

*TEXTOS EN INGLÉS*



## VALUATION OF REAL ESTATES IN GERMANY. METHODS, TRANSPARENCY, MARKET DEVELOPMENT AND CURRENT ASPECTS OF RESEARCH

**Carla Seidel**

*Dipl. Ing.  
Head of Valuation Department.  
Berlin, Germany*

### SUMMARY

According to the German law, independent and self-employed land valuation boards support the transparency in the real estate market by means of a digital purchase price collection. Some derived data of the purchase price collection are the real estate market reports and price contour maps with standard land values. Currently, the German government discusses how price contour maps can be used for land taxation.

German valuation methods generally stand up to the international comparison. However, the developments in the current real estate market require an increasing knowledge.

Automatic valuation tools, demographical development and global risks are some aspect of the research in the field of valuation.

### THE BASE BY LAW

Germany has a federal state system. That means that some laws are valid in the whole country while others are federal. The most important German law concerning valuation is the federal building code ("Baugesetzbuch" (BauGB)). In § 194 BauGB you find a definition of the current market value ("Verkehrswert"). This market value is a value dated of the valuation date which can be realized in the fair market with notice of the ordinary situation, the real features and of course the location. It is also important that there are no personal or unusual relations. The market value is not comparable with the best market value like the one in the U.K. It shows more similarities to the open market value.

The market value written by an expert has to be exact – that means that the allowed tolerance is about ±10 %. If the difference is bigger than ±20 %, the expertise will be judged as false.

Another part under the German BauGB is the "Wertermittlungsverordnung" (WertV). It is a valuation instruction which is the base for market valuation. Besides, there is a valuation guideline ("Wertermittlungs-Richtlinie" (WertR)) for public

departments. They could be useful for private valuation but not binding.

### PUBLIC AND PRIVATE VALUATORS

There are essentially two types of valuers in Germany. On the one hand, there are independent private valuation experts. On the other hand, there are public institutions.

#### Private valuers and private institutional valuers

The German title "expert" is not a title by law. Everybody could use this title. If you like to show being a real expert, you have some possibilities.

#### German certificates

At first, one has to mention the title "ö.b.v.S.". This title is awarded by the IHK (Industrial and Trade Association) and means that you are the right person for each kind of market value expertise. For some situations it is necessary to be an ö.b.v.S. ("öffentlich belehener und vereidigter Sachverständiger"), for example for courts (e.g. for partition of an inheritance), for public institutions (e.g. for public estate agencies) or for a tax office (if you don't like the amount of your land tax). With that title it is possible to work for banks, too.

A certificate which is only useful by working for banks (for mortgage lending value (MLV)) is the so-called certificate "HypZert". All in all, there are four different certificates including the HypZert. The first one is for valuating standard objects ("HypZert S"). The second one is the "HypZert F" for financial purposes. The "HypZert M" is for market valuation and the "HypZert R" is the part for rating experts.

A special kind of title is the "ÖbVI" ("Öffentlich bestellter Vermessungsingenieur"). He is a land surveyor with a special profession for public tasks (mainly for cadastral measurements). In some German federal states it is written by law that you could take this title for official valuation expertise. As an ÖbVI you have the same rights as an ö.b.v.S. and you could also work for banks.

For each title or certificate it is necessary to pass an examination.

#### Influence of international organisations

The European Union (EU) and the general global situation support the communication with other organisations of valuation experts. Cross-border organisations of experts are at an advantage. One of these organisations is the Royal Institution of Chartered

red Surveyors (RICS) which influences German experts. In Germany, it is very attractive to be a member of this organisation because it can be helpful. Actually a lot of persons in high positions of banks and real estate developer companies are members of the RICS.

### **Public institutions – Land Valuation Boards**

Furthermore, there are some public institutions – the “public valuation boards” (“Gutachterausschüsse für Grundstückswerte” (GAA)). These committees are responsible for certain local areas, for example Berlin, Munich, Dresden, Hamburg. The offices of the boards are established in the departments of surveying. Each public valuation board has about 10 to 20 members. The members are mostly head of public surveying departments or experts of the private economy.

The tasks of the official committees are fixed in § 192 and following in the German federal building code (“Baugesetzbuch” (BauGB)). The most important task of the land valuation boards is to make the results of the local real estate markets more transparent for citizens and experts.

