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Comparative analysis of property taxation policies within Greece and Cyprus evaluating the use of GIS, CAMA, and remote sensing techniques

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Comparative analysis of property taxation policies within Greece & Cyprus, evaluating the use of GIS, CAMA & Remote Sensing techniques

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ABSTRACT

This paper aims to examine how CAMA, GIS and Remote Sensing are integrated to assist property taxation. Real property tax apart from its fiscal dimension is directly linked to geographic location. The value of the land and other immovable features such as buildings and structures is determined from specific parameters. All these immovable assets are visible and have specific geographic location & coordinates, materials, occupied area, land-use & utility, ownership & occupancy status and finally a specific value (ad valorem property taxation system) according to which the property tax is levied to taxpayers. Of high importance in the tax imposing procedure is that the use of CAMA, GIS and Remote Sensing tools is capable of providing effective and efficient collection of this property value determining data. Furthermore, these tools can track changes during a property's lifecycle such parcel subdivision into plots, demolition of a building and development of a new one or track a change in the planning zone. The integration of these systems also supports a full range of business processes on revenue mobilization ranging from billing to taxpayers objections management.

Keywords: CAMA, Property taxation, Ad valorem, Mass Appraisals, Market Values, Tax Values, GIS, Remote Sensing, Greece, Cyprus

1. INTRODUCTION

Greece and Cyprus, although both countries of the EU with powerful bonds, sharing a common cultural & historical background and a financial & geopolitical common present and future, operate significantly different SDI policies, especially in terms of property administration, registration and certainly taxation. Cyprus is using an "ad valorem" property taxation system on market values with a reference date of January 1st, 1980, supposed to ensure horizontal and vertical equity, but instead being outdated (mainly because of a long-term non-free operation of the market). Thus, tax levied is not imposed on the actual market values of the properties, inevitably bearing down on many other direct and indirect taxes as well. In Greece, property tax is imposed since 1985 not on Market Values but on the "objective value" of the properties as it is defined by the Ministry of Economics. It forms a non-flexible system, with market-irrelevant values, inducing land-policy practices and potential political cost to each periodical update. Furthermore, instead of adjusting taxation levels to the current economic reality, real estate market is experiencing further burdening through approximately 40 different property taxes and levies, leading to further shrinking and depreciation. This paper aims to present analytically property taxation procedures in both Cyprus and Greece and to compare them in order to identify good policies and needs for improvement. Indeed, the authors present some typical examples of some areas of interests with common locational characteristics with the main aim of exploring the need for further improvements. The authors demonstrated how high spatial resolution satellite data are used to retrieve social survey that helps to assess the socio-economic status of the population for tax contribution purposes.

Local governments need "easy" own revenue source, involving little political responsibility, administrative simplicity and high taxpayer compliance. Over the years various revenue sources have been tried by countries, while property

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taxation has accordingly evolved employing various tax bases. Being a fact that taxpayers universally do not generally like timing of property tax payments, revaluations in growing markets, as well as ad valorem (more than area) basis, discussion is open for the subjective nature of tax base determination, taxation of unrealized value growth and valuations lag market volatility. Local governments need more acceptance of property tax as a way to finance local governments and provision of non-charged services

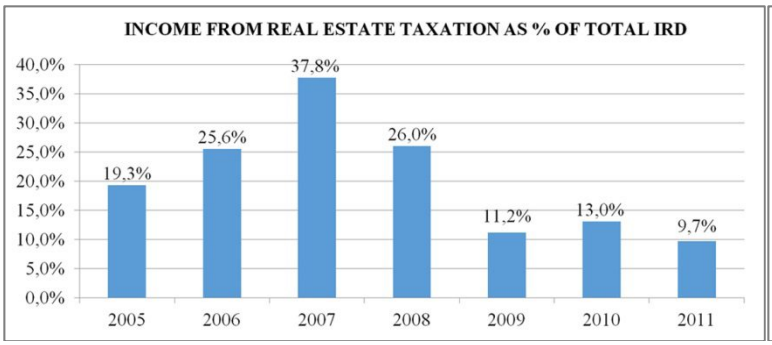
2. REAL ESTATE MARKETS IN CYPRUS & GREECE

2.1 Real estate market and property taxation in Cyprus

Income that is generated from real property tax is a strong and considerable source for local authorities and the government. The property taxes are an important part of the gross domestic product and in any case there is proven evidence of how they contribute. Property taxes can be separated in direct taxes such as property tax and indirect taxes such as capital gains tax, stamp duty and transaction fees. Whilst the income from direct taxes is relatively stable, the income depending on indirect taxation varies and is heavily depending on the effect of real estate cycles, the general status of the economy the influence of foreign buyers and other unpredicted factors. The income from all types of property taxes is presented on table 1 below regarding the years from 2005 to 2011. It is observed that the income from direct property taxation is extremely low compared with indirect taxes. The explanation of the above phenomenon is that the property tax levied was based on Market Values as they were on 1st of January 1980. This is expected to change the current year 2014 if the Department of Land and Surveys complete the new General Valuation with value reference the 1st of January 2013.

