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Renter Equity

A new housing model to make renting work better for both households and property developers

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ABSTRACT

Against the backdrop of the EU affordable housing challenges, this paper proposes a new form of housing called Renter Equity that could lower housing costs, encourage household wealth accumulation and increase property developer returns. The model works by offering tenants rent reductions for periodic equity contributions. The developer receives less money overall than in a regular rental case but obtains larger interim cashflows, leading to situations where the developer's IRR increases relative to regular renting. A high-level analysis of the model shows that rent could be decreased by 43.9% before the developer's IRR diminishes, assuming a 10-year lease with equity contributions at 100% of rent. Analyzing a rental case study in Greater Stockholm, the developer's base case 7-year IRR can increase from 16.3% to 25.5% for a forward purchase deal and from 20.1% to 26.0% for a development deal. The Renter Equity model could therefore be used to increase returns from otherwise relatively low-yielding rent-control projects and incentivize provision of affordable housing.

Keywords: *Renter Equity, Real Estate, Housing Affordability, Property Development*

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To my family, whose trials and tribulations to own a home inspired my thinking behind the model described in this paper

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"This business of ours has existed since the neolithic, and we still haven't learned"
- a Spanish property developer during a discussion on affordable housing in Europe

1. INTRODUCTION

The EU housing challenge[1], defined as an increasingly urgent need for more affordable housing in the union, is a double conundrum. The complicated duality of the challenge is that not only more housing needs to be built, it has to be done inexpensively. It is not hard to see how the first part of the equation – increasing the housing supply - is nearly impossible to achieve without a substantial involvement from the private sector. It is likewise not hard to see how the second part – selling or renting housing cheaper - diminishes the profit incentive for private developers to build more housing. This paper proposes a new housing model called Renter Equity that can improve property developer returns while lowering household housing costs and encouraging their transition to homeownership, the most affordable form of housing. Thus, the model outlines one potential way on how to tackle the EU housing challenge.

The Renter Equity model introduces two new variables to the standard renting setup:

1) the tenant makes periodic equity contributions in addition to rent, accumulating an equity stake in the property over time - this part improves the developer's IRR thanks to the time value of money related to a share of property sale proceeds being received closer to the present date
2) the developer offers a rent reduction to the tenant for the equity contributions made - this part decreases effective housing costs and promotes household wealth accumulation, although requiring higher monthly cash payments from the tenants

As a result, the Renter Equity model could be a win-win for the tenants and the developers at times of problematic housing affordability. The key goal of this paper will be to examine and test the model from two standpoints:

Q1 *How much rent reduction can the Renter Equity model offer to the tenants without leaving the developer worse-off in terms of its returns from the project?*

Q2 *How much extra return can the Renter Equity model generate for the developer when rents are controlled?*

[1] Dubbed so by the Housing Europe President Cedric Van Styvendael in his agency's 2017 housing review

Analysis of a hypothetical Renter Equity model will show that the developer could offer rent reductions of up to 43.9% and still generate a return that is at least as high as under a normal rental case. Moreover, it will become evident that Renter Equity works better when rents are already high, all things equal, highlighting the model's potential to address high housing costs.

However, in countries with regulated rents like in Sweden, the challenge is not that private developers charge high rents to generate their target returns. In rent-control markets the issue is that private developers do not develop enough of the low-rent housing, or subsidized rentals are converted to ownership units (Donner et al, 2017). While elimination of the rent-control program in Sweden could generate substantial welfare gains (Andersson and Söderberg, 2012), it would be a complex political project involving conflicting interests of various constituent groups. Instead, the Renter Equity model will be tested under the current rent-control system's status quo to gauge the model's potential to increase developer returns while encouraging households to accumulate savings that would (hopefully) lead to higher homeownership rates.

The results obtained from a case study analysis of a standard residential-to-let apartment project in Stockholm suburbia will highlight the Renter Equity model's applicability for such a challenging task. Under the base case 7-year model, the developer's IRR can increase from 16.3% to 25.5% or from 20.1% to 26.0% by applying Renter Equity, depending on whether the project is purchased or developed. Additionally, the renter would create savings worth 35% of the apartment's market value during the 7-year period – more than required for a mortgage downpayment. Considering that homeownership has become a cheaper form of housing in Stockholm than even rent-controlled apartments (Jonsson, 2018), these savings could help more households transition to homeownership and lower their housing costs. More importantly, this would allow other households waiting in the 600,000+ long rental queue get earlier access to subsidized rental apartments, lowering housing costs for the public overall and leading to more efficient outcomes from governmental rent-control programs, which has not been the case so far according to empirical evidence (Diamond et al, 2018; Andersson and Söderberg, 2012).

The author has not been able to find comparable studies that would evaluate alternative forms of housing from the standpoint of developer financial returns and household costs. As a result, this paper sets forth a new conceptual model on how to think about housing, contributing a fresh perspective to the ongoing debate about the increasingly pressing nature of housing affordability challenges.

2. RELATED LITERATURE

2.1. HOUSING COSTS

The EU housing situation is critical, according to the *State of Housing in the EU* report prepared by Housing Europe. Despite the pickup in the EU growth in 2017 and 2018, house prices have increased faster than household disposable incomes, putting more families further away from the opportunity to purchase a home (Exhibit 1). In fact, *'housing has become the highest expenditure for Europeans and overburden rate remains stable at high level'*, highlighting the urgency of the task to find solutions that could lower housing costs for the public. The importance of this challenge is further heightened by the fact that several studies have shown housing to be a necessity (Albouy and Zabek, 2016).

Moreover, the problematic nature of the EU housing challenge is exacerbated by the growing income inequality within most countries, particularly the developed ones (Bubbico and Freytag, 2018). Lower-income households are more likely to rent their homes and are more likely to spend a higher proportion of their incomes on housing, a well-studied regularity known as "Schwabe's Law" first documented in 1868 (Singer, 1937). Moreover, with housing costs rising faster than household incomes, even governmental support programs such as rent-controls and housing allowances are increasingly failing to provide housing affordably (Haffner and Boumeester, 2014).

Furthermore, provision of governmental housing assistance has been reduced in the aftermath of the global financial crisis, advancing the usefulness of a private rent-reducing housing solution such as Renter Equity. The Housing Europe report highlights that *'policy responses [to the EU housing challenge] have been to decrease public expenditure for housing and relying on measures to increase the supply in the private sector or access to homeownership'*. As a result, the proportion of population paying below-market rents has fallen from 14.6% to 9.5% during 2007-2017. More and more households have had to turn towards the private rental market, with the share of households paying the market rent increasing from 12.6% to 20.7% during the same period (Exhibit 2).

There are at least two reasons why the increased prevalence of households paying market rents is a concerning trend for making progress on housing affordability. First, renting at the market rent had the highest housing cost overburden rate at 60.1% in 2017, meaning that 60.1% of

households paying the market rent saw more than 25% of their disposable income going towards housing costs (Exhibit 3). Even paying a reduced rent results in a cost overburden rate of 30.7%. In comparison, owning a home either outright or through a mortgage has a cost overburden rate of only 15.3% and 14.0% respectively.

Second, households that rely on the rental market tend to have lower incomes and lower wealth. Coupling this with the fact that they pay more of their income for housing, there is a heightened risk of these households being caught in a perpetual renter trap (Shelter England, 2013). On top of that, a study encompassing data on G7 countries shows that the increase in the net capital share of aggregate income since 1970 has almost entirely come from the housing sector (Rognlie, 2015). The implication from the study's results is that a key driver behind the growing income and wealth inequality has been the relative financial success of homeowners compared to non-homeowners. Considering the high cost of renting and the positive effect on income coming from an accumulation of housing capital, the strategy to tackle the EU housing challenge should not only attempt to reduce costs but also encourage homeownership.

2.2. HOUSEHOLD SAVINGS AND HOMEOWNERSHIP

Homeownership is the most important source of wealth accumulation for households, especially the ones with lower incomes. While homeownership is not required to build wealth per se, it strongly correlates with household wealth accumulation. More importantly, it often serves as the first step towards wealth accumulation for low-income households, as *"someone who does not own a home probably has never been able to own anything of more value"* (Di, 2001). Reviewing this contention in the aftermath of the 2007-2008 housing crisis when households saw their housing wealth being eroded, Herbert et al (2013) find that homeownership is still an effective means of building wealth, particularly for low-income and minority households. While the two aforementioned studies relate to the US, empirical evidence shows very similar trends across the EU (HFCN / ECB, 2016; Mathä et al, 2014).

What determines homeownership rates? On a macro level, a cross-country study shows that demographic aspects such as age, marriage rates and fertility rates are important and positively correlate with homeownership; economic factors such as borrowing constraints such as higher mortgage downpayment requirements and government rent subsidies are negatively correlated with homeownership (Bourassa et al, 2015) On a micro level, household net wealth and savings accumulated prior to a home purchase appear to be the key determinants (Lersch, 2014).

With that in mind, it is somewhat concerning that the savings rate relative to household disposable income has dropped in the EU since the global financial crisis from a decade-high 12.9% in 2009 to just 9.7% in 2017 (Exhibit 4). However, the savings rate can decrease with higher homeownership since disposable income is calculated after mortgage payments, which already include 'forced' savings in home equity. Nevertheless, since the household disposable incomes in the EU have decreased relative to house prices and savings rates have fallen relative to disposable incomes, it is not far-fetched to expect that savings for potential first-time buyers have significantly decreased relative to house prices, leading to lower homeownership rates.

Not surprisingly, the homeownership rate in the EU has gone down from 72.8% in 2007 to 69.2% in 2017 (Exhibit 5). Observing young adults or "millennials", for whom most if not all of their income-generating years have been defined by the aftermath of the global financial crisis, their homeownership rate has plummeted by 20% relative to what it was 20 years ago (Choi et al, 2018). Moreover, the highest falls in homeownership rates have taken place in countries with predominantly market-led homeownership access models and the most volatile housing markets (Lennartz, 2014).

That said, lifestyle choices, structural shifts in the labor market such as more widespread short-term employment and stricter lending requirements may have contributed to a lower homeownership rate, as analyzed by Choi et al (2018). However, the same study highlights that a 1% increase in rent-to-income ratio decreased homeownership by 0.07 percentage points, while 1% increase in wealth (savings) increased homeownership by 0.08 percentage points. Therefore, the impact of household budgets on homeownership rates should not be underestimated.

Taking into consideration the complicated nature of these trends, a housing model such as Renter Equity could be an effective tool to facilitate a faster road to homeownership among young adults, since it offers households an opportunity to both lower housing costs and build wealth step-in-step with the housing market. There is empirical evidence that targeted savings incentives work, with the Canadian Registered Home Ownership Savings Plan program increasing the rate of transition to homeownership by 20 percent for young households in the 1970s and 1980s (Engelhardt, 1997). However, this is of course only one side of the coin. For the model to be an effective solution for providing more affordable housing, its impact on residential property developers needs to be analyzed as well.

2.3. SUPPLYING AFFORDABLE HOUSING

Building more affordable housing can be an investment project with large positive externalities in its economic impact on the society. For example, research by MacLennan and O'Sullivan in 2015 on Scotland found that *every £100mn invested in affordable housing supply via both public and private finance generates £210mn of economic output in the wider economy and sustains 1,270 jobs.* However, various zoning and land regulations can put constrictions on supplier ability to offer affordable housing, as shown by Gyourko and Molloy (2014) and Paciorek (2011). Limitations on property development push up the price of land; for example, in the US the real house price index has increased by more than 60% since 1980 while the real construction cost index has remained relatively flat. A similar trend can be observed in Sweden (Exhibit 6).

Beyond studies on the regulatory effect on housing supply, there is a dearth of research about the supply side of the housing market, especially from private property developer perspective (Gyourko, 2009). This paper will aim to fill in the gap to some extent by analyzing developer returns based on a case study of a rental apartment project in Greater Stockholm area, where rents are controlled, affordable housing is hard-to-access and real house prices have increased by 8.1% p.a. since 1995 while real household disposable incomes and construction costs have only increased by 2.7% and 5.0% p.a. respectively over the same period (Exhibit 7).

2.4. RENT CONTROLS AND PRIVATE PROPERTY DEVELOPER RETURNS

Rent control in Sweden was first introduced as a wartime measure in 1942. Its key provision mandates that the rent in apartments developed by property developers must comply with the rent control legislation, otherwise it may be subject to review. As a result, regulated rents in Stockholm can be more than 50% lower than the market rent charged in the secondary peer-to-peer market, as highlighted by fellow SSE students Nabseth and Strömsten (2014). Receiving lower rents leads to significant welfare gains for the households that succeed in waiting out the long queues for subsidized rental apartments, albeit at an expense for the rest of the society which could receive welfare gains of up to 20bn SEK (Andersson and Söderberg, 2012).

However, a recent report from Veidekke, a Swedish housing developer, shows that ownership apartments can be more economical for households even when compared to regulated rents. Importantly, this economic advantage increases over time due to the inflation effect. Yet,

despite the economic advantages of owning an apartment, the homeownership rate in Sweden has gone down from 69.5% in 2007 to 65.2% in 2017 (Exhibit 5). Besides the large-scale immigration experienced by Sweden since 2014, an additional key factor behind this trend could be the sharp price appreciation, as house prices stood 40% above their 20-year average relative to household incomes in 2017 (Terner Center for Housing Innovation, 2017). Considering the recently tightened mortgage requirements for households in Sweden, obtaining an ownership apartment has arguably become even more difficult in the medium term (Asal, 2018). The house price correction in Q3 2017 – Q1 2018 may have somewhat alleviated this effect in the short-term for households but has led to stormy times for property developers and their financial returns (Magnusson, 2018).

As a result, rent-regulated housing retains its importance as a currently available option for households to lower their housing costs. However, the stock of rental apartments has decreased over the last few decades, reducing household access to this option. In a report to the Swedish Fiscal Policy Council, Donner et al (2017) point out that low relative returns could be the key factor holding developers back from building more rent-regulated units. The authors argue that deregulating the rent-control program would increase the supply of rental apartments in Stockholm area as developers would be able to earn higher returns on their investments, although it is unclear how swiftly the supply would increase. Moreover, since there is not a lot of space available for construction left in central Stockholm, the supply effect is more likely to go through the suburbs where *space is not a limitation*.

Therefore, considering that:

- rent controls lower housing costs for households that get access to subsidized apartments,
- but total supply of such apartments has decreased over time in Stockholm,
- while house prices in Stockholm have increased much faster than household incomes over time,
- and suburbs are currently the only realistic option where to build affordable housing, since land costs in city center are too high,

the housing demand-supply dynamics in Stockholm and its suburban areas appear to be a perfect testing ground for evaluating Renter Equity model's potential to increase developer returns for rent-control projects, thus encouraging an increase in supply of affordable housing while incentivizing households to save more and eventually transition to homeownership.

3. EXISTING FORMS OF HOUSING TENURE

Before moving on to an examination of Renter Equity's functionality, providing some context may be useful since the model's usefulness can only be measured relative to other forms of housing tenure. Therefore, a review of the key alternative housing options is given first as a backdrop to the conceptual and quantitative analysis of the Renter Equity model.

3.1. RENTING VS BUYING

There are two main ways of obtaining housing tenure – buying it or renting it. These two forms of housing represent the two ends of the spectrum in terms of what kind of payoffs households and property developers get, with a few other alternative options in-between.

Household payoffs and risks

Buying a property gives households a wealth accumulation opportunity, albeit increasing their exposure to the market risk related to residential real estate in general and the idiosyncratic risk related to the particular property. It also locks household savings in a relatively illiquid asset with high transaction costs. In addition, assuming that households can get similar terms on mortgages like developers get on their loans, owning the property should lead to lower rolling expenses than renting. Households can also benefit from inflation, as mortgage rates are usually fixed while wages normally grow at least in line with inflation over the long run. However, buying the property also involves some ancillary transaction costs such as mortgage deeds, appraisal fees and broker fees which would not be applicable in a rental case.

Despite the conventional wisdom, paying rent can have a positive financial payoff. If the tenant has alternative investment opportunities that offer a much better risk-return profile than buying a property, the household could invest the money meant for down payment in another risky asset that would generate higher risk-adjusted returns. Looking at the risk side, there should be many lower risk options, considering the illiquidity and the lack of diversification related to owning a house or an apartment. On the return side, the alternative investment opportunity has to offer significantly better returns than buying a property, as it would have to offset the positive effects that accrue to homeowners related to inflation and lower rolling expenses.

From the qualitative perspective, homeownership offers several well-studied social and psychological benefits. Research by Manturuk et al (2016) finds that households which own homes have a lower risk of both physical and mental health problems, as well as a higher overall satisfaction with their financial lives. Homeownership can also have positive externalities on the larger society, as it is linked to higher community involvement, higher voter turnout in local elections and higher social capital. However, there are also drawbacks - homeownership leads to a reduced mobility and exacerbates the negative income effects under adverse labor market shocks (Winkler, 2011; Blanchflower and Oswald, 2013). Nevertheless, much of the modern affordable housing shortage appears to be concentrated in metropolitan cities, places with more elastic labor markets and more opportunities to sublet a home in case the owner needs to temporarily move.

Developer payoffs and risks

Selling the property gives the developer an early financial payoff but increases the overall risk of the project, since the developer cannot time the market for the exit. If the construction costs rise and / or the housing prices decline during the development period, the developer faces a real prospect of not recouping the investment, especially if sizeable leverage was used for the project. Because of the higher perceived risk, developers usually require a larger development uplift in for-sale projects compared to rentals. Because the project is sold at or soon after completion, the development uplift is realized earlier than in rental projects, giving a positive IRR effect thanks to the time value of money. That is, the time value of money effect is positive in for-sale projects as long as the net yield for which the property can be rented is not higher than the IRR generated by selling the property right away.

Renting is largely the reverse image of for-sale properties. It drags down the project's IRR by delaying the largest part of the developer's cash flows to some future date when the property is sold, but in return gives the owner more protection from the volatility in the housing market, as the owner has more control of when to sell the property. Rental properties are also less risky from a leverage standpoint, as debt can be partially amortized till exit and interest rates are fixed while rent usually grows with inflation. However, the IRR of a rental project usually diminishes over time, converging to the net yield earned on the property the longer it is held.

While condominiums offer a higher return potential for the developer, there appear to be more qualitative benefits for developers stemming from rental properties. For-sale properties have a higher reinvestment risk, as most of the proceeds are received at the same time. Rentals, on the other hand, offer a spread-out cash flow profile, evening out reinvestment. In addition, rentals offer more opportunities for cash-flow optimizing at a fund management level, as cash inflows from one project can be used to finance periodic cash outflows related to other properties.

The takeaway is that households appear to receive better overall payoff from buying a residential property. Developers, on the other hand, would arguably be better off developing a rental property, if offered the same return profile. As a result, developers require a larger risk margin for developing for-sale housing, creating a mismatch between homeownership and affordability. Several alternative housing tenure concepts such as rent-to-buy and right-to-occupancy have been tried in the market to mitigate this mismatch of incentives, albeit with lackluster and even counterproductive results.

3.2. RENT-TO-BUY

Rent-to-buy effectively works like a temporary interest-free mortgage that the tenant takes up with the developer. The tenant is required to make a nonrefundable deposit, usually around 5% of the house price, as a premium for the option to buy the house in the future at a price fixed upon the contract start date. The tenant signs a lease contract, usually for up to five years, that requires the tenant, in addition to rent, to make monthly payments called rent credits that go towards saving for a downpayment required for a bank mortgage. If the tenant has saved enough for the mortgage deposit and is eligible to take a mortgage on the property at the end of the lease term, the tenant can exercise the buy option, take out a bank loan and purchase the property. If the option is not exercised or the tenant terminates the lease contract prematurely, the tenant loses the nonrefundable deposit.

While rent-to-buy has been applied as a well-meaning attempt to encourage homeownership and give households insurance against steep house price increases, it is not hard to see why this is a sub-optimal solution for most households. First, the household is still renting the property for 2-5 years but without the benefits of flexibility and mobility that are related to being a renter. Second, the tenant is usually required to partially cover maintenance fees, property taxes and insurance fees related to the ownership of the asset before the option to buy is exercised,

increasing the overall costs for the tenant. Third, the temporary rent-to-buy mortgage used for saving for a down payment, while not charging an interest outright, is not actually interest-free, as it comes at a cost of potentially losing the initial deposit.

Most importantly, however, is that rent-to-buy has a high risk of being counterproductive in efforts to encourage homeownership. Rent-to-buy is usually used to encourage low-to-middle income households to save up for a down payment towards buying a home. However, because it reduces the flexibility and mobility of such households by increasing the costs of moving, it accentuates the negative income effect linked to homeownership under severe recessions. And since low-to-middle income households have little savings to begin with, losing the nonrefundable deposit has a high risk of significantly delaying their journey to homeownership.

3.3. RIGHT-TO-OCCUPANCY

Right-to-occupancy is a form tenure that is mainly only used in Finland. It works similarly to taking out a mortgage to purchase an ownership apartment or a house, but without taking over the ownership rights to the dwelling. The tenant deposits 15% of the price of the house or apartment, and in return gets a right to occupy it indefinitely for a monthly payment that is based on a cost basis rather than market basis and cannot be higher than the rent charged for comparable apartments in the area.

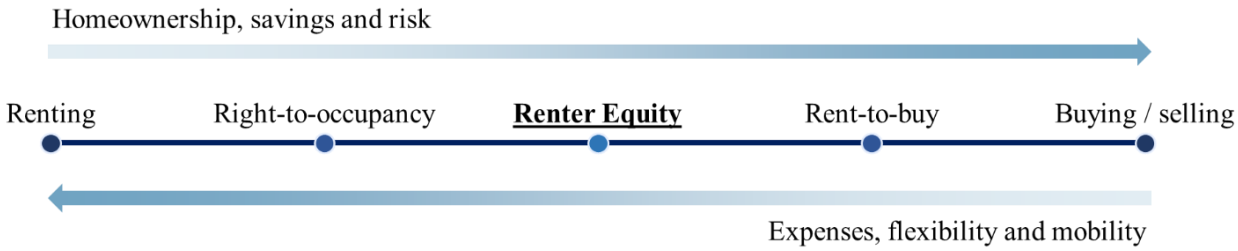
The benefits are:

- tenants can receive a loan for the down payment, requiring little initial capital
- the deposit is refunded upon moving out with indexation applied corresponding to the change in the building cost index
- the tenant does not face the risk of early terminations of the lease contract, offering a long-term solution to housing

The downsides are:

- the total cost could be higher than for regular rental units, considering the opportunity cost of the deposit and / or interest payments a bank loan was taken up for the initial payment
- is not as attractive for the developers, as they lose part of the indexation uplift and can only charge the cost rent; hence the right-to-occupancy projects are subsidized by the state

The four aforementioned forms of housing tenure can be plotted on an axis reflecting various degrees of homeownership relative to their costs to tenants and tenant's ownership rights:



For households that would want to move from the left side of the axis towards the right one, i.e. go from renting a domicile to owning their own house or apartment, right-to-occupancy and rent-to-buy are far from perfect solutions. Right-to-occupancy primarily addresses problematic aspects of renting, without encouraging a transition to homeownership; rent-to-buy effectively turns a homeowner into more of a renter of his / her own house while taking away the flexibility and mobility associated with renting, as well as potentially resulting in a loss of savings for households (Stevenson and Goldstein, 2016).

The paper will now turn towards examining how a middle-ground form of housing tenure such as Renter Equity could provide more affordable housing to households which rent their dwellings while directly incentivizing them to save towards homeownership. Additionally, the paper will also show that the Renter Equity model can provide better returns to property developers than regular rentals under various market conditions, albeit at a cost of reduced flexibility and mobility for the tenants as the model works best under longer lease terms.

