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Information Asymmetry, Lease Incentives, and the Role of Advisors in the Market for Commercial Real Estate

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SUMMARY – Using a unique transactions dataset from the Amsterdam office market, this paper examines the determinants of property lease incentives. The study focuses on the type of landlord involved (institutional/private) and whether the tenant or landlord used an advisor (professional broker) to help negotiate the lease. The results show that an institutional landlord, *ceteris paribus*, offers 3 percentage points more incentives than a private owner. In addition, a landlord who uses the services of an advisor pays 9 percentage points less incentives. An advisor at the side of the tenant increases incentives by 7 percentage points. However, if both parties use an advisor there are no additional benefits in terms of lease incentives. These findings are in line with a prisoner’s dilemma story. Further results show an effect of the lease term and economic cycle on lease incentives. The results in this paper highlight the crucial role of market information, information asymmetry, and bargaining in the market for commercial real estate.

JEL-code – R30; D82; L85

Keywords – commercial real estate; office market; lease incentives; advisor; information asymmetry

I. Introduction

Especially in thinly traded, intransparent markets, bargaining plays a crucial role in the formation of prices (Harding et al, 2003). The market for commercial real estate is a typical example of such a market. If we look at the office market in the US alone, there has been 62.4 million square feet of leases signed in 2017 Q3 and there is an expected new supply of 52.4 million square feet in 2018 (JLL, 2017). Taking into account that the average rent in 2017 is about 30 dollar per square foot (and in many cities much higher), it is safe to say that we are

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talking about a multi-billion dollar market. This implies that finding good (strong covenant, long-term) tenants is an important business.

A typical strategy by landlords to ensure that a tenant signs a long-term rental contract is to provide lease incentives. This can be a rent-free period, compensation for office fit out costs, up to a full renovation of the offered rental space. There is typically a lot of money involved with lease incentives and, to the extent it affects rental income, it also has a fundamental impact on the asset value of commercial real estate. Although incentives play a crucial role in the market for commercial real estate, there is typically not much known about the exact amount of incentives that are offered or what are the determinants of lease incentives. This paper aims to fill this gap.

In this paper, a unique dataset on lease incentives (rent-free periods/rent discounts) from the Amsterdam office market over the period 2002-2012 is used. Because office markets are intransparent — transactions data is not publically available — and the data is typically fragmented (there are usually several intermediaries involved, all with their own databases), it is difficult to get any kind of consistent data on commercial property transactions, let alone lease incentives. The data used in this paper was gathered by the Amsterdam taxing authority (DBGGA) for taxation purposes and includes self-reported lease incentives, which was double-checked by DBGGA for consistency. We supplemented the database with transactions data from Cushman & Wakefield.

A unique aspect of the dataset is that it contains information about building characteristics, location characteristics, transaction-specific characteristics, and the subjects involved in the transaction (type of landlord/advisors). Specifically, information is available on the number of tenants, the lease term, the type of landlord, the number of square meters as mentioned in the lease contract, and several other location (e.g. travel time to nearest highway ramp/station, google walk score) and building (i.e. construction year, whether the building is a high-rise building) characteristics.

We use data from Strabo (research company specialized in real estate market information) on whether the landlord or tenant used the services of an advisor (professional broker) to help negotiate the deal. Because there are some transactions without any lease incentives, we estimate several Tobit regression models to examine the determinants of lease incentives. Moreover, it is fair to state that the dataset used in this study is far from perfect as we observe quite some missing values in some variables, especially with regard to the type of landlord and whether there are advisors involved. We discuss the potential impact of endogeneity and selection issues on the regression results when applicable and do several subsample comparisons. Nevertheless, with a base sample of about 400 property transactions and given the unique nature of the data involved, we are able to provide a detailed perspective on the determinants of lease incentives. We focus the discussion on the effect of the type of landlord (institutional versus private) and whether there was an advisor on the side of the landlord or tenant involved in the transaction, as

there is a clear behavioral economic interpretation to these results, but we will also show effects related to the lease term, the number of tenants, and the economic cycle.

The results in this paper show that, *ceteris paribus*, an institutional landlord offers 3 percentage points more incentives than a private owner. This is a sizeable effect relative to the average incentive of about 16 percent. An explanation for this effect is that a private owner is more performance oriented (i.e. driven by financial returns) and as such is less likely to give high lease incentives. An institutional landlord provides higher lease incentives as the incentives are typically given by an (external or internal) asset manager who is not financially dependent on the actual rent that is given, but just whether the office space is rented out or not.

Furthermore, we find that a tenant who uses an advisor to help ‘seal the deal’ gets 7 percentage points more incentives when the landlord does not have an advisor. Information on market rents and incentives are typically not publically available, which creates an information asymmetry between landlords and tenants, in favor of the landlords. An advisor can provide help in getting the appropriate market information and can give advice when negotiating a lease contract. Apparently, this alleviates the information asymmetry. From this perspective, hiring an advisor seems to make sense.

Interestingly, a landlord using the services of an advisor offers, on average, 9 percentage points less incentives, but only if a tenant does not have an advisor. This effect is larger than the effect if a tenant uses an advisor. This difference, however, is not statistically significant and should be interpreted with caution. It might, for example, be possible that higher lease incentives are underreported. In this case, the effect of an advisor at the side of the tenant is underestimated and the effect of an advisor at the side of the landlord is overestimated.

Finally, if both the tenant and landlord use the services of an advisor the effect on lease incentives is not statistically significantly different from zero (with reference category: no advisors on both sides). Apparently, if both the tenant and landlord hire an advisor there is, at least from the perspective of lease incentives, not much to gain.¹ This seems to be in line with a prisoner’s dilemma story in which both parties cannot afford *not* to hire an advisor and end up with incurring the cost of hiring an advisor.² Interestingly, the raw data shows that in about 61 percent of the transactions both parties use the services of an advisor. Further results show there is a boom-bust cycle in lease incentives and lease incentives are higher if the tenant signs a contract with a longer lease term. There is also some weak

¹ Of course, an advisor may provide other valuable services (search for tenants, writing up the contract) decreasing search and transaction costs. More in general, it is well known that top-tier advisors are more likely to complete financial deals (i.e. merger and acquisition deals, see Hunter and Jagtiani, 2003).

² The cost of hiring an advisor differs by transaction. It can easily be 10 percent of the first year rent or a percentage of the negotiated lease incentive. Although we do not have information on the exact commission structure, it at least suggests that the costs are sizeable; to hire an advisor is not a trivial decision.

evidence that when both parties use an advisor tenants benefit most in terms of lease incentives when the lease term is relatively long (i.e. more than 84 months).

This paper relates to two overarching strands of literature. First, there is quite some literature on bargaining in real estate markets. The seminal work by Genesove and Mayer (1997) shows that sellers sell their house above the list price especially in case of high loan-to-value ratios. In extension, Merlo and Ortalo-Magné (2004) provide more insight in the strategic interaction between buyers and sellers by examining a rich source of data on list price revisions and actual offers made by buyers in England. They find that list price revisions are relatively infrequent and offers are typically lower if a property is already a long time on the market. Sellers typically accept the first offer that is made.

A second key study is that by Harding et al. (1993). They extend the standard hedonic framework to include bargaining power and estimate bargaining power in the market for existing homes. Using the American Housing Survey they find, amongst others, that bargaining (symmetric for buyers and sellers) is higher for families with children during the school year. Also, other factors like the wealth of households and gender determine bargaining power. Colwell and Munneke (2006) apply this augmented hedonic approach to examine bargaining in commercial (office) real estate markets. Buyers and sellers are divided into five categories: individual, individual in cooperation with bank, corporate, corporate in cooperation with bank, and individual banks. They show that sellers (buyer) who work together with a bank sell (buy) offices for a lower (higher) price in comparison with corporate buyers and sellers. By contrast, the involvement of a trust increases bargaining power and increases the price by 20 percent for sellers and decreases the price by 17 percent for buyers. They conclude, however, that the exact cause for these effects is hard to pin down.

A particular problem of the augmented hedonic approach is that it relates to bargaining strength and not so much to bargaining outcomes. Lease incentives are, however, a direct measure of bargaining outcomes and, given the unique nature of the dataset used in this paper, it is possible to highlight some aspects of the buyer and seller side separately. In addition, investors typically buy properties because of their income-generating potential. Hence, instead of focusing on the overall market value of the property, our paper contributes by examining the underlying rent discounts (lease agreements) using a large set of potential determinants.

A related issue is that bargaining and the bargaining process itself can be a source of information. A key study in this regard (but not specific to real estate) is by Kennan and Wilson (1993) who argue that bargaining, costly delays, and failure to agree can be a valuable tool to convey (signal) private information. This directly relates to the second strand of literature relevant to our paper: The role agents and access to market information play in real estate transactions.

Levitt and Syverson (2008), for example, find that real estate agents sell their own homes for more than comparable houses of their clients. Greater information asymmetry leads to larger distortions (also see Rutherford et al., 2005). Differences in commission structures also affect the performance of real estate agents. Munneke and Yavas (2001) show that full-commission agents spend more effort and hence have better results when selling a house, but they also get more listings which crowds out this effect. From a digital, online, perspective, Hendel et al. (2009) show that sales through a multiple listing service platform sell faster in comparison with a no-service, For-Sale-By-Homeowner platform. Specifically to indirect, listed real estate, Howe and Shilling (1990) find that REIT performance is determined by the type of advisor that is used by the REIT.

Most directly related to our paper, however, is the work by Garmaise and Moskowitz (2004) who use the difference in property tax assessments and the market value of commercial real estate to create a measure of (asymmetric) information. Buyers reduce the asymmetric information by a variety of strategies including buying properties that are nearby their local market, not buying from professional brokers, or avoiding buying properties with a short income history. By contrast, our paper looks at hiring advisors as a strategy to obtain market information and alleviate information asymmetry.

To summarize, bargaining and information asymmetry are well-established factors determining price formation in real estate markets. There are, however, relatively few papers on this topic focusing on commercial real estate. Those that do, focus on the overall market value of real estate. Our specific contribution is that we examine the underlying lease contracts (incentives) from the perspective of landlords and tenants. The role lease incentives play in commercial property markets is, at best, a heavily under-researched topic.