The main tasks are the following ones:

- to keep the purchase price collection (“Kaufpreissammlung”)
- to publish real estate market reports (“Grundstücksmarktberichte”) (in generally one per year)
- to write valuation reports (“Gutachten”) for built-up and non built-up real estates for private persons, companies or courts
- to determine “standard prices” or “guiding prices” for price contour maps for local types of property on the 1<sup>st</sup> of January (“Bodenrichtwerte”, “Bodenrichtwertkarten”)

### **Purchase Price Collection**

In the purchase price collection (“Kaufpreissammlung”) are all land transfers included. It was an analogue catalogue in the past. But now it is a digital frame like a geographical information system (GIS) with information about the purchase date, location, size of lot, type of use, year of construction from buildings etc. and last but not least the purchase price. The costs for use the purchase price collection in Berlin amounts to 120 € per inquiry (including 12 purchase prices). For each purchase price more you have to pay 10 € more.

For a valuation expert it is possible to use the digital purchase price collection as database. However, the database has to be anonymous for private persons due to German data protection. In Germany, it is impossible to find data of purchase prices in the Internet like in Denmark or South Africa!

The results of the collected purchase prices are market reports and standard values. So the purchase price collection actually supports the transparency in the real estate market.

A current problem is the missing property transfer in some areas. In fact, in these areas there are prob-

blems to find comparable plots. Another problem is that some notary offices do not send the contract of property change to the land valuation board.

From my point of view, a solution for the fragmentary information in contracts could be a change of the tasks. In South Africa and Hong Kong for example the contract information is given to the purchase price collection by the deeds office. In that way, each contract of property change is registered.

### **Real Estate Market Reports**

In generally, each year a real estate market report of each local land valuation board is published. They are based on the results of statistical analysis of the purchase prices in the purchase price collection. In the real estate market report of Berlin for example you can find information on the price margin of residential buildings, single family and semi-detached houses, apartment buildings and so on.

### **Price Contour Maps / Standard Land Value**

Products of the purchase price collection made by the land valuation board are the price contour maps. In the price contour maps you can find a standard land value. This standard land value is updated each year with the reporting date 1<sup>st</sup> January. The standard values are a result of a discussion of the independent land valuation board. In that session the data of the purchase price collection of the last year are valid. For that the purchase prices are ordered by types. The most common types of standard land prices are values for:

- agricultural and forest areas
- rural and urban areas
- trade and industrial areas
- traffic areas
- areas for public purpose like schools or hospitals.

If it is possible there is also some given information about the kind of value like the use (residential use, commercial use), plot to area ratio (“Geschossflächenzahl” (GFZ)), number of floors (“Geschosszahl”) and so on. The best that could happen is that all the points are comparable with the valuation object. Otherwise it is necessary to use some (given) factors by the Land Valuation Board.

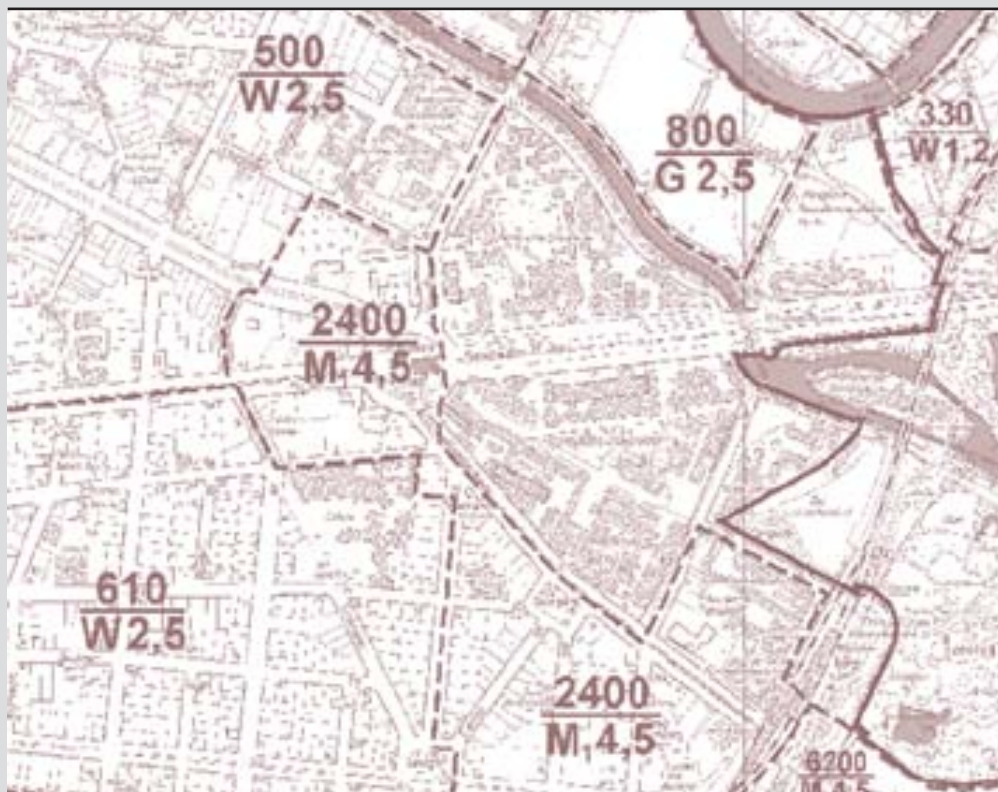
### **Publications of further relevant valuation data**