4. RENTER EQUITY - A MIDDLE-GROUND AFFORDABLE HOUSING SOLUTION

Like all the different forms of housing tenure described in the previous chapter, Renter Equity also represents two sides of the same coin. From the tenant's perspective, it is an equity investment program in the apartment. The tenant makes monthly equity contributions, gradually buying-out some of the developer's stake in the property. As such, the tenant becomes a junior investment partner in the apartment alongside the developer. In return, the tenant's effective rent is reduced, with the size of the reduction proportional to the size of the equity contributions. However, the tenant will realize the full payoff from the equity contributions only at some future date, for example, when the apartment is sold by the developer or the lease term expires (specifics of various ways to exit from the Renter Equity model and their implications will be discussed later in the paper).

From the developer's standpoint, the Renter Equity model allows to sell the rental property gradually instead of in one piece at exit. As a result, the developer generates higher cash-on-cash yield during the holding period, limits its exposure to adverse market shocks and, most importantly, improves the project's IRR compared to a regular rental case by bringing the apartment sale proceeds closer to the present day. If the holding period is long enough, the IRR increases so much that the developer can afford to compensate the tenant for making the equity contributions by lowering the rent and still achieve better returns than from regular rentals.

4.1. AN ILLUSTRATIVE EXAMPLE

A simple example may help illustrate the structure of Renter Equity model. The way it works is as follows:

Regular Rentals

- assume that Household A rents an apartment for the market rate of 1,000 EUR per month or 12,000 EUR per year,
- the developer buys the apartment for 100,000 EUR at the beginning of the lease contract, giving a generous yield of 12% per annum,
- assume no inflation, taxes, transaction costs and no operating or maintenance costs for the sake of simplicity,

- assume a holding period of 5 years, and that the apartment does not increase in value during the holding period,
- considering these initial costs, a rental level that yields 12.0% p.a., no other costs or income and no uplift in value, it is straightforward that the project's 5Y IRR is 12.0%

Renter Equity

- now, assume that Household A contributes 1,000 EUR per month in cash as equity in the apartment, effectively buying 12% of the apartment every year for 12,000 EUR
- for this contribution, the Household A will receive a rent reduction of 100 EUR per month, making the new annual rent 10,800 EUR instead of 12,000 EUR
- (this payment structure could also be described as making 900 EUR per month equity contributions and receiving 100 EUR as "free" equity)
- the developer will receive 1,900 EUR in cash every month instead of 1,000 EUR, meaning it will receive 54,000 EUR more in monthly payments during the 5-year holding period than under the regular rental case
- at exit, the Household A will have accumulated a 60% stake in the apartment over the five years, valuing its stake at 60,000 EUR
- however, to get these 60,000 EUR, the household had to pay in only extra 10,800 EUR per year or 54,000 EUR over the holding period
- this generates a 5.27% IRR for the Household A over the five-year period, assuming that the apartment's price does not change
- the developer, while receiving 60,000 EUR less at exit, receives additional 54,000 EUR during the five-year lease period; the 5Y IRR improves by 165 bps to 13.65% despite receiving 6,000 EUR less cash than in the regular rental case
- the corresponding cash flows are shown in Exhibit 11 in the Appendix

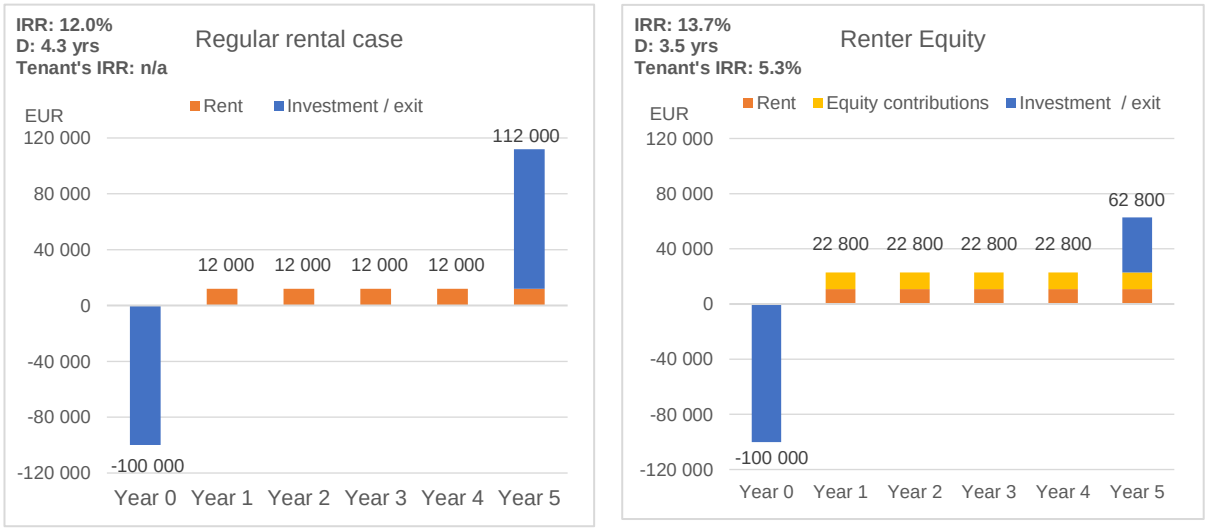
While highly simplified, this illustrative example outlines a potential for the developer to increase its returns from a rental project while also helping households generate a return on their savings. Of course, the relationship between the household's return and the improvement in the developer's return will depend on a multitude of factors such as size of the equity contribution, size of the rent reduction, holding period, initial yield, exit valuation, financing terms, indexation etc. Before going into the analysis of how these variables affect the returns under the Renter Equity, it would be worthwhile to first clarify the workings of the mechanism that modifies the returns for the developer under this structure.

4.2. CASH FLOW FRONTLOADING AS A SOURCE OF IRR IMPROVEMENT

Receiving a dollar today is better than receiving a dollar tomorrow – the concept of time value of money is easy to understand when put in such simple terms. However, the concept becomes more complex when one invests a dollar today to receive two dollars tomorrow, especially if *'tomorrow'* becomes several years and the two-dollar payback is stretched over time. The relation of how much more valuable a dollar becomes when received closer to the present day can be shown using an IRR indifference graph.

Let's reexamine the illustrative example from the developer's perspective. The developer's IRR improved over the holding period despite receiving 6,000 EUR less overall because more than half or 54,000 EUR of the exit proceeds were received before the end of the holding period. While this is a negative value proposition on its own for the developer, the return improves because the *duration* of the cash flows decreases (see Figure 1 below):

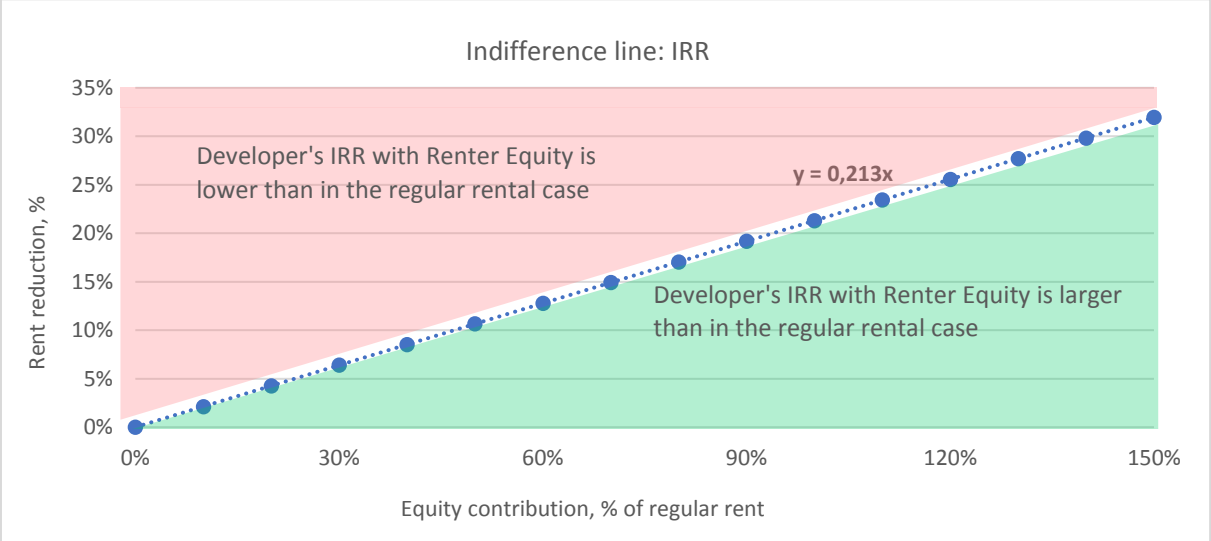
Figure 1 – Cash Flow schedule under Regular rental case relative to Renter Equity



With equity contributions equal to 100% of the regular rent; i.e. 1,000 EUR per month, the developer can reduce the rent by 10.0% and still have a substantially higher IRR, all while the tenant generates a return on his / her savings as well. It can also be found how much more the developer can reduce the rent to achieve the same return as in the regular rental case - there is rent reduction level at which the developer is indifferent between doing the regular rental case and the Renter Equity model. For this illustrative example, the indifference threshold turns out to be 21.3% rent reduction, at which point both the tenant and the developer have a 5-year IRR of 12.0% or the same as the developer's IRR in the regular rental case.

The level of rent reduction that makes the developer indifferent between the two models is heavily dependent upon the other new variable introduced in the Renter Equity model – the size of the equity contribution. Intuitively, the larger the equity contribution, the larger the improvement on the IRR from cash flow frontloading, and hence the larger the room for the developer to offer rent reductions. The IRR indifference line between these two variables is plotted in the graph below:

Figure 2 – Developer's IRR indifference line for the simple illustrative Renter Equity case



Note: the total equity contributions over the holding period should not reach more than 100% of the apartment value; for an apartment worth 100,000 EUR held for five years the equity contribution then cannot be larger than (Apartment value / holding period) / (Annual regular rent) or (100,000 / 5) / (12,000) = 167%.

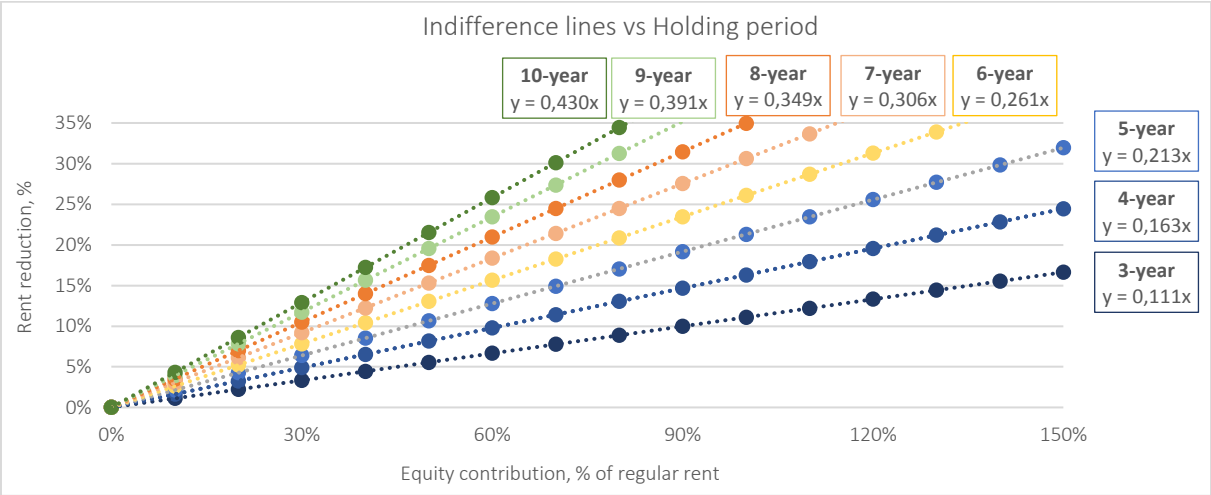
The coefficient of the indifference line shows that the developer can reduce the rent by 0.213% for every 1% of regular rent that the tenant pays in as an equity contribution. In other words, 0.213% rent reduction for every 1.0% equity contribution is the developer's break-even rent reduction level for Renter Equity model under the given assumptions. Any point below the indifference line means that the developer makes higher IRR than in the regular case; any point above the indifference line implies a lower IRR. The tenant's IRR is 0.0% on the x-axis, and gradually increases with higher levels of rent reduction to reach 12.0% on the indifference line. As is clear from the upward sloping nature of the indifference line, the developer can offer larger rent reductions with higher equity contribution. Now we turn to other variables that affect a rental apartment's return and investigate the relation of these variables with regards to Renter Equity model.

4.3. TESTING THE RENTER EQUITY MODEL

4.3.1. Holding period's effect on Renter Equity returns

All things equal, the holding period should be positively impact the Renter Equity IRR outperformance over regular rental case thanks to a stronger effect from the cash flow frontloading. The further the date when the equity investment would be recouped, the larger the IRR increase from receiving a part of that equity closer to now. Leaving all other assumptions the same, eight indifference lines for holding periods of 3-10 years are plotted:

Figure 3 – Indifference lines under various holding periods



It is evident from the graph that the slopes of the various indifference lines increase with longer holding periods, affirming that the holding period is indeed positively correlated with the IRR outperformance of the Renter Equity model. The implication from these graphs is that the developer can afford to give larger rent discounts for smaller equity contributions if the lease is signed for a longer period. Such an arrangement could prove to be more attractive for lower income households which would greatly benefit from rent reductions but do not have a lot of disposable income to earmark towards sizeable equity contributions.

Looking at the coefficients linked to the various indifference lines, I find that there is a diminishing marginal impact on the level of rent reduction that can be given by the developer:

Table 1 – Differences in rent reduction coefficients between different holding periods

3-year	4-year	5-year	6-year	7-year	8-year	9-year	10-year
0,111x	0,163x	0,213x	0,261x	0,306x	0,350x	0,391x	0,430x
diff:	*+0,052x*	*+0,050x*	*+0,048x*	*+0,045x*	*+0,044x*	*+0,041x*	*+0,039x*

Since the size of the break-even rent reduction can be viewed as a proxy for the how large the positive IRR impact will be from the Renter Equity, I would expect that the increase in the IRR related to longer holding periods will also show diminishing marginal effect. To test whether this is the case, it is worthwhile to examine the impact on the IRR by extending the holding period if the size of the equity contribution and the corresponding rent reduction rate are held constant. Assuming equity contribution of 80% of regular rent and rent reduction of 8.88%, the impact of the holding period on the IRR is summarized below:

Table 2 – Differences in IRR improvement between different holding periods

3-year	4-year	5-year	6-year	7-year	8-year	9-year	10-year
11,99%	12,56%	13,14%	13,73%	14,32%	14,91%	15,48%	16,03%
diff:	*+0,568%*	*+0,584%*	*+0,590%*	*+0,595%*	*+0,587%*	*+0,571%*	*+0,545%*

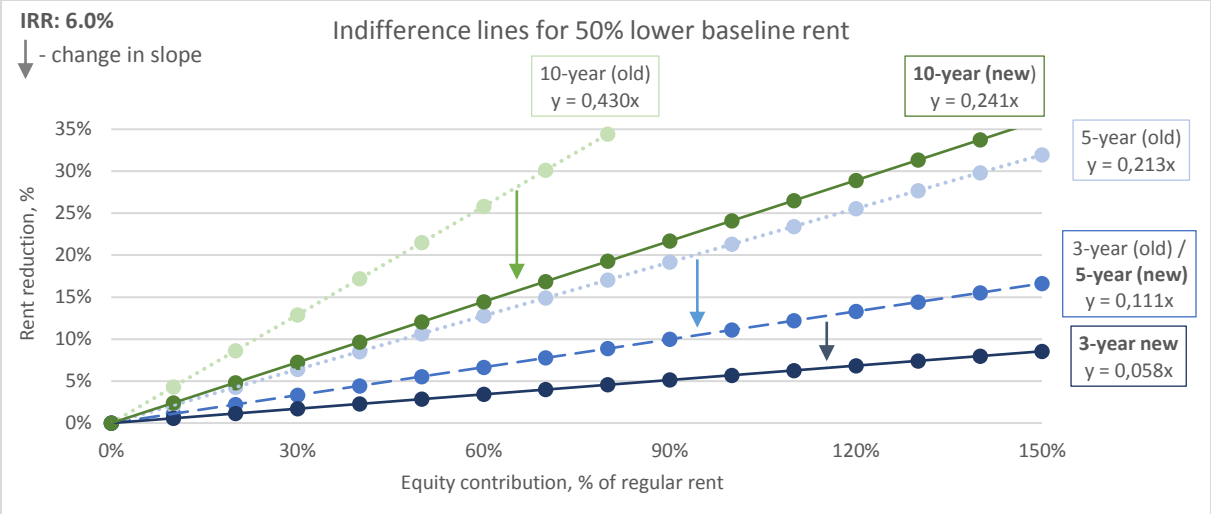
Note: the 80% level of equity contribution was chosen in order to not have a situation where the tenant accumulates more equity in the apartment than the apartment is worth; the 8.88% rent reduction level was chosen so that the IRR for the 3-year Renter Equity case would be the same as under normal rental case

Interestingly, the effect on the IRR is concave, with the marginal impact peaking at Year 7. The reason behind this dynamic appears to be related to the fact that the marginal effect from the cash flow frontloading diminishes with each additional year that the property is held – the benefit from receiving equity contributions is larger in Year 4 if the property is sold in Year 5 than from equity contributions in Year 8 if the property is sold in Year 9. However, it is not clear why this effect only appears at a later date rather than creating a downward sloping marginal IRR impact from the first year. Nevertheless, the marginal reduction in the IRR outperformance is negligible, and therefore no further analysis is devoted to this issue.

4.3.2. Rental level's effect on Renter Equity returns

Renting out an apartment at a 12% yield is a highly profitable affair, one that is rarely achieved in the market. As a result, it is worthwhile to examine how Renter Equity returns are affected by cutting the rent in half to 500 EUR per month or a 6% yield, which would be more in line with the actual rental market. The Renter Equity model's advantages are expected to diminish under such a scenario, as the size of the equity contribution is linked to the going-rate rent. As a result, the size of the cash flows being frontloaded would be smaller relative to the property value at the same equity contribution level, reducing the positive time value effect. Of course, this could be counterbalanced by doubling the relative size of the equity contributions; however, considering the low savings rates and high relative costs of rent for EU households discussed in Chapter 2, this is not likely to be achieved. The graph below shows what happens to the 3-year, 5-year and 10-year indifference lines with rents being 50% lower:

Figure 4 – 3Y, 5Y and 10Y indifference lines with 500/EUR per month rents (50% lower)



As we can see, the slopes of the indifference lines are significantly lower if the rent is halved to a level that is more in line with the current market levels across Europe. Examining the coefficients shown in Figure 4, it becomes evident that baseline rent reduction has a close to 1-for-1 effect on the developer's ability to offer rent reductions – the coefficients decrease by 48.7%, 47.8% and 44.0% for the 3Y, 5Y and 10Y indifference lines respectively, compared to a rent reduction of 50.0%. The effect is again in favor for longer holding periods.

While the large downward effect on the developer's ability to offer rent reductions caused by lower baseline rent could be seen as a negative indication for the viability of the Renter Equity model, it is the cash-on-cash yield that matters for the developer, not the rental yield per se. Considering this, leverage will play a crucial aspect from the developer's standpoint, as it significantly increases the project's cash-on-cash yield[2].

4.3.3. The effect of leverage on Renter Equity returns

Financing part of the property purchase with bank loans would lower the initial cash investment need for the developer. This should generate higher cash-on-cash yields during the holding period, as the equity contributions are linked to the total apartment price, and not the net price paid by the developer after accounting for bank loans. Therefore, I expect leverage to have a positive effect on the Renter Equity IRR outperformance. Assuming a market-standard rate of 75% LTV; i.e. 75,000 EUR of the 100,000 EUR apartment price is financed via a bank loan,

[2] Cash-on-cash yield is defined as (Cash distributed in any given year) / (Total cash invested by the developer)

interest rate of 3% p.a. and amortization rate of 3% p.a., I run two indifference line calculations relating to leverage – one for the high-rent case (1,000 EUR per month), and one for the low-rent case (500 EUR per month). The graphs are shown below:

Figure 5 – 3Y, 5Y and 10Y indifference lines with 75% LTV and 1,000 EUR/month rent

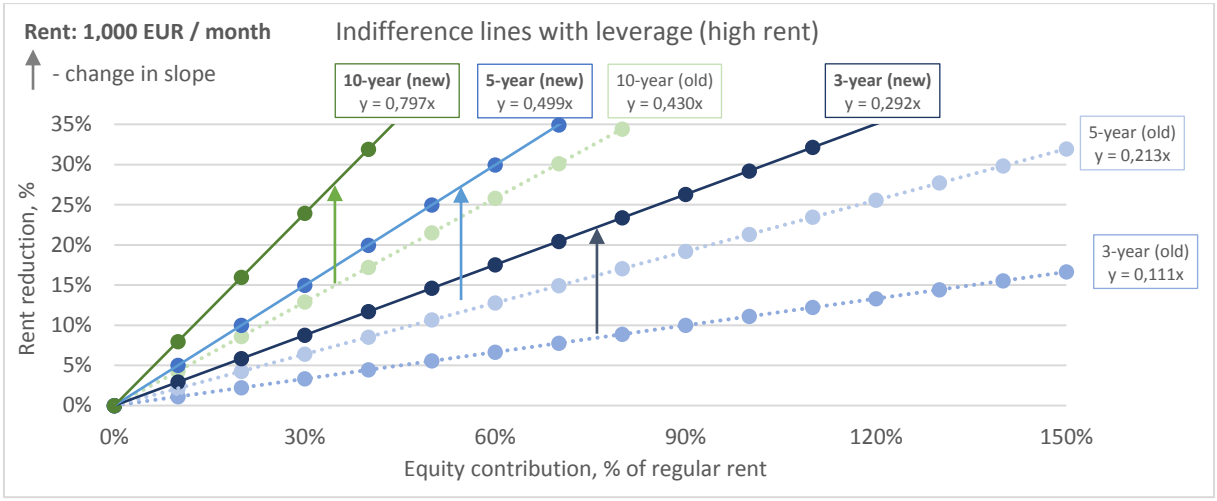
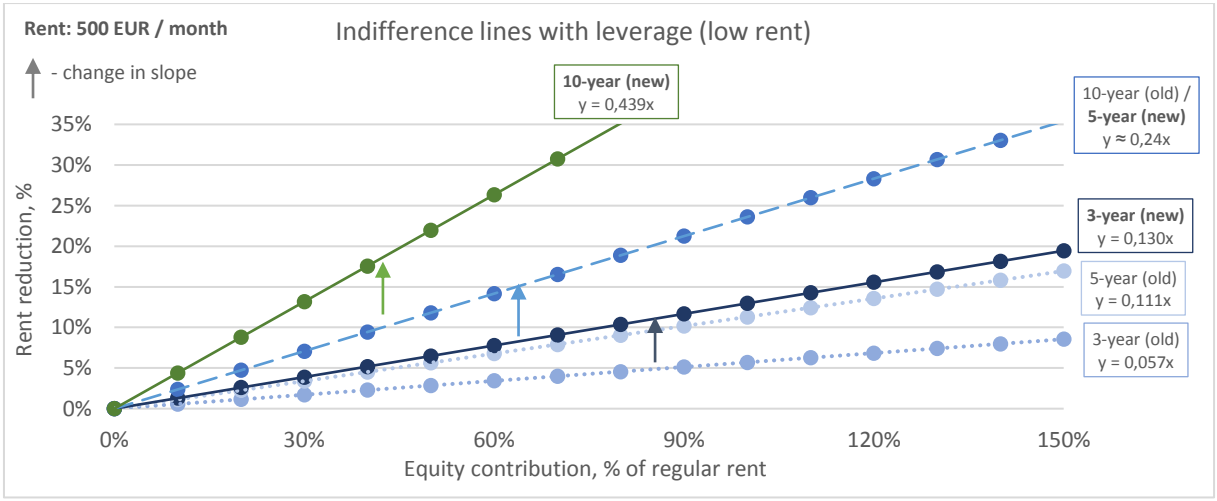


