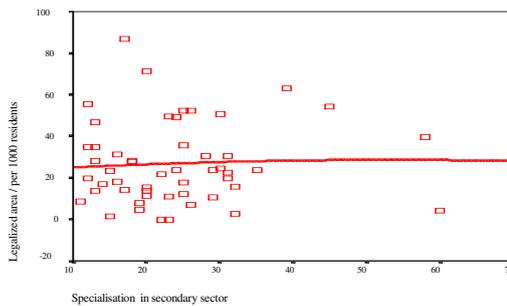
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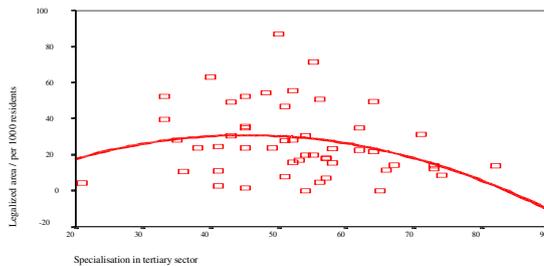
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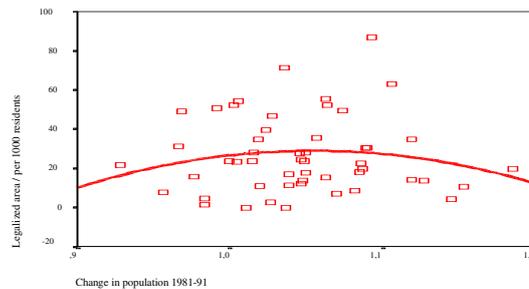
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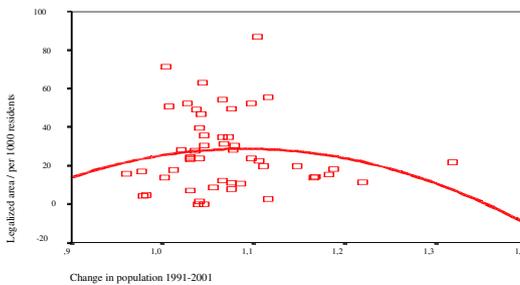
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FIGURES 12-20 CORRELATION BETWEEN LEGALISED AREAS AND THE INDICATORS

Finally, the correlation values between the informal housing variables and the factors “population quality” and “rate of urban population”, are positive but not statistically significant. These results suggest that there is not a strong relationship between informal housing and these variables. The prefectures that sustain high figures of informal houses, have also high urban population portions of relatively high levels of educational and professional specialisation.

## 6. Conclusions

The inter-relationships between medium or high income groups and informal settlements are still rather poorly understood. There are intimate links between on the one hand political will and administrative capacity and on the other hand informal housing issues. Despite the long-standing informal knowledge of these interactions, they are difficult to quantify and predict due to lack of data and are still too often ignored in decision making in urban land use planning. For several decades, mainstream urban land planning decisions in Greece have been guided by an approach of tolerance towards the low income migrants of the informal housing phenomenon. However, considerable evidence suggests that nowadays informal housing is the result of land speculation of middle and high income individuals.

The legal framework related to land and housing planning in Greece has some unique features. One such feature is that in the absence of a specific local land use management plan there are general provisions for building houses outside the existing urban plans even in small land parcels. These provisions have been a major drawback for putting in place an effective land use planning policy. In addition, they have fuelled urban sprawl and land speculation.

Informal housing in Greece constitutes a phenomenon with economic, social and sometimes political dimensions. It is tightly connected to the kind of management placed upon urban and non-urban land uses by the state and the implemented housing policy. The economic dimension mainly concerns the need for having provided residence of an affordable price to the low income working classes that came into the cities in search of employment during the transformation of the economy in the post-war period. In a similar way, the social dimension - especially shortly after the Second World War - was connected to the social need for providing for one of the basic requirements namely «shelter». The political dimension concerns the state planning efforts to legalise informal settlements.

In most of the times the state policy regarding the integration of new space into the existing urban plans virtually followed the illegal housing process instead of going before. Hence the increase in urban space did not precede but followed the demand already met by the process of illegal housing. The second generation of illegal housing units shows that the process still goes on. Therefore, it can be said that the

state has not managed to formulate a firm national land planning policy to deal with the issue. Instead, the state intervention has been spatially selective and temporally behindhand. The fact that most of the initiatives of legalising informal housing units are still launched usually just before election announcements shows that there is not real political will and commitment to deal with the problem.

During the past few decades, the informal housing phenomenon in Greece has undergone certain structural changes. In particular, the most important of these changes include the following:

- The purpose of constructing informal settlements used to be meeting urgent shelter needs. Nowadays, the main purpose is income generation through land speculation.
- The current major agents of the phenomenon are different than the past ones. Instead of low-income migrants from rural areas, the current players are middle or high income individuals and small building societies.
- The technical characteristics of informal settlements are fundamentally different. The majority of dwellings used to be low-quality structures, physically attached to each other in high density areas. At present, Current informal dwellings tend to be discrete, spacious luxurious units.
- The spatial distribution of informal settlements has also changed considerably. Most of the informal dwellings used to be close to cities and town in suburban areas. At presently, the majority of the such buildings are located in the countryside, on the coast and on the islands in remote scenic areas.

As far as the management of land uses is concerned, the state have not made provisions for creating the necessary «urban land stock» in each prefecture, so that everyone interested can find land parcels in an affordable price. Instead, the state action follows the informal building activity by legalising areas sporadically and by introducing new legislative initiatives of limited success in dealing with the issue. The state should get ahead by meeting low-income housing demand, preventing the development of informal settlements, lowering the cost of formal housing production and planning for the long-term. In this way there will be less social and environmental problems.

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