Table 1. Income from different property taxes in Cyprus. [Source: Inland revenue Department & Cyprus Statistics]

Year	Property Tax	Capital gains tax	Stamp Duty	Transaction Fees	Real Estate (total)	Total Revenue IRD
2005	€ 10,348,507	€ 98,955,376	€ 35,038,370	€ 75,588,749	€ 219,931,002	€ 1,139,933,458
2006	€ 10,722,361	€ 199,019,080	€ 47,778,229	€ 130,357,099	€ 387,876,768	€ 1,517,506,438
2007	€ 12,512,883	€ 467,127,479	€ 70,345,146	€ 256,678,839	€ 806,664,347	€ 2,136,407,267
2008	€ 11,743,826	€ 302,350,028	€ 64,649,792	€ 181,356,227	€ 560,099,873	€ 2,153,177,105
2009	€ 10,768,453	€ 74,469,873	€ 42,644,197	€ 77,952,162	€ 205,834,685	€ 1,842,625,831
2010	€ 14,123,082	€ 86,811,503	€ 42,644,197	€ 99,594,738	€ 243,173,520	€ 1,864,800,123
2011	€ 12,314,736	€ 68,563,659	€ 41,661,779	€ 73,664,226	€ 196,204,400	€ 2,020,754,966



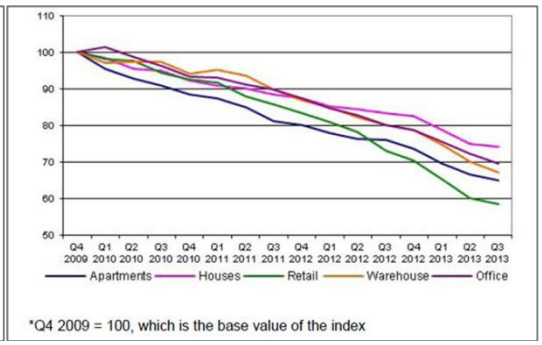


Fig.1. Income from RE taxation (direct & Indirect) as a percentage of the total Inland Revenue Department [source: Inland revenue Department & Cyprus Statistics], Fig.2. RICS Cyprus Property Index [source: RICS]

The value of properties in the previous years (until 2008) ranged at high price levels. The purchasers invested in properties not only for own use but also for the purpose of multiplying their capital, as there were indications of high rates of capital increases in properties especially during 2003-2008. This phenomenon created incredibly high income for the Inland Revenue Department that reached almost 38% of total (fig.1). Property values reached its peak at approximately mid-2008. Since then, due to the general economic downturn and credit crunch, prices of properties initially remained at firm price levels and subsequently showed a downward trend. Cyprus property market is

underperforming the last 5 years. Since 2008, market values of properties in general might have decreased around 30 to 45% as it is stated on the latest version (4th quarter 2013) of RICS Cyprus property Index (fig.2).

The volatility in the global financial system has created a noteworthy degree of turbulence in Cyprus and in other real estate markets across the world. Furthermore, the lack of liquidity in the local capital markets (commercial and cooperative banks in Cyprus) was the main reason for the decrease in property transactions. Cyprus' economy has faced a dramatic fiscal debt crisis which has led Cyprus to enter a bailout plan driven by the EU, IMF and the ECB. This crisis has become a general economic crisis covering almost every aspect of the daily economic life of the country. Due to the negative publicity that the country received after 16th of March, the vast majority of the foreign investors are thinking of withdrawing their interest for investments in Cyprus before the country becomes more investable and stable in macro-economic terms. Consequently the number of property transactions was dramatically decreased and the significant income from it (indirect taxes) was lost (Dimopoulos & Pashoulis, 2014). As it is stated at the MoU (Memorandum of Understanding) several times, EU, IMF and the ECB are underlining the importance of the income that is deriving from property taxation as vital for the exit from the current situation. Thus, they suggested that the DLS should proceed with the new General Valuation.