Figure 6 – 3Y, 5Y and 10Y indifference lines with 75% LTV and 500 EUR/month rent



The results clearly show that applying leverage at 75% LTV greatly increases the capacity for the developer to offer rent discounts against equity contributions. In fact, it nearly doubles that capacity, as the slopes of the indifference lines for the *'levered'* indifference lines are almost two times steeper than for the unlevered case. For the low rent case the leverage effect more than offsets the fall in slopes observed in the previous section, with the developer's ability to offer rent reductions becoming higher under the levered low rent case than under the unlevered high rent scenario. The impact of the leverage in terms of expanding the rent reduction potential

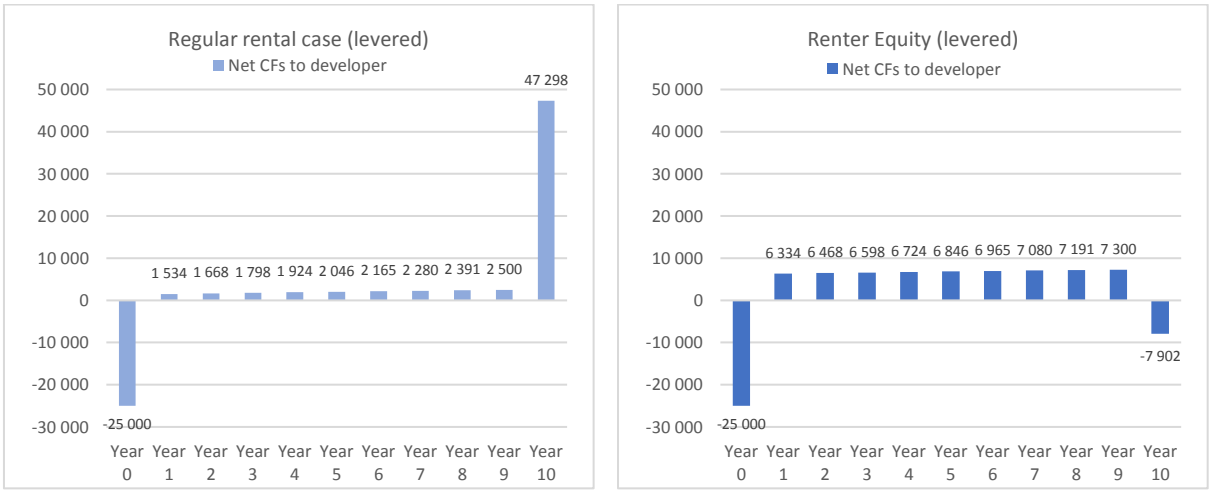
does depend on the rental level to some degree, although the effect is reduced for longer holding periods and converges to 1.8x higher rent reduction potential by year 10 regardless of rent:

Table 3 – Changes in indifference line coefficients from leverage

Increase in coefficient from leverage (times)	*3-year*	*5-year*	*10-year*
Low rent	*+2,28x*	*+2,09x*	*+1,82x*
High rent	*+2,63x*	*+2,34x*	*+1,85x*

There are two key aspects relating to leverage that should be noted. First, if the equity contribution is large enough, it may lead to a situation where the developer may have to put in additional equity at exit if the developer's remaining equity stake in the apartment cannot cover the outstanding bank loan at that time. While the returns will still be improved under the Renter Equity model in such a case, this would create an unconventional cash flow schedule for the developer, as there would be a need for an equity injection both at the beginning and the end of the holding period, with larger cash inflows in-between. For example, this is precisely what happens with the previously described bank financing terms if we assume a 10-year holding period, 500 EUR/month rent and equity contributions that match the rent, i.e. equity contributions at 100% of rent. The diagrams below show how the cash flow schedule for such a scenario can lead to an equity need at exit when the bank loan is repaid while still resulting in good IRR results for both the developer and the tenant if 20% rent reduction is applied:

Figure 7 – Developer CF schedules with 75% LTV and 500 EUR/month rent



Note: the reason why the net cash flows increase over time during the holding period is because, as the bank loan is amortized, the interest payments decrease, while the rental level and the equity contributions remain unchanged

Such an unconventional payoff structure where additional equity needs to be put in at the end of the holding period creates several issues for the developer's investors as well as the bank. These issues will be considered and discussed later in the paper. The second aspect relating to

applying leverage is that it increases the risks of the project. While improving market conditions will improve the windfalls of any project if leverage is applied, it can also more easily lead to loss-making scenarios if the market conditions deteriorate. Therefore, the Renter Equity model should be tested against increases and decreases in the price of the apartment.

4.3.4. Exit price increase / decrease effect on Renter Equity returns

Since Renter Equity reduces the equity exposure for the developer, variations in the exit price of the underlying asset should have a smaller effect on the developer's IRR than under a regular rental case. As a result, the slopes of the indifference curves are expected to increase if the apartment price decreases and vice versa. However, changes in the apartment price also affect the relative weight that rent reduction has on the project's overall cash flows. If the apartment sales price is lower, the same level of rent reduction would have a larger downward effect on the IRR, lowering the Renter Equity's return relative to the regular rental case.

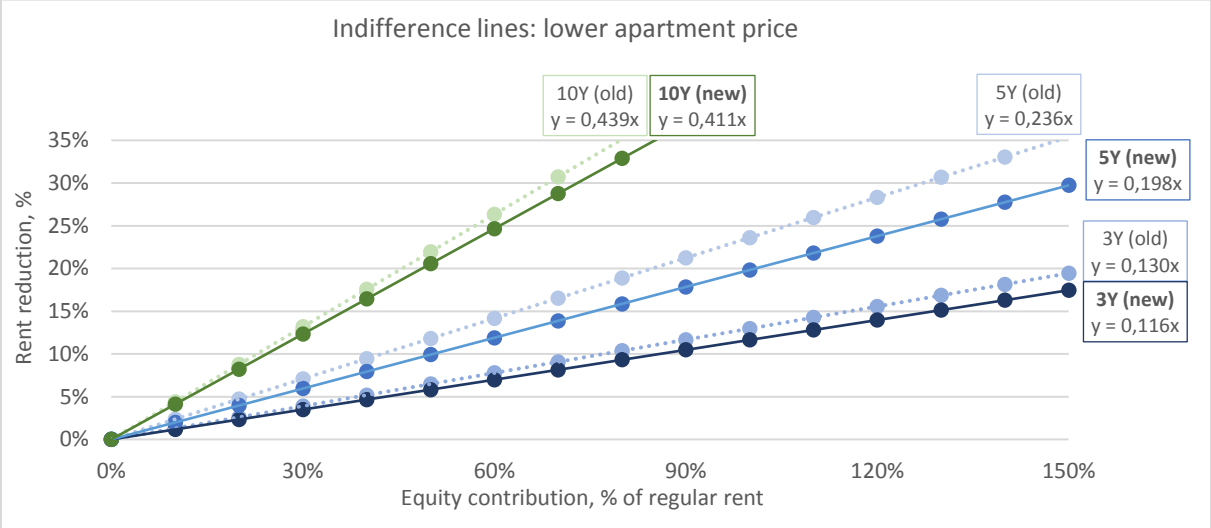
Because of these two opposite forces, I expect that there is a threshold point for the impact of the apartment price on the indifference line. In other words, there is a specific value for the exit price that maximizes the relative benefits of the Renter Equity, and a price change in any direction from this *'optimal'* apartment price will lower the slope of the indifference line. To check if this is the case, the indifference lines for the levered, 500 EUR / month case were analyzed for certain changes in the price of the apartment at exit. The goal was to find what apartment price makes Renter Equity perform best relative to the regular rental case. Of course, this is not to say that this optimal apartment price is the best for the overall project since lower exit price decreases the project's IRR even if it increases the relative IRR outperformance from Renter Equity. Instead, the aim is to examine whether the Renter Equity model provides more downside or upside protection for the given assumptions.

The optimal apartment price changes for the different holding periods were found to be +2.2% for 3Y, +6.5% for 5Y and -19.7% for 10Y. This means that the 10Y Renter Equity case has more implicit downside protection, implying again that the developer should aim to promote longer holding periods if applying the Renter Equity model. In other words, the Renter Equity model's IRR outperformance has a higher chance of being sustained even if the price of the underlying asset falls if the lease contract is set for ten years.

A. Decrease in apartment price / Downside scenarios

To test how well the model performs under downside scenarios, I decided to investigate the break-even scenarios for the various holding periods. That is, the apartment price reduction was set so that the regular rental case IRR is 0.5% regardless of the holding period. The implication is, of course, that the price fall needs to be larger for longer holding periods. I find that the levels for the apartment price decrease that result in a 0.5% IRR for the regular rental case are -11.2%, -19.0% and -39.7% for the 3Y, 5Y and 10Y holding periods respectively. The observed changes in the indifference lines for the levered, 500 EUR / month case are depicted below:

Figure 8 – 3Y, 5Y and 10Y indifference lines under severe downside scenarios

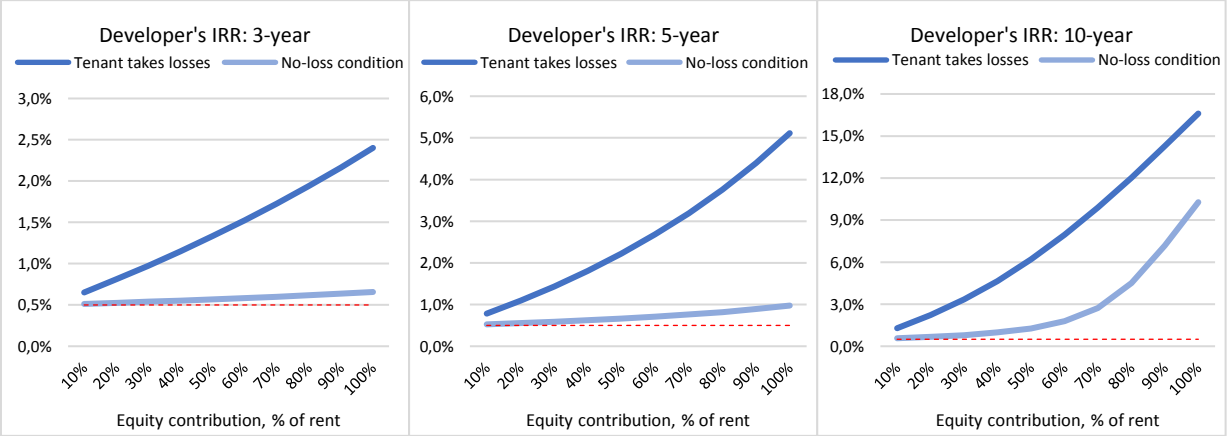


In line with the previous analysis, the 10Y and the 3Y lines change the least. For the 3Y holding period, the effective price drop from the optimal apartment price modeled in Figure 8 is only 13.1%, relative to 23.9% for the 5Y and 24.9% for the 10Y periods, explaining why the change in the indifference line is so small. The reason why the relative change in the slope is significantly smaller for the 10Y line vs the 5Y line despite having similar effective price drops is that the exit valuation only affects the last cash flow, meaning that the price fall effect on the IRR is smaller for the 10Y holding period where exit is further in the future. Still, it is important to note that the changes in the slopes of the indifference lines are relatively small considering the magnitude of the price shocks, meaning that the Renter Equity model exhibits a remarkable potential for downside protection for the developer. For example, for a 10Y holding period with 60% equity contributions, the developer could offer 15% rent discounts to the tenant and generate 6.6% IRR even if the market drops nearly 40%; the regular rental case would have generated only 0.5% IRR under such market conditions.

However, in the case of a steep apartment price decrease, Renter Equity would be a negative value proposition for the household making the equity contributions. With 60% equity contributions and 15% rent discount at 500 EUR / month rent, the household would have to put in 3,600 EUR per month in equity while receiving 900 EUR / month discounts, making the household's effective increase in the monthly payment 2,700 EUR. Over 10 years this would accumulate to a net investment of 27,000 EUR, giving the household a 36% equity stake in the apartment[3]. With a 39.7% drop in the price, the apartment's value would become 60,250 EUR at Year 10, putting the household's stake in it at 36% * 60,250 = 21,690 EUR. Since the household made 27,000 EUR net investments over time but would get only 21,690 EUR in return at exit, the effective losses would be 5,310 EUR or nearly a 20% loss on investment – clearly a suboptimal outcome for the household.

It is not hard to imagine how such situations could harm the public perception of the Renter Equity model. Therefore, I reexamine the effect of the steep apartment price decreases on the indifference lines with a constraint that the household has to at least break-even on its net investment. In the case previously described, this would mean that the household would get at least 27,000 EUR when the apartment is sold at the end of Year 10, matching its overall investments over the years. To analyze the impact of this condition on the developer's IRR, I picked points halfway to the indifference line for various holding periods, and summarized the effect on the developer's IRR if the no-loss protection is given to the tenant:

Figure 9 – Developer's 3Y, 5Y and 10Y IRR under the no-loss condition for the tenant



Note: Please refer to Exhibit 12 in the Appendix which details the developer's returns for the various holding periods under the no-loss condition

[3] 3,600 EUR equity contributions over 10 years would accumulate to 36,000 EUR; since the apartment originally was valued at 100,000 EUR, this results in a 36% stake for the tenant at exit

The graphs highlight that protecting the tenant from potential losses is a costly proposition for the developer in terms of the IRR impact, as the no-loss condition drops the IRR almost to the baseline level of 0.5% IRR (the IRR that is earned in the regular rental case). In fact, the total cash flow payoff for the developer under the no-loss condition is the same as in the regular rental case. In other words, the total cash flows do not change, it is only the timing of the cash flows that changes.

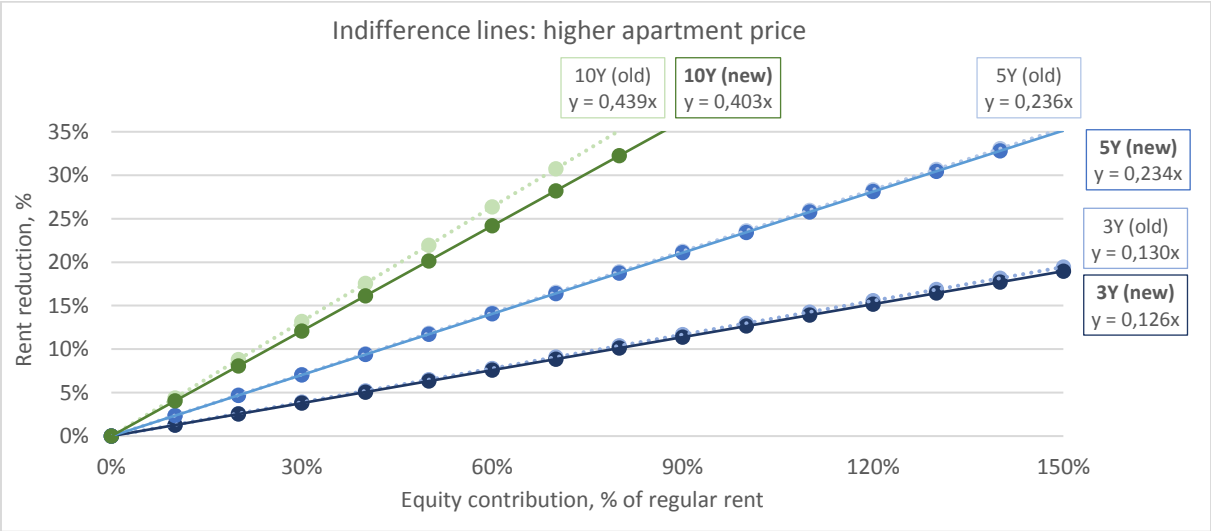
Effectively the no-loss condition functions like an interest-free reverse loan from the tenant to the developer, as the additional monthly cash payments paid in by the tenant are repaid only at the end of the holding period. The larger the size of this interest-free loan relative to the total cash flows of the project, the better the impact on the IRR – that is why we see that the IRR for the no-loss condition increases for larger equity contributions. Interestingly, for the 10Y holding period case with the no-loss condition, the IRR starts accelerating when equity contributions reach 70-80% of rent. This seems to be caused by two underlying factors: 1) under a 10Y holding period, the benefits from having an interest-free loan are larger, since they can be reinvested at the 0.5% baseline rate for more years; and 2) the sum of total equity contributions made by the tenant create a larger share of total cash flows, emphasizing the share of the IRR boost over 0.5% that comes from receiving an interest-free loan.

The key conclusions for the developer applying Renter Equity with a no-loss condition are again the same: 1) Renter Equity model performs better if the tenants are signed for longer lease terms like 10 years, and 2) the developer should aim to ask for larger equity contributions from the tenant. Looking at the no-loss condition from the tenant's perspective – while it is suboptimal to save for 10 years without earning anything, it should be compared to an alternative case where the tenant would take a mortgage, which would lead to the tenant taking all the losses. Furthermore, using the no-loss provision allows the tenant to match the savings to the market value of the apartment. For example, using a 10-year holding period, 80% equity contributions and 16.4% rent reduction, the tenant's payoff at exit in Year 10 would give the household 42% of the apartment's value without no-loss condition (if the market drops around 40% as modeled). If the apartment's price does not change, the tenant would receive 44% of the apartment value in Year 10. In comparison, with the no-loss condition the tenant effectively saves up 57% of the apartment value, a significant improvement compared to the other options. Therefore, considering the effectiveness of such downside protection for the tenant, the developer should be able to negotiate lower rent reductions if the no-loss condition is applied.

B. Increase in apartment price / Upside scenarios

For testing the profitability of the Renter Equity model under upside scenarios, I assume that the apartment prices for the different holding periods increase by the same percentage as was assumed when analyzing the downside scenarios. That is, I assume that the apartment prices increase by 11.2%, 19.0% and 39.7% for the 3Y, 5Y and 10Y holding periods respectively. Considering that all of these changes are higher than the optimal price change found before, I expect that the impact of apartment price increases will boost the Renter Equity case less than the regular rental case, leading to flatter indifference lines. The effects are shown below:

Figure 10 – 3Y, 5Y and 10Y indifference lines with higher apartment prices



As expected, the 10Y line sees the largest negative effect since the relative difference between the optimal price change and the tested price change is the largest for his holding period. The 3Y and 5Y lines barely change, as the optimal price changes were positive for these holding periods, indicating that Renter Equity would still perform better under upside scenarios.

From the developer's perspective, a dynamic where the upside is reduced may create concerns and may reduce the attractiveness of the Renter Equity model. For example, if the developer set the rent reduction on the initial indifference curve, but the apartment price increases significantly, the developer will make higher absolute return, but the IRR will become less than the developer would have earned without Renter equity. In fact, the tenant would earn a higher IRR than the developer under such scenarios, which is a suboptimal position for the developer which takes all the debt financing risks. Aa result, it would be recommended that under no scenario the tenant's IRR should be higher than the developer's. This could be accommodated

by linking rent reduction to the final apartment price, which would be accounted by making a deduction from the tenant's equity stake at exit if the housing market performed well.

While limiting or capping tenant's upside may not look appealing from a marketing standpoint, it would be crucial for structural reasons. Developers of Renter Equity apartments would be more likely to offer relatively small rent reductions at the beginning of the lease term to create a buffer for the cases that the apartment price increases over time, which historically has been more likely than seeing price falls. The motivation to create a buffer like this would be even larger for longer holding periods like 10 years, since the indifference lines are more sensitive to price increases for such cases. For example, if the apartment prices increase 10% p.a. over the 10-year holding period, the slope of the 10Y indifference line decreases by one third from 0.439 to 0.294. If that kind of apartment price increase is in line with the developer's expectations, it would be reasonable to offer rent reductions below the lower indifference line already at the beginning, even as much as 50% below the original indifference line.

This would lead to a slower take-up of the Renter Equity model, as smaller initial rent reductions offered would make it less appealing for households. In addition, the developers would be more likely to offer relatively better terms for shorter lease contracts which, as shown before, do not have the same rent reduction capacity as longer period holdings. As a result, this would diminish the positive incentives inherent in the Renter Equity model, meaning that more households may miss out on an attractive savings opportunity, while the developers may not capitalize on an opportunity to significantly improve their project's returns. To alleviate this, a step-up mechanism for the valuation of the equity contributions may be applied, where the apartment price would be adjusted at the beginning of each year for the calculation of the stake in the apartment that the tenant's equity contributions in that year would represent. Such a mechanism would provide a smoothing effect for the price increases from the developer's standpoint while retaining the wealth accumulation benefits for the households. This and several other considerations will be evaluated in the Discussion of Key Issues and Opportunities section.

To see what other advantages the Renter Equity model can offer to the developers and the tenants that were not captured by the simplified example, I will analyze a case study based on a resi-to-let project in Greater Stockholm. In addition to creating a more complete and realistic understanding of the model's functionality, such analysis may reveal other issues inherent in Renter Equity that should be addressed by adjusting the model's terms in some way.

5. RENTER EQUITY APPLIED: A CASE STUDY

5.1. BACKGROUND AND CASE DESCRIPTION

The Swedish resi-to-let industry was chosen as the conceptual testing ground for the Renter Equity model for two key reasons. First, the author has been working at a real estate private equity fund NREP since January 2018, making it easier to gather relevant market data, take note of location-specific and industry-specific aspects and check them against the expert opinions of the experienced real estate professionals working at the fund.

Second, the Swedish residential market is marked by having a rent control program that limits to how much private developers can charge in rent. On the one hand, this system provides a very affordable housing for the households that have managed to wait out the increasingly long rental queue. On the other hand, as reported by Donner et al (2017) and Andersson and Söderberg (2012), it may have contributed to higher prices for ownership apartments (coops) and higher rents in the secondary person-to-person market, making housing less affordable to the households that are not eligible or are at the beginning of the rental queue.

In addition, rent control appears to have significantly reduced the financial attractiveness of rental apartments for the developers, with many of them being converted into coops, leading to a lower overall supply of rental apartments. Therefore, considering these challenges in Stockholm's resi-to-let industry, it would be worthwhile to investigate the potential of the Renter Equity model to offer better returns for the property developers while lowering housing costs for the general public. If the benefits of the Renter Equity model observed in the previous section hold up when applied to a real-life case, it may encourage more construction of affordable rental apartments, helping alleviate Sweden's and Stockholm's housing shortage.

The case study is based on an actual apartment complex project in a suburban area of Stockholm investigated by NREP. The underlying assumptions have been benchmarked against the market where appropriate; otherwise they have been reviewed by a professional with expertise in the respective field. The assumptions are summarized in the Exhibit 13 in the Appendix with some adjacent notes explaining a particular parameter's significance for the project or its relationship to the project's return. The investment case will be reviewed from two angles: one where the developer purchases the property at a pre-determined forward price at development completion; the other where the developer buys the land and carries out the construction itself.

5.2. RESULTS: BASE CASE

First, to help the reader get a better grasp of the cash flow dynamics for the project as a regular rental apartment case, the breakdown of the project's capitalization and cash flow schedule is provided below for both the purchase and the development cases.