The remainder of this paper is organized as follows. Section II discusses the data used in this study. Section III covers the empirical methodology. In Section IV, we present the regression results and Section V provides a conclusion and discussion.

II. The Amsterdam office market and the determinants of lease incentives

As there is very little theoretical guidance as to what determines lease incentives, we have looked more closely at the determinants of rents. Appendix A contains an overview of several papers about office market rents. Although the purpose is not to provide a full overview, it does suggest that, much like the literature on residential housing, the emphasis typically lies on physical characteristics of the building, such as lettable floor area, the construction year, and parking availability. In addition, measures of the exact location and accessibility seem to be important. There are also several studies that use information about the lease contract (lease term, contract size). Moreover, on a more aggregate level, vacancy and office supply plays an important role. In more recent years, environmental and energy aspects have also become more important.

Our study includes the majority (i.e. we ignore the aggregate vacancy/office supply dynamics and do not examine the impact of green certificates) of the aforementioned variables to explain lease incentives, but also incorporates some information about the landlord/tenant (the number of tenants, the type of landlords and whether the landlord/tenant used an advisor). Those variables are typically not incorporated in studies examining office market rents, but are potentially important determinants of lease incentives. A noticeable exception in this regard are Webb and Fisher (1996) who have examined the effect of the presence of a broker at the side of the tenant on effective rents per square foot and find that rents in Chicago are about \$1.3 lower if a broker is present. This seems to corroborate our findings. The remainder of this section gives a short overview of the Amsterdam office market and, subsequently, the data on lease incentives and the potential determinants of lease incentives are discussed in more detail.

A. The Amsterdam office market

Figure 1 shows the main office areas in Amsterdam (Centre, Oud-Zuid, Zuidoost, Teleport-Sloterdijk, Westelijke tuinsteden, other areas). The first five areas capture more than 85% of the total stock of office space. The other areas are less important offices areas like Amstel Business Park, de Omval, and de Schinkel.

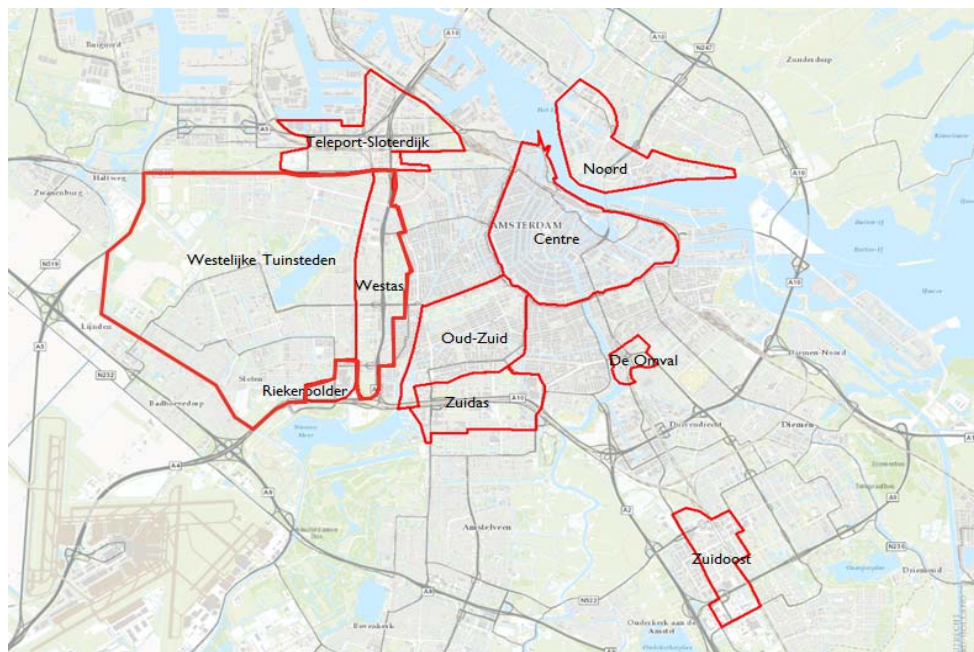
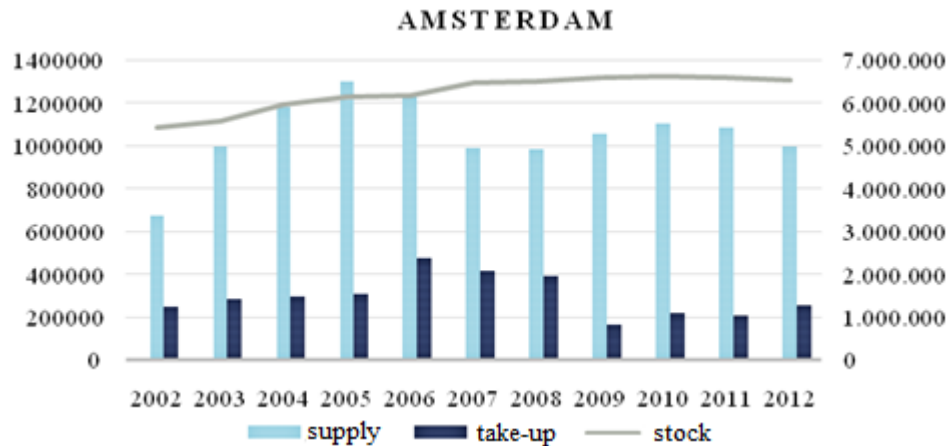


FIGURE 1 — MAIN OFFICE LOCATIONS IN AMSTERDAM



SOURCE: CUSHMAN & WAKEFIELD, OWN CALCULATIONS

FIGURE 2 — SUPPLY AND DEVELOPMENT OF OFFICE SPACE IN AMSTERDAM (SQUARE METERS)

Figure 2 shows the supply and development of office space in Amsterdam (for the sample period). Amsterdam is the largest office market in the Netherlands and provides office space to a variety of large national and international companies. The city has a strong concentration of companies from the ICT sector and financial sector. The European Cities Monitor³ shows that Amsterdam, from a European perspective, is already for many years a prominent place for businesses to locate. Between 2002-2012 Amsterdam has always had a position in the top ten of most attractive cities to locate as a business. Cities such as London, Paris, Frankfurt, and Brussels are typically more highly ranked than Amsterdam. Amsterdam has a good location in Europe (a major airport and harbor are nearby), there is a stable political climate, and it has an attractive fiscal policy.

Although Amsterdam is an attractive city for businesses to locate, there is a structural oversupply of offices (as of the year 2000). In part, this is the results of excessive construction of new offices, and more recently, due to the financial crisis. Flexible working (working remotely) has reduced the floor-space-to-workers ratio and ageing of the population has resulted in a decrease in the number of persons employed. Between 2002 and 2006 office space take-up increased from 250000 m² to 478000 m². The increase came after the recession due to the dot-com crisis and the attack on the world trade center in New York in 2001. The inelasticity of supply (pig cycle) is clearly visible in Figure 2 when comparing the take-up in 2006/2007 and the growth in office supply. In 2006, supply barely increased while take-up increased substantially. In 2007, take-up was less but the supply of office space increased a lot. Typically, supply increases with a delay because of the long production time to create new office space. The vacancy rates between 2002 and 2012 varied between 15.2% (2012) and 21.3% (2005). Given a necessary friction level of 5 to 8

³ See <http://www.europeancitiesmonitor.eu/>.

percent (OGA, 2006), it is safe to say that the vacancy in the Amsterdam office market is relatively high.

B. Lease incentives

Table 1 contains the variables, expected sign, and sources used in this study (see Appendix B for a more detailed description about the data sources). The main independent variable is the percentage incentives that is given to a tenant. Although there are many sources of incentives (see Table 2), there is only information available on the rent-free period and rent discounts. This implies that the results in this paper only apply to those two types of incentives. These are, however, the two most common types of lease incentives. Since the total amount of incentives is underestimated (although most likely not by a severe amount), the coefficient estimates on the determinants of lease incentives will most likely be an underestimate.

TABLE 1 — VARIABLES, SOURCES, AND EXPECTED SIGN

Variable	Description	Source	Expected sign
Incentives	Percentage incentives	DBGA*	
Landlord	Private = 0, Institutional = 1.	DBGA*	+
Advisor landlord (only)	no=0, yes=1.	Strabo	-
Advisor tenant (only)	no=0, yes=1.	Strabo	+
Both advisor	no=0, yes=1.	Strabo	+/-
No advisor	no=0, yes=1.	Strabo	Reference cat.
Size of transaction	Leased meters of office space.	DBGA*	+
Transaction year	Year of Transaction	DBGA*	+/-
Lease term	Lease term in months	DBGA*	+
Single tenant	0= multitenant, 1= single tenant if $\geq 90\%$ space rented by a single tenant	DBGA*	+/-
High building	< 6 floors =0, 6 or more =1	TU Delft	-
Near public transport	Walk distance to nearest station	Arcgis	+
Near highway	Travel time to nearest highway ramp	Arcgis	+
Amenities	Google walk score	TU Delft	-
Construction year	The year of construction (dummy's)	TU Delft / BAG	-
Center	1 = specific location, otherwise = 0	C&W	-
Zuidoost (southeast)	1 = specific location, otherwise = 0	C&W	+
Zuid (south)	1 = specific location, otherwise = 0	C&W	+
Teleport-Sloterdijk	1 = specific location, otherwise = 0	C&W	+
Westelijke tuinsteden	1 = specific location, otherwise = 0	C&W	+
Other areas	1 = specific location, otherwise = 0	C&W	Reference cat.

*Cushman & Wakefield data used to supplement the data.

