21. Detecting money laundering in the real estate sector

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21.1   INTRODUCTION

Estimations of the level of money laundering reach up to 2 to 5 per cent of world GDP,[1] raising the question where does all this money go. A potential answer lies within the real estate sector, which is large enough to absorb a large part of this money and prone to money laundering because of features such as the heterogeneity of buildings, the non-transparency in the market and possibilities for hiding the true owner. So far, however, no systematic study has been conducted on the importance and frequency of money laundering in the real estate sector. This study tries to use the information known to authorities to systematically identify and analyse money laundering in this sector. Though the data refer to the Netherlands only, the method can be used for other countries as well.

This chapter is organized as follows: After describing why the real estate sector is prone to money laundering, we explain our research method and present a list of seventeen indicators that we use to find the real estate objects that are most likely related to money laundering. Subsequently, we describe how criminologists analyse 200 of these objects on a case-by-case basis. The results of this criminological research are used in the last part of this chapter to find out, through use of econometrics, which indicators can detect conspicuous real estate and which fail to do so. In the conclusion we present a draft magic formula which can help to find money laundering objects in the real estate sector.

21.2   THE POTENTIAL ABUSE OF THE REAL ESTATE SECTOR

The real estate sector has certain characteristics that make it prone to money laundering. It has a very high value, which makes it attractive for both legal and illegal investments (Eichholtz 2006). Therefore, this sector has quite a potential to absorb a substantial volume of money laundering activities. The real estate sector displays the following characteristics that make it susceptible to money laundering (see Nelen 2008):

Real estate

- is a safe investment
- is a prestigious investment
- has an objective value that is difficult to assess
- is a sector in which speculation is tradition

- allows a distinction between legal and economic ownership (the buyer and seller in the papers are not necessarily the person who provides or gets the money)
- allows the realization of 'white' returns (e.g. apartment rents)
- can be used to conduct criminal activities (e.g. a chemical drugs lab)

The OECD (2006) identifies that the real estate sector is used to facilitate tax fraud and money laundering in most of the countries they survey. There is a general concern that the construction industry is used to generate unreported income and to invest unreported income coming from other industries, including illegal activities (OECD 2006).

The study of Meloen et al. (2003, p. 246) also shows that real estate is a popular sector for criminals to invest in. Meloen et al. analysed 52 Dutch criminal cases in which property with unlawful advantages was confiscated. They found that in 30–40 per cent of money laundering cases, money was invested in immovable property. The study points to the importance of the real estate sector for laundering. However, given the limited number of cases studied, conclusions cannot be drawn regarding the overall size of the problem.

The Dutch Scientific Research Documentation Centre WODC (Kleemans et al. 2002, p. 132) also finds, from analysing 80 cases, that investment in real estate is an efficient method of dealing with large amounts of money. The price increases of real estate make it profitable and the profits in the real estate sector create a legal basis for income.

Real estate objects can be used for criminal purposes in a number of ways. In the literature a distinction is made between criminal exploitation and criminal speculation. Money laundering belongs to the latter category and is defined as a series of activities meant to disguise the origin of illicit funds. It can refer to the first phase of laundering, where one tries to place the illegal money into a real estate construction (e.g. giving cash to a real estate agent in order to buy a house), to the second phase of laundering, where one tries to pump the money around the world (e.g. a foreign bank giving a loan to a person buying a house, with the loan in reality being the hidden money of the person buying the house), and on to the third phase of laundering, in which case the criminal parks the money in the real estate sector and is not interested in trading real estate, but in investing.

However, real estate can also be used for criminal investment without the intention of laundering money. For example, an ecstasy producer who buys a house in order to use it for ecstasy pill production might not do this with the intention of hiding the illicit origin of his money, but just to do criminal business. In this study, we did not (and could not) distinguish between money laundering and criminal investment without the intention of hiding the illicit origin of money.

21.3   RESEARCH METHOD

Although 'it is often extremely difficult to identify real estate transactions associated with money laundering' (FATF 2007, p. 5), the aim of this research is to develop a data research method that enables its user to filter out suspicious real estate transactions and distinguish them from all the ordinary ones. We are looking for the transactions of real estate objects with a motive other than the normal transactions: the outliers. According
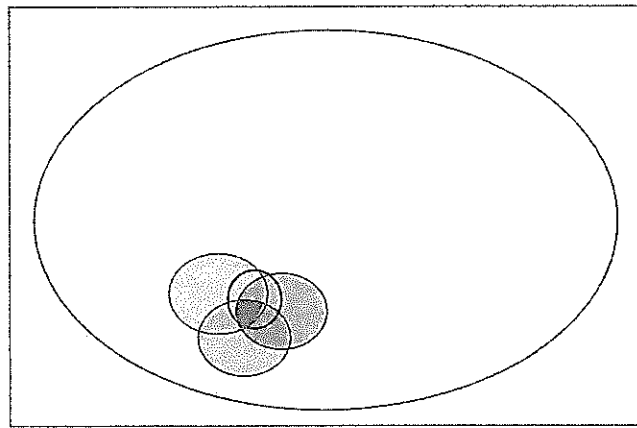
Note: The outer circle shows all the real estate objects. The grey circles are three indicators. The black open circle represents the criminal investments in this sector.