Figure 11 – Forward Purchase: capitalization and cash flow schedule

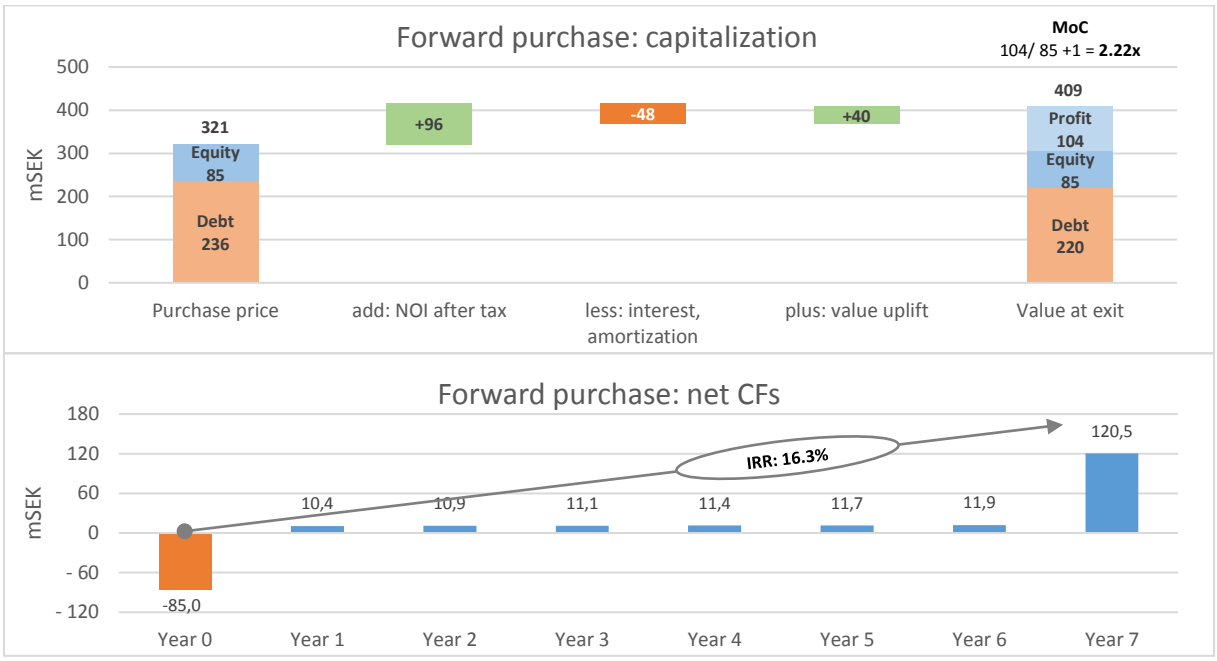
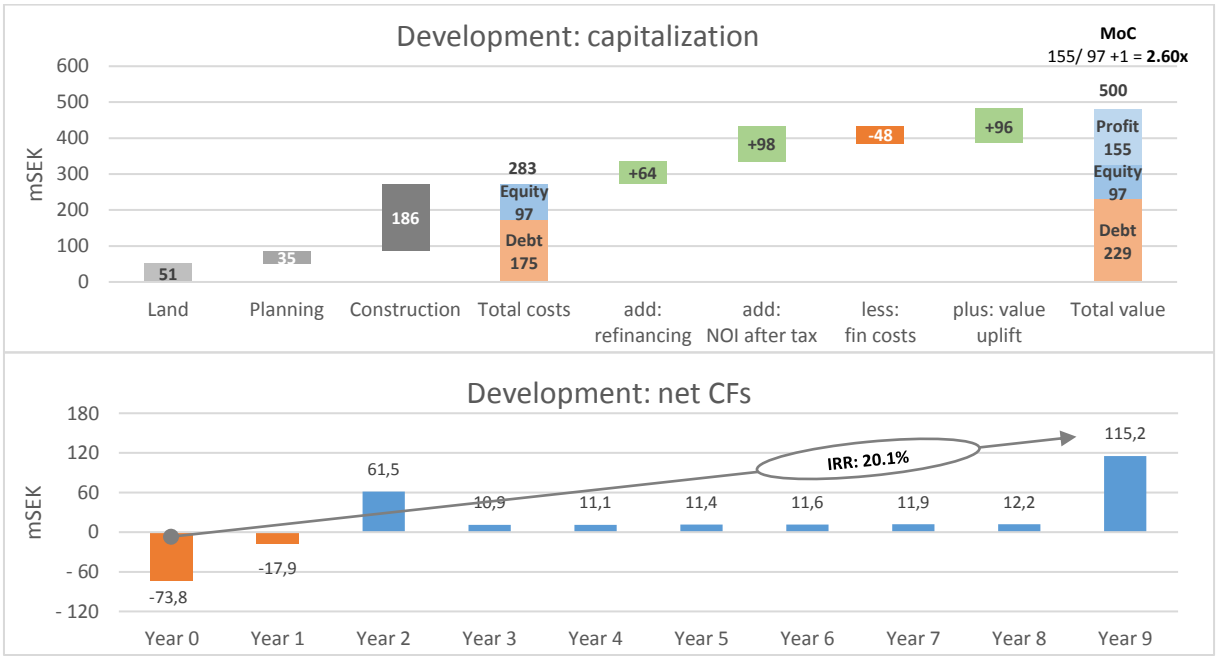


Figure 12 – Development: capitalization and cash flow schedule



The IRR for the development scenario, unsurprisingly, is higher than for the purchase scenario, since the developer is exposed to construction risks during development. To find the optimal levels for the renter's equity contribution and the corresponding rent reduction, I conducted a sensitivity analysis of the impact of the two variables on the base case IRR. However, instead of applying rent reduction as an independent variable, it will be linked to the equity contribution. In that sense, for the purposes of the following analysis the rent reduction variable will act more like the indifference line slopes discussed before – the variable will show what rent reduction the tenant receives by making an equity contribution that is 100% of rent. The tables are shown below, with red cells showing an IRR fall relative to the base case:

Table 4 – Base case: Renter Equity model's impact on the project's IRR

FORWARD PURCHASE

Δ IRR from Renter Equity Regular rental IRR: 16.7%		Equity contribution (% of rent)										
		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Rent reduction (%)	0%	0,0%	0,9%	1,9%	3,0%	4,3%	5,6%	7,0%	8,6%	10,3%	12,2%	14,1%
	5%	0,0%	0,8%	1,7%	2,7%	3,7%	4,9%	6,2%	7,6%	9,1%	10,7%	12,5%
	10%	0,0%	0,7%	1,5%	2,3%	3,2%	4,2%	5,4%	6,6%	7,9%	9,3%	10,9%
	15%	0,0%	0,6%	1,2%	2,0%	2,7%	3,6%	4,5%	5,5%	6,7%	7,9%	**9,2%**
	20%	0,0%	0,5%	1,0%	1,6%	2,2%	2,9%	3,7%	4,5%	5,4%	6,5%	7,6%
	25%	0,0%	0,4%	0,8%	1,2%	1,7%	2,2%	2,8%	3,5%	4,2%	5,0%	5,9%
	30%	0,0%	0,3%	0,5%	0,9%	1,2%	1,6%	2,0%	2,5%	3,0%	3,5%	4,2%
	35%	0,0%	0,2%	0,3%	0,5%	0,7%	0,9%	1,2%	1,4%	1,7%	2,1%	2,4%
	40%	0,0%	0,0%	0,1%	0,1%	0,2%	0,2%	0,3%	0,4%	0,5%	0,6%	0,7%
	45%	0,0%	-0,1%	-0,1%	-0,2%	-0,3%	-0,4%	-0,5%	-0,7%	-0,8%	-1,0%	-1,1%
	50%	0,0%	-0,2%	-0,4%	-0,6%	-0,8%	-1,1%	-1,4%	-1,7%	-2,1%	-2,5%	-3,0%

DEVELOPMENT

Δ IRR from Renter Equity Regular rental IRR: 20.1%		Equity contribution (% of rent)										
		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Rent reduction (%)	0%	0,0%	0,7%	1,5%	2,2%	3,0%	3,8%	4,6%	5,5%	6,3%	7,2%	8,1%
	5%	0,0%	0,6%	1,3%	2,0%	2,7%	3,4%	4,2%	4,9%	5,7%	6,5%	7,3%
	10%	0,0%	0,6%	1,2%	1,8%	2,4%	3,1%	3,7%	4,4%	5,1%	5,9%	6,6%
	15%	0,0%	0,5%	1,0%	1,5%	2,1%	2,7%	3,3%	3,9%	4,5%	5,2%	**5,8%**
	20%	0,0%	0,4%	0,9%	1,3%	1,8%	2,3%	2,8%	3,3%	3,9%	4,5%	5,0%
	25%	0,0%	0,4%	0,7%	1,1%	1,5%	1,9%	2,3%	2,8%	3,3%	3,7%	4,2%
	30%	0,0%	0,3%	0,6%	0,9%	1,2%	1,5%	1,9%	2,2%	2,6%	3,0%	3,4%
	35%	0,0%	0,2%	0,4%	0,6%	0,9%	1,1%	1,4%	1,7%	1,9%	2,2%	2,5%
	40%	0,0%	0,1%	0,3%	0,4%	0,6%	0,7%	0,9%	1,1%	1,3%	1,5%	1,7%
	45%	0,0%	0,1%	0,1%	0,2%	0,3%	0,3%	0,4%	0,5%	0,6%	0,7%	0,8%
	50%	0,0%	0,0%	0,0%	0,0%	-0,1%	-0,1%	-0,1%	-0,1%	-0,1%	-0,2%	-0,2%

TENANT

IRR from Renter Equity		Equity contribution (% of rent)										
		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Rent reduction (%)	0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
	5%	0,0%	1,6%	1,6%	1,6%	1,6%	1,6%	1,6%	1,6%	1,6%	1,6%	1,6%
	10%	0,0%	3,2%	3,2%	3,2%	3,2%	3,2%	3,2%	3,2%	3,2%	3,2%	3,2%
	15%	0,0%	4,9%	4,9%	4,9%	4,9%	4,9%	4,9%	4,9%	4,9%	4,9%	**4,9%**
	20%	0,0%	6,7%	6,7%	6,7%	6,7%	6,7%	6,7%	6,7%	6,7%	6,7%	6,7%
	25%	0,0%	8,7%	8,7%	8,7%	8,7%	8,7%	8,7%	8,7%	8,7%	8,7%	8,7%
	30%	0,0%	10,7%	10,7%	10,7%	10,7%	10,7%	10,7%	10,7%	10,7%	10,7%	10,7%
	35%	0,0%	12,9%	12,9%	12,9%	12,9%	12,9%	12,9%	12,9%	12,9%	12,9%	12,9%
	40%	0,0%	15,3%	15,3%	15,3%	15,3%	15,3%	15,3%	15,3%	15,3%	15,3%	15,3%
	45%	0,0%	17,9%	17,9%	17,9%	17,9%	17,9%	17,9%	17,9%	17,9%	17,9%	17,9%
	50%	0,0%	20,7%	20,7%	20,7%	20,7%	20,7%	20,7%	20,7%	20,7%	20,7%	20,7%

For the purpose of finding the Renter Equity base case levels of rent reduction and equity contributions, it will be assumed that the developer's goal is to maximize its own return while offering a reasonable return to the tenant. Seeing that the tenant's IRR does not change with higher equity contributions for the same rent while the developer's Renter Equity IRR increases with higher IRR, the developer should aim to ask for larger equity contributions, which I therefore assume will be set at 100% of rent.

What is a reasonable return for the tenant? Considering that the rent-control apartments in Greater Stockholm have rents that are as much as 50-70% below the market rent for comparable apartments (Nabseth and Strömsten, 2014), it can be argued that the households receive a significant gain just by getting access to the rent subsidies. As a result, I assume the developer can offer a 4-5% IRR as a reasonable return to the tenant, especially considering that this return can be seen as the base return coming just from the rent reduction and is therefore independent of the housing market fluctuations, since we assume no yield changes in the base case.

From the data in Table 4, I find that a rent reduction of 15% is required for the tenant's IRR to fall in the 4-5% IRR range. With equity contributions 100% of rent and 15% rent reduction, the Renter Equity case results in a 9.2% IRR increase for the developer relative to a regular rental case in the purchase scenario and a 5.8% IRR outperformance in the development scenario, while generating a 4.9% annual return for the tenant. Interestingly, while the purchase scenario has a higher IRR outperformance with 15% rent reductions, the development scenario is much more resistant to higher rent reduction levels. The reason for this is that part of developer's IRR for the development scenario is linked to the development uplift, which is 18.6% in the base case. There is an element in the developer's return calculation that is independent of the Renter Equity variables, leading to different return dynamics than for the forward purchase. In addition, the timing and structure of cash flows is markedly different for the development case. Because of these two factors, the cases should not be considered directly comparable.

Nevertheless, it should be noted that the development case offers more leeway for the developer, at least for the base case assumptions. The slopes of the indifference lines can be estimated from the sensitivity tables, finding the rent reduction level that makes $\Delta IRR = 0\%$. The indifference coefficients are estimated to be 0.49x for the development and 0.42x for the forward purchase. To determine if this also implies that the development scenario offers better protection against market shifts, I conducted an analysis of downside and upside cases.

5.3. RESULTS: DOWNSIDE AND UPSIDE CASES

The downside case is built around adverse developments for both the project and the larger residential real estate market, leading to markedly lower returns for the developer. The upside case, to the contrary, features better-than-expected outcomes for the overall project as well as positive trends in the market, leading to a substantially higher return. The changes to the key assumptions implemented in the downside and the upside case are summarized below:

Table 5 – Changes in assumptions for the downside and upside cases

Assumption	Base case	Downside case	Upside case
Holding period (years)	7.0	5.0	10.0
Efficiency ratio (%)	75%	70%	80%
Δ% Total cost (SEK/sqm GLA)	-	+10%	-10%
Δ entry yield	4.50%	-0.25%	+0.25%
Δ% Rent (SEK/sqm NLA)	-	-5%	+5%
exit yield (%)	4.50%	+0.50%	-0.25%
LTC (%)	65%	50%	75%
LTV (%)	75%	60%	80%

The changes in the key assumptions have been chosen so that they would affect both the forward Purchase and the development scenarios, albeit differently. The regular rental case would generate 3.4% IRR for the purchase scenario and 2.6% IRR for the development scenario under the downside case and 22.4% and 40.5% IRR under the upside case respectively. To make the Renter Equity model more realistic from the developer's point of view, valuation of the renter's equity stake will be done based on the average of the entry and exit yields, meaning that value of the renter's equity will be exposed to the market shifts in a similar way as the developer's.

5.3.1. DOWNSIDE CASE

Table 6 – Downside case: Renter Equity model's impact on the project's IRR

FORWARD PURCHASE

Δ IRR from Renter Equity Regular rental IRR: 3.4%		Equity contribution (% of rent)										
		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Rent reduction (%)	0%	0,0%	0,2%	0,5%	0,7%	1,0%	1,3%	1,6%	1,9%	2,2%	2,6%	3,0%
	5%	0,0%	0,1%	0,3%	0,5%	0,6%	0,8%	1,0%	1,2%	1,5%	1,7%	2,0%
	10%	0,0%	0,1%	0,1%	0,2%	0,3%	0,4%	0,5%	0,6%	0,7%	0,8%	1,0%
	15%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	-0,1%	-0,1%	-0,1%	**-0,1%**
	20%	0,0%	-0,1%	-0,2%	-0,3%	-0,4%	-0,5%	-0,6%	-0,7%	-0,8%	-1,0%	-1,1%
	25%	0,0%	-0,2%	-0,3%	-0,5%	-0,7%	-0,9%	-1,1%	-1,4%	-1,6%	-1,9%	-2,2%
	30%	0,0%	-0,2%	-0,5%	-0,7%	-1,0%	-1,3%	-1,7%	-2,0%	-2,4%	-2,8%	-3,2%
	35%	0,0%	-0,3%	-0,6%	-1,0%	-1,4%	-1,8%	-2,2%	-2,7%	-3,2%	-3,7%	-4,3%
	40%	0,0%	-0,4%	-0,8%	-1,2%	-1,7%	-2,2%	-2,7%	-3,3%	-3,9%	-4,6%	-5,4%
	45%	0,0%	-0,5%	-1,0%	-1,5%	-2,0%	-2,6%	-3,3%	-4,0%	-4,7%	-3,4%	-3,4%
	50%	0,0%	-0,5%	-1,1%	-1,7%	-2,4%	-3,1%	-3,8%	-4,6%	-3,4%	-3,4%	-3,4%

DEVELOPMENT

Δ IRR from Renter Equity Regular rental IRR: 2.6%		Equity contribution (% of rent)										
		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Rent reduction (%)	0%	0,0%	0,1%	0,3%	0,4%	0,6%	0,7%	0,9%	1,0%	1,2%	1,4%	1,6%
	5%	0,0%	0,1%	0,2%	0,3%	0,3%	0,4%	0,5%	0,6%	0,7%	0,9%	1,0%
	10%	0,0%	0,0%	0,1%	0,1%	0,1%	0,2%	0,2%	0,2%	0,3%	0,3%	0,4%
	15%	0,0%	0,0%	0,0%	-0,1%	-0,1%	-0,1%	-0,1%	-0,2%	-0,2%	-0,2%	**-0,2%**
	20%	0,0%	-0,1%	-0,1%	-0,2%	-0,3%	-0,4%	-0,5%	-0,6%	-0,7%	-0,8%	-0,9%
	25%	0,0%	-0,1%	-0,2%	-0,4%	-0,5%	-0,7%	-0,8%	-1,0%	-1,1%	-1,3%	-1,5%
	30%	0,0%	-0,2%	-0,3%	-0,5%	-0,7%	-0,9%	-1,1%	-1,4%	-1,6%	-1,9%	-2,1%
	35%	0,0%	-0,2%	-0,4%	-0,7%	-0,9%	-1,2%	-1,5%	-1,8%	-2,1%	-2,4%	-2,8%
	40%	0,0%	-0,3%	-0,6%	-0,8%	-1,2%	-1,5%	-1,8%	-2,2%	-2,6%	-3,0%	-3,4%
	45%	0,0%	-0,3%	-0,7%	-1,0%	-1,4%	-1,8%	-2,2%	-2,6%	-3,1%	-3,6%	-4,1%
	50%	0,0%	-0,4%	-0,8%	-1,2%	-1,6%	-2,0%	-2,5%	-3,0%	-3,6%	-4,2%	-4,8%

TENANT

IRR from Renter Equity		Equity contribution (% of rent)										
		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Rent reduction (%)	0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
	5%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
	10%	0,0%	1,2%	1,2%	1,2%	1,2%	1,2%	1,2%	1,2%	1,2%	1,2%	1,2%
	15%	0,0%	3,6%	3,6%	3,6%	3,6%	3,6%	3,6%	3,6%	3,6%	3,6%	**3,6%**
	20%	0,0%	6,2%	6,2%	6,2%	6,2%	6,2%	6,2%	6,2%	6,2%	6,2%	6,2%
	25%	0,0%	9,0%	9,0%	9,0%	9,0%	9,0%	9,0%	9,0%	9,0%	9,0%	9,0%
	30%	0,0%	12,0%	12,0%	12,0%	12,0%	12,0%	12,0%	12,0%	12,0%	12,0%	12,0%
	35%	0,0%	15,3%	15,3%	15,3%	15,3%	15,3%	15,3%	15,3%	15,3%	15,3%	15,3%
	40%	0,0%	18,8%	18,8%	18,8%	18,8%	18,8%	18,8%	18,8%	18,8%	18,8%	18,8%
	45%	0,0%	22,6%	22,6%	22,6%	22,6%	22,6%	22,6%	22,6%	22,6%	22,6%	22,6%
	50%	0,0%	26,9%	26,9%	26,9%	26,9%	26,9%	26,9%	26,9%	26,9%	26,9%	26,9%

As evident from the largely red-tinted results shown in Table 6, the Renter Equity model would perform rather poorly under the downside scenario, especially if the deal was structured as a forward purchase. A Renter Equity forward purchase scenario would barely break-even with 100% equity contributions and 15% rent reduction, generating a MoC of 1.10x as well as leading to a lower IRR relative to the regular rental case, as the IRR decreases by 0.1%. The development scenario would generate the same MoC of 1.10x but would perform marginally worse in terms of the IRR which would fall by 0.2%

However, the renter would still generate a healthy 3.6% return despite the fall in the developer's return. The negative developments modeled in the downside scenario would not significantly alter the renter's relative cash-flows as long as the size of equity contributions remain at 100% of baseline rent and the rent reduction remains 15%. This opens several opportunities for the developer to improve its returns, the most notable option being to increase the holding period and rent reductions. If the lease term is kept at 7 years as in the base case but rent reduction is raised to 18%, the Renter Equity IRR outperformance becomes positive and increases to +1.6% from -0.1% for the forward purchase and +0.4% from -0.2% for the development; the tenant would still generate the same 3.6% IRR despite the tough market conditions.

Alternatively, the developer may retroactively reduce the rent reduction component by discounting renter's accumulated equity stake at exit. However, this would arguably be a costlier method in terms of reputational damage as the tenants would resist retroactive devaluation of their savings. In addition, such an approach would most likely be a complex task contractually; therefore, it would be more advisable to negotiate the lease contract so that the developer can extend the lease term in case of adverse market developments, which is one of the key advantages of doing rental apartments in the first place, as covered before.