TABLE 2 — TYPES OF INCENTIVES

-
- One or more rent free periods (This study)
 - Rent discount (typically the first few years) (This study)
 - Fit out contribution and/or ‘turn key’ completion ^a
 - No re-delivery obligation ^b
 - Relocation allowance
 - Physical adjustment of the property on request of the tenant
 - Signing bonus and/or other payments (money at free disposal)
 - Option on released vacant office space
 - Escape clauses
 - Limit/cap on service costs and/or rent indexation
 - Share in the development profits after sale by the developer to an investor
 - Pay for less square meters than the actual rented square meters
 - Other incentives ^c
-

Source: Van Gool (2011). a) Completion including installation package (partitions, carpeting, etc.). b) The tenant does not have to remove the installed amenities and/or does not have to deliver the office space in shell condition. c) The landlord takes over a previous rental contract, extra flexibility in rental contracts, the provision of additional services (shuttle bus service, exclusive advertisement rights).

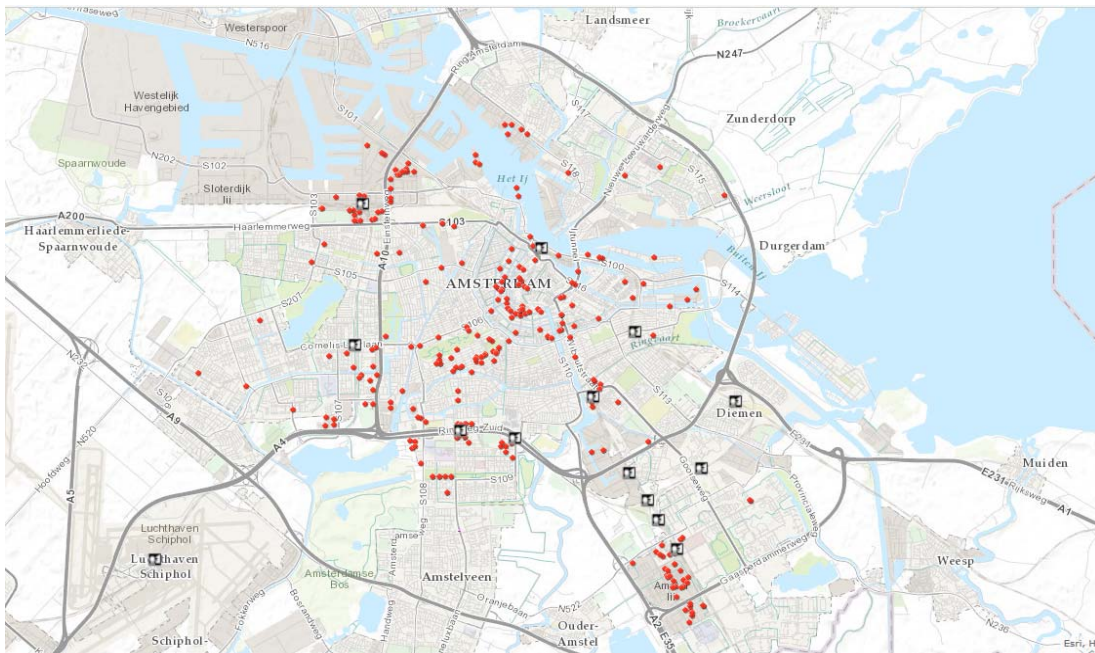


FIGURE 3 — OFFICE MARKET TRANSACTIONS IN AMSTERDAM (2002-2012)

The methodology section goes into more detail how incentives are exactly calculated, but basically a discounted cash flow method is used. The incentives are based on a survey (to tenants) done by the Amsterdam taxing authorities, DGBA (in the Netherlands owners need to pay property taxes, which is based on the assessed value of the properties), and covers lease contracts between 2002 and 2012 (pooled cross-section data). This data only recently became available for research purposes. We only have information about new contracts (no contract extensions). We used transactions with a lettable floor area of 500 m² or more that were extensively checked for correctness (and approved) by the Amsterdam taxing authorities. In total there are 415 transactions available (including 29 transaction taken from Cushman and Wakefield), this is roughly 15 percent of the total number of transactions (which also includes small offices) and 33% were not approved by DGBA (for a discussion, see Boots, 2014). We excluded six observations as outliers (i.e. relatively high initial rent or incentives), leaving a total of 409 observations available for the empirical analysis. The spatial distribution of the transactions is shown in Figure 3. All major office locations in Amsterdam are covered by the dataset.

The data also contains information on the type of landlord, square meters in the contract, the year of transaction, lease term in months, and whether there are one or more tenants. The exact location is also known, but (also given the number of observations per area) we decided to use a more aggregated definition of office areas. Whether an advisor was involved in the transaction was taken from the research company Strabo. The google walk score⁴ (measure of nearby amenities like shops and restaurants) and whether the building is a high-rise building are from the database of TU Delft. The walking distance to the nearest train station and travel time to the nearest highway ramp were calculated by using a GIS program (see Appendix C). In sum, the data includes building-specific, location-specific, transaction-specific, but also subject-specific variables.

Table 3 contains the descriptive statistics of the dataset. The average incentives are about 8 percent against an initial rent of about 170 euros/m². However, there are relatively many transactions without any incentives (see Figure 4), something we specifically need to take into account in the empirical methodology (i.e. Tobit regressions). Interestingly, the number of transaction without incentives has decreased over time, especially after the crisis. This seems to suggest that landlords might have adjusted for the economic cycle not by reducing contract rents, but by providing more incentives. The average incentives, excluding observations with no incentives, is 15.6 percent. Figure 5 shows that the average incentives have increased over time possibly also as a result of the financial crisis.

⁴For an explanation, see www.walkscore.com.

TABLE 3 — DESCRIPTIVE STATISTICS

	Mean	Std. Dev.	Min.	Max.
Percentage lease incentives	0.082	0.117	0.000	0.414
Effective initial rent per m ²	169.81	82.88	30.32	519.79
Size transaction (m ²) ^a	1711.11	2385.83	500	22122
Travel time to highway (minutes) ^a	4.24	2.86	0.27	12.30
Walking dist. to station (meters) ^a	1589.64	940.90	4.14	6015
Walkscore (1-100) ^a	75.67	16.30	27	100
Landlord (institutional/private) ^b	0.60			
Advisor tenant (only) ^c	0.07			
Advisor tenant	0.64			
Advisor landlord (only) ^c	0.23			
Advisor landlord	0.86			
Advisor both ^c	0.61			
No advisor (reference cat.) ^c	0.08			
Contract < 37 months (ref. cat.)	0.14			
Contract 37 to 84 months	0.68			
Contract > 84 months	0.17			
Dummy single tenant	0.28			
Dummy high building (>5 stories)	0.44			
Construction year < 1900 (ref. cat.)	0.11			
Construction year 1900-1949	0.15			
Construction year 1950-1969	0.16			
Construction year 1970-1989	0.17			
Construction year 1990-1999	0.20			
Construction year ≥ 2000	0.21			
Dummy Center	0.22			
Dummy Zuidoost (southeast)	0.14			
Dummy Westelijke Tuinsteden	0.09			
Dummy Teleport Sloterdijk	0.09			
Dummy Zuid (south)	0.25			
Dummy Other areas (ref cat.)	0.21			
D2002 (ref. cat.)	0.11			
D2003	0.09			
D2004	0.10			
D2005	0.08			
D2006	0.12			
D2007	0.14			
D2008	0.10			
D2009	0.07			
D2010	0.08			
D2011	0.09			
D2012	0.02			
Period		2002-2012		
Number of observations		409		

Notes: Some variables (indicated with an indentation) are not directly used in the empirical analysis, but do contain important information about the sample. In case of multiple dummy variables the reference category is also stated. The advisor tenant/landlord (only) dummy variables are one in case either the tenant or landlord uses an advisor, but not the other party. a) The logarithmic variables are used in the regression analysis. b) Based on 318 observations. c) Based on 124 observations.

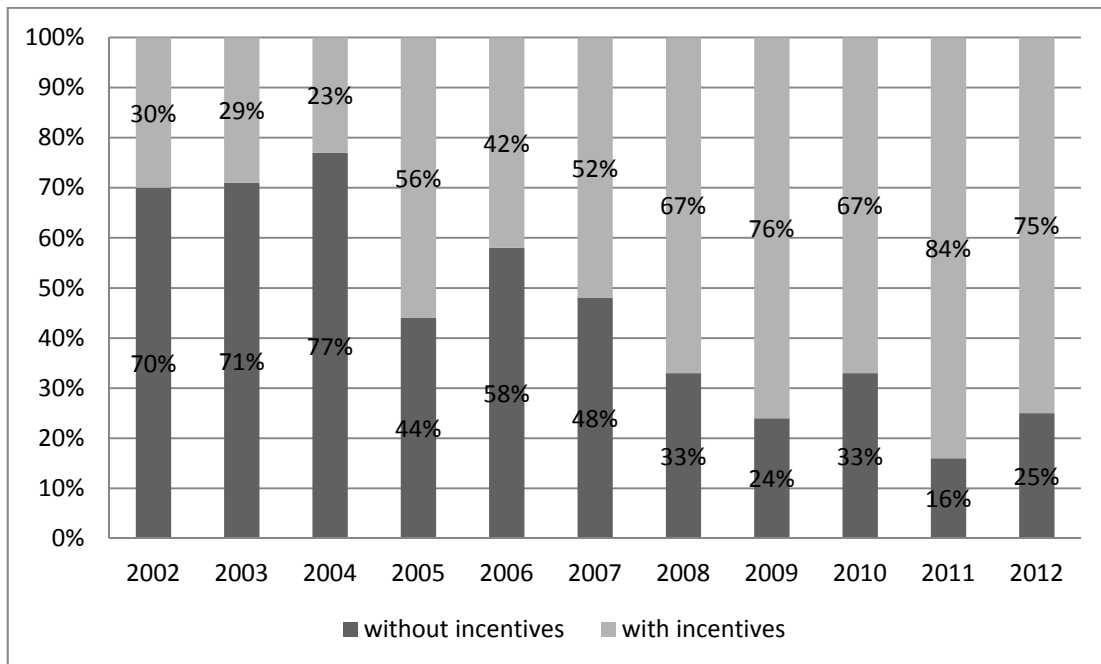


FIGURE 4 — TRANSACTIONS WITH AND WITHOUT INCENTIVES



FIGURE 5 — AVERAGE LEASE INCENTIVES OVER TIME

C. Sample selection, the type of landlord, and the presence of advisors

Although there are 409 observations about lease incentives, the type of landlord and the advisor indicators are, unfortunately, only available for a subsample of the data. As long as the sample selection is based on the independent variables (i.e. construction year, location)

we would not expect our results to be biased as we will control for those variables. However, if high lease incentives are underreported (see Figure 6 for the distribution of observed lease incentives) it might lead to sample selection bias.