Sometimes the land valuation boards give information about other important valuation parameters like property yields for residential buildings or parameters for valuations on a cost basis.

The published parameters are also based on statistical analysis of the purchase price collection. In times with not so much turnover of real estates it could be a problem to collect enough purchase prices for the analysis.

These parameters are generally published in the regional official gazette of the valuation board.

Figure 1  
A detail from a price contour map in Berlin (Postdamer Platz)



(Reporting date 01.01.2006)

#### More transparency with the World Wide Web

For more transparency in the real estate market some land valuation boards have published their results in the World Wide Web. So it is easier for everybody to find helpful information.

The land valuation board of Berlin – for example – started its presentation in the World Wide Web in September 2000. It was the first one in Germany. This Internet presentation is a very useful portal for real estate market information. The most important products are:

- information from the digital purchase price collection (“Kaufpreissammlung”)
- standard land prices (“Bodenrichtwerte”) and
- real estate market reports (one per year) and so-called ad-hoc market reports (one each month) (“Grundstücksmarktbericht”, “Ad-hoc Marktreport”).

The users have to pay for the board products. The e-payment started in May 2002. The feedback shows

the great interest of private persons and appraisal experts for the information. In 2004, about 56,000 people used the presentation for getting information about the Berlin real estate market – that is a plus of 6 % in comparison to the previous year. The number of payment actions is about 9,000. Altogether the earnings had a value of about 55,000 Euro.

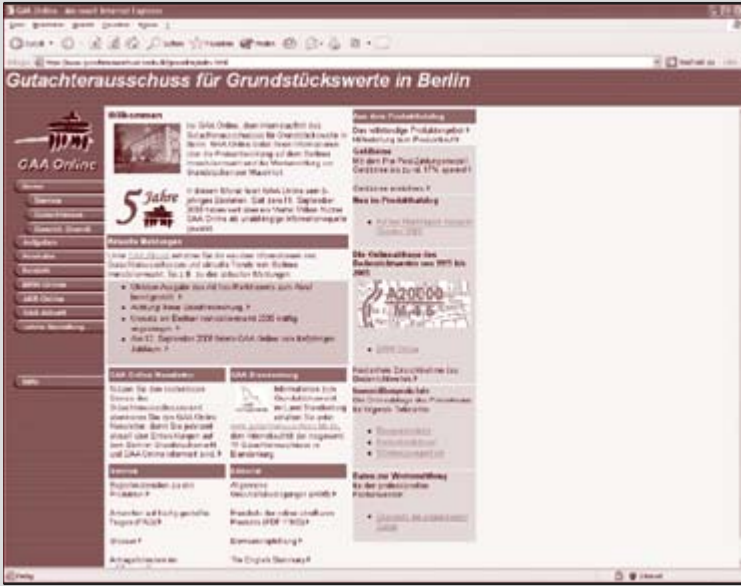
Therefore, the Internet portal is a very useful instrument to support the transparency in the real estate market.

#### VALUATION METHODS

The German valuation methods are defined by law (BauGB and WertV). In generally, there are three methods: the comparable method, the rental method and the cost approach.