Since the last General Valuation in Cyprus took place almost 30 years ago, the Department of Land and Surveys has to reevaluate all properties with reference date the 1st of January 2013. In order to highlight the difficulty of the above it is mentioned that totally in the South part of Cyprus are more than one million Title Deeds (proofs of ownership) and accordingly properties. Therefore, property tax collection is a very complicated task because of the need to manage a large number of different taxation objects, as well as, property owners or users. For that reason, setting up a property tax collection requires the application of special knowledge and capacity to work in conjunction with variable data basis which is often very challenging. Additionally, the failure to establish a credible tax base usually thwarts the confidence of taxpayers and also limits revenue performance (Lindgren, 1985). Furthermore, O' Sullivan, Sexton and Sheffrin (1995) say that property tax is the single largest source of revenue and it can easily be integrated with local planning as it is a probable source of revenue. It is important to have a comprehensive tax base to avoid questions over the suitability of the property tax.

2.2 Real estate market and property taxation in Greece

Real Estate used to be a capstone of the Hellenic economy, significantly contributing to the country's GDP. Greece presented one of the highest owner-occupancy rates (~80%) in Europe, while on the other hand real properties were considered a traditional and conservative investment for everyone. Now, during the 6th consecutive year of economic recession, residential market values have fallen to a percentage of 31% off (in the last 5 years) and at the same time properties are being over-taxed, resulting to an inactive real estate market with properties being considered only as a burden. More than 40 taxes, levies & fees are imposed on real properties' construction & repairs, ownership & occupancy, transactions, inheritance & donations, deriving income and management, while additional dues are continuously added for new obligatory certifications on static adequacy, energy efficiency, legal status etc. (fig.3-5)

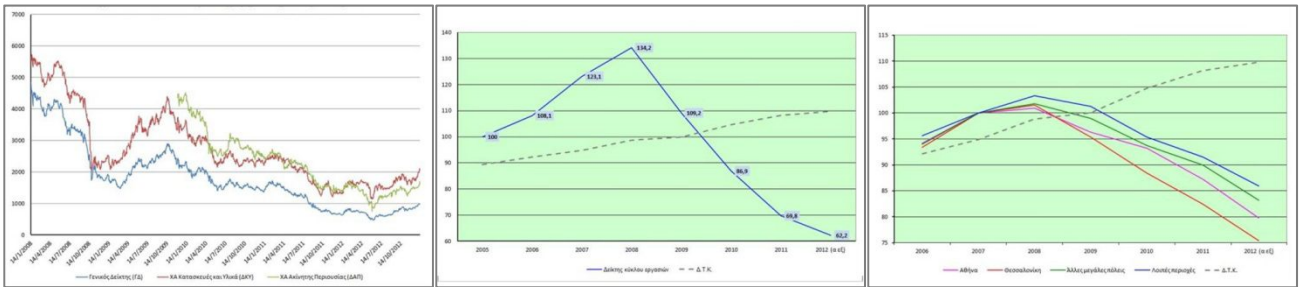


Fig.3: Constructions & Materials Index (red) vs Real Estate property Index (green) vs General Index of the Athens Stock Exchange (blue) 2008-2012 [source: A.S.E.], Fig.4: Total activity of the Architect's profession (cont) vs Consumer Price Index (int) 2005-2012 [source: bank of Greece], Fig.5: Apartment Price Index per Geographic Area (cont) vs CPI (int) 2006-2012 [source: Bank of Greece]

Taxation basis in the last decades has mainly been the so called "objective" value, deriving from the Objective Values Calculation System (OVCS), which has been operational in most cities and settlements since 1985. It is based on zoning

(neighborhood defining) in residential and rural areas and base values assigned per zone (fig.6) by the Ministry of Economics. Various coefficients (about number of facades, floor, age etc) produce the final value through 21 different forms for every different kind of property. For non-residential areas, objective values have also been assigned since 2000 and since then almost all properties in Greece have been covered by the objective system.