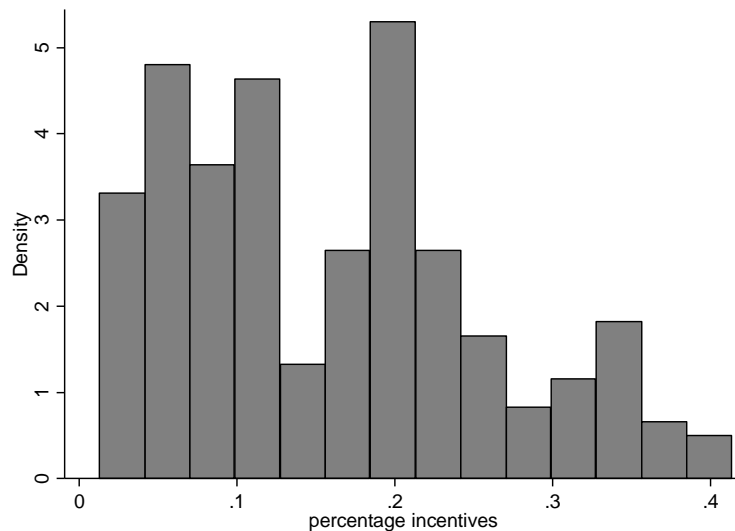


FIGURE 6 —DISTRIBUTION OF LEASE INCENTIVES

For example, the institutional landlord/private landlord variable is only available for 318 observations. If higher lease incentives are given by institutional landlords (in comparison to private landlords) and these lease incentives are not reported the effect of institutional landlords on lease incentives is underestimated. The descriptive statistics in Table 3 shows that, for those cases where the type of landlord is not missing, about 60 percent of the rental agreements are by an institutional landlord. To give a better idea about the type of properties and contracts offered by different types of landlords, Table 4 contains the descriptive statistics for private and institutional landlords. First, and foremost, there are no noticeable (or statistically significant) differences between the total sample and subsample for which the type of landlord variable is nonmissing. Second, lease incentives given by institutional landlords are much higher (11.7 percent) than those given by private landlords (3.8 percent). An important difference that can explain this effect is that the size of the transaction in square meters is much lower for private landlords. For those transactions, less lease incentives are typically given. Also, private landlords in our sample seem to rent out smaller office buildings. This is evident by the relatively high share of single tenants (41 percent) and low share of high rise buildings they rent out (only 25 percent). By contrast, the buildings rented out by private landlords are further away from highways and train stations, and are typically older buildings located in the center of Amsterdam. The question is whether, *ceteris paribus* on these differences, there is still an effect of the type of landlord

TABLE 4 — DESCRIPTIVE STATISTICS: INSTITUTIONAL VERSUS PRIVATE LANDLORDS

	Mean (total)	Mean (subsample)	Mean (inst.)	Mean (private)
Percentage lease incentives	0.082	0.085	0.117	0.038
Effective initial rent per m ²	169.81	173.25	172.29	174.68
Size transaction (m ²) ^a	1711.11	1801.83	2181.44	1238.35
Travel time to highway (minutes) ^a	4.24	4.24	3.19	5.79
Walking dist. to station (meters) ^a	1589.64	1548.03	1315.7	1892.9
Walkscore (1-100) ^a	75.67	75.64	71.67	81.52
Landlord (institutional/private) ^b	0.60	0.60	1.00	0.00
Advisor tenant (only) ^c	0.07	0.08	0.04	0.14
Advisor tenant	0.64	0.64	0.71	0.52
Advisor landlord (only) ^c	0.23	0.23	0.23	0.23
Advisor landlord	0.86	0.85	0.91	0.76
Advisor both ^c	0.61	0.62	0.70	0.49
No advisor (reference cat.) ^c	0.08	0.07	0.03	0.14
Contract < 37 months (ref. cat.)	0.14	0.14	0.13	0.17
Contract 37 to 84 months	0.68	0.67	0.66	0.68
Contract > 84 months	0.17	0.19	0.21	0.15
Dummy single tenant	0.28	0.27	0.18	0.41
Dummy high building (>5 stories)	0.44	0.48	0.63	0.25
Construction year < 1900 (ref. cat.)	0.11	0.09	0.01	0.23
Construction year 1900-1949	0.15	0.13	0.05	0.24
Construction year 1950-1969	0.16	0.16	0.16	0.16
Construction year 1970-1989	0.17	0.19	0.23	0.13
Construction year 1990-1999	0.20	0.21	0.28	0.10
Construction year ≥ 2000	0.21	0.22	0.28	0.14
Dummy Center	0.22	0.23	0.13	0.39
Dummy Zuidoost (southeast)	0.14	0.16	0.23	0.06
Dummy Westelijke Tuinsteden	0.09	0.09	0.10	0.07
Dummy Teleport Sloterdijk	0.09	0.10	0.14	0.05
Dummy Zuid (south)	0.25	0.25	0.24	0.27
Dummy Other areas (ref. cat.)	0.21	0.17	0.17	0.16
D2002 (ref. cat.)	0.11	0.10	0.08	0.14
D2003	0.09	0.08	0.07	0.11
D2004	0.10	0.10	0.08	0.13
D2005	0.08	0.09	0.09	0.10
D2006	0.12	0.12	0.12	0.13
D2007	0.14	0.13	0.16	0.09
D2008	0.10	0.11	0.11	0.10
D2009	0.07	0.07	0.09	0.03
D2010	0.08	0.08	0.08	0.07
D2011	0.09	0.09	0.11	0.08
D2012	0.02	0.02	0.02	0.03
Number of observations	409	318	190	128

Notes: Some variables (indicated with an indentation) are not directly used in the empirical analysis, but do contain important information about the sample. In case of multiple dummy variables the reference category is also stated. The advisor tenant/landlord (only) dummy variables are one in case either the tenant or landlord uses an advisor, but not the other party. a) The logarithmic variables are used in the regression analysis. b) based on 318 observations. c) based on 124 observations.

on lease incentives. If so, this would be in line with a more behavioral economic interpretation in which institutional landlords are more inclined to give lease incentives because they (asset managers) are not directly dependent on the financial outcome of giving high lease incentives.

A similar story about potential selection effects applies to the presence of advisor variables. About 64 percent of the tenants used an advisor when negotiating a contract and this percentage is 86 percent for the landlord. It is not strange that a lot of landlords use an advisor because, as mentioned, we only have information about new tenants (not contract renewals). These percentages are, however, cumulative totals and are not conditional on whether the other party uses an advisor. In particular, only 7 percent of the tenants use an advisor conditional on the landlord not using an advisor. By contrast, 23 percent of the landlords use an advisor conditional on the tenant not using an advisor. In about 61 percent of the cases both the tenant and landlord use an advisor. Finally, 8 percent of the landlords and tenants negotiate the lease contract without using an advisor at all. We are particularly interested to find out whether there are differences in lease incentives among those four categories.

An important issue is that these variables are only nonmissing for 124 transactions, which is admittedly far from ideal. Table 5 shows the descriptive statistics for the subsample of nonmissing observations and for the ‘presence of advisor’ categories. The descriptive statistics for the subsample of 124 observations are remarkably similar to the full sample. Only the percentage lease incentives and the size of the transaction seem to be considerably higher. To the extent the higher lease incentives in the subsample are due to a higher size of the transaction, controlling for the transaction size in the regression model should account for this issue. A potential problem arises when higher lease incentives 1) determines whether the presence of advisor variables have missing observations and 2) lease incentives results in self-selection (advisors are not randomly assigned to landlords and tenants) across the four categories. Since the presence of advisor variables are from an independent source (not from the tenant survey), the first case seems unlikely. The second case is, however, a more difficult one as it directly relates to causality and exogeneity of the presence of advisor variables. To the extent the differences among the four presence of advisor categories are not dependent on the amount of lease incentives, the estimation results should not be affected. This relates to the more fundamental question whether an advisor (market information) is more valuable in case the stakes are higher. To some extent Granger causality may apply as lease incentives are determined after the choice to hire an advisor. Against this argument, if expected lease incentives determine the choice to hire an advisor and expected lease incentives are somewhere along the line realized, the effect of the advisor variables on lease incentives captures an association, but not a causal relationship. If anything, the discussion above implies that the results should be interpreted with caution.