The best method is the comparable method if there are enough comparable and actual purchase prices in the purchase price collection. If you cannot use

Figure 2  
Internet presentation of the Berlin Land Valuation Board



costs, yield. Hence, the German method is a static based method, not a dynamic method.

**Cost method (“Sachwertverfahren”)**

The cost based method is for buildings or houses where it is generally not possible to get a worthwhile rent. All in all, the right method is used for single family houses and semi-detached houses.

The base of this method is the costs for building up a new house. Here it is necessary to determine the volume of the house and to assess the built up costs. To assess the cost, people use statistical based tables named “NHK2000”. They are tables on the base of the year 2000 of the whole country. It is important because before we had

the comparable method, you have two possibilities. You can choose between the rental method and the cost method.

**Comparable method (“Vergleichswertverfahren”)**

The purchase price collection is the base for using the comparable method. The best possibility occurs when the found purchase prices are in harmony with the valuation object. If it is not, you may find special differences in features between the valuation objects. One way could be using a linear function to fit the purchase prices to the valuation object.

**Rental method (“Ertragswertverfahren”)**

The rental method is used for rental objects like residential buildings or shopping malls. The result is the discounted cash value of all rents and cost in the future over the physical life of a building. For determining the cash value, it is necessary to use a property yield. The amount of the yield depends on usage, location, risks, height of rent and so on. Additionally, you need the value of land (for example with the help of standard land values). At the end of using the method there is a factor for considering the actual real estate market.

This German method is similar to the British discounted cash flow method (DCF). The difference is that we generally use static parameters e.g. for rent,

some other tables like NHK1995 or values from 1913/14. Sometimes we use the old tables for special objects or special contract partners. For considering the localisation inside Germany, you need a special local factor. For the capitol Berlin we have for example one.

If we have multiplied the average costs (including costs for the architect, surveyor, exterior features, regional factor etc.) with the volume of building, we have to consider the age of the building. It depends on the usage of the building and therefore we do it with a linear function (for industrial buildings) or with the so-called “Ross function”.

After that you need a market factor for considering the actual real estate market.

**Result and choice of method**

Normally you have to use two independent methods, for example the rental method and the cost approach or the comparable method with the cost method. It is not allowed to average both results. You have to make a decision which one is the best for which object. However, the second method is meant as confirmation of the first one. A small difference between both methods is possible.

**Other methods**

The British methods like the discounted cash flow (DCF) method or the investment method are under discussion. From my point of view, German methods

are sufficient for all objects but in times of international transactions we have to know the methods of other countries.

**CURRENT DEVELOPMENTS OF THE REAL ESTATE MARKET**

The real estate market in Germany depends on the location inside Germany. In fact, the focus is on urban areas and the small sphere around them. It depends, among other things, on the possibility of getting a job.

So for example in Berlin, the real estate market was lately going down (i.e. prices). Since the last year (around 2005), it is possible to observe a boom made by international institutions. At the beginning, the demand for residential buildings was very high. Some big companies have sold residential buildings in packets, i.e. selling many buildings to one contract partner (portfolio). The graphic below shows that the number of transactions and the average of turnover are getting higher.

In Germany, there are many property companies. For some of these packets, a price above the “normal” price was paid. A view to the international real estate market especially the so-called real estate cycle could be helpful to understand this phenomenon.

There you can see the big cities of Germany in the quadrant right below. After that phase the trend is going to higher rents. In that time the demand will be higher because the prices of real estates is not the high but the trend will be go to higher prices.

Meanwhile, the demand for commercial real states is growing, too.

**TAXATION (LAND TAX)**

**Situation at the Moment**

The basis for land tax at the moment is the so-called rateable value (“Einheitswert”). The rateable value is defined in the taxation law (“Bewertungsgesetz” (BewG)). So the rateable value must be the minimum in land value. That means square metre is multiplied by price per square meter. Lots with pull down houses are exceptional. There are four cases of rateable values: for agricultural land, for forest land, for trade land and for trade business.