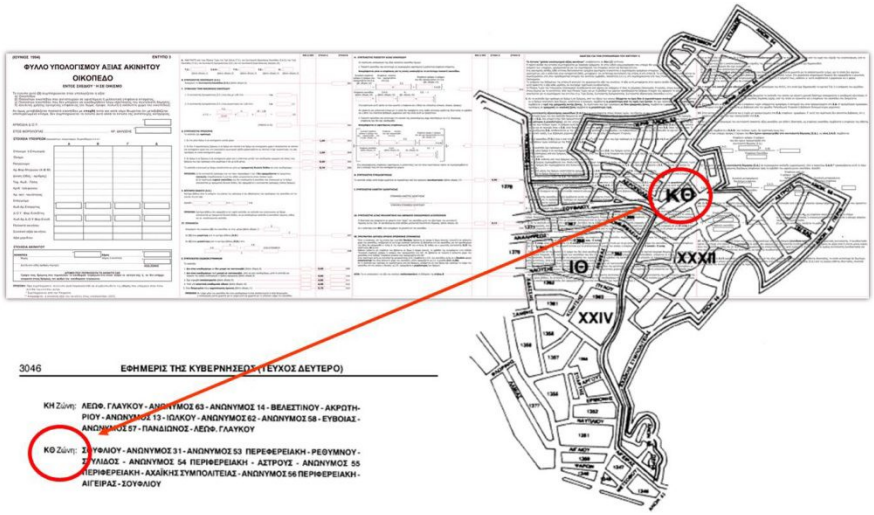


Fig.6: Layout of the Objective Values Calculation System (OVCS) [Source: Labropoulos, 2012]

Generally: Taxable V = max [Objective V, Contract V] ≠ Market V, meaning that the property buyer can practically chose to be taxed on a price higher or equal to the objective, which certainly has no relation at all to the market value of the property. In figures 7-9 objective and (min & max) market values are compared for same location but different property types, as well as for same property type but different locations. The main consequence of this practice combined to the properties' over-taxation was that property sales data was not registered and not made public, since buyers preferred to declare lower prices on transactions in order to be less taxed. In the context of three major new laws on Real Estate Taxation alone in 2013, the taxation on transactions became more attractive with a reduced percentage of 3% compared to the former 10%, while on the other hand, due to the re-foundation of the surplus value taxation with an impossible calculation formula, no transactions took place between 01.01.2014-30.04.2014. Taxable Values were designed to be updated (increased) every 2 years, but since their readjustment affects approximately 20 taxes, dues & fees, it has always been a tough political decision and the last update took place in 01.03.2007. This is one of the reasons, along with the simple system operation, that the objective system does not simulate market values in any way, it periodically violently disturbs the market's equilibrium (on system updates).

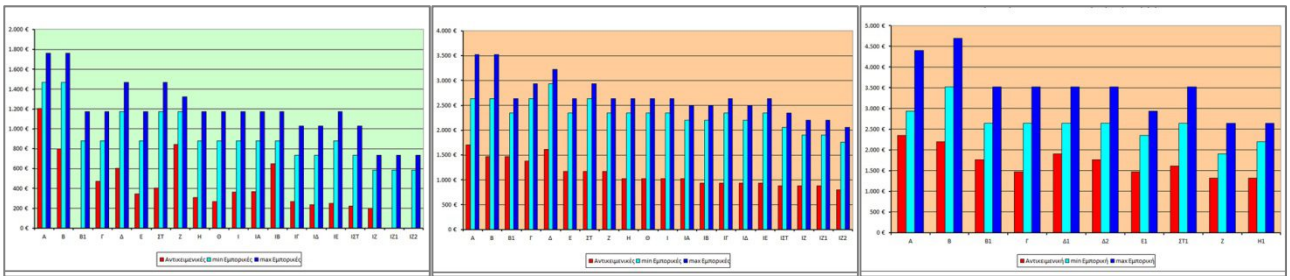


Fig.7-9: Objective values (red) vs min (light blue) and max (dark blue) market values for same location but different property types (fig.7 vs fig.8: land plots and apartments in Chalandri) and for same property type but different locations (fig.8 vs fig.9: apartments in Chalandri and Voula) [source: Labropoulos, 2013]

2.3 Comparison of the two taxation systems and fiscal policies affecting taxation

Both Countries impose taxes on values significantly different that the current market values, resulting to unfair taxation. Possessing Real Estate Property in Greece has been "criminalized" through excessive taxation, while the situation tends

to be similar in Cyprus. Spatial Information is taken into account with partial & indirect use of GIS, but neither of the systems performs spatial or 3D analysis. No CAMA System exists in Greece although some Mass Appraisal (or rather mass calculation) techniques are employed, while Cyprus has recently developed a semi-automatic CAMA System. Remote Sensing could definitely play an important role in the data collection, analysis and automation processes.