TABLE 5 — DESCRIPTIVE STATISTICS: PRESENCE OF AN ADVISOR

	Mean (total)	Mean (subsmpl.)	Mean (adv. tenant)	Mean (adv. landlord)	Mean (both adv.)	Mean (no adv.)
Perc. lease incentives	0.082	0.131	0.198	0.038	0.168	0.055
Eff. initial rent per m ²	169.81	177.67	171.31	184.25	173.96	192.51
Size transaction (m ²) ^a	1711.11	1959.8	2348.52	1996	1902.22	1942.6
Trav. time to highw. (min.) ^a	4.24	4.01	3.94	3.77	3.95	5.20
Walking dist. to station (m.) ^a	1589.64	1499.75	1652.23	1552.96	1356.11	2299.84
Walkscore (1-100) ^a	75.67	73.84	68.78	71.21	75.33	74.7
Landlord (inst./private) ^b	0.60	0.62	0.33	0.62	0.70	0.25
Advisor tenant (only) ^c	0.07	0.07	1.00	0.00	0.00	0.00
Advisor tenant	0.64	0.69	1.00	0.00	1.00	0.00
Advisor landlord (only) ^c	0.23	0.23	0.00	1.00	0.00	0.00
Advisor landlord	0.86	0.85	0.00	1.00	1.00	0.00
Advisor both ^c	0.61	0.61	0.00	0.00	1.00	0.00
No adv. (reference cat.) ^c	0.08	0.08	0.00	0.00	0.00	1.00
Contract < 37 m. (ref. cat.)	0.14	0.10	0.00	0.10	0.13	0.00
Contract 37 to 84 m.	0.68	0.69	0.78	0.76	0.64	0.80
Contract > 84 m.	0.17	0.20	0.22	0.14	0.22	0.20
Dum. single tenant	0.28	0.25	0.44	0.34	0.16	0.50
Dum. high build. (>5 stories)	0.44	0.48	0.33	0.31	0.58	0.40
Constr. yr < 1900 (ref. cat.)	0.11	0.15	0.11	0.17	0.13	0.20
Constr. yr 1900-1949	0.15	0.08	0.22	0.00	0.07	0.30
Constr. yr 1950-1969	0.16	0.12	0.00	0.10	0.13	0.20
Constr. yr 1970-1989	0.17	0.18	0.33	0.24	0.14	0.10
Constr. yr 1990-1999	0.20	0.16	0.11	0.34	0.11	0.10
Constr. yr ≥ 2000	0.21	0.31	0.22	0.14	0.42	0.10
Dum. Center	0.22	0.20	0.22	0.21	0.20	0.20
Dum. Zuidoost (southeast)	0.14	0.22	0.22	0.34	0.20	0.00
Dum. Westelijke Tuinsteden	0.09	0.08	0.00	0.10	0.09	0.00
Dum. Teleport Sloterdijk	0.09	0.10	0.00	0.14	0.08	0.20
Dum. Zuid (south)	0.25	0.27	0.44	0.07	0.32	0.40
Dum. Other areas (ref. cat.)	0.21	0.13	0.11	0.14	0.12	0.20
D2002 (ref. cat.)	0.11	0.06	0.11	0.14	0.01	0.20
D2003	0.09	0.10	0.11	0.07	0.11	0.10
D2004	0.10	0.09	0.00	0.10	0.07	0.30
D2005	0.08	0.09	0.00	0.10	0.11	0.00
D2006	0.12	0.10	0.22	0.17	0.08	0.00
D2007	0.14	0.08	0.00	0.07	0.09	0.10
D2008	0.10	0.11	0.22	0.17	0.08	0.10
D2009	0.07	0.07	0.11	0.03	0.09	0.00
D2010	0.08	0.12	0.00	0.14	0.12	0.20
D2011	0.09	0.15	0.22	0.00	0.21	0.00
D2012	0.02	0.02	0.00	0.00	0.04	0.00
Number of observations	409	124	9	29	76	10

Notes: Some variables (indicated with an indentation) are not directly used in the empirical analysis, but do contain important information about the sample. In case of multiple dummy variables the reference category is also stated. The advisor tenant/landlord (only) dummy variables are one in case either the tenant or landlord uses an advisor, but not the other party. a) The logarithmic variables are used in the regression analysis. b) based on 318 observations. c) based on 124 observations.

Given these considerations, an interesting pattern emerges when examining lease incentives across the four categories (see Table 5). If a tenant uses an advisor and the landlord does not the lease incentives (19.8 percent) are higher than the average lease incentives (13.1 percent). In case a landlord uses an advisor and the tenant does not, the lease incentives are considerably lower (3.8 percent). If both the tenant and landlord use an advisor the lease incentives (16.8 percent) are in between the previous two cases and get close to the average lease incentives. If both parties do not use an advisor the lease incentives (5.5 percent) are below the average, but above the case in which the landlord uses an advisor. These initial outcomes seem to make sense and are in line with the idea that using an advisor (market information) determines bargaining outcomes. Whether this pattern holds when controlling for building and other characteristics is mainly an empirical question. We will show that especially the latter effect (no advisors) is different than the pattern observed in the raw data. We find that, after including a substantial amount of control variables, the effect is not statistically different from the case in which both parties use an advisor. To give an example that explains these differences in findings, the distance to the nearest railway station is relatively high for the no advisor category which explains part of the deviation (lower lease incentives) from the average, but conditional on this effect the lease incentives would be closer to the average.

To conclude, given the number of missing observations an important part of the empirical strategy will be to use several subsamples and to compare the results. Although it might be difficult to accurately (small sample) and correctly (zero lease incentives, missing observations, self-selection, underreporting of high lease incentives) estimate the effect of the type of landlord and the advisor variables on lease incentives, the analysis still provides us with an important perspective on the functioning of the commercial real estate market.

D. Other determinants of lease incentives

We also include a variety of other variables. In particular, the size of the transaction is on average 1,000 m². If a tenant rents more office space we would expect that he receives a higher discount on the rent. The average travel time to the nearest highway ramp is about 4 minutes and takes into account the impact of traffic lights and congestion. The walking distance to the nearest train station is about 1.5 km. The google walk score is on average 75 and is a measure of nearby amenities. Not surprisingly, in some transactions in the center of Amsterdam the google walk score is a perfect 100. The size of the transaction, the travel time to the nearest highway ramp, the walking distance to the nearest train station, and the google walk score are all included in logarithmic form in the regression analysis. The (in)accessibility measures are expected to have a positive effect on the level of lease incentives. A higher google walk score should have a negative effect.

The majority of rental contracts are between 37 months and 84 months. This is not surprising as it is common practice to have a 5 year rental agreement. We would expect that

for a longer rental agreement more incentives are given. In 28 percent of the transactions a single tenant (more than 90 percent of the space rented by a single tenant) rented the office space. This seems like a lot, but in the center of Amsterdam there are relatively small office spaces which is relatively easily rented by a single tenant. Having a single tenant is easier (lower administrative costs) to manage than a multitenant building. Hence, we would expect higher lease incentives in case the tenant rents the whole building. On the other hand, if a tenant goes bankrupt or leaves, it is more of a risk to own such a building. Hence, there are countervailing forces at work, the effect of the single tenant dummy is thus mainly an empirical question. About 44 percent of the tenants rent office space in a high-rise building (more than 5 stories high). Since there is a higher probability of panoramic view (landmark effect, see Koster, 2014, Fuerst, 2007, Shilton and Zaccaria, 1994) this variable should have a negative effect on lease incentives.

About 41 percent of the observations are based on buildings which were built after 1990. It should be easier to attract tenants (less lease incentives) in case a building is relatively new. With regard to location, most rental contracts are from the Amsterdam Zuid office location and the lowest lease incentives are in the center of Amsterdam. Finally, the number of signed contracts decreased substantially during the crisis. Bond (1994) discusses that after vacancy levels peak, incentive levels should peak, and this eventually affects rental rates and vacancy rates. As such, it is important to see whether such a boom-bust pattern in lease incentives indeed exists based on the regression evidence.

III. Methodology

As mentioned, in this paper only the rent-free period or rent discount are measured. To calculate the lease incentives, first, the net present value $NPV_{contract,it}$ of the annual rent (full contract duration) is calculated for contract i signed in year t . Subsequently, the present value, $NPV_{corrected\ for\ incentives,it}$, is calculated corrected for incentives. The (initial) rents are indexed by inflation $infl$, in the rental agreement this is typically based on the consumer price index of all households, and discounted using the discount rate r :

$$NPV_{contract,it} = \sum_{t=1}^T Initial\ rent_{it} (1 + infl)^t / (1 + r)^t \quad (1)$$

Subsequently, the percentage incentives are calculated as

$$Lease\ incentives_{it} = (NPV_{contract,it} - NPV_{corrected\ for\ incentives,it}) / NPV_{contract,it} \quad (2)$$

The discount rate is assumed to be equal to the risk free rate (rent on 10 year bonds) corrected for the average inflation in the preceding 5 years (CPI with basis year 2006). The average discount rate we used was 2.1 percent, with the highest discount rate in 2008 (2.4 percent) and lowest in 2006 (1.7 percent). The incentives measure we use is basically a

summary measure that already incorporates the potential differences in risk (discount rate) associated with the rental cash flows. Moreover, for a less solvable tenant the incentives may be spread over the rental term to reduce the risk. A solvable landlord like the government or a stock market listed company might be more prepared to give higher initial lease incentives. Such timing consideration may well be important, but are aggregated in our measure of lease incentives.

The following regression model is estimated:

$$Lease\ incentives_{it} = \beta_0 + \beta_1 Landlord_{it} + \beta_2 Advisor\ dummies_{it} + \beta_3 Controls_{it} + \varepsilon_{it} \quad (3)$$

where $Landlord_{it}$ is the binary institutional or private landlord indicator and $Advisor\ dummies_{it}$ are the three presence of advisor indicators with ‘no advisors’ as reference category, $Controls_{it}$ includes all of the other variables such as contract-specific characteristics and building characteristics mentioned in the previous section, and ε_{it} is the error term. Because we use the percentage incentives as dependent variable, the interpretation of the coefficients is in percentage points.

Several versions of equation (3) are estimated. First, a base model including only the control variables is estimated on the full sample of 409 observations using OLS. Since the percentage lease incentives cannot be negative (corner solutions) and there is a substantial amount of observations with zero lease incentives the estimates may be biased. To correct for this, the second step is to estimate a Tobit regression model.⁵ Because the marginal effects are nonlinear in this case we recalculate the marginal effects based on the estimates evaluated at the average of the independent variables. The marginal effects also depend on whether the interest lies in total lease incentives, latent lease incentives, or incentives conditional on the incentives being positive. As is common, we report the latter marginal effects. Subsequently, we estimate the model using the type of landlord variable, the presence of advisor variables, and both of them together. We also present several extensions in which we interact the advisor variables with the contract size, lease term, and economic cycle. To capture at least some of the potential spatial effects in the data, we cluster the standard errors at the submarket (location) level.

IV. Results

A. Accessibility, contract length, and the economic cycle

Table 6 reports the regression results based on equation (3). Column 1 and 2 show the regressions estimates of the model based on OLS and Tobit. In the OLS model about 34 percent of the variation in lease incentives is explained by the set of independent variables. Both regression model estimates show a similar pattern although the size of the coefficient

⁵The zero lease incentives are not missing observations (but actual zeros). As such, we use the Tobit model not the Heckman sample selection model.

estimates and the statistical significance seems to differ somewhat. This is an indication that it is important to use the Tobit model to correct for left censoring. Consequently, in this section, the focus lies on the Tobit estimates.