Figure 21.1   Visual explanation of the method used for this research

Figure 21.2   Trade-off between false positives and false negatives

to the definition, an outlier in general is an observation that deviates so much from other observations as to arouse suspicion that it was generated by a different mechanism (Hawkins 1980). To find the criminal investments amidst all the usual real estate transactions, we developed a list of characteristics that are associated with criminal investments in the real estate sector: the 'red flags'.[2] This is in line with the remark by Nelen et al. (2007, p. 75) that illogical and unusual behaviour in the real estate sector indicates an increased risk of criminal behaviour. Although a single characteristic in itself is not enough to arouse suspicion of a criminal investment, we believe that a combination of these characteristics might be. To give an example: although it is often mentioned in the literature that many criminal investments in the real estate sector are financed with money from abroad, we cannot, of course, conclude that all real estate transactions financed from abroad are suspicious. However, we can label them unusual[3] and conclude that the more unusual characteristics a transaction has, the more it should arouse suspicion (this is in line with the vision of Belastingdienst/FIOD-ECD 2008, p. 28).

For a visual representation of this research method, we refer to Figure 21.1. The outer circle represents all the investigated real estate objects and the grey circles are the subgroups found with the indicators. The black surface is the congruent of real estate objects that have the characteristics of all three indicators. The small open circle represents the criminal investments in this sector (the subgroup we are looking for). We assume that by using more and more indicators this circle will be filled more and more with darker surfaces.

When using such an indicator-based approach, one is always confronted with the trade-off between false positives and false negatives, or the so-called type I and type II errors, respectively. A false positive in this specific research occurs when an object is marked as (potentially) criminal while it actually is not. A false negative occurs when a
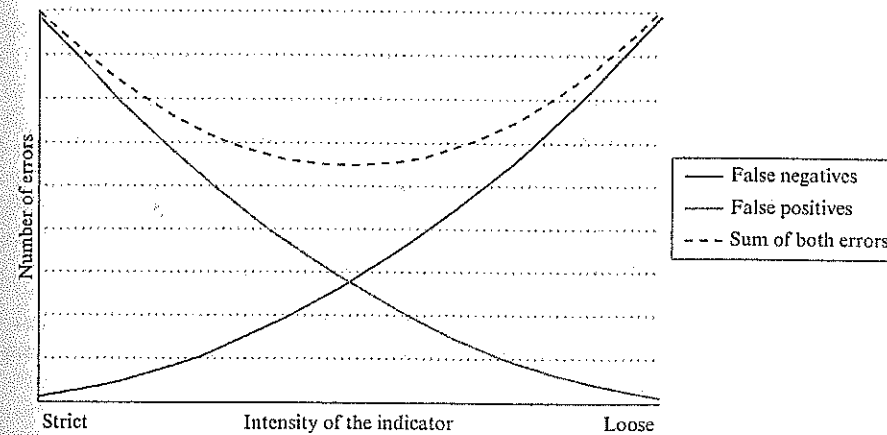
criminal investment is not detected by our research method. The trade-off between these two errors is visualized in Figure 21.2.

Figure 21.2 is best explained by discussing the two extremes: a very strict indicator and a very broad indicator. When one chooses a very broad indicator (right end of the graph), almost all objects are marked as unusual. Therefore, there will be very few false negatives (the downward sloping line), at the expense of a lot of false positives (the upward sloping line). When one chooses a very strict indicator (left side of the graph), hardly any object will be marked as unusual. Therefore there will be almost no false positives, at the expense of a large amount of false negatives. The optimum can be found at the minimum of the sum of these two errors (the parabola), if one attaches equal importance to both errors. Since we do not know the amount and types of errors we make, we circumvent this dilemma by choosing a different research method. We will not mark any object unusual based on just one indicator, but will do so based strictly on the combination of several indicators. Since we assume that real criminal activities have an increased chance of receiving more red flags than normal activities, we can conclude that the number of false positives will diminish quickly once we start looking at the combination of several indicators. Therefore, we focus more on the false negatives of a single indicator than on the false positives. This means that we will use relatively broad indicators (and therefore accept an increased degree of false positives).

21.4 THE INDICATORS

Based on an extensive literature research, we developed a list of 17 indicators that we can operationalize[4] for our dataset. We mainly use Dutch publications (like the reports of the Dutch Financial Expertise Centre (FEC) and the Dutch Financial Intelligence and Investigation Unit (FIOD)) because our analysis is on the Dutch real estate sector, but

we also include some international publications (like the reports of the Financial Action Task Force (FATF) and the OECD).