The use of government spending and taxation to influence the economy is what is termed fiscal policy (Weil, 2008 and Fuchs, 1993). Fiscal policies affect the economy in various ways consequently affecting taxation. For instance, fiscal policies affect aggregate demand in that the government can increase its purchases thereby increasing demand directly or the government can increase transfer payments to households and this will increase their disposable income. According to Weil (2008), fiscal policies also change the aggregate demand and if the government chooses to borrow from savers by issuing bonds, the interest rates will rise. According to Gorman (2003), fiscal policies that raise tax discourage spending by reducing the disposable income of households. By discouraging spending, investment in property reduces because for example firms and households become unable to rent premier property. Auerbach (1997) and Wallace (2010) add that fiscal policies that affect tax parameters such as allowable deductions, depreciation allowances and investment tax credits are likely to influence the rate of property tax. Authors suggest that fiscal policies should be led and determined by tools such as CAMA, GIS and Remote Sensing.

3. USING CAMA SYSTEMS, GIS AND REMOTE SENSING FOR PROPERTY TAXATION

3.1 Mass Appraisals and CAMA Systems valuation methodology

According to Nawawi, Jenkins and Gronow (1997), computer assisted mass appraisal is a term that describes a software package that in most cases is used by government agencies in valuing real estate's for the purposes of ascertaining property tax. The Network of Associations of Local Authorities of South-East Europe (NALAS, 2009) and McCluskey and Anand (1999) go ahead to say that the mass appraisal method can be used on both single and multiple properties. The development of mass appraisal systems demands continual improvement in order to achieve maximum quality coupled with efficient utilization of available resources (Cullingworth, 1997). In addition, the quality of property valuation system is also determined by accuracy, uniformity, equity, reliability, as well as a low cost system. The only hindrance to mass valuation is incomplete or obsolete data for accurate valuation performance of the introduction of improvements in mass valuation models (Curry, 1997). The aforementioned is actually the main problem for the authority that undertook the new general valuation in Cyprus. Currently, the functioning of mass valuation is linked to the degree of automatization of administrative systems, data management systems, as well as, data analysis and valuation systems.

The basic conditions for the use of the method entail collection of data social, physical, economic and geographical conditions in addition to actual property sales. For this method to yield satisfactory results, large amounts of data on property description and costs are analyzed (McCluskey et al, 1997 and Kauko and d'Amato,2008). For accurate and fair results of property value, the computer assisted mass appraisal method is used (McCluskey, 1996). McCluskey and Borst (1997)and Eichenbaum (1988), go ahead to say that the introduction of computers in the appraisal method will enable the combination of cost and geographic data in an operational context and this will facilitate the revaluation and rating of residential properties. Furthermore the use of computers will facilitate manipulation, analysis and storage of data in a shorter duration of time thus increasing the value of the appraisal report. For increased usefulness of the available data to assessors, the computer assisted mass appraisals should be able to fully utilize econometric methodology (Golembiewski and Rabin, 1997).

This system provides a source for a more vigorous objective and cost effective solutions to compare and valuate properties because it offers the most current and up to date information that is available for those who are interested in assessing property values. Thus, CAMA is a powerful tool that can be used to gain information required and when it is needed. Hence, it can assist assessors to prepare value estimates for a large number of properties, on a yearly basis, and at a given point in time during the past years to handle the logistic challenge that is presented by the task of property valuation. Its use allows for the application of a systemic approach of appraisal to groups of properties at a given date through the use of standardized procedures and statistical testing and analysis methods. The use of CAMA ensures the performance of annual mass valuation and assists in updating property values at the same time on a large number of objects by using common valuation models and ensuring accuracy.

CAMA valuation methodology is very useful for the property taxation process, where the main interest is not basically to obtain a market value for each and every property but to obtain an appropriate tax base. Fairness is a very fundamental consideration when dealing with valuation of properties, or taxation matters since the same methodology is used to the characteristics of every property (Malme &Youngman 2001). Additionally similar base values are applied for similar land locations and same building categories. When using a CAMA system, all revenue items are accorded relative values compared to other items in question and modified by the set of coefficients by taking into account specific criteria such as property type, use, size, shape, access, class, categorization and many others. According to McCluskey, Cornia and Walters (2013), the mass appraisal method uses multiple regression statistical packages. The writers tell us that the mass appraisal method uses other attributes of property such as availability, lot size, living space, location and age of the property among other attributes to establish the value of the property. The method uses databases extensively and it typically relies on sales comparison methods. The mass appraisal technique is useful when dealing with property that has been sold and uses the statistical relationship between the numbers of those features mentioned above to determine value.