5.3.2. UPSIDE CASE

Table 7 – Upside case: Renter Equity model's impact on the project's IRR

FORWARD PURCHASE

Δ IRR from Renter Equity Regular rental IRR: 20.0%		Equity contribution (% of rent)										
		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Rent reduction (%)	0%	0,0%	1,7%	3,6%	5,7%	8,0%	10,5%	13,2%	16,0%	19,1%	22,2%	25,5%
	5%	0,0%	1,6%	3,3%	5,3%	7,4%	9,7%	12,2%	14,8%	17,6%	20,6%	23,7%
	10%	0,0%	1,4%	3,0%	4,8%	6,7%	8,9%	11,1%	13,6%	16,2%	19,0%	21,8%
	15%	0,0%	1,3%	2,8%	4,4%	6,1%	8,1%	10,1%	12,4%	14,8%	17,3%	**20,0%**
	20%	0,0%	1,2%	2,5%	3,9%	5,5%	7,2%	9,1%	11,2%	13,3%	15,7%	18,1%
	25%	0,0%	1,1%	2,2%	3,5%	4,9%	6,4%	8,1%	10,0%	11,9%	14,0%	16,2%
	30%	0,0%	0,9%	1,9%	3,1%	4,3%	5,6%	7,1%	8,7%	10,5%	12,3%	14,3%
	35%	0,0%	0,8%	1,7%	2,6%	3,7%	4,8%	6,1%	7,5%	9,0%	10,6%	12,4%
	40%	0,0%	0,7%	1,4%	2,2%	3,1%	4,0%	5,1%	6,3%	7,6%	9,0%	10,5%
	45%	0,0%	0,5%	1,1%	1,8%	2,5%	3,2%	4,1%	5,1%	6,1%	7,2%	8,5%
	50%	0,0%	0,4%	0,8%	1,3%	1,9%	2,4%	3,1%	3,8%	4,6%	5,5%	6,5%

DEVELOPMENT

Δ IRR from Renter Equity Regular rental IRR: 35.6%		Equity contribution (% of rent)										
		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Rent reduction (%)	0%	0,0%	1,5%	2,9%	4,3%	5,7%	7,0%	8,3%	9,6%	10,9%	12,1%	13,3%
	5%	0,0%	1,4%	2,7%	4,1%	5,4%	6,6%	7,9%	9,1%	10,3%	11,5%	12,7%
	10%	0,0%	1,3%	2,6%	3,8%	5,1%	6,3%	7,5%	8,6%	9,8%	10,9%	12,0%
	15%	0,0%	1,2%	2,4%	3,6%	4,8%	5,9%	7,0%	8,1%	9,2%	10,3%	**11,4%**
	20%	0,0%	1,1%	2,2%	3,3%	4,4%	5,5%	6,6%	7,6%	8,7%	9,7%	10,7%
	25%	0,0%	1,0%	2,1%	3,1%	4,1%	5,1%	6,1%	7,1%	8,1%	9,0%	10,0%
	30%	0,0%	1,0%	1,9%	2,9%	3,8%	4,7%	5,7%	6,6%	7,5%	8,4%	9,3%
	35%	0,0%	0,9%	1,7%	2,6%	3,5%	4,3%	5,2%	6,1%	6,9%	7,7%	8,5%
	40%	0,0%	0,8%	1,6%	2,4%	3,2%	3,9%	4,7%	5,5%	6,3%	7,0%	7,8%
	45%	0,0%	0,7%	1,4%	2,1%	2,8%	3,5%	4,3%	5,0%	5,7%	6,4%	7,1%
	50%	0,0%	0,6%	1,2%	1,9%	2,5%	3,1%	3,8%	4,4%	5,0%	5,7%	6,3%

TENANT

IRR from Renter Equity		Equity contribution (% of rent)										
		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Rent reduction (%)	0%	0,0%	1,2%	1,2%	1,2%	1,2%	1,2%	1,2%	1,2%	1,2%	1,2%	1,2%
	5%	0,0%	2,3%	2,3%	2,3%	2,3%	2,3%	2,3%	2,3%	2,3%	2,3%	2,3%
	10%	0,0%	3,4%	3,4%	3,4%	3,4%	3,4%	3,4%	3,4%	3,4%	3,4%	3,4%
	15%	0,0%	4,6%	4,6%	4,6%	4,6%	4,6%	4,6%	4,6%	4,6%	4,6%	**4,6%**
	20%	0,0%	5,8%	5,8%	5,8%	5,8%	5,8%	5,8%	5,8%	5,8%	5,8%	5,8%
	25%	0,0%	7,1%	7,1%	7,1%	7,1%	7,1%	7,1%	7,1%	7,1%	7,1%	7,1%
	30%	0,0%	8,5%	8,5%	8,5%	8,5%	8,5%	8,5%	8,5%	8,5%	8,5%	8,5%
	35%	0,0%	10,0%	10,0%	10,0%	10,0%	10,0%	10,0%	10,0%	10,0%	10,0%	10,0%
	40%	0,0%	11,6%	11,6%	11,6%	11,6%	11,6%	11,6%	11,6%	11,6%	11,6%	11,6%
	45%	0,0%	13,3%	13,3%	13,3%	13,3%	13,3%	13,3%	13,3%	13,3%	13,3%	13,3%
	50%	0,0%	15,2%	15,2%	15,2%	15,2%	15,2%	15,2%	15,2%	15,2%	15,2%	15,2%

The Renter Equity model's advantages over the regular rental case improve when lifted by positive market developments, with the IRR outperformance increasing to 20.0% for the forward purchase and 11.4% for the development from 9.2% and 5.8% respectively in the base case. However, the renter generates 4.6% IRR on the equity contributions or a slightly lower return than the 4.9% IRR in the base case. This is because the renter's return is not affected by the improvements in financing terms, construction costs, efficiency ratio and other project-related assumptions. In addition, with the previously assumed structure that the renter's equity is valued at the average of the initial and the exit yield, the renter does not benefit from the positive market development either – the average of the initial and exit yields in the upside case is 4.50%, the same as the reference yield in the base case, with the IRR slightly decreasing due to the longer holding period[4].

If the renter is allowed to take part in the full upside of the yield improvements, the Renter Equity outperformance remains intact; i.e. decreases only negligibly, while improving the tenant's return to 5.7% from 4.6% before. This means that the developer can make the Renter Equity model significantly more attractive for the households when the property value increases over time, as well as generate some downside protection without a significantly adverse effect on the tenants by increasing the holding period as discussed in the *Downside Case* segment. To paraphrase, the Renter Equity model, if structured accordingly, allows the developer to obtain countercyclical insurance for the project's IRR, increasing the upside if the project is successful and decrease the downside if the project performs worse than planned. That said, structuring the Renter Equity model so that it gives the most optimal return profile for both the tenant and the developer is a complex task. The model's usefulness will depend on a good calibration between the renter's and the developer's financial and structural incentives. A deeper look at the key variables in isolation may help understand where the balance between the two parties may lie.

5.4. ANALYSIS OF THE KEY VARIABLES AND THEIR IMPACT ON THE CASE

The following analysis will make numerous references to the data included in Exhibits 14-20 in the Appendix. The impact on the case will be evaluated from the standpoint of organizing the case study as a Renter Equity project with equity contributions at 100% of rent. To

[4] The reference yield for the renter is calculated as (Entry yield + Exit yield) / 2. In the base case the reference yield is (4.50% + 4.50%) / 2 = 4.50%. In the upside case it is (4.75% + 4.25%) / 2 = 4.50% or unchanged despite the changes in the yields for the developer.

streamline the analysis, it is assumed that for the Renter Equity to work for both parties, the following requirements need to be fulfilled:

- the tenants require at least 4.0% IRR for their equity contributions (assuming no changes in yields)
- the developers require the IRR outperformance to be at least 4.0%

There is no particular rationale why these levels for the developer's and the tenant's return requirements were chosen. For a hypothetical sensitivity testing of the model, the issue is not deemed as particularly important but having some sort of benchmarks will allow to focus the analysis. In addition, considering the currently low yields on most government bonds in the developed countries, the benchmarks of 4.0% IRR for the tenant and the 4.0% IRR boost to the developer do not appear unreasonable on the first look.

5.4.1. HOLDING PERIOD

Holding period is arguably the most important factor in determining the Renter Equity model's potential to generate returns above the regular case. As Exhibit 14 in the Appendix shows, the Renter Equity's outperformance is highly sensitive to the holding period. For example, the extra return generated for the developer is lower than the tenant's IRR for all holding periods under 5 years, leading to suboptimal results according to the previously specified thresholds. As a result, the Renter Equity model is unlikely to function well unless the lease term is set to at least five years. Considering that Munch and Svarer (2011) found that the average tenure of rent-control apartments in Denmark was 11.7 years and that a recent BBC article shows that it takes at least 8 years to save for a 20% mortgage down payment in the UK (Peachey and Palumbo, 2018), a minimum 5-year holding period should not be seen as a significant limitation to the model.

For holding periods larger or equal to 5 years, there are several Renter Equity structures that fulfill the return requirements detailed at the beginning of the section, creating a set of options for the developer in terms of how much rent reduction can be offered. An effective way how to approach this issue could be to offer the tenants various options with regards to the holding period and the rent reduction, with lower effective rent for longer lease terms. Assuming the developer aims to maximize its own return and therefore offers the lowest rent reduction possible to generate a base case IRR of 4.0% for the tenant, the optimal rent reduction levels can be found for various holding periods (see Table 8 on the next page).

Table 8 – Minimum rent reduction to generate 4.0% IRR for the tenant

Holding period	Purchase	Development
5.0	9.0%	9.0%
6.0	10.7%	10.7%
7.0	12.5%	12.5%
8.0	14.1%	14.1%
9.0	15.8%	15.8%
10.0	17.4%	17.4%

Note: the optimal rent reduction levels are the same for both cases because the tenant's cash flows are not affected by what project structure is used by the developer, as long as the holding period and the base rents are the same

The exact level of the rent reduction will depend on the negotiations between the developer and the tenants. The developer may be content with lower Renter Equity outperformance if the model offers other advantages, such as the previously mentioned downside protection and upside expansion. Therefore, the applicability of the proposition to link rent reductions to the holding period in this way should be evaluated against the potential downside and upside scenarios caused by movements in other variables.

5.4.2. EXIT YIELD (VALUATION)

As remarked before, exit yields are expected to be positively correlated to the IRR outperformance of the Renter Equity model, since the developer shares the upside and the downside changes in the market valuation with the tenant. Exhibit 15 in the Appendix shows what happens to the returns under the Renter Equity model for holding periods of 5-10 years if the rent reductions detailed in Table 8 are applied.

The model performs as expected for the development scenario for all holding periods, with the Renter Equity outperformance increasing for higher exit yields and decreasing for lower ones, highlighting the model's potential for downside protection. For example, even if the exit yields increase by 100 bps, lowering the expected exit value by 18.0%, the development scenario Renter Equity model would still generate 23.2% IRR under the 7-year holding period vs 15.6% IRR for the regular rental case. More importantly, the tenant would still generate 1.2% IRR despite the apartment's value falling nearly 20%. Even if the tenant's benchmark 4.0% IRR is ensured, the Renter Equity model would still be able to generate +6.1% IRR for the developer.

The forward purchase case, however, matches the expectations only partially. The IRR outperformance increases with higher exit yields for holding periods 7-10 years but decreases for shorter holding periods. It appears that the exit yield's impact on the Renter Equity's results

is related to the development uplift that the developer has in the project and that is not shared with the tenant. For example, if the entry yield for the forward purchase increases by 100 while the exit yield remains at 4.50% as in the base case, this would create a development uplift of 22.2% vs zero uplift in the base case. Looking at the sensitivity analysis for this case, the model performs as expected for all holding periods. However, negotiating purchase deals with such steep discounts to the market valuation are unlikely, and therefore it should be expected that the Renter Equity is not countercyclical for shorter term forward purchase deals.

Examining the results, it seems that the Renter Equity model holds up even under very adverse market developments, especially for longer holding periods. For instance, while a 5-year purchase project would only make +2.6% with 100 bps higher exit yield for the developer, the Renter Equity would add 15.0% to the IRR if the holding period was 10 years. Looking at the tenant's IRR, we can see that the previously specified rent reductions are sufficient to generate a positive IRR for the household under most market downturn scenarios. For example, with 100 bps increase in the exit yield, the tenant's IRR is still 0.6% under the 6-year holding period and 2.0% under the 10-year holding period. Since the tenant's IRR has a better countercyclical shield under longer holding periods, it can be concluded that the incentives for extending the holding period under Renter Equity are aligned between the tenant and the developer when it comes to shifts in the yield curve over time. In addition, since the developer's returns hold up so well under higher exit yields, some type of additional incentives could be provided for the tenant to improve his / her returns.

5.4.3. RENT

Rent has a very little effect on the purchase scenario, since nearly all variables are linked to the rental level. Still, Exhibit 16 shows an increase in the IRR outperformance for lower rents under the purchase scenario. The reason behind this outcome is that the OPEX remains fixed remained fixed for this sensitivity analysis, meaning that the change in NOI is not perfectly correlated to the size of the increased early cash inflows related to the equity contributions, which are only linked to rent and not NOI. With lower rent, the relative weight of the equity contributions increases, leading to a higher IRR outperformance. If the change in rent was substituted with a change in NOI, there would be no impact on the IRR outperformance.

However, the development case is significantly hurt if the realized rent is below the level upon which the project's realization was based upon. Since construction costs are assumed to be

independent of the rent in this analysis, the developer's profit margin is significantly reduced with lower rents as exit valuation is diminished. While the development Renter Equity model still outperforms the regular rental case even if the rent falls by up to 20%, the rent reduction given to the tenant can lead to developer's MoC dropping below 1.0x if the rent decreases further. This would imply that the project becomes loss-making for the developer. However, this should not be a concern for the developer for two reasons. First, the rent is known by the developer at the development completion – if the base rent is too low, the developer can opt to implement the regular rental case instead. Second, thanks to the rent-control program, rents for newly built projects have increased 4.4% p.a. in Stockholm in the last 10 years, with the largest annual decrease being 2.2% (Exhibit 8). Plus, considering that controlled rents are 50% below market level, they extremely unlikely to fall in the future as well. If anything, the rents could go up if the supply-demand pressures remain intact, which would improve the Renter Equity model's relative advantages.

The tenant's IRR under Renter Equity is independent of the rent level set in the lease contract; the tenant gets the previously fixed 4.0% IRR no matter what happens with the base rent. Since both equity contribution and rent reduction were fixed at a certain level relative to rent, the ratio of tenant's equity vs rent stays the same, leading to the same IRR result. If the relative size of the equity contribution was to vary with the rental level, then we would observe changes to the tenant's IRR. That said, it should be noted that higher rents imply higher cash payments for the tenant, meaning that the households may struggle to make the increased equity contributions assumed in the model. However, considering the highly positive results for the developer's IRR from higher rents, it should be possible for the both parties to find a mutually beneficial equilibrium in terms of equity contribution size and rent reductions, especially since the increased IRR outperformance implies a higher slope for the indifference line.

5.4.4. LEVERAGE

Renter Equity model's performance is highly dependent upon the level of bank financing that the developer can get to offset cash outflows related to the purchase or development of the property. On the one hand, there is a positive aspect brought out by the sensitivity analysis in Exhibit 17 - the model's IRR is still slightly higher than for the regular rental case even if zero leverage. On the other hand, the IRR improvement is extremely sensitive to the leverage level – if the LTV goes down from 75% to 50%, the 7-year Renter Equity IRR outperformance drops

from +10.1% to just +2.2% under the purchase scenario and from +6.2% to +3.4% under the development scenario. The development deal is more resistant to changes in leverage because it generates a higher baseline IRR if fully financed by equity, meaning that the leverage ratio plays a smaller role in the IRR generation in this case. Meanwhile the tenant's IRR is unaffected by the leverage level chosen by the developer since it has no direct impact on the renter's cash flows under the Renter Equity model.

Considering the risks of obtaining a significantly lower IRR outperformance with lower leverage levels, a base case assumption of 75% LTV may appear overly optimistic, especially if benchmarking against KPMG 2018 Property Lending Barometer which shows max 74% LTV for highly rated income-generating real estate projects in Europe[5]. However, rent-controlled apartment projects in Sweden and especially in Stockholm are considered low-risk investments from the cash-flow generation aspect. Rent, while being below the comparable market level, can be fixed for 15 years upon the development completion if the Rent Tribunal approves its conformity to the rent-control program. Moreover, the long queues for rental apartments mean that the resi-to-let apartments in Stockholm have low vacancies and low tenant turnover rates (Andersson et al, 2006). It is because of these structurally supportive factors that the LTV ratio is set at a relatively high 75% in the base case. Furthermore, if the Renter Equity outperformance is not significantly diminished by higher interest rates, the developer may be able to keep the LTV ratio at this level by offering a higher margin on the interest rate, even if the financial market conditions become more challenging.

5.4.5. INTEREST RATES AND AMORTIZATION

As evident in the sensitivity tables in Exhibit 18 & 19, the Renter Equity model is remarkably resistant against interest rate rises and amortization rate increases, especially for holding periods longer than 8 years. In fact, rising interest rates can lead to an even higher IRR outperformance for the developer under the development scenario. For a forward purchase the shorter 5-6 year period cases can be adversely affected by rising interest rates, with every 50 bps increase in the interest rate resulting in roughly 0.3-0.6% loss in the IRR outperformance. However, this slows down to 0.2% and 0.1% drag on the IRR outperformance for every 50 bps rise in interest rates for the holding periods of 7 and 8 years respectively, and even becomes a positive effect for the 9-year and 10-year holding periods.

[5] The same study shows that bank expectations on LTC for residential properties in Sweden are above 65%

Importantly, the marginal reduction in the IRR outperformance is higher for higher interest rates for the 5-8 year holding periods, meaning that the Renter Equity model works well with small interest rate increases but may be stressed if there is a sharp rate hike. The amortization rate also appears to have relatively small effects on the Renter Equity model's outperformance, as the IRR outperformance is 3.7–7.7% under various scenarios even with amortization at 5% p.a.. Overall, the interest rates do not affect the Renter Equity model much, potentially opening doors for the developer to negotiate higher leverage with the banks, to be compensated by higher interest rates and / or higher amortization rates; this topic will be discussed in Chapter 6.

5.4.6. CONSTRUCTION COSTS

Since the Renter Equity model performs better relative to the regular rental case if the project has a higher development uplift, I expect the IRR outperformance to be negatively correlated with construction costs for the development scenario. As shown by the Exhibit 20, it indeed turns out to be the case that higher construction costs decrease the Renter Equity model's relative advantages. However, it should be noted that even if there is a construction cost budget is overrun by 30%, there still is a noteworthy IRR outperformance of 1.7–4.9%, depending on the holding period. That means that the Renter Equity model can be used as an IRR-saving tool by the developer concerned with increasing construction costs.

Furthermore, in case the construction costs rise so much that the Renter Equity model no longer outperforms the regular rental case, the developer still retains the option to organize the project as a regular rental case. However, it was estimated that the construction costs would have to increase by more than 50% of the base case assumption before the outperformance buffer is exhausted. As for the situations where the developer is conservative in budget estimates and the construction costs are usually decreased, the Renter Equity model would help lift the IRR even more. Additionally, the model's high resistance to cost increases means that the developer could be able to pay more for land than otherwise, creating a competitive advantage.

To sum up, the analysis of the model's sensitivity to changes in certain variables has highlighted that its IRR performance can be sustained even with negative project or market developments. However, the model's set-up is such that it also affects certain qualitative aspects of renting. I now turn to an evaluation of what opportunities and risks the model can bring to different stakeholders that could be involved in the model's implementation.

6. DISCUSSION OF KEY ISSUES AND OPPORTUNITIES

The key feature of the Renter Equity model is the cash flow forwarding aspect. It allows the developers to improve the project's IRR while giving the tenants an opportunity to invest their savings in a familiar asset class (their home) without requiring an initial deposit. However, as shown in the previous sections, the model can lead to counterintuitive and unconventional results, at least when compared to the standard forms of housing tenure. For the Renter Equity to be of practical use in the real estate industry, these unconventional aspects should be aligned with the goals and incentives of the involved stakeholders, namely property developers, households, banks and governmental institutions. The following section will aim to critically evaluate when this alignment functions well, when it does not and what kind of adjustments could be made to improve its usefulness for the larger group of stakeholders.

6.1. IS IRR AN ADEQUATE WAY TO MEASURE THE IMPACT FROM RENTER EQUITY FOR THE DEVELOPER?

In the paper so far, the focus has been on measuring the Renter Equity model's potential to increase or decrease the project's IRR for the developer. The analysis tested the robustness of the model's IRR outperformance against various changes in market-related and project-specific conditions. However, since the increase in the IRR comes at the expense of lower overall cash flows for the developer, it may be useful to include an additional layer of robustness check to test the Renter Equity's performance regarding profit-generation instead of return-generation, especially if the developer is partial to the size of the total net profit generated by a project and not just cash flows over time.

The reason why IRR alone may not be an adequate metric for the model's evaluation is that Renter Equity exacerbates the inconsistencies related to the reinvestment assumption inherent in IRR calculations. It may be useful to look at the NPV of the project as well, assuming a hurdle rate that would work as a proxy for the developer's reinvestment rate. Analyzing both the illustrative example and the case study project from an NPV standpoint, it was found in both instances that the Renter Equity still performed significantly better at a 10% hurdle rate which is assumed to be an appropriate cost of capital for investment funds. Moreover, the NPV indifference line was found to be unaffected by the rental level or leverage, although it was

significantly lifted up by higher holding periods. The graphs and tables below summarize the results from the NPV robustness check:

Figure 13 – Illustrative example: NPV and IRR 5-year indifference lines

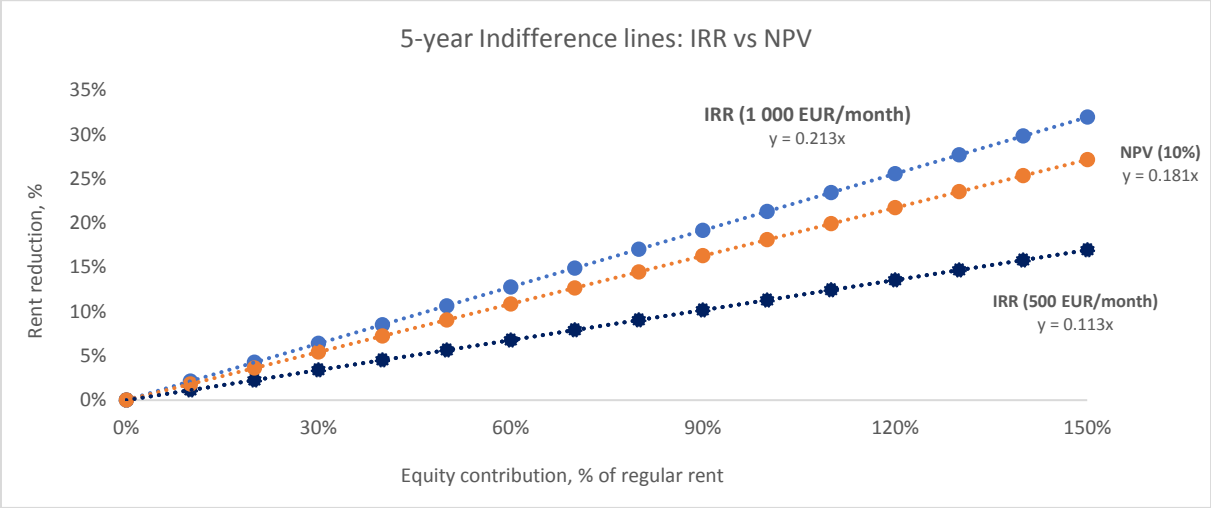


Table 9 – Case study: Renter Equity model's impact on the NPV in the base case

FORWARD PURCHASE

Δ NPV from Renter Equity (mSEK) Regular rental NPV: 23.9		Equity contribution (% of rent)										
		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Rent reduction (%)	0%	0,0	2,4	4,8	7,1	9,5	11,9	14,3	16,6	19,0	21,4	23,8
	5%	0,0	2,0	4,0	6,0	8,0	10,0	11,9	13,9	15,9	17,9	19,9
	10%	0,0	1,6	3,2	4,8	6,4	8,0	9,6	11,2	12,8	14,4	16,1
	15%	0,0	1,2	2,4	3,7	4,9	6,1	7,3	8,5	9,8	11,0	**12,2**
	20%	0,0	0,8	1,7	2,5	3,3	4,2	5,0	5,8	6,7	7,5	8,3
	25%	0,0	0,4	0,9	1,3	1,8	2,2	2,7	3,1	3,6	4,0	4,5
	30%	0,0	0,1	0,1	0,2	0,3	0,3	0,4	0,4	0,5	0,6	0,6
	35%	0,0	-0,3	-0,6	-1,0	-1,3	-1,6	-1,9	-2,3	-2,6	-2,9	-3,2
	40%	0,0	-0,7	-1,4	-2,1	-2,8	-3,5	-4,2	-5,0	-5,7	-6,4	-7,1
	45%	0,0	-1,1	-2,2	-3,3	-4,4	-5,5	-6,6	-7,7	-8,7	-9,8	-10,9
	50%	0,0	-1,5	-3,0	-4,4	-5,9	-7,4	-8,9	-10,3	-11,8	-13,3	-14,8

DEVELOPMENT

Δ NPV from Renter Equity (mSEK) Regular rental NPV: 41.8		Equity contribution (% of rent)										
		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Rent reduction (%)	0%	0,0	1,7	3,5	5,2	6,9	8,7	10,4	12,1	13,9	15,6	17,3
	5%	0,0	1,4	2,8	4,2	5,6	7,0	8,4	9,8	11,2	12,6	13,9
	10%	0,0	1,1	2,1	3,2	4,2	5,3	6,3	7,4	8,5	9,5	10,6
	15%	0,0	0,7	1,4	2,2	2,9	3,6	4,3	5,0	5,8	6,5	**7,2**
	20%	0,0	0,4	0,8	1,1	1,5	1,9	2,3	2,7	3,1	3,4	3,8
	25%	0,0	0,0	0,1	0,1	0,2	0,2	0,3	0,3	0,4	0,4	0,4
	30%	0,0	-0,3	-0,6	-0,9	-1,2	-1,5	-1,8	-2,1	-2,3	-2,6	-2,9
	35%	0,0	-0,6	-1,3	-1,9	-2,5	-3,2	-3,8	-4,4	-5,0	-5,7	-6,3
	40%	0,0	-1,0	-1,9	-2,9	-3,9	-4,8	-5,8	-6,8	-7,7	-8,7	-9,7
	45%	0,0	-1,3	-2,6	-3,9	-5,2	-6,5	-7,8	-9,1	-10,4	-11,8	-13,1
	50%	0,0	-1,6	-3,3	-4,9	-6,6	-8,2	-9,9	-11,5	-13,1	-14,8	-16,4

The Renter Equity model still outperforms regular rentals with base case assumptions even if NPV is used as the evaluation metric. However, the maximum rent reduction that the developer can give to the tenant is lower for NPV than it was for the IRR: for the illustrative case the slope

of the indifference line goes down from 0.21x to 0.18x if NPV is applied. Likewise, for the case study the indifference line slopes would diminish from 0.42x to 0.31x under the purchase scenario and from 0.49x to 0.26x under the development scenario. Of course, if a higher hurdle rate was used, the Renter Equity model's relative advantages would improve. For example, with a 15% hurdle, the purchase scenario Renter Equity case would have the same rent-reduction potential regardless if NPV or IRR was used as the reference metric. In addition, leverage would play a much less significant role in determining Renter Equity model's outperformance if NPV method is used – the extra NPV generated by applying the model stays largely unchanged regardless of the level of LTV used.