Indicator 1: Financier is from Abroad

The misuse of a foreign legal party as a financier is the prototype of disguising the fact that you invest your ill-gotten gains into the real estate sector (van de Bunt et al. 2007, p. 67). The idea is that it becomes harder to discover the origin of the money when a (preferably anonymous) foreign company is used to finance the investment. The Dutch Tax Administration and the Dutch financial intelligence and investigation unit in their report also warn about the use of foreign companies for the financing of real estate (Belastingdienst/FIOD-ECD 2008, pp. 12, 20, 23, 32 and 33). The literature mentions many cases in which foreign companies played an important role in money laundering constructions. For instance, case 1.1 in FATF (2007), where money was invested in the Dutch real estate sector with loans from several foreign companies that were actually controlled by the person receiving the loan.[5] The idea behind this is that one can invest their own (dirty) money by first transferring it to a foreign country and then lending it back to themselves. This disguises the origin of the money, which is exactly the aim of money laundering. The use of foreign companies for this loan-back method is also described, among others, in Nelen et al. (2007, pp. 54–5), Trouw and Knobbout (2007, p. 10) and Belastingdienst/FIOD-ECD (2008, pp. 13).

Indicator 2: Financier is a Person, not a Company

When banks provide a mortgage to finance the purchase of real estate, there are certain control mechanisms in place, like comparing the necessary income with the applicant's wage. When people provide a mortgage, this control is unclear, which can be an indication that this way of financing is used for dubious purposes. The Belastingdienst/FIOD-ECD (2008, p. 33) states that a mortgage not provided by a financial institution can point in the direction of money laundering. See also van de Bunt et al. (2007, chapter 6) and FEC (2008), who mention that a mortgage by a non-business party, especially a foreign one, must raise suspicion.

Indicator 3: Financing is Unusual Compared to Appraised Value

An indication for a fictitious mortgage is when the mortgage is significantly higher than the appraised value of the object, since a bank will normally not provide a mortgage above the actual value of the property (Belastingdienst/FIOD-ECD 2008, p. 24). The FATF (2007, p. 36) also mentions in its report that buyers taking on a debt that is significant in relation to the value of the property should arouse suspicion. A significantly high mortgage is found especially in cases where a 'straw man construction' is used.

Indicator 4: Financing is Not Used (No Mortgage)

Real estate is the most expensive property most people will ever buy and not many buyers are wealthy enough to pay the whole purchase amount without the use of a

mortgage. The absence of a mortgage should raise the suspicion of the notary (FEC, 2008, p. 19) and can indicate the misuse of foreign legal persons (van de Bunt et al. 2007, p. 114). A study on real estate in Amsterdam (PEO 1995) specifically focused on objects that were bought without the use of a mortgage, because it considered this a helpful indication of money laundering (Trouw and Knobbout 2007, interview 3). This indicator is also apparent in case study 3.5 described by FATF (2007), in which two high-value properties (of more than €20 million) were bought in France with a single payment (not a loan). Later it became clear that this concerned an investment of dirty capital, disguised by offshore companies.

Indicator 5: Financing is Provided by the Owner (Same Person)

The use of transactions with oneself is mentioned as a characteristic of money laundering in the real estate sector (Belastingdienst/FIOD-ECD, 2008, p. 10). According to the Belastingdienst/FIOD-ECD (2008, p. 28) and the FATF (2007, p. 35), the use of illogical and unnecessarily complex financial constructions should arouse suspicion. We consider providing a mortgage to oneself dubious. This indicator is often mentioned in connection to the loan-back construction, which is described in many publications on money laundering methods, see for example OECD (2006), Ferwerda et al. (2007), Nelen et al. (2007, p. 55), Belastingdienst/FIOD-ECD (2008, pp. 12–13) and FATF (2007, pp. 7–8).

Indicator 6: Owner is from Abroad

Purchasing real estate abroad adds a layer of disguise, because one is not known by the local authorities. In the back-to-back loan construction especially, the purchase of real estate is done from abroad. Although it is often mentioned that this is done by offshore companies only (like in FATF 2007, pp. 12–13 and p. 35, and van de Bunt et al. 2007), others mention that it is done by foreigners in general (Nelen et al. 2007, p. 54).

Indicators 7 and 8: Owner is a Person with an Unusual Number of Objects or Transactions

The FEC (2008, pp. 20) and FATF (2007, pp. 34; 2006, pp. 8) mention that a red flag should be raised when a person performs several transactions. The Belastingdienst/FIOD-ECD (2008, p. 29) mentions that a sudden increase in someone's real estate portfolio can indicate a wish to launder a large amount of money within a short period of time (see also FEC 2008, p. 23).