3.2 Integrating GIS

For many decades, valuers and appraisers have used CAMA technology in order to assist them in their roles to mass value large numbers of properties at the same time. In addition, the literature on CAMA techniques has long been recognized the fundamental roles of time, space and property characteristics in order to determine the value of the real property. Consequently the ability to analyze location value has been greatly improved over the last 20 years by the development and integration of GIS and CAMA. This has been observed as a major development that has greatly assisted those who are involved in the mass valuation work. Additionally, this has been the assimilation of large amounts of property attributes data into extensive relational focused database. These databases are potentially the most fundamental sources of information for application within GIS. Therefore, integrating CAMA and GIS technologies is at the core of property tax valuation systems (McCluskey, Cornia & Walters 2013)

Integrating GIS and CAMA is vital because it enables tax assessment functions to be done concurrently with spatial data that is very relevant to tax evaluation model. In addition, it supports the creation and maintenance of very accurate land records base map that applies the tool and functions of GIS and also provides descriptive data that support workflow, updates, as well as mass appraisal input. GIS is also important since it adds value to the CAMA systems. For instance the appraisal model that can place the added value on properties that have a better shape, are adjacent with green areas or have a frontage to a coastline, a lake or a golf course (McCluskey & Franzsen, 2004). This integration also supports the maintenance of an accurate single property data repository with respect to the geometry of each land parcel coupled with its descriptive data. This makes the calculation of the location impact to be easy provided that a description of the land parcel and the spatial are maintained in a geodatabase, and this employs the spatial intelligence of the GIS (Kennedy, 1996).

The other benefit is that when GIS is used within a CAMA, there is enhanced visualization capability (Longley, 2007) that can demonstrate many thinks such as the impact of the location on the overall value mainly usually with the creation of value maps where range of values are presented as buffer zones. In most cases the results are presented through a map based output that makes it easy to communicate with individuals who lack an appropriate background in mass appraisal and those the mass appraisal affects. Thus, this can assist to make the system more accountable and transparent because it provides the mechanism to communicate more effectively.

Another feature of integrating GIS with CAMA is that it makes easy to improve the analytical capabilities of the methodology used in property appraisal by offering a mechanism to view, query, manage and model spatial information. The advantage of this is that it allows for a number of possibilities that do not exist without the integration. The next possibility is the potential to carry out sub regional analysis very effectively and also to improve the overall management of the spatial data and more importantly the management of the properties upon which the appraisal will be carried out (McCluskey & Franzsen 2005).

Studies into the advantages of different property tax systems also indicate that this integration is vital because the basic idea of a CAMA system is to estimate a price index of a call of property from a representative sample of sold properties, within the entire population. It is this index that is used to relate the sale process with the physical characteristics and the

location features of the properties that are sold. Therefore the integration of CAMA and GIS contributes to the reduction in the amount of data that is necessary from on – site inspections; hence resulting to a considerable cost reduction which leads to the setting up of an accurate fiscal database (McCluskey, Cornia & Walters 2013).

3.3 Integrating Remote Sensing

Remote sensing is another important tool that can be used in the determination of property tax. In remote sensing, information about a given category of property is acquired without necessarily contacting the property. According to Nayak and Zlatanova (2008), remote sensing experts establish GIS systems that are often utilized by property tax experts. Jain (2008) says that remote sensing makes it possible to determine the attributes of property such as location, lot size and type of structures erected on land. This is especially helpful because some property may be located in areas where access is restricted (Xiao-sheng, Zhe and Ting-li, 2011). Remote sensing make identification of property easier because in the remote sensing developed maps, property lines can be drawn that show the exact location of the property (Lindgren, 1985).

Remote sensing can also be used to provide measures for a number of dependent variables, which are linked to human activity, especially with regards to environmental impacts of various social, economic, as well as, demographic processes. For instance, remote sensing observations of land cover may depict the footprints of agricultural intensification, the expansion of urban areas, as well as road developments and many other factors that are affecting properties' value. These may also entail observations of vegetation density that may be linked to the impacts of fertilization, irrigation, coupled with other agricultural practices. Other areas may cover observations on new buildings constructions that are related to property taxation. Therefore, models that combine remote observations with ground based social data may be very important in understanding their market value.

4. CASE STUDIES

4.1 Case study in Nicosia, Cyprus

For the purposes of this paper, an urban area of Nicosia, where major alterations have been made over the last 20 years, was chosen as the most indicative to highlight the importance of the aforementioned integrations. This area is located a few meters east of the former airport of Nicosia (abandoned now) and it abuts UN buffer zone on its western boundary.