6.2. DO DEVELOPERS REQUIRE A PREMIUM FOR RENTER EQUITY RELATIVE TO REGULAR RENTALS?

A strong case could be made that the Renter Equity would have to show higher returns than regular rentals before developers would be interested in taking the risk of implementing the model. Not only the Renter Equity structure is more complex than regular renting, it also would be a new and untested form of housing. As a result, the model may create unexpected and unintended consequences, especially at the end of the lease term when bank loans would have to be settled and the tenants would receive the value of their equity stake. Considering this increased uncertainty, it seems reasonable that the developers would require a higher IRR from the Renter Equity model than from regular rentals as a preliminary condition. That said, estimating the size of the premium that could be required by developers is not straightforward.

The sensitivity analysis revealed that Renter Equity can be structured in a way that generates a sizeable premium for the developer and gives a decent return for the tenants. Moreover, the model's outperformance was sustained even with significantly negative market developments and could therefore be used as a buffer for potential downside scenarios. In addition, the premium requirements may vary depending on developer's own characteristics. For example, large social-housing developers with substantial balance sheet would arguably require lower IRR outperformance, as they would be less stressed to make the equity injection at the end of the holding period (if required) and would put a higher value on Renter Equity's positive externalities. Furthermore, since the development scenario had lower variations in the IRR outperformance for most robustness checks relative to purchase transactions, it could also be expected that development of rental projects would require lower premiums.

6.3. IS THE POTENTIAL OF REQUIRING ADDITIONAL EQUITY INJECTION AT PROJECT-END A CONCERN FOR THE INVESTORS?

The Renter Equity model can generate atypical cash flow schedule where an additional equity injection is required at exit, especially if higher leverage or longer holding periods is applied. However, even if that may be a concern for investors, there are several ways how to address this issue. First, the bank loan may be amortized at a faster pace so that the bank loans are significantly lower at the end of the holding period while retaining the Renter Equity model's IRR outperformance. For example, if the amortization rate is increased from 1.0% p.a to 2.5% p.a., there is no need for additional cash injection at exit for neither purchase or development scenarios under the base case. More importantly, the Renter Equity model's IRR outperformance still holds up and is +7.5% for the purchase scenario and +5.5% for the development scenario with higher amortization compared to +9.2% and +5.8% before.

Second, the Renter Equity model could be used in combination with a regular rental case or offering lower equity contributions. For example, in a multi-building project, the Renter Equity could be applied to only a half of a project, with the other half acting as a collateral for any potential cash needs upon sale. While such a set-up would reduce the IRR outperformance when compared to a base case, the IRR would still be higher than for a regular rental case alone.

6.4. WOULD BANKS SEE RENTER EQUITY AS LESS OR MORE RISKY COMPARED TO REGULAR RENTALS?

In short, there is no fundamental reason for the banks to view the Renter Equity model as more risky than regular rentals since both forms are still collateralized by the same asset. In fact, the banks may view the Renter Equity model as less risky since it would generate higher interim cash flows to cover the periodic payments. While there may be a concern that the Renter Equity model would result in the developer's share not covering the bank loans in the end, it could be addressed by requiring higher amortization rate or offsetting the final equity injection from the sale proceeds of another project organized as a regular rental. However, the banks may be worried about what happens to the legal ownership structure of the apartment under the Renter Equity model since it is a standard requirement that the holder of the mortgage is also the sole owner of the property.

6.5. IS THE CONSTANTLY CHANGING APARTMENT'S OWNERSHIP STRUCTURE UNDER RENTER EQUITY A CONCERN FOR BANKS?

While the continuous changes to the ownership structure of the apartment is an unconventional factor for banks to consider when giving out the mortgage, the Renter Equity model could be formed as a derivative contract between the developer and the tenant, having no legal implications on the apartment's ownership structure. The bank loan would still be covered by the full value of the apartment, not just the developer's decreasing stake in it. Additionally, it would be recommended that the Renter Equity model is used by large developers with sizeable balance sheets, as that would reduce the bank concerns about whether the developer can repay the mortgage, considering its stake in the property is reduced over time.

6.6. WHAT LEGAL STANDARDS SHOULD BE MET BY RENTER EQUITY?

Since financial literacy tends to improve with age and household savings (Batsaikhan and Demertzis, 2018), it is highly important that the Renter Equity is clearly structured, considering that the model's target audience very well may turn out to be younger households with low savings. A few issues in particular stand out for which the Renter Equity contract should have easy-to-follow and understandable rules.

First, the tenant should not be held prisoner by the Renter Equity model's saving program. Households may be forced to move for job purposes or may not have enough cash for the equity contribution during recessions or job transitions. Luckily, the Renter Equity model has enough flexibility that several tools could be created to address such issues. In the case of difficulties to pay the equity contributions, the tenant should always be able to go back to regular renting (temporarily or indefinitely). Since the household's equity stake is valued only at the end of the lease term, the rent reduction or "free equity" part related to equity contributions could be adjusted at exit depending on the total sum of equity payments made by the households during the length of the contract. The higher the sum of total equity contributions, the higher the size of the rent reductions.

The same principle could be applied in case the tenant wants to terminate the contract prematurely. The size of the rent reduction; i.e. the "free equity" proportion, could be retroactively adjusted at exit based on the average duration of renter's equity contributions. For example, if the renter made 36 monthly equity contributions over a five-year period, that would

be translated to a 3-year duration for the Renter Equity model. The final size of the "free equity" granted to the tenant would then be adjusted based on the duration – the higher the duration, the higher the relative rent reduction that determines the "free equity" portion. Of course, certain minimum requirements for the equity contributions and the durations should be applied to give the developer at least some certainty for the minimum IRR outperformance. To sum up, the Renter Equity contract should include a table detailing what rent reductions will be given to the household for what equity contributions, with a clear note that the true value of the equity contributions will be adjusted upon exit depending on the duration of the contributions.

Another element that should addressed by the contract is ownership rights. Even if the Renter Equity contract would be a derivative or supplement contract junior to the regular rental contract, the developer should be liable towards the tenant of upholding the commitment to give the tenant his / her accumulated equity stake in the apartments. The developer's liabilities towards the banks should not affect his obligations towards the renter. That said, in case the bank forecloses on the developer and repossesses the apartment as a collateral, the tenant will have no right of claim against the bank but only against the developer. In that sense, the renter's equity stake will be junior to the bank loan but senior to the developer's equity. Because of this, it is recommended that the Renter Equity model should only be applied by large developers with strong balance sheets that can sustain the ups and downs of real estate cycles.

Finally, the method for determining apartment's reference value for renter's equity stake calculations should be clearly defined by the contract. The most straightforward approach would be to set the apartment price against the going rate market value, with independent real estate appraisers providing the valuation. However, as shown before, this would leave the developer 100% exposed towards real estate market fluctuations. Alternatively, instead of setting one fixed reference price for the apartment at the beginning of the contract, the reference price could be adjusted annually for the following year's equity contributions on rolling basis, benchmarking it against the house price index. Such an approach would provide a risk-sharing setup for both the developer and the tenant.

6.7. IS IRR AN APPROPRIATE WAY TO MEASURE HOUSEHOLD'S RETURN ON THE RENTER EQUITY MODEL?

On the one hand, the using IRR as a metric for the tenant's return does not have the same reinvestment assumption drawback that the developer's IRR has under the Renter Equity

model, since for the household all the positive cash flows come in one installment at the end of the holding period. On the other hand, the IRR does not take into consideration the opportunity cost of capital for the households; i.e. the return that could be earned on the cash used for equity contributions by investing it in other assets. However, since the household investment rates in Sweden are below their savings rate and household cash deposits have increased as % of GDP (Exhibit 9 & 10), it appears that there is a portion of household savings that are not used for any investments. As a result, the opportunity cost of capital is assumed to be near zero or even negative (inflation) for more households, making IRR a well-suited metric to measure the tenant's return under Renter Equity.

6.8. HOW DOES RENTER EQUITY AFFECT HOUSING CONDITIONS FOR RESIDENTS?

A positive qualitative aspect that may be brought forward by application of Renter Equity is that it may help increase a sense of homeownership for households, reducing moral hazard risks that are inherent in many rental and lease contracts (Benjamin et al, 1998). Since the tenant becomes invested in the apartment alongside the developer under the Renter Equity model, there would be direct incentives for the tenants to keep good care of the premises. Otherwise, the final valuation of the apartment may be reduced, leading to a smaller financial payoff for the tenant.

Additionally, Renter Equity may help create a sense of homeownership for households that would otherwise be just renting. The sense of having a home could be especially elevated if the equity contributions are seen as a savings tool to accumulate enough funds for a down payment required to take out a mortgage. Prospectively for large scale developers, the Renter Equity model could be used in combination with sales of ownership apartments, with the households making the equity contributions seen as future customers of other residential projects in the developer's pipeline.

6.9. CAN THE RENTER EQUITY MODEL HELP ALLEVIATE THE HOUSING CHALLENGES FACED BY GOVERNMENTS ACROSS THE EU?

While being in no way a magic bullet solution, the analysis of Renter Equity model presented in the paper highlights its potential to create a mutually beneficial incentive structure between households and property developers. The key advantage from the Renter Equity model is that

it can significantly improve developer's returns even if the country has a systemwide rent-control program, as shown by the case study analysis of a rental apartment project in Greater Stockholm. With governments having reduced their spending on housing assistance since the global financial crisis, finding private-sector solutions for affordable housing has become increasingly important. To that end, the Renter Equity model appears to be a good solution.

While the model works well on a standalone basis, the state could provide low-cost assistance such as higher leverage and / or cheaper debt financing. In addition, since Renter Equity promotes household wealth accumulation and transition to homeownership, the governments could evaluate the model's usefulness as a part of the defined contribution pension plans.

7. TOPICS REQUIRING FURTHER RESEARCH

As highlighted by the previous chapter, the Renter Equity model brings forward several issues and potential opportunities that, considering both the length and the subject-matter confines of this paper, could not be addressed here and would therefore benefit from further examination. A key question to address and upon which the applicability of Renter Equity depends is how the model would be perceived by the banks and the governments. While the model's structure allows for adjustments that could mitigate certain concerns that these two stakeholders may hold regarding the model's legal implications and the status of ownership rights, it would be crucial to determine whether the banks and the governments would be on board of the general idea behind the concept. Otherwise it is hard to imagine how Renter Equity could be implemented without the support from these two parties.

Another area for further investigation would be to test and survey household perception of the model. While the author, himself being in the model's presumed target audience, can foresee that Renter Equity would be positively welcomed by the public, it would be worthwhile to test this assumption against empirical data. In addition, household perceptions of the model may illustrate how the optimal Renter Equity structure may look like from the demand side, especially with regards to the size of the equity contributions (due to constraints on household budgets) and the various holding periods (due to the tenant preference for higher mobility).

Additionally, the evaluation of Renter Equity would be helped if the model would be also compared to the other forms of housing besides typical renting. Particularly it would be insightful to see how this middle-ground solution stacks up against the other end of the spectrum, namely buying an apartment. Taking up a mortgage to buy a house or an apartment is one of the most important investment decisions made by households and involves both certain risks and benefits. The key benefits are: (i) the housing costs usually decrease as a proportion of household disposable income; (ii) households access an easy-to-understand and simple wealth accumulation opportunity and (iii) there are certain socioeconomic and psychological benefits related to homeownership. However, the mortgage also makes the household fully exposed to fluctuations in the housing market, a risk whose potential harmfulness became evident during the global housing crisis. The Renter Equity offers households nearly all of the same benefits as buying a house (although arguably to a lesser extent), but reduces their risk exposure. An analysis of the risk-benefit structure from this angle would therefore be welcome to help better understand the full picture of Renter Equity's usefulness for households.

8. CONCLUSIONS

Looking at the EU housing challenge from the demand side perspective, there is a negative feedback loop quality to it. As the house price growth outpaces household disposable income growth, more and more people need to delay their decision to buy a home, turning to the rental market instead. Renting tends to be a more expensive form of housing than homeownership, leading to households having less money to put aside as savings. With a lower savings rate, it takes longer to accumulate funds for a mortgage downpayment, meaning that the decision to buy a home needs to be delayed even further.

Finding cheaper ways how to build housing could be one way how to break the vicious cycle. Converting part of rent into household savings could be another one. This paper examines the second option, proposing a new form of housing tenure called Renter Equity where households receive rent reductions by gradually buying into the equity of their rental apartments. As long as the level of rent reduction is well-calibrated against the size of the equity contributions made by households, the property developer's return measured by IRR can be sustained at the same level or even improved.

Testing the model's viability under simplified hypothetical assumptions first, I found that the developer could offer as much as 43.9% rent reduction and still have the same IRR, given a 6.0% rental yield with a 10-year contract term and 75% LTV bank financing at the project's start. Considering that 60.1% of EU households pay more than 25% of their disposable income on rent, any sizeable rent reduction can bring material improvements in household budgets. Moreover, the households would accumulate a 6.0% stake in the apartment every year by opting in the Renter Equity model, resulting in a 60% stake after 10 years. Plus, assuming that the apartment's value would match the house price developments to a large degree during the contract term, the value of these savings would increase in line with house prices, addressing the concerns that house prices have run away from household ability to save for a mortgage downpayment. If the accumulated Renter Equity savings would be used to buy a home, this could help alleviate the housing affordability challenge even more – only 14.0% of households owning homes with a mortgage or a loan pay over 25% of their disposable incomes on housing. Renter Equity could thus create a positive feedback loop for households.

To find out whether the model makes sense from the property developer standpoint, I investigated the model's functionality based on a real-life case study of a rental apartment

project in Greater Stockholm. The base case showed that a property developer could increase its IRR by 9.2% in a forward purchase deal and by 5.8% in a development scenario compared to a case of doing regular rentals. To achieve this return uplift, the tenant would be required to make equity contributions to the tune of 100% of the unreduced rent. In return, the renter would receive a 15% rent reduction, generating a 4.9% IRR on the savings. While it is not clear exactly how much return improvements would be required by property developers before they would opt for applying Renter Equity, the results show that the model's potential to make both the developer and the tenant better off holds. Furthermore, the results showed that the model could act as a countercyclical hedge for private developers, as higher exit valuation still led to a positive IRR outperformance from Renter Equity while lower exit valuation resulted in Renter Equity generating an even higher IRR outperformance relative to a regular rental project.

The analysis also revealed that leverage would play an important role in ensuring Renter Equity's ability to generate higher return. As a result, bank acceptance on the model's structure is a necessary condition for the its applicability. However, higher interim cash flows received by the developer with Renter Equity improves the project's interest coverage. The paper proposes a model where the amortization rates are increased if Renter Equity is used, as it does not drag down the returns that much. Furthermore, if leverage levels could be increased on Renter Equity projects because of their higher debt-servicing ability, the negative effect from higher amortization rates would be more than offset.

Considering the newness factor of Renter Equity, the first research work in this area naturally raises more questions than it answers. The aim of this paper has been to evaluate the model's prospect in making renting work better both for households and property developers. The key conclusion is that Renter Equity, if structured accordingly, has the potential to align developer incentives with household goals. The practicality of turning the model's potential into reality will require a separate deep dive on several of the issues which, while briefly highlighted in the analysis, were beyond the scope of this paper.

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APPENDIX

Exhibit 1 – EU house price index relative to household disposable income, 2005-2017