Indicator 9: Owner is a Company with a Particular Exploitation

The FEC (2008, p. 16) and Trouw and Knobbout (2007) suggest that money launderers invest in and with companies that they have knowledge of. Also Belastindienst/FIOD-ECD (2008, p. 5 and p. 37) cautions against business sectors with an increased risk for criminal investment. The FATF (2007, p. 27) mentions that within the real estate sector some areas are more attractive for criminal investment than others. Which sectors are specifically suspicious and have an increased risk or are more important for money

laundering? While the FEC (2008) does not mention any sectors, Belastingdienst/FIOD-ECD (2008, pp. 5 and 37) mentions illegal exploitation (such as illegal pensions, cannabis nursery, human trafficking, illegal gambling and illegal prostitution) and risky legal sectors (such as hotels, restaurants, 'coffeeshops',[6] prostitution, gambling and transport). Trouw and Knobbout (2007) mention catering services, prostitution and transportation. The FATF (2007, p. 27) cites the hotel business, construction firms, development of public or tourist infrastructure (especially luxury resorts) and the catering business.

Indicator 10: Owner is a Company just Established

The FEC (2008) suggests that a company that has just been established and is immediately buying up real estate is likely to be part of a construction of companies designed to conceal the ultimate beneficial owner and to launder money. Also, Belastingdienst/FIOD-ECD (2008, p. 28) and the FATF (2007, p. 35) warn about transactions by certain companies that have just been founded.

Indicator 11: Owner is a Company without Employees

According to the FEC (2008), real estate companies that do not have employees are very likely to be part of some sort of money laundering construction (see also van de Bunt et al. 2007, chapter 4). The use of empty companies in money laundering constructions is described by the FATF (2007, p. 14), which calls these companies 'shell companies'; the company only consists of a shell, without any contents.

Indicator 12: Owner is a 'World Citizen' (Unknown to the Tax Administration)

When a foreigner purchases real estate in the Netherlands, this leads to a tax payment duty abroad. A problem occurs with this payment obligation when it is unknown where the purchaser pays his taxes, that is, when the purchaser is unknown to the national Tax Administration. According to the FEC (2008, p. 16), investors who have no tax payment duty, or at least not in the Netherlands, should raise a red flag. Also Belastingdienst/FIOD-ECD (2008, pp. 4 and 28) mentions these kinds of foreign real estate owners as an indicator for money laundering.

Indicator 13: Real Estate Object is Involved in Multiple Transactions

When an object is bought and sold multiple times, this can indicate a swindle to push the price above the property's actual worth. FEC (2008), Ferwerda et al. (2007, chapter 4) and Belastingdienst/FIOD-ECD (2008, p. 17) all mention that this occurs and that it can be a major part of a money laundering process, especially with the use of the ABC construction and carousel fraud (driving up the price by successive sales and purchases within the same organization with the eventual goal of making the object appear to be worth more (or less) than it actually is). The FATF (2007) explains that the method of successive sales and purchases, which is in line with the above-mentioned methods, has the specific characteristic that the property is (fictitiously) sold in a series of subsequent transactions, each time at a higher (or lower) price.

### Indicators 14 and 15: Real Estate Object is in a Very Bad or Very Good Neighbourhood

The FATF (2007, p. 37) sees transactions in high-risk urban areas as an indicator for money laundering in the real estate sector. Also van Gestel et al. (2008, pp. 35–36) mention the link between criminal activities in this sector and the liveability in the corresponding district. Nelen and Huisman (2008) find the relationship between bad neighbourhoods and organized crime not undisputed, and mention that there is hardly any evidence that deprived areas and marginalized business activities are breeding grounds for organized crime. Areas and sectors that, as a result of governmental policies, have been uplifted seem to be just as vulnerable. It could be that criminals want to show off their purchases and show the rest of the world that they are (or were) successful in business. This consideration might result in investments in very good, fashionable and expensive neighbourhoods. Therefore both extremes (very bad and very good neighbourhoods) are used as separate indicators in this study.

Indicators 16 and 17: Purchase Amount is Unusual Compared to Appraised Value or Previous Purchase Amount

A purchase amount that is too high or too low can indicate a swindle to drive up the price, like an ABC construction or the fraud carousel, or play a role in tax fraud. This is one of the most visible indicators of criminal investments in real estate, since the purchase prices are transparent, at least in the Netherlands. This might be the reason that, as so often mentioned in the literature, a too high or too low purchase price is suspicious (see e.g. Nelen et al. (2007, pp. 47 and 56), FATF (2007, p. 24 and 21) and Ferwerda et al. (2007, chapter 4)). The comparison of the appraised value with the purchase amount using Dutch data was suggested by Eichholtz (2006, p. 67) and done by Siegman (2006). Although Siegman (2006) was able to depict strange price increases of real estate in Amsterdam, he did not continue his efforts to estimate the amount of money laundering in the real estate sector, simply because there was no way he could differentiate between the price increases caused by money laundering and those caused by the speculation of real estate agents. This study tackles this issue, at least partly, by using many more indicators, by cooperating with criminologists and by the use of closed data in addition to publicly available information.