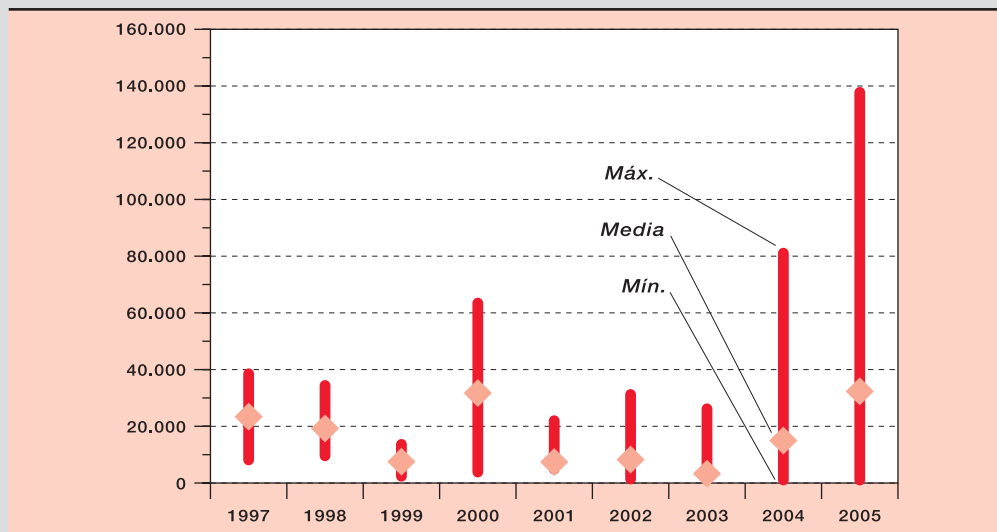
The rateable value does not harmonize with the market value. Mostly the rateable values are historical values. They are mostly dated on 01.01.1964. The experts assess that the costs for actually valuations are too high.

The problem is that some lots have changed and so the rateable value is not in harmony with the actual utility.

**Possible Situation in Future**

The finance ministry of the federal states Bavaria and Rheinland-Pfalz have worked out a new concept for land taxation in Germany. The target is to simplify the tax, to support residential construction and to

Figure 3  
Number of portfolio transactions and the average of turnover



Source: Deutsche Bank Research



Table 1  
Types of building and the possible flat rates

Building type	Flat rate €/m <sup>2</sup>
Offices, shopping malls, banks, hotels, etc.	1.000
Industrial hallss, warehouses, shops, parking garages, etc.	400
Tennis halls, horse riding halls, etc.	200
Single and double family houses, single flat ownership, etc.	800
Rent houses, more than 2 flat ownerships, etc	600

consider structural vacancy (a problem in cities especially in the eastern part of Germany).

One idea is to consider the value of the land and the value of the building. The valuation of the land is easy when you take the standard land value into consideration. To determine the tax value of the building is more difficult. The intention is to divide all buildings or houses in 5 types. The choice of type depends on the kind of use of the building, e.g. buildings for living or for offices. Each type has a flat rate per square meter on the ground floor. The sum of land value and building value is the base for the height of the land tax.

The administrative costs for changing the base of land tax are high. And at the moment, it is unclarified whether it is a task of the federal government or a task of the distinctive communities.

With that idea of tax, the valuation could be very simple to use and there is a chance to introduce a valuation GIS which works automatically. The idea is also usable for land transfer tax and for inheritance tax.

## ASPECTS OF RESEARCH

### First steps to automatic valuation

Some institutions try to put the knowledge of a valuation expert in software programmes. For example, the Allianz AG has developed a program for the valuation of property normally valued based on costs (e.g. single family houses or semi-detached houses). The program works but in specialist circles there is a discussion. The problem is that the program works in "normal" cases of valuation but the result is false if there are special problems.

Some institutions research with hedonic methods. Hedonic methods are multiple regression analyses – statistical methods. At the moment, there is no computer program for all cases of valuation. Some experts think that it is not possible to put all valuation knowledge in a computer program.

### Demographic developments in valuation

The demographical change in Europe happens also in Germany. The reasons are diverse but one result is the change of population inside Germany.

The demographical development is important for the real estate market because demographic trends are

essentially long-term. The scenarios of decrease in population show that the maximum in population will be reached around 2012. After that, a strong decrease will take place. Not only is the birth rate and the number of immigrations important, but also the life expectancy.

These parameters will develop differently inside Germany. And that's the reason that the real estate markets will develop differently. The tendency at the moment (and maybe for the future) shows a decrease of population especially in the eastern parts of Germany. An exception will be Berlin as capital. Besides, some areas in the western part of Germany will show an increase of population. Principally, there will be a focus on and near big cities. The countryside will loose more and more inhabitants.