The Tobit estimates (see column 2) suggest that the size of the transaction does not have a statistically significant effect on the offered lease incentives. We would have expected to see more incentives in case of larger transactions. By contrast, a decrease in accessibility does have an effect on lease incentives. In particular, a one percent increase in the travel time to the nearest highway ramp and conditional on receiving a positive incentive decreases lease incentives by 1.4 percentage points. Similarly, a one percent increase in the distance to the nearest train station decreases incentives by one percentage point. Both of these effects are counterintuitive. We would have expected an opposite sign. A potential reason is that these variables pick up the effect of location. In particular, the regression estimates suggest that there are no large differences in lease incentives across general office locations in Amsterdam. Only in the area 'westelijke tuinsteden' the lease incentives are disproportionately higher than the 'other areas' category. Apparently, the location effect is captured by the other variables like building characteristics, but also the accessibility measures. An alternative explanation is that only offices that are of pristine quality get rented out if it has a low accessibility. This could lead to a negative coefficient on the (in)accessibility measures.^{6 7} Finally, the google walk score does seem to have the correct sign, but is not statistically significant. In some of the subsamples (i.e. column 4 and 5) it seems to have a positive effect, but this is most likely the result of sample selection.

Interestingly, taller buildings seem to be associated with higher lease incentives (about 2.7 percent) and the effect is highly statistically significant. This is, however, the average effect and it might be that for offices with panoramic view less lease incentives are being offered. In addition, not all tall office buildings are necessarily landmarks. The highest building in Amsterdam (Rembrandtoren) is only 135 meters high and has 35 floors. By contrast, the highest building in Manhattan (One World Trade Center) is 541 meters high and has 94 floors. It is important to keep those differences in mind when interpreting the results.

If a tenant is willing to hire a majority of the office space within a building (single tenant dummy), there is a negative effect on lease incentives, although not statistically significant (in case of the OLS estimates, only at the 10 percent level), and in the later specifications the

⁶We also tried a binary measure of train/highway accessibility but it still resulted in coefficient estimates of the wrong sign.

⁷Some subsample analyses show that the negative coefficient estimates seem to predominately cluster in the center of Amsterdam and Amsterdam Zuid. The center of Amsterdam is highly desirable as office location (low incentives), but also not very accessible by train or car. Moreover, the offices in Amsterdam Zuid that are further away from highways or the train station are typically of very high quality (low lease incentives).

TABLE 6 — REGRESSION RESULTS
 (DEPENDENT VARIABLE: PERCENTAGE LEASE INCENTIVES)

	(1)	(2)	(3)	(4)	(5)
	Base model (OLS)	Base model (Tobit)	Type of landlord (Tobit)	Advisor variables (Tobit)	Landlord & advisor (Tobit)
Landlord (inst./priv.)			0.031*** (0.003)		0.103*** (0.027)
Advisor tenant				0.071* (0.041)	0.061 ^a (0.039)
Advisor landlord				-0.090*** (0.028)	-0.162*** (0.035)
Both advisor				0.027 (0.036)	-0.013 (0.043)
Log size trans.	0.002 (0.004)	-0.002 (0.003)	-0.003 (0.002)	-0.007 (0.012)	-0.005 (0.011)
Log time to highway	-0.026*** (0.006)	-0.014** (0.006)	-0.008 (0.011)	-0.006 (0.005)	0.001 (0.011)
Log dist. to trainst.	-0.017** (0.006)	-0.010*** (0.003)	-0.009*** (0.002)	-0.004 (0.006)	0.004 (0.008)
Log walkscore	0.005 (0.033)	-0.028 (0.020)	-0.035 (0.028)	0.079** (0.039)	0.162*** (0.046)
High building	0.036*** (0.008)	0.027*** (0.008)	0.028** (0.011)	0.035** (0.016)	0.023 (0.015)
Single tenant	-0.018* (0.007)	-0.010 (0.008)	-0.009 (0.006)	0.042*** (0.008)	0.055*** (0.013)
Contract 37 to 84	0.025* (0.010)	0.029*** (0.009)	0.038*** (0.014)	0.054*** (0.013)	0.064*** (0.017)
Contract >84	0.015 (0.020)	0.029* (0.016)	0.038** (0.017)	0.043** (0.022)	0.057*** (0.011)
Const.yr 1900-1949	0.006 (0.009)	0.005 (0.008)	0.002 (0.007)	-0.010 (0.009)	-0.041 (0.027)
Const.yr 1950-1969	-0.030 (0.017)	-0.026** (0.012)	-0.054*** (0.010)	0.010 (0.021)	-0.017 (0.022)
Const.yr 1970-1989	-0.015 (0.014)	-0.017* (0.010)	-0.038*** (0.007)	0.049*** (0.016)	-0.013 (0.022)
Const.yr 1990-1999	-0.020 (0.017)	-0.018** (0.009)	-0.041*** (0.007)	0.051* (0.027)	-0.008 (0.026)
Const.yr ≥ 2000	0.021 (0.021)	0.004 (0.013)	-0.019** (0.009)	0.068*** (0.022)	0.006 (0.027)
Center	0.011 (0.014)	0.013 (0.011)	0.017*** (0.004)	-0.006 (0.012)	-0.011 (0.007)
Zuidoost (southeast)	0.011 (0.008)	0.004 (0.004)	0.008 (0.005)	0.020*** (0.004)	0.035*** (0.010)
Westelijke Tuinst.	0.042*** (0.007)	0.028*** (0.004)	0.043*** (0.009)	0.022 (0.028)	0.088*** (0.026)
Teleport Sloterdijk	-0.005 (0.011)	-0.003 (0.006)	-0.001 (0.011)	0.024 (0.016)	0.062*** (0.011)
Zuid (south)	0.007 (0.014)	0.009 (0.009)	0.012 (0.010)	-0.031*** (0.012)	-0.013 (0.009)
2003	0.011 (0.011)	0.004 (0.012)	0.004 (0.012)	-0.008 (0.008)	-0.042* (0.024)

2004	0.000 (0.022)	-0.010 (0.020)	-0.017 (0.026)	-0.035 (0.023)	-0.087*** (0.027)
2005	0.043* (0.019)	0.036*** (0.014)	0.034*** (0.012)	0.035 (0.032)	-0.009 (0.038)
2006	0.045 (0.026)	0.032* (0.019)	0.033 (0.023)	0.061 (0.053)	0.032 (0.049)
2007	0.050* (0.022)	0.040*** (0.014)	0.026 (0.020)	0.038 (0.037)	-0.020 (0.028)
2008	0.070* (0.028)	0.053*** (0.015)	0.048*** (0.017)	0.041 (0.044)	0.051 (0.035)
2009	0.127** (0.045)	0.083*** (0.023)	0.084*** (0.024)	0.143*** (0.032)	0.111*** (0.016)
2010	0.086 (0.048)	0.058** (0.027)	0.060* (0.032)	0.099** (0.046)	0.072** (0.037)
2011	0.144*** (0.027)	0.087*** (0.012)	0.095*** (0.013)	0.099*** (0.033)	0.056* (0.032)
2012	0.121** (0.039)	0.080*** (0.020)	0.072*** (0.017)	0.109** (0.047)	0.077* (0.043)
Observations	409	409	318	124	112
Adj. R-squared	0.34	-	-	-	-
Left-censored	-	198	159	39	35
Log pseudolikelihood	-	9.30	8.76	64.68	66.72

Notes: ***, **, *, a significance at 1%, 5%, 10%, and 15%, respectively. Clustered (at office market location) standard errors in parentheses. The coefficient estimates in column 2-5 are the marginal effects conditional on positive incentives and evaluated at the mean of the independent variables.

effect is even positive, suggesting that the results here are ambiguous at best. The lease term has a positive effect on lease incentives. In particular, a lease term equal to or more than 3 years leads to 2.9 percentage points higher lease incentives. Interestingly, the coefficient on the 37 to 84 months category is not different from the more than 84 months category suggesting there is no evidence for either a diminishing or an increasing effect. The linearity of the effect depends on the way future cash flows are valued. A landlord might for example be willing to pay an additional premium if he would expect that it is relatively valuable to have a long term tenant (i.e. difficult to find a new tenant). In that respect, the Amsterdam office market is a relatively liquid market, such that this may be less relevant, although as mentioned earlier the market liquidity has varied substantially over time (i.e. see Figure 2).

Regarding the construction year, tenants in newer buildings get less lease incentives although there is quite some variation in this effect and for buildings build before 1950 or after 2000 this effect does not seem to hold. Interestingly, buildings that were constructed between 1950 and 1969 get the lowest lease incentives and are, apparently, regarded as the most desirable buildings. These findings are suggestive of vintage effects. Finally, the results in Table 6 suggest that during the financial crisis higher lease incentives were given (Chi-squared of 10.5, before 2009 versus after 2008) most likely to compensate for higher vacancy rates in the office market. The increase in lease incentives, however, seems to have already started before the crisis suggesting that this possibly has been a development that

started earlier. There is also quite some variation during the financial crisis period, although the coefficients after 2008 are not statistically significantly different from each other (Chi-squared of 4.1).

Overall, it is evident that the data and the baseline results are not as clear cut as we would normally expect to find while using for example residential data. In part, this reflects the quality of the data, in part the heterogeneity within the office market. Nevertheless, already some of the simple patterns we find in this dataset are quite valuable as there is simply not much empirical evidence about the functioning of the office market regarding this particular topic.

B. The type of landlord and the effect of advisors on lease incentives

The effect of the type of landlord on lease incentives is reported in column 3. As mentioned, the number of observations drops. The results discussed in the previous section, however, still seem to hold. The regression estimates in column 3 suggest that, *ceteris paribus* on building characteristics, an institutional landlord provides about 3.1 percentage points more incentives to tenants than a private landlord. As mentioned, an institutional landlord (like the government) might care less about lease incentives as those incentives are typically given by asset managers who are not directly financially dependent on the amount of incentives that are given, but are hired to ensure that the building is actually rented out. If this difference would be perfectly clear to market participants resulting in arbitrage, such differences should not exist. The market for offices is, however, highly intransparent and there are substantial search and transactions costs involved with finding an office (signing a lease contract). It would be interesting to examine in more detail what type of tenants decide to rent from public landlords as this could explain part of the effect. The results do suggest that there are differences in the underlying incentives to provide rent discounts.