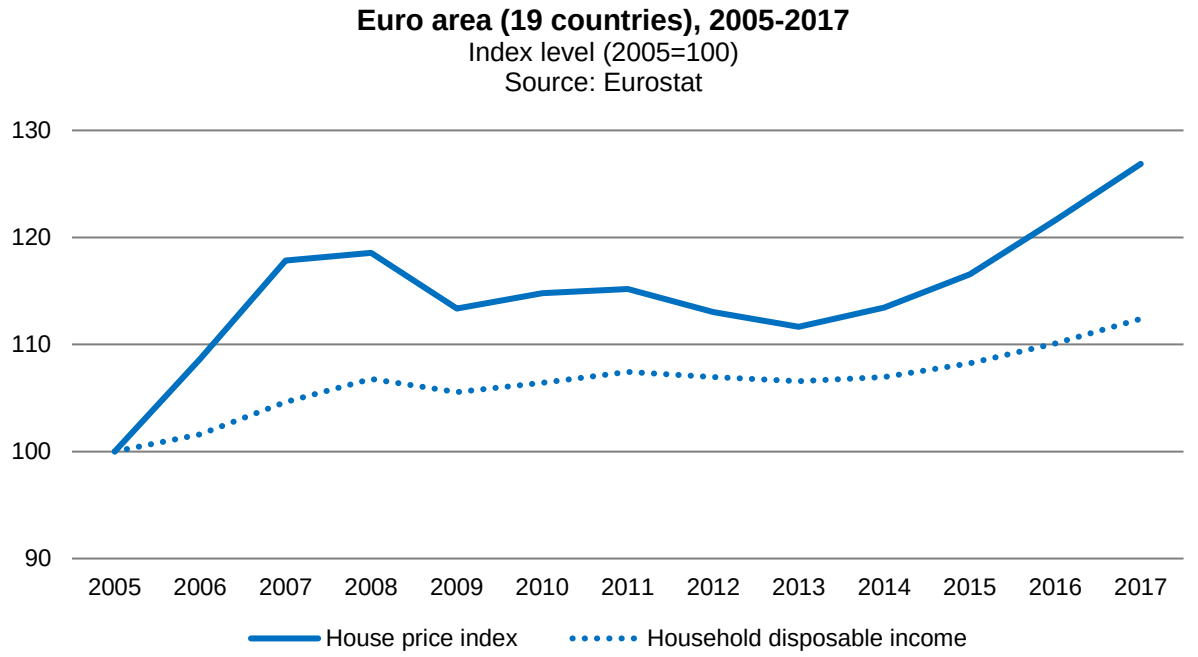

Exhibit 2 – Distribution of population by tenure status in the EU, 2007 vs 2017

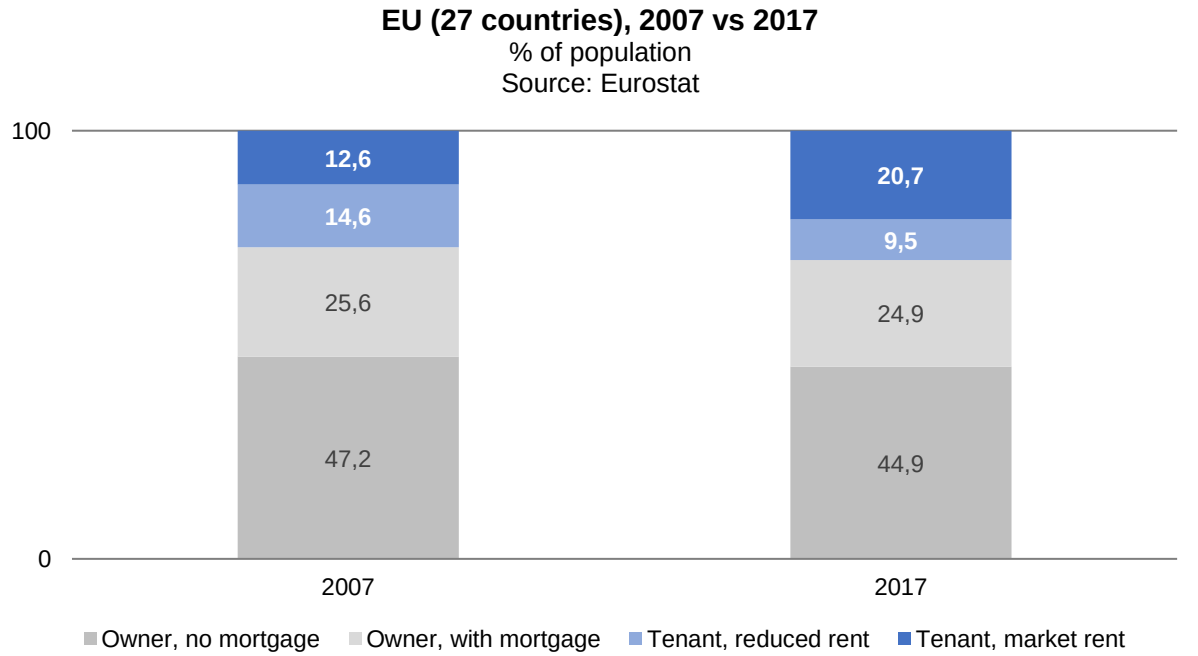

Exhibit 3 – Housing cost overburden rates by tenure status in the EU, 2017

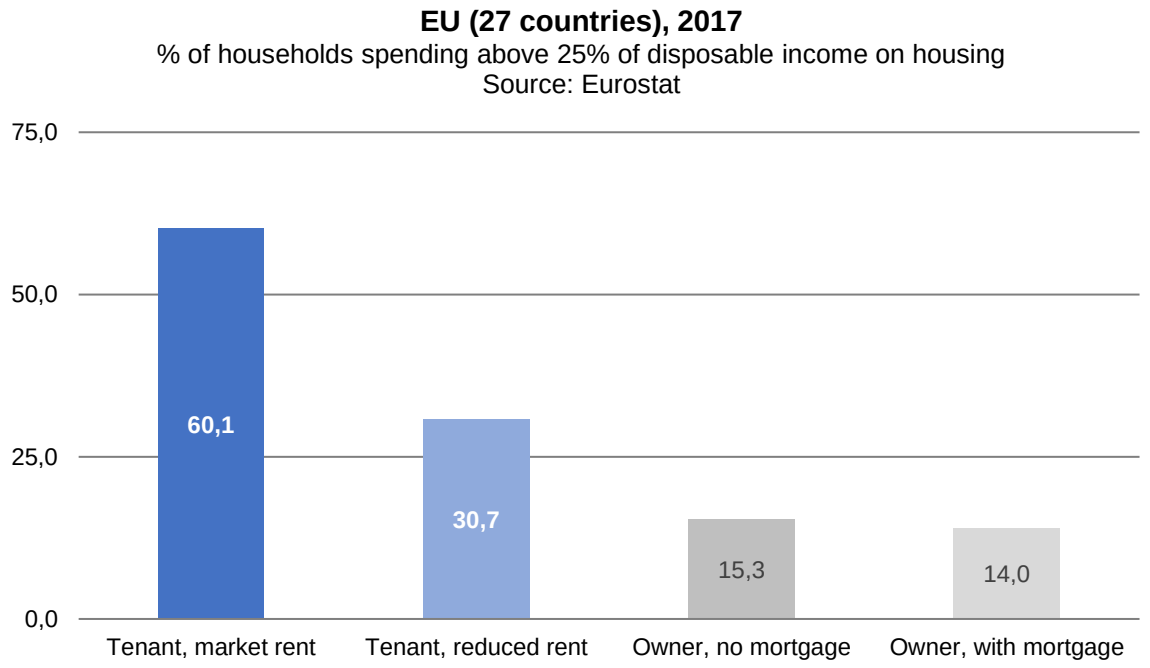

Exhibit 4 – Gross household savings rate in the EU and Sweden, 2007-2017

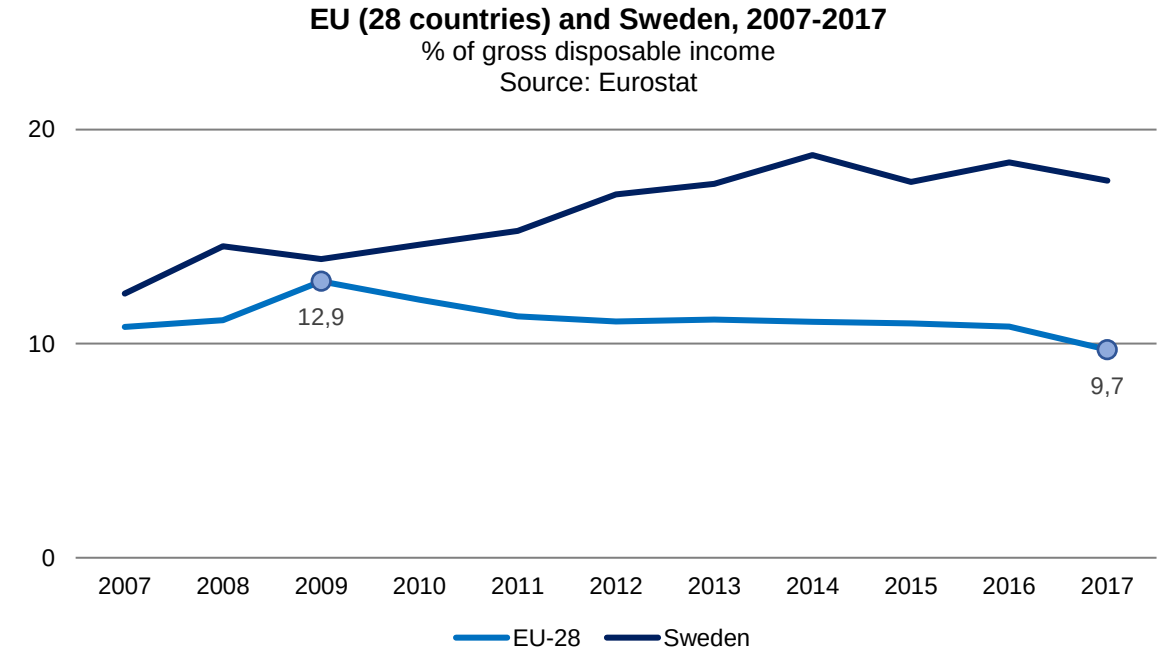

Exhibit 5 – Homeownership rates in the EU and Sweden, 2007-2017

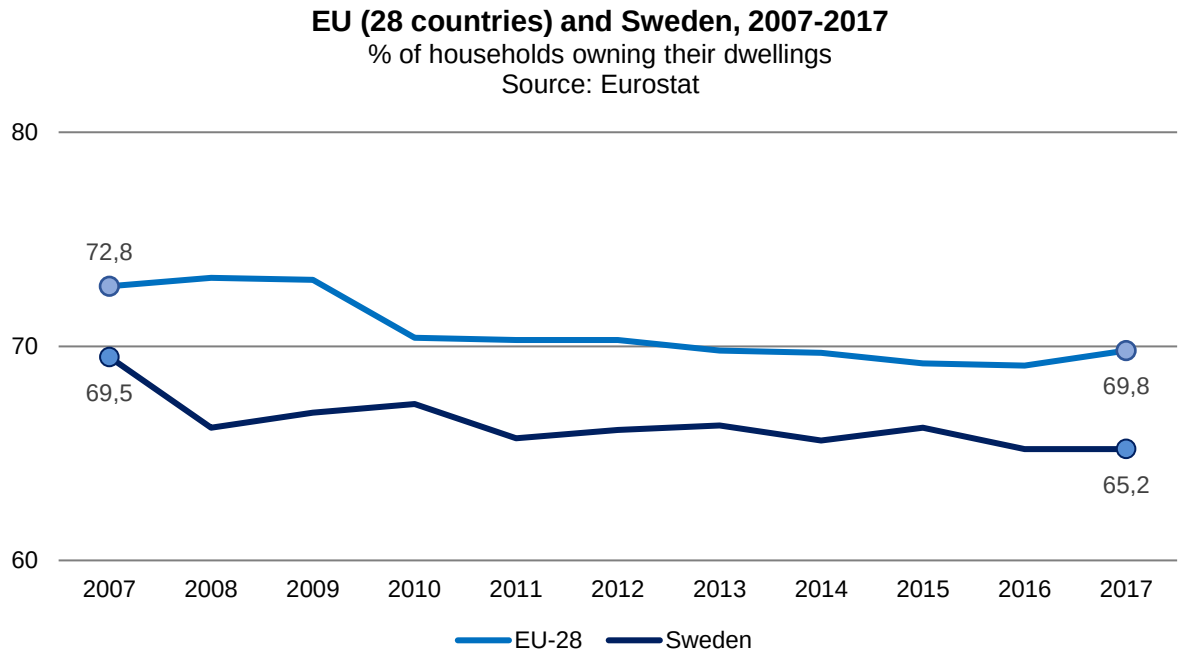

Exhibit 6 – House price index vs Construction cost index in Sweden, 2005-2017

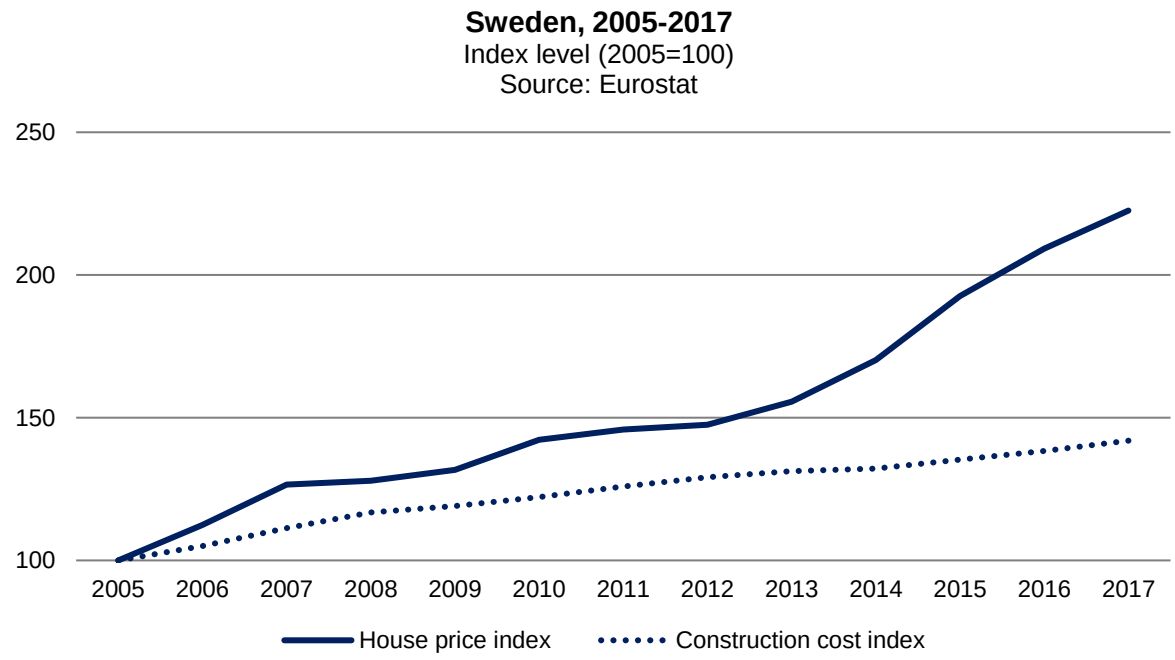

Exhibit 7 – House prices, Household incomes and Construction costs in Stockholm

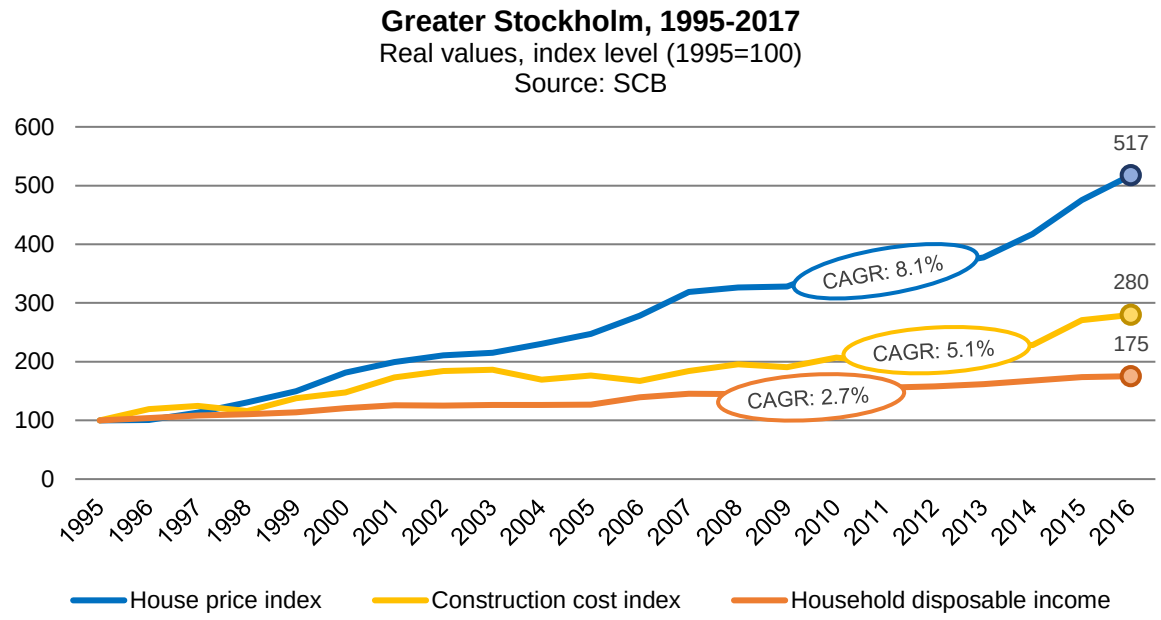

Exhibit 8 – Rent per sqm in rent-control apartments in Greater Stockholm since 2007

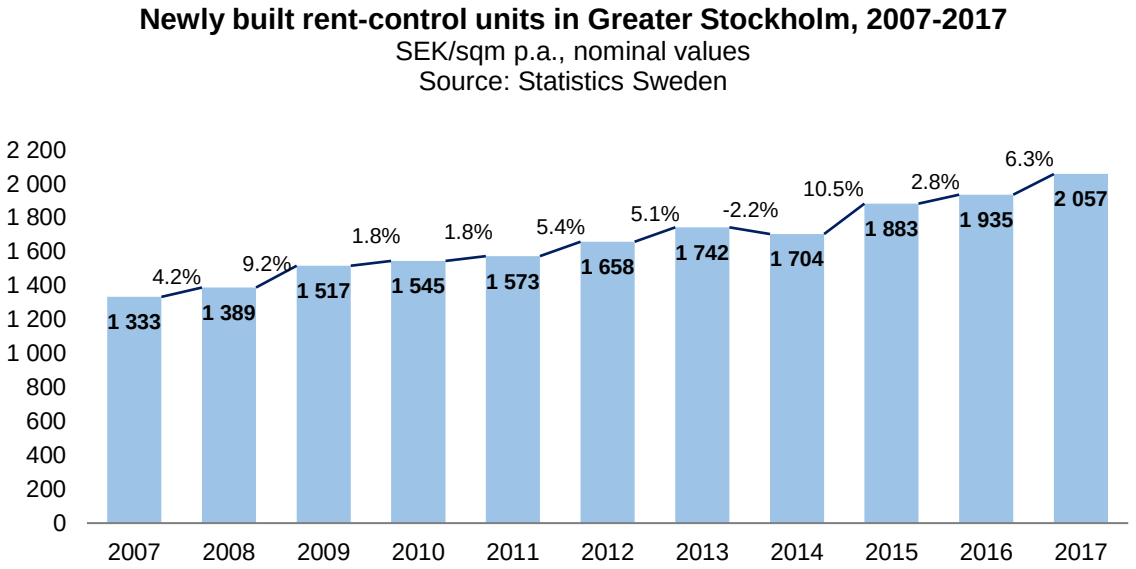

Exhibit 9 – Household savings rates and investment rates in Sweden, 2007-2017

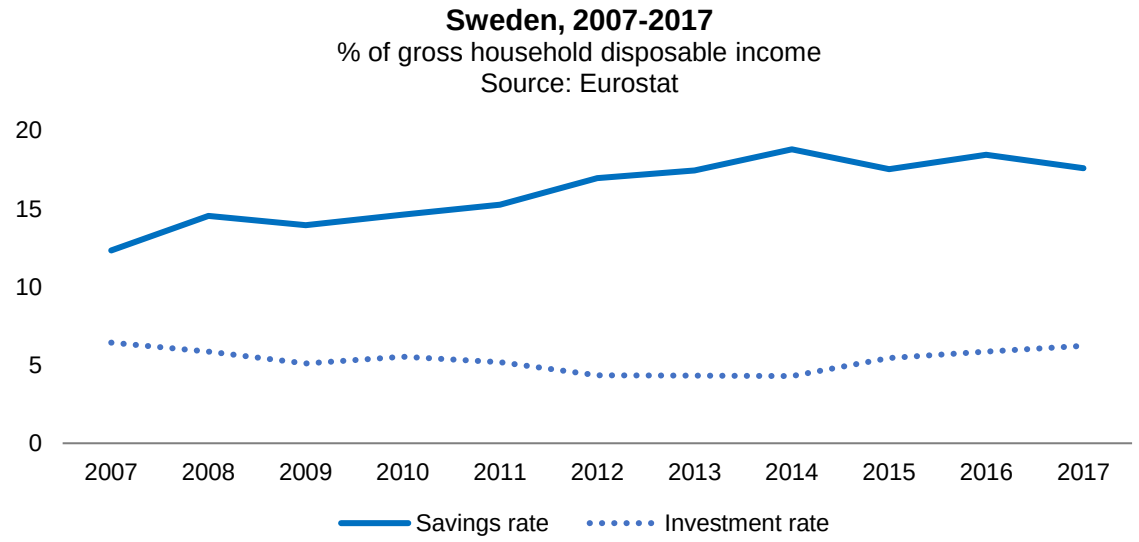

Exhibit 10 – Household currency and deposits in Sweden, 2008-2017

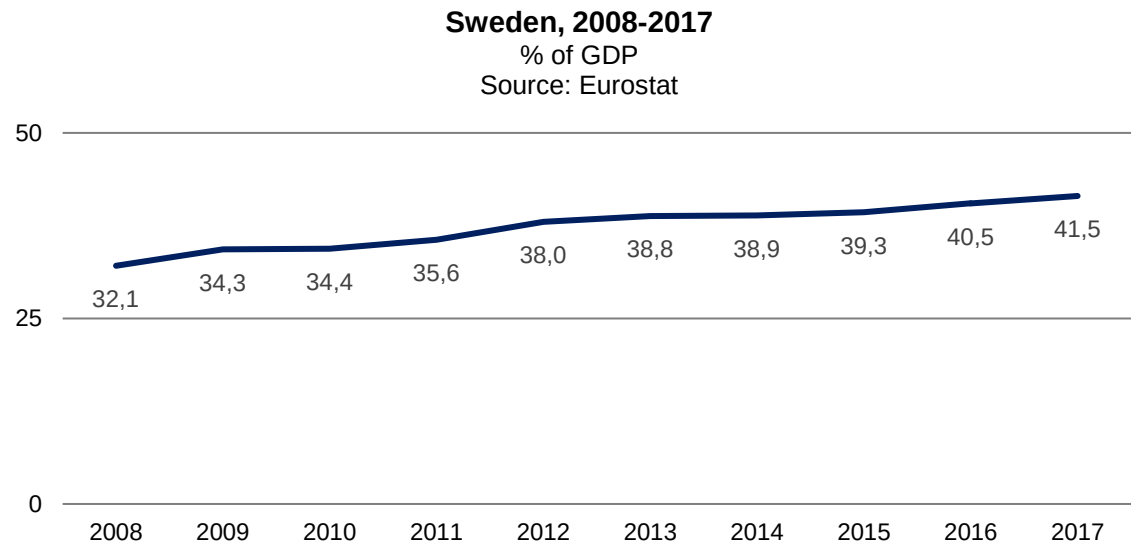

Exhibit 11 – Illustrative simple example of the Renter Equity model

Input	EUR	2018-12-31	2019-12-31	2020-12-31	2021-12-31	2022-12-31	2023-12-31
REGULAR RENTAL		**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Investment / exit	0%	-100 000	0	0	0	0	100 000
Rent	1 000	0	12 000	12 000	12 000	12 000	12 000
Profit	**60 000**	**-100 000**	**12 000**	**12 000**	**12 000**	**12 000**	**112 000**
Developer's IRR	**12,0%**						

RENTER EQUITY		**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Investment / exit	0%	-100 000	0	0	0	0	100 000
Rent	-10,0%	0	10 800	10 800	10 800	10 800	10 800
Eqt contribution	100,0%	0	12 000	12 000	12 000	12 000	12 000
Tenant's Profit	**6 000**	-1	-10 800	-10 800	-10 800	-10 800	49 200
Tenant's IRR	**5,27%**						
Profit	**54 000**	**-100 000**	**22 800**	**22 800**	**22 800**	**22 800**	**62 800**
Developer's IRR	**13,65%**						

Exhibit 12 – Developer's IRR performance under the no-loss condition

3-year										
Eqt contr	**10%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**100%**
Rent reduction	**0,6%**	**1,2%**	**1,7%**	**2,3%**	**2,9%**	**3,5%**	**4,1%**	**4,7%**	**5,2%**	**5,8%**
IRR (1)	0,7%	0,8%	1,0%	1,2%	1,3%	1,5%	1,7%	1,9%	2,2%	2,4%
IRR (2)	0,5%	0,5%	0,5%	0,6%	0,6%	0,6%	0,6%	0,6%	0,6%	0,7%
diff	*-0,1%*	*-0,3%*	*-0,4%*	*-0,6%*	*-0,8%*	*-0,9%*	*-1,1%*	*-1,3%*	*-1,5%*	*-1,7%*

5-year										
Eqt contr	**10%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**100%**
Rent reduction	**1,0%**	**2,0%**	**3,0%**	**4,0%**	**5,0%**	**5,9%**	**6,9%**	**7,9%**	**8,9%**	**9,9%**
IRR (1)	0,8%	1,1%	1,4%	1,8%	2,2%	2,7%	3,2%	3,8%	4,4%	5,1%
IRR (2)	0,5%	0,6%	0,6%	0,6%	0,7%	0,7%	0,8%	0,8%	0,9%	1,0%
diff	*-0,3%*	*-0,5%*	*-0,8%*	*-1,2%*	*-1,6%*	*-2,0%*	*-2,4%*	*-2,9%*	*-3,5%*	*-4,1%*

10-year										
Eqt contr	**10%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**100%**
Rent reduction	**2,1%**	**4,1%**	**6,2%**	**8,2%**	**10,3%**	**12,3%**	**14,4%**	**16,4%**	**18,5%**	**20,5%**
IRR (1)	1,3%	2,2%	3,3%	4,7%	6,2%	7,9%	9,9%	12,0%	14,3%	16,6%
IRR (2)	0,6%	0,7%	0,8%	1,0%	1,3%	1,8%	2,7%	4,5%	7,2%	10,3%
diff	*-0,7%*	*-1,6%*	*-2,5%*	*-3,7%*	*-4,9%*	*-6,2%*	*-7,2%*	*-7,5%*	*-7,1%*	*-6,3%*

Exhibit 13 – Base case assumptions or the Renter Equity case study

Category	Input	Forw Purchase	Development	Note
Areas	**Gross leasable area (GLA)**	**10 000**	**10 000**	**Area planned for tenant's use, incl. hallways etc**
	Efficiency ratio (%)	**75%**	**75%**	**% GLA that is planned for tenants' apartments**
	Net leasable area (NLA)	7 500	7 500	The apartment area to which rent is linked
Dates	Planning (months)	-	6.0	Time needed for ground preparations
	Development (months)	-	18.0	Time from constr. start till tenants move in
	Holding period (years)	**7.0**	**7.0**	**The lease term for the Renter Equity model**
Dev costs	Land price (SEK/sqm GLA)	-	5 000	In line with a data for 2015-2017
	Planning costs (SEK/sqm GLA)	-	3 500	Planning costs range from 2,000 - 5,000 SEK/sqm
	Construction costs (SEK/sqm GLA)	-	17 500	Constr. costs range from 15,000 - 20,000 SEK/sqm
	Forw purchase yield (%)	**4.50%**	**-**	**In line with market data**
	Total cost (SEK/sqm GLA)	**30 833**	**26 000**	**Total cost per sqm**
Income	**Rent (SEK/sqm NLA)**	**2 200**	**2 200**	**In line with rents for new apartments in Stockholm**
	less: OPEX (SEK/sqm NLA)	350	350	Ongoing costs borne by the developer
	NOI (SEK/sqm NLA)	1 850	1 850	The pre-tax income per sqm of NLA for the developer
	Exit yield (%)	4.50%	4.50%	Assuming only increase in value from inflation
	Exit value (SEK/sqm NLA)	**41 111**	**41 111**	**Sales price per sqm w/o adjusting for inflation**
	dev uplfit, %	*0%*	*18.6%*	The profit margin for the project w/o inflation effects
Financing	**LTC (%)**	**-**	**65%**	**Loan-to-cost ratio (bank debt as % of total costs)**
	interest rate, %	-	3.00%	In line with bank standards
	amortisation p.a., %	-	0.00%	Usually 0% as there are no cash inflows during dev
	arrangement fee, %	-	0.50%	Fee for setting up the loan, bank standard
	LTV (%)	**75%**	**75%**	**Loan-to-value ratio (bank debt as % of property value**)
	interest rate, %	2.00%	2.00%	Lower than LTC since LTV financing is long-term
	amortisation p.a., %	1.00%	1.00%	Varies from 0-3% for most cases
	arrangement fee, %	0.50%	0.50%	Fee for setting up the loan, bank standard

Exhibit 14 – Renter Equity returns under various holding periods

Note: Equity contributions kept at 100% of rent values that meet the threshold criteria are in bold and are marked with borders