The results for the real estate market are different. The demand for office buildings could go down. The reason is that the number of working people will go down more quickly than the population in general. The scenarios show maximal demand on office area about 2020 till 2030. After that, there will be a break down.

The prognosis for the development of retail trade areas is a little bit different. The thesis is that the retail trade will loose demand because of Internet shopping (eCommerce). But the demography will change the assortment. And the actual development shows a decrease of turnover per square meter retail area. And the decrease of population in some areas will influence the demand on retail areas.

The trend of the housing requirements shows an increase for demand for bigger flats. But in fact, the demographic changes inside Germany will cause a smaller demand in some areas, especially in the eastern part. On the other hand, the demand for square meter per flat will increase in the next few years till it will decrease afterwards.

The planning law reacts to this development with the so-called rebuilding of towns ("Stadtumbau"), i.e. the rebuilding of houses. For valutors, it is a difficult task to value the land. The problem lies in finding a solution for the owner in areas with rebuilt houses and the non-rebuilt neighbourhood. Sometimes there is only a little distance between the rebuilt areas and the residential areas.

In Germany, there are some so-called sponsor banks. These banks sometimes support the property owners if they built up a residential house. In the past, it was sometimes very helpful, especially in times with not enough flats.

In current times of demographic change, the sponsor banks want to change the law of sponsorship.



They have to react on the developments. Otherwise, the residential buildings will not have enough demand and influence for rents for other residential buildings.

These things are important to know for a valuator.

### Global Risk Research

Recent news has very often shown pictures of nature disasters like the Tsunami in Southeast Asia, the hurricanes "Rita" and Katrina" in the United States and earthquakes.

Some of these events are caused by a change of climate. The task of the valuers in the future will be to register and to see the effects of these geographic risks and climate changes for the real estate market.

Here is a chart from the Munich Re Group that shows the increase of natural disasters between 1950 and 2004.

The lowest mark shows the number of earthquakes including Tsunamis. The next part of the lines shows winds or storms. The line with the title "Überschwemmung" is an indicator for floods. The last part ("Sonstiges") describes events like heat, coldness or forest fire. The chart shows the trend to an increase of global risks.

The damage for the economy is shown in the following chart.

The biggest part of the lines marks the damage for the economy in US \$ based on natural disasters. The smaller part of the lines symbolises the insurance damages.

The worldwide re-insurance Munich Re ("Münchener Rück-Versicherung") and unit GeoRiskResearch

arch ("GeoRisikoForschung") have observed that climate change influenced the real estate market in the last years (temporary).

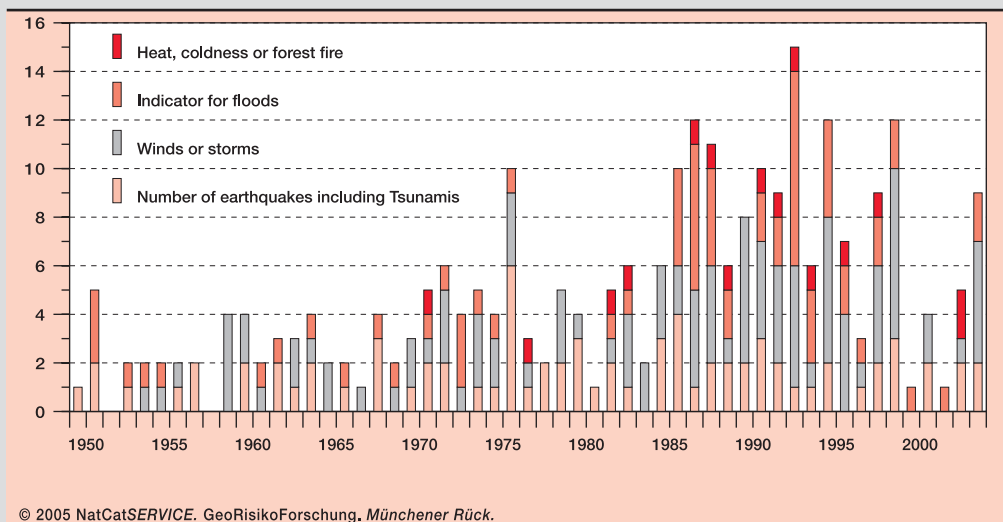
Especially in areas with flood it is possible to show the effect. The reason is that floods occur quite regularly. So it is not a single and accidental event – but typical for the area. In Germany, the typical flood areas correspond with the so-called flood plains ("Überschwemmungsgebiete"). The flood plains are published in public maps. That means that each person has the chance to register the risk. The knowledge influences also the real estate prices permanently.