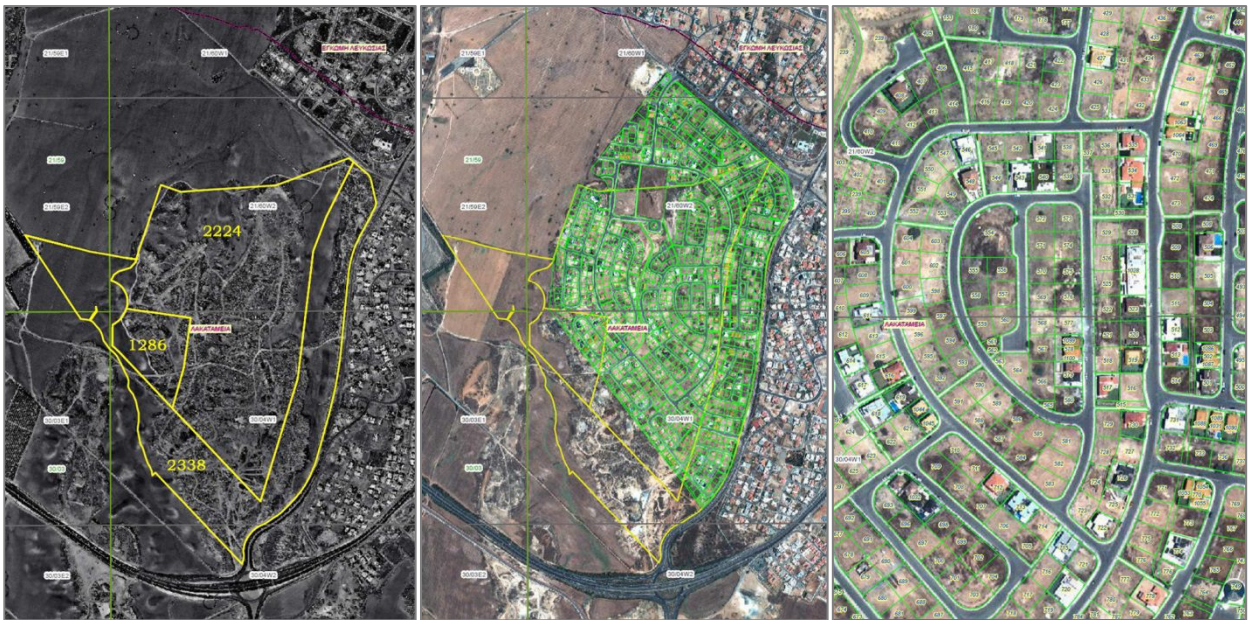


Fig.10. Orthophoto (1993) of the 3 original parcels (yellow) - original scale: 1:8.500, Fig.11. Orthophoto (2014) of the 3 original parcels (yellow) & the 1042 plots from the subdivision (green) - original scale: 1:8.500, Fig.12. Zoom on the orthophoto (2014) of the 1042 plots from the subdivision (green) - original scale: 1:2.000

Since high quality pictures were not available for this study, orthophotomaps of the study area at 1993 and at 2014 were used. Orthophotomaps were imported in ArcGIS and are shown with the layers of the parcels boundaries. As it can be seen in fig.10 below, the total area of approximately 900,000sq.m. was separated in three big parcels. However the demand for land and residential properties was really high and these parcels were divided into plots as it is stated in fig.11. In fig.12, someone can observe that not only the parcels were divided into plots, but buildings were erected as well. At that point the responsible authority for the new General Valuation has to take into account all the alterations. This work with the specific data is very demanding and requires working hours, data collection, data purchasing and data processing.

4.2 Case study in Chalandri & Voula municipalities, Greece

Despite -and because of- the crisis and the inactive Hellenic Real Estate Market, Real Estate management tends to mature and become more rational. So, the need is emerging for a more sophisticated, scientific, automated and intervention-secure system for the mass valuation of real estate values for fiscal purposes. Significant difficulties existing until now -lack of public comparable data, partial existence of Cadastral data and multiple laws- finally seem to be overrunable. The Model proposed is mainly developed for fiscal (taxation) purposes, aiming to a more rational real estate taxation system. It is designed for central (government) operation with various levels of access, security and functionality and the ability to serve as a reference base for market values and a valuation tool for big real estate portfolios. It could also be used as a Development Tool for national-state expropriations, land-exchange, large-scale development projects etc, an Analysis Tool using statistics, producing indices etc and a Land Policy tool, connected to social, economic & geographical criteria.