21.5 THE APPLICATION OF THE INDICATORS TO OUR DATASET

To be able to apply all the above-mentioned indicators, we compiled a database of 11,895 real estate objects, which comprises all real estate objects in Utrecht and Maastricht (two cities in the Netherlands with respectively about 310,000 and 120,000 inhabitants) that were sold at least once within the period 2002–2006.[7] This database consists of data from the Dutch Offices of Land Registry (information from the deed of conveyance, object number, purchase amount, name and date of birth of purchaser and seller, gender for natural persons, business form for legal persons, mortgage amount, the provider of the mortgage, etc.) and from the Dutch Tax Administration (like income of the subject,
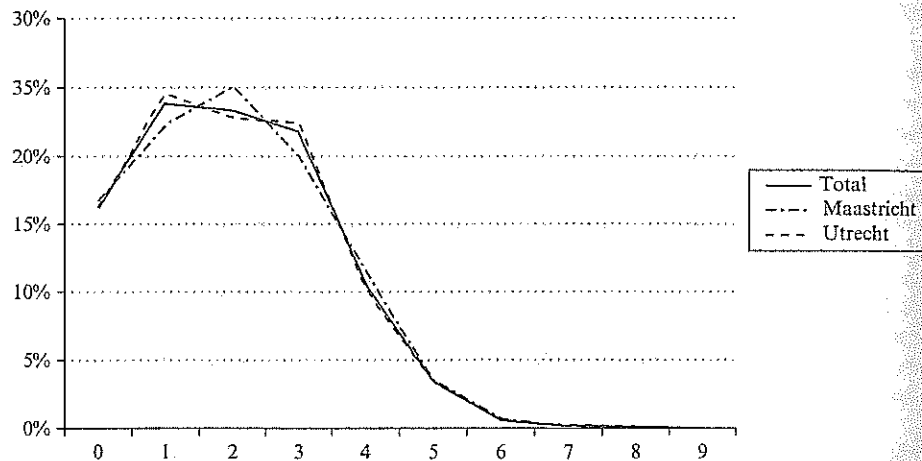
Source: Compiled by the authors. The percentage refers to the percentage of objects with an X (0 through 9) number of red flags relative to the number of objects in the group (Utrecht, Maastricht or the two cities combined).

Figure 21.3 Distribution of red flags for Utrecht and Maastricht

establishment date of legal persons, appraisal value, some tax information, etc.). Once we apply all the 17 indicators to our dataset,[8] we can see (as depicted in Figure 21.3) that many real estate object have a couple of red flags,[9] but that finding more than five red flags for one object is quite exceptional. The 150 real estate objects with the most red flags receive a criminological case-by-case analysis. To increase the impartiality of the criminological research we add 50 real estate objects with less than five red flags to the list as a control group, without signalling this to the criminologists.[10]

21.6 CRIMINOLOGICAL ANALYSIS

The criminological research is done independently from the application of red flags and by criminologists that do not know how many red flags each object received. For the impartiality of this study we have to stress that the criminologists try to focus as much as possible on different indicators than those mentioned above. This is mainly possible because the case-by-case basis of the criminological research provides the possibility of using many more sources of information and applying a whole different range of indicators. For example, the 200 cases are supplemented with open-source information (like the name of the notary, the use of the notary account during the transaction, anything that might show up on Google) and closed source information (e.g. whether the persons involved have antecedents, whether the persons involved performed any unusual or suspicious transactions[11] and the tax declarations of the persons involved). The case-by-case analysis also gives an opportunity to perform more extensive analyses, like a network analysis to detect natural and legal persons that work together in an organized fashion or

an individual analysis to detect whether the persons involved can play the role that they play (e.g. do they have enough capital/income to get that mortgage, or is there some kind of straw men construction?).

The method of analysis is based on describing two possible scenarios – a licit and an illicit one – and the evaluation of which of the two is best supported by the facts that showed up during the analysis. Eventually, the criminological analysis indicates that 36 of the 200 objects should be labelled as 'conspicuous'. We do not use the term 'suspicious', because we are only able to analyse what we see on paper and cannot go as far as actual police investigation. Of the 36 conspicuous objects, five are linked with drugs, 27 with fraud and four with renting irregularities. While nine of the 36 cases are strongly conspicuous, eight are moderately conspicuous and 19 have only a weak indication that something is wrong.

In addition to this criminological research, the criminologists also asked stakeholders at the ground level (such as local police officers) which subjects and objects have raised their awareness in the two cities. Overall, this survey resulted in a list of 356 subjects and 32 objects deduced from various sources. Comparing this list with the list of 1130 subjects identified in the 200 cases gives only two hits, which concern the same strongly conspicuous case. The meagre results of this so-called bottom-up analysis can indicate that the application of red flags is not very effective to find the relevant objects and subjects, but can also indicate that our method points to subjects and objects that are not yet known to the local authorities.

We now use the results of the criminological analysis (36 conspicuous cases) to estimate which indicators can identify the relevant real estate objects and which indicators fail to do so.