FORWARD PURCHASE

Δ IRR from Renter Equity		Holding period (yrs)										
		0,5	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0
Rent reduction (%)	0%	-0,2%	0,7%	2,7%	5,0%	7,5%	9,9%	12,1%	14,1%	15,9%	17,3%	18,4%
	5%	-1,1%	-0,5%	1,4%	3,6%	5,9%	8,3%	10,5%	12,5%	14,3%	15,7%	16,9%
	10%	-2,1%	-1,6%	0,1%	2,2%	**4,4%**	**6,7%**	8,9%	10,9%	12,7%	14,1%	15,4%
	15%	-3,0%	-2,7%	-1,2%	0,8%	2,9%	**5,1%**	**7,2%**	**9,2%**	**11,0%**	12,6%	13,8%
	20%	-3,9%	-3,8%	-2,4%	-0,6%	1,4%	3,5%	**5,6%**	**7,6%**	**9,4%**	**10,9%**	**12,3%**
	25%	-4,8%	-4,9%	-3,7%	-2,0%	-0,1%	1,9%	3,9%	**5,9%**	**7,7%**	**9,3%**	**10,7%**
	30%	-5,8%	-6,0%	-5,0%	-3,4%	-1,7%	0,3%	2,2%	**4,2%**	**6,0%**	**7,6%**	**9,0%**
	35%	-6,7%	-7,1%	-6,2%	-4,8%	-3,2%	-1,4%	0,5%	2,4%	**4,3%**	**5,9%**	**7,4%**
	40%	-7,5%	-8,2%	-7,4%	-6,2%	-4,7%	-3,0%	-1,2%	0,7%	2,5%	**4,2%**	**5,6%**
	45%	-8,4%	-9,2%	-8,7%	-7,6%	-6,2%	-4,6%	-2,9%	-1,1%	0,6%	2,3%	3,9%
	50%	-9,3%	-10,3%	-9,9%	-8,9%	-7,7%	-6,3%	-4,7%	-3,0%	-1,2%	0,5%	2,0%
Regular Rental IRR		**-8,4%**	**8,2%**	**13,2%**	**14,8%**	**15,6%**	**15,9%**	**16,1%**	**16,3%**	**16,3%**	**16,3%**	**16,3%**

DEVELOPMENT

Δ IRR from Renter Equity		Holding period (yrs)										
		0,5	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0
Rent reduction (%)	0%	0,1%	0,4%	1,5%	2,8%	4,2%	5,6%	6,9%	8,1%	9,1%	10,0%	10,7%
	5%	-0,1%	0,1%	1,0%	2,2%	3,5%	4,9%	6,2%	7,3%	8,4%	9,3%	10,0%
	10%	-0,2%	-0,2%	0,5%	1,6%	2,9%	**4,2%**	5,4%	6,6%	7,6%	8,5%	9,3%
	15%	-0,4%	-0,5%	0,1%	1,0%	2,2%	3,5%	**4,7%**	**5,8%**	**6,9%**	7,8%	8,5%
	20%	-0,6%	-0,8%	-0,4%	0,4%	1,5%	2,7%	3,9%	**5,0%**	**6,1%**	**7,0%**	**7,8%**
	25%	-0,7%	-1,1%	-0,9%	-0,2%	0,8%	2,0%	3,1%	**4,2%**	**5,3%**	**6,2%**	**7,0%**
	30%	-0,9%	-1,3%	-1,4%	-0,8%	0,1%	1,2%	2,3%	3,4%	**4,4%**	**5,3%**	**6,2%**
	35%	-1,1%	-1,6%	-1,8%	-1,4%	-0,6%	0,4%	1,5%	2,5%	3,6%	**4,5%**	**5,3%**
	40%	-1,2%	-1,9%	-2,3%	-2,0%	-1,3%	-0,4%	0,6%	1,7%	2,7%	3,6%	**4,4%**
	45%	-1,4%	-2,2%	-2,8%	-2,7%	-2,1%	-1,2%	-0,3%	0,8%	1,8%	2,7%	3,5%
	50%	-1,6%	-2,5%	-3,3%	-3,3%	-2,8%	-2,1%	-1,2%	-0,2%	0,8%	1,7%	2,6%
Regular Rental IRR		**22,1%**	**20,9%**	**20,8%**	**20,7%**	**20,5%**	**20,4%**	**20,3%**	**20,1%**	**20,0%**	**19,9%**	**19,8%**

TENANT

IRR from Renter Equity		Holding period (yrs)										
		0,5	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0
Rent reduction (%)	0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
	5%	49%	14%	6%	3,8%	2,8%	2,2%	1,8%	1,6%	1,4%	1,2%	1,1%
	10%	122%	31%	13%	7,9%	**5,7%**	**4,5%**	3,7%	3,2%	2,8%	2,5%	2,2%
	15%	232%	52%	20%	12,3%	8,9%	7,0%	**5,8%**	**4,9%**	**4,3%**	3,8%	3,4%
	20%	400%	76%	28%	17,0%	12,3%	9,6%	7,9%	**6,7%**	**5,9%**	**5,2%**	**4,7%**
	25%	659%	104%	37%	22,2%	15,9%	12,4%	10,2%	**8,7%**	**7,5%**	**6,7%**	**6,0%**
	30%	1066%	139%	47%	27,9%	19,9%	15,4%	12,6%	10,7%	**9,3%**	**8,2%**	**7,4%**
	35%	1717%	182%	58%	34,1%	24,2%	18,7%	15,3%	12,9%	11,2%	**9,9%**	**8,9%**
	40%	2783%	236%	71%	41,0%	28,8%	22,2%	18,1%	15,3%	13,3%	11,7%	**10,5%**
	45%	4580%	303%	85%	48,7%	34,0%	26,1%	21,2%	17,9%	15,5%	13,6%	12,2%
	50%	7715%	390%	102%	57,4%	39,8%	30,4%	24,7%	20,7%	17,9%	15,8%	14,1%

Exhibit 15 – Exit yield effect on Renter Equity under various holding periods

Note: the 7-year IRR outperformance with the base case assumptions is bordered and marked in white for reader's reference

FORWARD PURCHASE

Δ IRR from Renter Equity		Holding period (yrs)					
		5,0	6,0	7,0	8,0	9,0	10,0
Exit yield (%)	-1,00%	7,6%	8,5%	9,3%	10,1%	10,8%	11,4%
	-0,80%	7,6%	8,6%	9,5%	10,3%	11,1%	11,7%
	-0,60%	7,5%	8,6%	9,6%	10,6%	11,4%	12,0%
	-0,40%	7,4%	8,7%	9,8%	10,8%	11,7%	12,4%
	-0,20%	7,3%	8,7%	9,9%	11,1%	12,0%	12,7%
	0,00%	7,0%	8,7%	**10,1%**	11,3%	12,3%	13,1%
	+0,20%	6,7%	8,6%	10,2%	11,6%	12,6%	13,4%
	+0,40%	6,2%	8,4%	10,3%	11,8%	13,0%	13,8%
	+0,60%	5,5%	8,2%	10,4%	12,1%	13,3%	14,2%
	+0,80%	4,4%	7,8%	10,4%	12,3%	13,7%	14,6%
	+1,00%	2,6%	7,1%	10,3%	12,6%	14,1%	15,0%
Regular rental IRR (Δ exit yield = 0%)		**15,9%**	**16,1%**	**16,3%**	**16,3%**	**16,3%**	**16,3%**

DEVELOPMENT

Δ IRR from Renter Equity		Holding period (yrs)					
		5,0	6,0	7,0	8,0	9,0	10,0
Exit yield (%)	-1,00%	3,4%	4,2%	5,0%	5,7%	6,3%	6,9%
	-0,80%	3,6%	4,4%	5,2%	5,9%	6,6%	7,1%
	-0,60%	3,8%	4,7%	5,5%	6,2%	6,8%	7,4%
	-0,40%	4,0%	4,9%	5,7%	6,5%	7,1%	7,6%
	-0,20%	4,1%	5,1%	6,0%	6,7%	7,4%	7,9%
	0,00%	4,3%	5,3%	**6,2%**	7,0%	7,6%	8,2%
	+0,20%	4,5%	5,6%	6,5%	7,3%	7,9%	8,4%
	+0,40%	4,7%	5,8%	6,7%	7,6%	8,2%	8,7%
	+0,60%	4,9%	6,1%	7,0%	7,8%	8,5%	9,0%
	+0,80%	5,1%	6,3%	7,3%	8,1%	8,8%	9,2%
	+1,00%	5,3%	6,6%	7,6%	8,5%	9,1%	9,5%
Regular rental IRR (Δ exit yield = 0%)		**20,4%**	**20,3%**	**20,1%**	**20,0%**	**19,9%**	**19,8%**

TENANT

IRR from Renter Equity		Holding period (yrs)					
		5,0	6,0	7,0	8,0	9,0	10,0
Exit yield (%)	-1,00%	9,8%	8,7%	8,0%	7,5%	7,1%	6,7%
	-0,80%	8,5%	7,7%	7,1%	6,7%	6,4%	6,1%
	-0,60%	7,2%	6,6%	6,3%	5,9%	5,7%	5,5%
	-0,40%	6,1%	5,7%	5,5%	5,2%	5,1%	5,0%
	-0,20%	5,0%	4,8%	4,7%	4,6%	4,5%	4,5%
	0,00%	4,0%	4,0%	**4,0%**	4,0%	4,0%	4,0%
	+0,20%	3,1%	3,3%	3,4%	3,4%	3,5%	3,6%
	+0,40%	2,3%	2,5%	2,8%	2,9%	3,0%	3,1%
	+0,60%	1,4%	1,9%	2,2%	2,4%	2,6%	2,7%
	+0,80%	0,7%	1,2%	1,7%	1,9%	2,2%	2,4%
	+1,00%	0,0%	0,6%	1,2%	1,5%	1,8%	2,0%

FORWARD PURCHASE WITH 22.2% DEVELOPPMENT UPLIFT

Δ IRR from Renter Equity		Holding period (yrs)					
		5,0	6,0	7,0	8,0	9,0	10,0
Exit yield (%)	-1,00%	10,8%	11,8%	12,8%	13,8%	14,6%	15,3%
	-0,80%	11,0%	12,1%	13,1%	14,1%	15,0%	15,7%
	-0,60%	11,1%	12,3%	13,4%	14,5%	15,4%	16,1%
	-0,40%	11,2%	12,5%	13,7%	14,8%	15,7%	16,5%
	-0,20%	11,3%	12,7%	14,0%	15,2%	16,1%	16,9%
	0,00%	11,4%	12,9%	**14,3%**	15,5%	16,5%	17,3%
	+0,20%	11,4%	13,1%	14,6%	15,9%	16,9%	17,6%
	+0,40%	11,5%	13,3%	14,9%	16,2%	17,2%	18,0%
	+0,60%	11,5%	13,5%	15,2%	16,6%	17,6%	18,4%
	+0,80%	11,5%	13,7%	15,5%	16,9%	18,0%	18,7%
	+1,00%	11,5%	13,9%	15,8%	17,3%	18,4%	19,1%
Regular rental IRR (Δ exit yield = 0%)		**29,5%**	**27,2%**	**25,6%**	**24,4%**	**23,5%**	**22,8%**

Exhibit 16 – Rental level's effect on Renter Equity under various holding periods

Note: the 7-year IRR outperformance with the base case assumption is bordered and marked in white for reader's reference

FORWARD PURCHASE

Δ IRR from Renter Equity		Holding period (yrs)					
		5,0	6,0	7,0	8,0	9,0	10,0
Rent (SEK/NLA)	-25%	7,7%	9,5%	11,1%	12,4%	13,5%	14,3%
	-20%	7,5%	9,3%	10,8%	12,1%	13,2%	14,0%
	-15%	7,3%	9,1%	10,6%	11,9%	12,9%	13,7%
	-10%	7,2%	8,9%	10,4%	11,7%	12,7%	13,5%
	-5%	7,1%	8,8%	10,2%	11,5%	12,5%	13,3%
	0%	7,0%	8,7%	**10,1%**	11,3%	12,3%	13,1%
	+5%	6,9%	8,5%	9,9%	11,2%	12,1%	12,9%
	+10%	6,9%	8,5%	9,8%	11,1%	12,0%	12,8%
	+15%	6,8%	8,4%	9,7%	10,9%	11,9%	12,6%
	+20%	6,7%	8,3%	9,6%	10,8%	11,8%	12,5%
	+25%	6,7%	8,2%	9,6%	10,7%	11,7%	12,4%
Regular rental IRR (Δ Rent = 0%)		**15,9%**	**16,1%**	**16,3%**	**16,3%**	**16,3%**	**16,3%**

DEVELOPMENT

Δ IRR from Renter Equity		Holding period (yrs)					
		5,0	6,0	7,0	8,0	9,0	10,0
Rent (SEK/NLA)	-25%	-0,1%	0,2%	0,5%	1,0%	1,5%	2,0%
	-20%	0,2%	0,7%	1,3%	1,9%	2,4%	3,0%
	-15%	1,4%	2,0%	2,7%	3,4%	3,9%	4,5%
	-10%	2,5%	3,2%	4,0%	4,7%	5,3%	5,9%
	-5%	3,4%	4,4%	5,2%	5,9%	6,6%	7,1%
	0%	4,3%	5,3%	**6,2%**	7,0%	7,6%	8,2%
	+5%	5,1%	6,2%	7,1%	7,9%	8,6%	9,1%
	+10%	5,8%	6,9%	7,9%	8,7%	9,3%	9,8%
	+15%	6,3%	7,5%	8,5%	9,3%	9,9%	10,4%
	+20%	6,8%	8,0%	9,0%	9,8%	10,3%	10,8%
	+25%	7,2%	8,4%	9,4%	10,1%	10,6%	11,0%
Regular rental IRR (Δ Rent = 0%)		**20,4%**	**20,3%**	**20,1%**	**20,0%**	**19,9%**	**19,8%**

TENANT

Δ IRR from Renter Equity		Holding period (yrs)					
		5,0	6,0	7,0	8,0	9,0	10,0
Rent (SEK/NLA)	-25%	4,0%	4,0%	4,0%	4,0%	4,0%	4,0%
	-20%	4,0%	4,0%	4,0%	4,0%	4,0%	4,0%
	-15%	4,0%	4,0%	4,0%	4,0%	4,0%	4,0%
	-10%	4,0%	4,0%	4,0%	4,0%	4,0%	4,0%
	-5%	4,0%	4,0%	4,0%	4,0%	4,0%	4,0%
	0%	4,0%	4,0%	**4,0%**	4,0%	4,0%	4,0%
	+5%	4,0%	4,0%	4,0%	4,0%	4,0%	4,0%
	+10%	4,0%	4,0%	4,0%	4,0%	4,0%	4,0%
	+15%	4,0%	4,0%	4,0%	4,0%	4,0%	4,0%
	+20%	4,0%	4,0%	4,0%	4,0%	4,0%	4,0%
	+25%	4,0%	4,0%	4,0%	4,0%	4,0%	4,0%

Exhibit 17 – Effect of leverage on Renter Equity under various holding periods

FORWARD PURCHASE

Δ IRR from Renter Equity		Holding period (yrs)					
		5.0	6.0	7.0	8.0	9.0	10.0
LTV (%)	0%	0,3%	0,3%	0,4%	0,5%	0,5%	0,6%
	10%	0,4%	0,4%	0,5%	0,6%	0,7%	0,8%
	20%	0,5%	0,6%	0,7%	0,8%	0,9%	1,1%
	30%	0,7%	0,8%	1,0%	1,2%	1,3%	1,5%
	40%	1,0%	1,2%	1,5%	1,7%	1,9%	2,2%
	50%	1,5%	1,9%	2,2%	2,6%	3,0%	3,3%
	60%	2,5%	3,1%	3,7%	4,3%	4,9%	5,3%
	65%	3,4%	4,2%	5,0%	5,8%	6,4%	7,0%
	70%	4,7%	5,9%	7,0%	7,9%	8,8%	9,5%
	75%	7,0%	8,7%	10,1%	11,3%	12,3%	13,1%
	80%	11,1%	13,5%	15,3%	16,8%	17,9%	18,6%
Regular rental IRR (LTV = 75%)		15,9%	16,1%	16,3%	16,3%	16,3%	16,3%

DEVELOPMENT

Δ IRR from Renter Equity		Holding period (yrs)					
		5.0	6.0	7.0	8.0	9.0	10.0
LTV (%)	0%	2,5%	2,9%	3,4%	3,8%	4,2%	4,6%
	10%	2,5%	2,9%	3,4%	3,8%	4,2%	4,6%
	20%	2,5%	2,9%	3,4%	3,8%	4,2%	4,6%
	30%	2,5%	2,9%	3,4%	3,8%	4,2%	4,6%
	40%	2,5%	2,9%	3,4%	3,8%	4,2%	4,6%
	50%	2,5%	2,9%	3,4%	3,8%	4,2%	4,6%
	60%	2,8%	3,4%	4,0%	4,6%	5,1%	5,5%
	65%	3,2%	4,0%	4,7%	5,3%	5,9%	6,4%
	70%	3,7%	4,6%	5,4%	6,1%	6,7%	7,3%
	75%	4,3%	5,3%	6,2%	7,0%	7,6%	8,2%
	80%	5,0%	6,1%	7,0%	7,8%	8,5%	9,0%
Regular rental IRR (LTV = 75%)		20,4%	20,3%	20,1%	20,0%	19,9%	19,8%

Exhibit 18 – Interest rate effect on Renter Equity under various holding periods

FORWARD PURCHASE

Δ IRR from Renter Equity		Holding period (yrs)					
		5.0	6.0	7.0	8.0	9.0	10.0
Interest rate on LTV (%)	1.50%	7,3%	8,8%	10,2%	11,3%	12,2%	12,9%
	1.60%	7,2%	8,8%	10,1%	11,3%	12,2%	13,0%
	1.70%	7,2%	8,8%	10,1%	11,3%	12,3%	13,0%
	1.80%	7,1%	8,7%	10,1%	11,3%	12,3%	13,0%
	1.90%	7,1%	8,7%	10,1%	11,3%	12,3%	13,0%
	2.00%	7,0%	8,7%	10,1%	11,3%	12,3%	13,1%
	2.50%	6,7%	8,4%	10,0%	11,3%	12,4%	13,2%
	3.00%	6,4%	8,2%	9,8%	11,3%	12,5%	13,4%
	3.50%	6,0%	7,9%	9,7%	11,3%	12,5%	13,5%
	4.00%	5,5%	7,5%	9,5%	11,2%	12,6%	13,7%
	4.50%	4,9%	7,1%	9,2%	11,1%	12,7%	13,9%

DEVELOPMENT

Δ IRR from Renter Equity		Holding period (yrs)					
		5.0	6.0	7.0	8.0	9.0	10.0
Interest rate on LTV (%)	1.50%	4,3%	5,3%	6,2%	6,9%	7,5%	8,1%
	1.60%	4,3%	5,3%	6,2%	6,9%	7,6%	8,1%
	1.70%	4,3%	5,3%	6,2%	6,9%	7,6%	8,1%
	1.80%	4,3%	5,3%	6,2%	7,0%	7,6%	8,1%
	1.90%	4,3%	5,3%	6,2%	7,0%	7,6%	8,1%
	2.00%	4,3%	5,3%	6,2%	7,0%	7,6%	8,2%
	2.50%	4,3%	5,4%	6,3%	7,1%	7,7%	8,3%
	3.00%	4,3%	5,4%	6,3%	7,2%	7,9%	8,4%
	3.50%	4,3%	5,4%	6,4%	7,3%	8,0%	8,6%
	4.00%	4,3%	5,5%	6,5%	7,4%	8,1%	8,7%
	4.50%	4,3%	5,5%	6,5%	7,5%	8,3%	8,9%

Exhibit 19 – Amortization effect on Renter Equity under various holding periods

Note: the 7-year IRR outperformance with the base case assumption is bordered and marked in white for reader's reference

FORWARD PURCHASE

Δ IRR from Renter Equity		Holding period (yrs)					
		5.0	6.0	7.0	8.0	9.0	10.0
Amrotization rate on LTV (%)	0.00%	7,9%	9,9%	11,5%	12,9%	14,0%	14,8%
	0,50%	7,4%	9,2%	10,8%	12,1%	13,1%	13,9%
	1.00%	7,0%	8,7%	10,1%	11,3%	12,3%	13,1%
	1.50%	6,6%	8,1%	9,4%	10,6%	11,5%	12,3%
	2.00%	6,2%	7,6%	8,8%	9,9%	10,8%	11,5%
	2.50%	5,9%	7,2%	8,2%	9,2%	10,0%	10,7%
	3.00%	5,6%	6,7%	7,7%	8,6%	9,4%	10,0%
	3.50%	5,3%	6,3%	7,3%	8,1%	8,8%	9,4%
	4.00%	5,0%	6,0%	6,8%	7,6%	8,2%	8,8%
	4.50%	4,8%	5,7%	6,4%	7,1%	7,7%	8,2%
	5.00%	4,5%	5,4%	6,0%	6,7%	7,2%	7,7%
Regular rental IRR (amortization = 1%)		**15,9%**	**16,1%**	**16,3%**	**16,3%**	**16,3%**	**16,3%**

DEVELOPMENT

Δ IRR from Renter Equity		Holding period (yrs)					
		5.0	6.0	7.0	8.0	9.0	10.0
Amortization rate on LTV (%)	0.00%	4,5%	5,5%	6,5%	7,3%	7,9%	8,4%
	0,50%	4,4%	5,4%	6,3%	7,1%	7,8%	8,3%
	1.00%	4,3%	5,3%	6,2%	7,0%	7,6%	8,2%
	1.50%	4,2%	5,2%	6,1%	6,9%	7,5%	8,0%
	2.00%	4,2%	5,1%	6,0%	6,7%	7,4%	7,9%
	2.50%	4,1%	5,0%	5,8%	6,6%	7,2%	7,7%
	3.00%	4,0%	4,9%	5,7%	6,4%	7,1%	7,6%
	3.50%	4,0%	4,8%	5,6%	6,3%	6,9%	7,4%
	4.00%	3,9%	4,7%	5,5%	6,2%	6,7%	7,2%
	4.50%	3,8%	4,6%	5,4%	6,0%	6,6%	7,1%
	5.00%	3,7%	4,5%	5,2%	5,9%	6,4%	6,9%
Regular rental IRR (amortization = 1%)		**20,4%**	**20,3%**	**20,1%**	**20,0%**	**19,9%**	**19,8%**

Exhibit 20 – Construction cost effect on Renter Equity under various holding periods

DEVELOPMENT

Δ IRR from Renter Equity		Holding period (yrs)					
		5.0	6.0	7.0	8.0	9.0	10.0
Construction costs (SEK/GLA)	-25%	6,4%	7,4%	8,2%	8,8%	9,2%	9,5%
	-20%	6,2%	7,3%	8,2%	8,9%	9,4%	9,7%
	-15%	6,0%	7,1%	8,0%	8,8%	9,3%	9,8%
	-10%	5,6%	6,7%	7,7%	8,4%	9,1%	9,5%
	-5%	5,1%	6,2%	7,1%	7,9%	8,5%	9,0%
	0%	4,3%	5,3%	6,2%	7,0%	7,6%	8,2%
	+5%	3,5%	4,4%	5,2%	6,0%	6,6%	7,1%
	+10%	2,6%	3,4%	4,2%	4,9%	5,5%	6,0%
	+15%	1,7%	2,4%	3,1%	3,8%	4,4%	4,9%
	+20%	0,8%	1,4%	2,0%	2,7%	3,2%	3,8%
	+25%	-0,1%	0,5%	1,0%	1,6%	2,2%	2,7%
Regular rental IRR (Δ constr. cost = 0%)		**20,4%**	**20,3%**	**20,1%**	**20,0%**	**19,9%**	**19,8%**