The situation is a little bit different in areas with strong winds. Winds (or in the worst case hurricanes) are temporary and local events. It is possible to show that in such areas the real estate markets show a temporary effect. Mostly after about 3 years the event is forgotten and the prices for real estates are on the former level. But that behaviour could change when the frequency becomes higher. That showed for example the weather events in the years around 1990.

But the targets are sometimes different in risk areas. For the public sector it is important to find (new) investors and to support the developments of local areas. The private sector on the other side (especially big companies) knows and notes the risks when they are looking for new locations.

The prognosis from the GeoRiskResearch from the Munich Re is that the meteorological events will increase. The climate change is gathering momentum and the frequency of climate influences grow. So it could be a new important task for valuation experts to observe and know this development on the real estate markets in geo-risk areas – for more transparency in the real estate market and for risk assess-

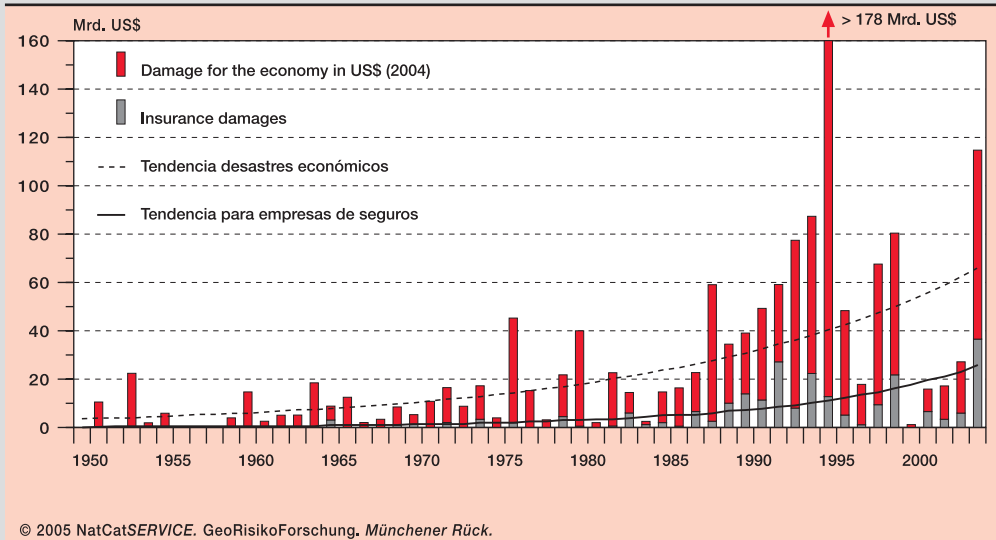
Figure 5  
Number of natural disasters in 1950-2004



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Source: Munich Re Group

Figure 6  
Damage for the economy made by natural disasters



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Source: Munich Re Group

ment for banks (for mortgages). A combination of valuation GIS with research of geo risks and climate change (“Klimafolgenforschung”) could be a very reliable instrument for experts in valuation in the future.

**FUTURE PROSPECTS**

In times of the European market and globalisation, national peculiarities will face the challenge of the international benchmark. Some systems will gain strength, while others will become obsolete. The German system is tried and tested but it is also expensive. Current problems like demographical developments and global risks will be important in the future. Computer aided solutions might be helpful.

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## DIGITAL PHOTOGRAPHIC CAMERAS

**Santos Pérez, Luis Julián**

*Ingeniero Tec. en Topografía.*

*Ingeniero en Geodesia y Cartografía*

*D.G. del Catastro, Madrid*

### ABSTRACT

Digital photographic cameras have entered with strength in the last years in all the areas where it was necessary the registration of images (from the homes to the astronomy going by the photogrammetry). The fundamental characteristics of the digital sensors are described comparing them with the analogical ones, highlighting their advantages. The two types of cameras are approached, line and matricials cameras detailing their main components and carrying out a comparative study, to finish making a review to the applications of the digital sensors and describing their possible use in the urban cadaster.



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