21.7 STATISTICAL AND ECONOMETRICAL ANALYSIS

If red flags are a good indication for conspicuous cases, we would expect that the conspicuous cases have more red flags on average than the objects that are not marked as conspicuous by the criminologists. The conspicuous objects have, on average, 5.4 red flags, while the 200 selected objects have, on average, 4.8 red flags. So, red flags seem more frequent for the conspicuous objects than for the sample of 200. More disappointing at first glance it seems that when we remove the 50 objects of the control group, the 150 unusual objects identified in the economic analysis have on average 5.7 red flags, that is more red flags than the 36 conspicuous objects identified by the criminological analysis. This disappointing finding changes, however, when we take into account the degree of conspicuousness, which shows that more red flags indeed do point at more strongly conspicuous objects: the weakly conspicuous objects have 5.1 flags on average, the moderately conspicuous objects have 5.5 red flags on average, and the strongly conspicuous objects have 6.1 red flags on average. The average, median and mode amount of red flags of all 11,895 analysed objects lie around two. This result seems to confirm the idea behind this study that a real estate object with more red flags has an increased chance of being related to money laundering or other criminal investments.

In our econometrical analysis the dependent variable (whether the object is conspicuous or not) is a binary variable. We will therefore use a specific econometric estimation

Table 21.1 Econometrical estimation results

Dependent variable:	(1)	(2)	(3)	(4)	(5)
Conspicuous (or not)	probit	Logit	cloglog	OLS	dprobit
2 Financier is a natural person and	0.73	1.12	0.80	0.16	0.23
5 Mortgage to self (same surname)	(0.56)	(1.02)	(0.87)	(0.14)	(0.21)
3 Unusual mortgage compared to	0.03	0.20	0.29	0.03	0.01
appraised value	(0.37)	(0.67)	(0.60)	(0.09)	(0.09)
4 Absence of mortgage	0.32	0.60	0.56	0.08	0.08
	(0.30)	(0.54)	(0.47)	(0.07)	(0.07)
6 Foreign owner	0.53*	0.95*	0.81*	0.14*	0.15
	(0.30)	(0.52)	(0.44)	(0.08)	(0.09)
7 Owner has unusual number of	0.31	0.64	0.61	0.07	0.07
objects and					
8 Owner does unusual number of	(0.29)	(0.53)	(0.45)	(0.07)	(0.06)
transactions					
9 Risky exploitation	0.36	0.57	0.45	0.08	0.10
	(0.30)	(0.52)	(0.45)	(0.08)	(0.09)
10 Owner is a just-established	0.78**	1.36**	1.17**	0.21**	0.24*
company	(0.36)	(0.62)	(0.52)	(0.09)	(0.13)
11 Owner is a company without	−0.17	−0.27	−0.19	−0.05	−0.04
employees	(0.26)	(0.46)	(0.40)	(0.07)	(0.07)
12 Owner is a 'global citizen'	0.22	0.42	0.43	0.05	0.06
	(0.35)	(0.62)	(0.53)	(0.09)	(0.10)
13 Object involved in multiple	0.02	0.03	−0.04	0.00	0.01
transactions	(0.33)	(0.58)	(0.53)	(0.08)	(0.08)
15 Object in good neighbourhood	0.08	−0.06	−0.29	0.01	0.02
	(0.34)	(0.64)	(0.56)	(0.08)	(0.09)
16 Unusual purchase amount	−0.37	−0.67	−0.55	−0.12	−0.08
compared to appraised value	(0.33)	(0.61)	(0.54)	(0.08)	(0.06)
17 Unusual price fluctuation	0.84***	1.44***	1.20***	0.23***	0.25**
	(0.30)	(0.52)	(0.44)	(0.08)	(0.10)
Constant	−1.67***	−2.93***	−2.89***	0.03	
	(0.37)	(0.72)	(0.65)	(0.08)	
Observations	200	200	200	200	200
Pseudo R²	0.103	0.103			0.103
Adjusted R²				0.0364	

Note: Standard errors are given in parentheses. P-values (chance of a coincidental relationship) are shown with superscripts: *** = $p<0.01$, ** = $p<0.05$, * = $p<0.1$. The (adjusted or pseudo) R² (coefficient of determination) of cloglog cannot be calculated, but regarding the comparable values of the log likelihood it is most likely comparable to the probit model (in column 1) and the logit model (in column 2).

model that takes this into account: the so-called Probit model. To show the robustness of the results of this specification, we present the results of two other estimation models: OLS and Logit.[12] Since the number of conspicuous objects is quite low (less than 20%), we add the results of the complementary log-log model,[13] which is particularly useful for cases where one of the outcomes (conspicuous in this case) is rare. Since the Probit model does not assume linearity and therefore cannot be interpreted directly, we calculate the marginal effect[14] of each indicator and show this with the other estimation results. The

results of the econometric analysis are shown in Table 21.1.[15] Practically, the primary focus is on the results (significant or not) in column 1. Columns 2, 3 and 4 are a check on the robustness of the results and column 5 is used to interpret the significant results.