Data collection was a very important and time consuming procedure. The Mass-Appraisal system proposed, aimed to use all available official data for the two selected study areas of Chalandri & Voula municipalities, in order to produce fair and indisputable property values for taxation purposes. Among others, the main remote sensing relative data collected were 229 orthoimages (GSD 25cm) of September 2010 (fig.13-14), in JPEG2000 format (.jp2), georeferenced (.j2w), VLSO (GSD 20cm) & LSO (GSD 50cm) orthophotomaps (2007-2009), through webGIS service (fig.16), web-API (fig.17), WMS-server (fig.18) and 3D web-API and finally the corresponding DEM (Digital Elevation Model) & DSM (Digital Surface Model) in ETRS89 reference system.

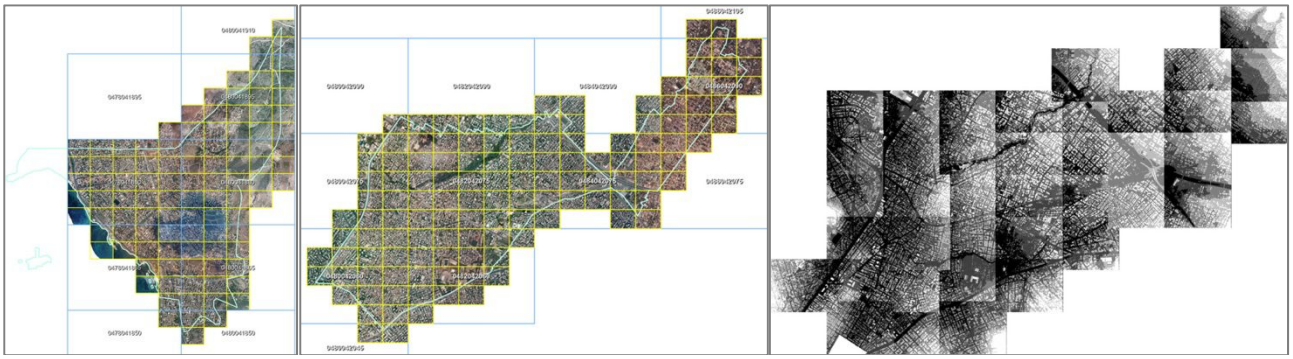


Fig.13-14: Orthoimages (GSD 25cm) of Voula & Chalandri municipalities / Fig.15: DSM of Chalandri [source: Labropoulos, 2013]

Other significant data collected were approximately 1650 valuations submitted by the MFIs to the Bank of Greece (2009-2012) and the produced indices and statistics, GIS data (City Boundaries, Cadastral Parcels, Buildings, Street Names, official forestry land-use information) & Descriptive data (properties' attribute tables) from the National Cadastre and Mapping Agency S.A., geographic data (City Boundaries / Urban Units, City Blocks, Parcels, Buildings, Terms of building (building coefficients etc), Land Use, Points of Interest, Public Transportation, Public Utilities, Open Spaces, Educational/Athletic/Religion Premises) from the municipalities of Chlandri & Voula, Census (2001) & Geographic data from the Hellenic Statistical Authority, Corine Land Cover land-use polygons, routes and stations of all public transportation from the Athens Urban Transport Organization and lots of other free geographic data.

The concept was to use all appraised properties data to build a model and then use this model to appraise all the properties of a geographic region implementing geocoding techniques, spatial data operations and multiple regression analysis through hedonic modeling.

Fig.16-18: VLSO images data (GSD 20cm) of Chalandri via the Hellenic Cadastral Institution's web-GIS (fig.16), web-API (fig.17) and WMS-server (fig.18) [source: National Cadastre and Mapping Agency S.A. (EKXA S.A.)]

5. CONCLUSIONS

Cyprus & Greece are now exiting a long-term economic crisis bearing obvious marks of the socioeconomic consequences. Both economies are heavily depending on Real Estate, since it has always been a traditional investment in both countries and can play an important role in recovering. On the other hand, both countries and especially Greece face excessive taxation, especially on real estate properties, and the target now is to control it and to make it fair & equitable in order to be efficient. A key element to that direction is to adjust base values from being either irrelevant to market or out-of-date, to reflect as much as possible the image of the market. Tools as GIS, CAMA & remote sensing are slowly being implemented in R.E. taxation and could be precious in supporting a project like this. However it seems that we have a long way to go.

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