Regarding the advisor variables, column 4 contains the Tobit estimates. Of course, these results should be interpreted with caution as they are only based on about 30 percent of the full dataset. Although most of the variables show a similar sign as before, we do see some variables for which the coefficient estimates are notably different (i.e. see the walking score variable, construction year, and some of the office market location coefficients). The results do show an interesting pattern regarding the advisor variable though. An advisor on the side of the tenant, without an advisor at the side of the landlord, has a positive effect on lease incentives of about 7.1 percentage points. This effect is only statistically significant at the 10 percent significance level. This result is in line with the idea that an advisor is valuable for a tenant from the perspective of increasing lease incentives. By contrast, if a landlord hires an advisor lease incentives are about 9.0 percentages points lower. Note that although this is somewhat higher than the effect for tenants, the difference is not statistically significantly different from zero (Chi-squared of 0.08). A priori, we would have expected that the effect is higher for tenants. Tenants have less information about the

market and building than a landlord who owns the building and possibly also other similar buildings. It might be that an advisor is less willing to work for a tenant than for a landlord or that a tenant is less able to benefit from the knowledge of an advisor. On the other hand, since we are looking at new lease contracts, tenants might be spending more effort in search for office space and relevant market information. It is difficult to exactly determine what is underlying these effects.

Interestingly, if both the tenant and landlord hire an advisor there is a positive, but statistically insignificant, 2.7 percentage point effect on lease incentives. It suggests that either tenants are more to gain from hiring an advisor, but we inaccurately measure the effect, or the competitive forces in the market are such that the information given by advisors are equally valuable (in terms of bargaining power) for both landlords and tenants. The latter explanation is more in line with the marginal effects for the ‘advisor landlord only’ and ‘advisor tenant only’ categories. We would have expected that tenants are more informationally disadvantaged (information asymmetry in favor of the landlord) and as such would gain the most from having an advisor. It might also be that tenants in the Amsterdam office markets have easy access to the same market information as landlords (or are professional enough to acquire such information) and, as such, are not as informationally disadvantaged as commonly asserted. However, the fact that the difference between both advisor indicators is relatively small (and there are substantial costs of hiring an advisor) suggests that hiring advisor is, although maybe rational, not necessarily the most beneficial outcome. The problem of this prisoner’s dilemma situation is that both the tenant and landlord cannot credibly promise not to use an advisor. As such, the majority of landlords and tenants end up hiring an advisor just to make sure that they have the relevant market information to close a beneficial deal. Of course, an advisor may also help in ensuring the deal goes smoothly (i.e. search for tenants, checking lease contracts, etc.) and, as such, may be valuable on different aspects than just providing assistance with negotiating lease incentives.

Finally, column 5 includes both the type of landlord variable and the advisor variables. Since the number of available observations decreases even further, it is clear that these estimates are at the boundary of what is still a feasible model to estimate.⁸ The results show that the type of landlord effect increases to 10 percentage points and especially the advisor for the landlord variable increases to 16 percentage points. Although it is evident that these results should be taken with a grain of salt, the key point is that the pattern regarding the landlord and advisor variables remains the same. A public landlord offers more lease

⁸ Especially in this final model the number of observations decreases substantially, while we do estimate a substantial amount of parameters. We also reestimated all regression models using a more parsimonious model with year, year squared, construction year, construction year squared. The main results are very similar.

incentives and hiring an advisor is beneficial in terms of lease incentives for both the landlord and tenant, except when both of them hire an advisor.

C. The role of advisors: contract size, lease term, and economic cycle

Finally, this section discusses several extensions (of the estimates in Table 6, column 4) that examine the heterogeneity in the effect of the advisor variables on lease incentives. In particular, we interacted the advisor variables with a large transaction size dummy (i.e. more than 3500 m², top 10 percentile), a long lease term dummy (more than 84 months), and a crisis dummy (i.e. years 2009-2012). We would expect that an advisor can give an additional advantage to tenants in terms of bargaining in case the stakes for the landlord are high (i.e. large transaction, long lease term, economic bust). An economic bust might also lead to more bargaining power for landlords. The results are summarized in Table 7.

Column 1 shows that the interaction variables with the transaction size dummy are neither individually or jointly statistically significant. However, there are some interesting patterns observed in the joint effects (main effect plus interaction effect). In particular, in case of large transactions, if the tenant uses an advisor but the landlord does not, the lease incentives are 10.7 percentage points higher than when both do not use the services of an advisor. By contrast, this effect is -5.3 percentage points (the effect is attenuated downward by the interaction terms) in case of the landlord. Unfortunately, the difference between both (absolute) effects is not statistically significant. The results do seem to be in line with the idea that especially the tenant (with his advisor) is able to take advantage when the lease contract involves a large lease size.

A very similar story holds for a long lease term. A tenant that uses the services of an advisor realizes 9.3 percentage points higher lease incentives in case of a long lease term, although this effect is not statistically significant at standard significance levels. For landlords this is only -5.0 percentage points. The difference between landlords and tenants is again not statistically significant. Interestingly, when both use the services of an advisor and the lease term is particularly long there seems to be some weak evidence that the bargaining outcome is in favor of the tenant. In this case, a tenant receives on average 7.1 percentage points extra lease incentives.

Finally, the gap between tenants and landlords seem to widen in case of an economic bust. During an economic downturn a tenant gets 11.6 percentage points higher lease incentives after using the services of an advisor relative to not using an advisor during an economic upturn (reference category). For landlords this effect is -13.1 percentage points. Again, when both parties are using an advisor there is, from a statistical significance point of view, not much to gain in terms of lease incentives, although the negative sign suggests that, if anything, landlords might benefit most.

TABLE 7 — REGRESSION RESULTS: INTERACTION EFFECTS
(DEPENDENT VARIABLE: PERCENTAGE LEASE INCENTIVES)

	(1)	(2)	(3)
	With transaction size	With lease term	With economic cycle
Main effect			
Advisor tenant	0.068 ^a (0.043)	0.065 ^a (0.045)	0.032 (0.042)
Advisor landlord	-0.095*** (0.030)	-0.106*** (0.030)	-0.065*** (0.025)
Both advisor	0.026 (0.037)	0.001 (0.044)	0.043 (0.032)
Interaction effect			
Advisor tenant * High tr. size	0.039 (0.062)		
Advisor landlord * High tr. size	0.042 (0.053)		
Both advisor * High tr. size	0.011 (0.052)		
Advisor tenant * Long lease term		0.028 (0.062)	
Advisor landlord * Long lease term		0.056 (0.046)	
Both advisor * Long lease term		0.071* (0.043)	
Advisor tenant * Bust			0.084 (0.010)
Advisor landlord * Bust			-0.066 (0.070)
Both advisor * Bust			-0.048 (0.088)
Controls			
Building char.	YES	YES	YES
Accessibility	YES	YES	YES
Location	YES	YES	YES
Transaction year	YES	YES	YES
Institutional landlord	YES	YES	YES
Tenant size	YES	YES	YES
Observations	124	124	124
Left-censored	39	39	39
Log pseudolikelihood	15.30	15.44	16.06

Notes: ***, **, ^a significance at 1%, 5%, 10%, and 15%, respectively. Clustered (at office market location) standard errors in parentheses. The coefficient estimates are the marginal effects conditional on positive incentives and evaluated at the mean of the independent variables.

In sum, these results do seem to point towards some heterogeneity around the average effect of hiring an advisor depending on the contract size, lease term, and economic cycle. However, given the sample size the estimates are fairly inaccurate. Only in case of the lease term there seems to be some weak evidence that there are additional benefits for the tenant of hiring an advisor. Since not hiring an advisor is still costly in terms of lease incentives and there are substantial commission costs involved with hiring an advisor, the results are still in line with the prisoner's dilemma story mentioned before. Further research should examine this heterogeneity in further detail and compare the benefits with the costs of hiring an advisor.

V. Conclusion and discussion

Market information in a market where information is scarce and goods are heterogeneous is very valuable to get a good deal. This paper has provided a perspective on this issue using a unique dataset on lease incentives in the Amsterdam office market. The regression results show that the type of landlord (institutional versus private) has a statistically significant positive effect on the percentage incentives. An institutional landlord, *ceteris paribus*, offers 3 percentage points higher incentives than a private landlord. This result is in line with the broader literature on the role financial incentives play in determining real estate outcomes (e.g. Genesove and Mayer, 1997).

A private landlord rents out office space at own account and risk, while institutionally owned real estate is governed by asset managers who are allowed to rent out office space for the investor. This can be asset managers working for the investor or private asset managers. These managers typically have some leeway to act freely. A private landlord in which each month of free rent is directly visible in his financial statement might be less inclined to provide lease incentives. In addition, private landlords are, at least in part, typically financed by debt and may not be able to provide incentives because of bank covenants, but also because there may be substantial monthly (operational) costs. Finally, it may be that a private landlord has a longer investment horizon and, as such, is less affected by lower rents or a private landlord may simply not have enough liquid assets to pay for incentives.

The regression results also show that a commercial advisor at the side of the tenant increases incentives substantially. In particular, we find 7 percentage points higher incentives conditional on receiving an incentive and relative to the 'no advisors' category as benchmark. This result seems to be in line with a story in which there is information asymmetry between the landlord and tenant. Negotiating a lease is typically not a core business of a tenant. Moreover, the landlord might be more aware of current market conditions (especially since a landlord typically owns multiple buildings).