All the significant effects in Table 21.1 are positive, which means that these indicators can be used to 'detect' conspicuous objects. The most significant effect found in the econometric analysis is that objects with an unusual price fluctuation (indicator 17) are associated with an increased chance of 25 percentage points to be conspicuous. Objects owned by a company that was just established (indicator 10) are associated with an increased chance of 24 percentage points to be conspicuous. Finally, objects with a foreign owner (indicator 6) are associated with an increased chance of 15 percentage points to be conspicuous. For the rest of the indicators there is no significant effect on the probability to be conspicuous.

21.8 CONCLUSION

This study can be seen as a pioneer and pilot study for detecting money laundering in the real estate sector by using the skills of both economists and criminologists. The study consists of three main steps. We start with an outlier detection model based on 17 indicators derived from the literature. In the second step a criminological analysis is conducted on the 150 objects with the most indications for money laundering, mixed with 50 seemingly normal objects. Once we determine that 36 objects can be labelled conspicuous, we use an econometrical analysis in the last step to find out which of the 17 indicators can detect these conspicuous objects.

Our hope for this study was to end up with a magic formula that allows the identification of suspicious objects from objective data. At this stage of research we can only provide a first draft formula for such a magic detection tool, which could be refined and improved in the future (Box. 21.1).[16]

Figure 21.4 shows the objects with five or more red flags and which are labelled as conspicuous on the map of both cities. As one can see, there is no clear concentration in one neighbourhood, as the objects are rather evenly spread on the map.

BOX 21.1

The draft magic formula that can 'detect' conspicuous objects:
Chance to be conspicuous = 15% * foreign owner + 24% * just-established company + 25% * unusual price fluctuation

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21.9 RESEARCH LIMITATIONS AND POSSIBLE FURTHER RESEARCH

Note that the significant relationships are not causal per se; a characteristic could lead to criminal activity, but criminal activity could also lead to a certain characteristic. Also

Source: The authors, graphic made by Arjen Siegman. The five black bars are the objects from the control group of 50 objects that are nevertheless identified as conspicuous, while the 31 dark grey bars are the conspicuous objects that are not in the control group of 50. The other 119 bars light grey are the objects that have five or more red flags, but are not labelled conspicuous in the criminological analysis. The bars are moved slightly to protect the privacy of the analysed objects and subjects.

Figure 21.4   Objects Identified in Utrecht (left) and Maastricht (right)

note that it is not clear to what extent we can generalize the results, since the sample is fairly small (200 objects) compared to the whole sector (11,895 objects), and not random and therefore normally not representative. We hope, however, to have demonstrated that using a multidisciplinary approach including outlier detection, criminology and econometrics is a promising method to create a detection tool for criminal investments in the real estate sector. However, it needs further refinement. Refinement can be achieved by focusing on more narrow concepts of criminal behaviour (e.g. specific forms of fraud or drugs), specific real estate sub-sectors (e.g. housing or commercial market) and by the mere use of behaviour-specific indicators.

NOTES

* This chapter is the shortened version of a study financed by the Dutch Ministries of Finance, Interior Affairs and Justice, which has been published as B. Unger and J. Ferwerda (2011) *Money Laundering in the Real Estate Sector, Suspicious Properties*, (with a contribution from H. Nelen and L. Ritzen), Edward Elgar, Cheltenham, UK. We would like to thank criminologists Hans Nelen and Luuk Ritzen from Maastricht University for their cooperation in this research project.
1. This was a first estimate of money laundering by the managing director of the IMF, Michel Camdessus, in 1998. Figures within that range were later found by Walker (1999) and Unger (2007).
2. With respect to the use of red flags, we follow the phrasing and research method of FATF (2007) and FEC (2008).
3. By using the word 'unusual', we follow the phrasing of the Dutch FIUs that make a distinction between unusual transactions and suspicious transactions.
4. Although the literature mentions more indicators, here we only present the indicators that we can actually apply to our dataset. See Unger and Ferwerda (2011) for a more complete list of indicators and a more extensive explanation of these indicators. The indicators might not all be directly related to money laundering, but could also indicate other forms of criminal investments or exploitation.
5. See also, for example, case 4.1 in FATF (2007) and case 18 in FATF (2006)
6. In the Netherlands the selling of marihuana is tolerated in so-called coffeeshops.