By contrast, when a landlord uses the services of an advisor it leads to lower incentives. In particular, we find a 9 percentage point lower incentive. Apparently, besides finding an

appropriate tenant, the advisor might be much better aware of the actual market situation than the landlord. Again, this is not so surprising given that the focus in this study lies on new lease contracts. Finally, advisors do not seem to have an impact on incentives if hired by both the landlord and the tenant simultaneously, although we find some weak evidence that a tenant gets more lease incentives in case of a relatively long lease term. In sum, these results are in line with a prisoner's dilemma story in which the tenant and landlord hire an advisor and pay its cost while from an incentives perspective it does not lead to much gain. More importantly, the alternative choice of not hiring an advisor comes at a substantial cost in terms of lease incentives. A landlord and tenant, however, cannot credibly promise not to use an advisor, so a strategy where both use an advisor might be a Nash equilibrium.

No research is without limitations and it is clear the data used in this study is far from ideal as the sample is relatively small, a characteristic of a thinly traded market, there are a lot of zero lease incentives, there are quite some missing observations in the type of landlord variable and the presence of advisor variables, and there is a potential for self-selection mainly across the presence of advisor categories. As such, the results should be interpreted with caution, although we did show that some of the subsamples are relatively similar in terms of underlying characteristics, the coefficient estimates seem to be fairly robust among subsamples, and we adequately controlled for the presence of zero lease incentives using Tobit regression models. Further research should focus on the commission structure of advisors, using a broader measure of lease incentives, comparing different bargaining strategies within the commercial real estate market, and examining the dynamics between market/contract rents, vacancy, and lease incentives.

Overall, the results suggest that of the many strategies, as outlined by Garmaise and Moskowitz (2004), to obtain market information and decrease potential information asymmetries a viable strategy is to hire an advisor to help with negotiating the lease contract. This holds even if from the perspective of lease incentives there is not much to gain if both the landlord and tenant hire an advisor. It might be very costly not to hire an advisor if the other party in the negotiation does have better access to market information. It also suggest that if the office market would become more transparent the role of advisors would change, we see that increasingly more in residential markets with the development of online benchmarking platforms like Zillow and increasingly detailed datasets coming available for scientific research. This trend is, however, less prevalent for commercial real estate markets as there are a variety of real estate companies that have as core business to sell market information. As such, the academic literature on commercial real estate is currently lagging behind that of residential real estate. It is evident though that more insight into the exact functioning of the commercial real estate market is of fundamental importance for landlords, tenants, and (institutional) investors. This paper shows that, to understand the commercial real estate market, we should go beyond transaction/rental prices and look in more detail at the underlying rental contracts.

Appendix A. Determinants of office rents

TABLE A1 — DETERMINANTS OF OFFICE RENTS

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	XXII	XXIII
Distance to CBD	√	√	√						√	√			√	√	√		√						
Accessibility										√			√				√		√		√		
Submarket / micro-location					√	√		√	√					√	√		√		√	√	√	√	√
Building class (A,B,C)					√								√				√			√		√	√
Building age or period	√	√	(√)			√			(√)	√		√	√	√	√	√	√	√	√	√	√	√	√
Building size	(√)	√	√		√	√			√			√	√		√		√	(√)	√		√		√
Building height	√	√						√	√				√		√		√			√			√
Parking facilities	√										√		√	√									
Environmental certification																				√			√
Energy efficiency rating																					√	√	
Lease term			(√)	√				√								√	√	√				√	
Lease size			√					√						√		√	√		√		√	√	
Vacancy/Supply				√			√																
Broker representation											√												

Notes: Within brackets are variables which are examined in the paper, but are for a variety of reasons not incorporated in the final empirical specification.

<i>I Clapp (1980)</i>	<i>VI Mills (1992)</i>	<i>XI Webb & Fisher (1996)</i>	<i>XVI Gunnelin & Söderberg (2003)</i>	<i>XXI Kok & Jennen (2012)</i>
<i>II Hough & Kratz (1983)</i>	<i>VII Clapp (1993)</i>	<i>XII Colwell et al.(1998)</i>	<i>XVII Laverne & Winson-Geideman (2003)</i>	<i>XXII Gabe & Rehm (2014)</i>
<i>III Brennan et al. (1984)</i>	<i>VIII Wheaton & Torto (1994)</i>	<i>XIII Bollinger et al. (1998)</i>	<i>XVIII Englund et al. (2004)</i>	<i>XXIII Fuerst & Van de Wetering (2015)</i>
<i>IV Wheaton & Torto (1988)</i>	<i>IX Shilton & Zaccaria (1994)</i>	<i>XIV Dunse & Jones (1998)</i>	<i>XIX Jennen & Brounen (2009)</i>	
<i>V Glascock et al. (1990)</i>	<i>X Sivitanidou (1995)</i>	<i>XV Archer & Smith (2003)</i>	<i>XX Eichholtz et al. (2010)</i>	

Appendix B. Description of main data sources

1. *Building database TU Delft*

TU Delft gathered the hedonic characteristics of office buildings in Amsterdam. These are mainly building-specific and location-specific variables like the Google Walk Score, construction and renovation year and the number of floors.

2. *GIS data – ArcGIS*

We have used the GIS program to calculate the walking distance to the nearest station and travel time to the ramp of the nearest highway. The walking distance is a better measure than the distance by car, which has been used in previous research (see Boots, 2014). Moreover, we did not use the distance to the ramp of the nearest highway, but the travel time as distance can be equal, but travel times can differ substantially.

3. *Amsterdam tax authority (DBGA)*

DBGA collects transactions data of rental agreements as part of the law WOZ (translated: 'valuing real estate'). To determine the value of a real estate object they send a questionnaire to new tenants of a building. This means that extensions of existing rental agreements are not registered. In the questionnaire information is asked about incentives, square meters, number of parking places, and the lease term.

4. *Basisregistratie Gebouwen en Adressen (BAG)*

The BAG (Basis registration addresses and buildings) contains information about all addresses and buildings in a municipality. This information is publicly available and contains data on the size of the real estate object, the construction year, and whether the object is in use.

5. *Cushman & Wakefield*

Cushman & Wakefield is a real estate advisor that collects all of the relevant information about the Amsterdam (and other) office market and analyses that information (market reports). Market information about Amsterdam, including transactions data of transactions that were guided by Cushman & Wakefield, were made available for this study.

6. *Strabo*

Strabo is a research company that is specialized in market research and real estate information. They have a transactions information system (called VTIS) which contains, amongst others, all of the relevant information about transactions of offices in Amsterdam. This is also based, in part, on information from PropertyNL and de Vastgoedmarkt. The database also contains information whether an advisor was involved with the transaction for either the landlord, tenant, or both.

Appendix C. Walking distance (train stations) and travel time (nearest highway ramp)

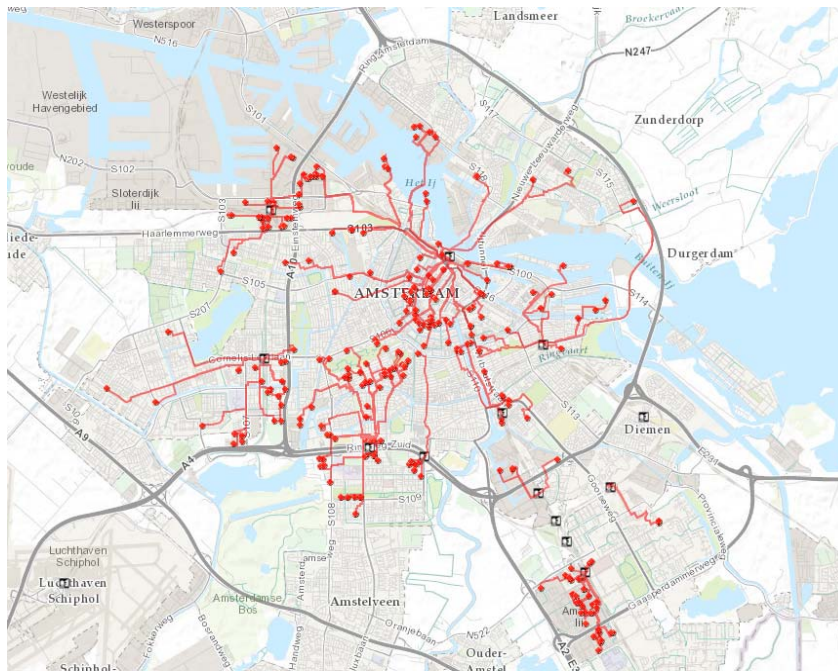


FIGURE C1 — WALKING DISTANCE TO NEAREST TRAIN STATION

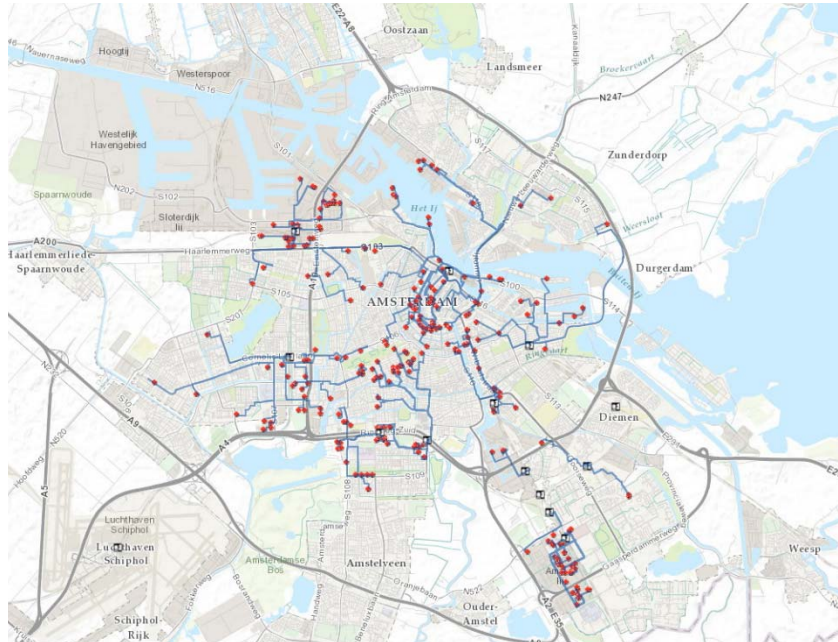


FIGURE C2 — TRAVEL ROUTES TO NEAREST HIGHWAY RAMP

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