7. We did not select any one part of the real estate sector, which means that all kinds of real estate are included, ranging from houses and offices to churches and undeveloped land.
8. The application of these indicators is sometimes quite cumbersome and has led to some limitations for the research. For example, the nationality of the owners is not available in the dataset and therefore we use the former addresses of the owners as a rough indication of the nationality. Another example is that some indicators need threshold levels to indicate what is unusual and what is not, while this is not specified in the literature. We describe the limitations and (sometimes arbitrary) decisions for the application of the indicators in Unger and Ferwerda (2011), chapters 4.2 and 5.3.
9. This is a logical consequence of the use of relatively broad indicators, as explained earlier.
10. The selection of only 200 objects for criminological research is due to the limited criminological research capacities in the project.
11. In the Netherlands obliged entities (like banks, notaries, car dealers, etc.) report all unusual transactions to the FIU-Netherlands. The FIU-Netherlands then starts to analyse these reports and decides which of them can be classified as suspicious.
12. The standard OLS estimation with Y as the dependent variable and X as the independent variable is: $Y = \beta_0 + \beta_1 X$. The Logit model (with Pr as the probability) estimates: $p_i = \Pr[y_i = 1|x_i] = \frac{\exp(\beta_0 + \beta_i x_i)}{1 + \exp(\beta_0 + \beta_i x_i)}$, which clearly ensures that $0 < p_i < 1$. The Probit model, on the other hand, estimates: $p_i = \Pr[y_i = 1|x_i] = \Phi(\beta_0 + \beta_i x_i)$, where $\Phi(.)$ is the cumulative distribution function for the standard normal distribution, which means that $p_i = \int_{-\infty}^{\beta_0 + \beta_i x_i}(2\pi)^{-1/2}e^{-z^2/2}dz$ and thus that $0 < p_i < 1$ (Cameron and Trivedi 2005, pp.464–5).
13. The coefficients in the complementary log-log model are also probabilities, estimated by $p_i = 1 - \exp(-\exp(\beta_0 + \beta_i x_i))$ (Cameron & Trivedi 2005, p.466–7).
14. The marginal effect of the probit model is: $\partial p/\partial x_i = \phi(X\beta)\beta_i$ with $\phi(.)$ as the probability density function for the standard normal distribution (Cameron & Trivedi 2005, p.467).
15. Since indicators 2 and 5 and indicators 7 and 8 are strongly correlated, these indicators measure more or less the same. We combine the indicators to prevent potential multi-collinearity and to require fewer independent variables and therefore have more degrees of freedom. The results when these indicators are used separately are more or less similar, except that 7 and 8 both become significant, one positive (7) and one negative (8). These effects seem to counter each other when combined (as an interaction term). The multiplication of indicators 2 and 5 is the same as just indicator 5. Indicator 1 and 14 are dropped due to insufficient variation (not enough conspicuous cases have this characteristic, respectively 1 and 0).
16. How could this formula be used? If we have a case where a foreigner sells a real estate object to a just-established company, which then sells the object a couple of months later for a significantly higher or lower price, there is a 64% chance that this case is conspicuous. Because it has all three characteristics the calculation is: 15% * 1 + 24% * 1 + 25% * 1 = 64%. Now let us consider a case where a just-established company buys real estate from a foreigner for a normal price: then the chance that this real estate is conspicuous is 39%. Because it has two of the above characteristics, the calculation is: 15% * 1 + 24% * 1 + 25% * 0 = 39%.

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22. Cash economy, measuring the tax gap from the tax administrative perspective*

Victor van Kommer

22.1   INTRODUCTION

Lately, the US and the FATF have made a large effort to include tax evasion as a predicate crime for money laundering. Tax evasion in Europe is a predicate crime only in some countries, such as Greece, where the anti-money laundering (AML) policy concern is mainly to hunt out corruption and tax evasion, or in the Netherlands, where tax fraud is fought by a specific police-like authority, FIOD. Tax evasion is, however, not a predicate crime for money laundering in other countries, such as in Austria, where hunting drug dealers is the major concern of AML authorities. When it turned out that the German government had offered several million euros to a Liechtenstein bank employee for a list of potential German tax evaders holding an account in Liechtenstein (see the contribution of Prince Michael von and zu Liechtenstein in this volume, Chapter 11), it became quite clear that hunting tax evaders will become more important in the future. In particular, governments in need of financing their public debt will become more eager to hunt tax evaders, as the German government demonstrated.

Whether European Union member states will follow the US strategy with regard to broadening the money laundering definition, and will include tax evasion in the list of predicate crimes, or whether Europe will follow the suggestion of Prince Michael von and zu Liechtenstein, and make tax laws more transparent so that banks can identify tax evaders more easily and tax evaders feel less compelled to bring their money abroad, only time will tell. The goal of this contribution is to help both identifying tax evasion and monitoring tax compliance.

22.2   THE ROLE OF THE TAX ADMINISTRATION

Tax Administrations have a responsibility to report on their performance and achievements related to their organizational objectives. This includes a responsibility to monitor and report on taxpayers' compliance and the impact of the Administration's efforts to improve taxpayer compliance. The need to monitor taxpayers' compliance in any form is obvious: it is a direct consequence of the primary goal of Tax Administrations to improve overall compliance with tax laws. Understanding and monitoring taxpayers' compliance is, however, a complex challenge. Tax Administrations should therefore develop and apply tools and indicators to measure levels and trends in taxpayers' compliance in order to report on the health of the tax system to their stakeholders from a tax compliance viewpoint and show the impact of compliance improvement strategies on the