

A Work Project, presented as part of the requirements for the Award of a Master's degree in
Finance from the Nova School of Business and Economics.

Vonovia: More Opportunities Than Risks Ahead

JOHANNA KIRSTEN LINDEN

Work project carried out under the supervision of:

Melissa Prado

17/12/2024

Abstract

This thesis evaluates Vonovia's financial and strategic performance and focuses on its growth outlook, valuation, and response to market challenges. The analysis incorporates key drivers like disposals, developments, and liquidity generation, alongside a detailed review of the macroeconomic environment and German real estate industry dynamics. An ESG analysis highlights Vonovia's leadership in sustainability and lower CO₂ tax burden compared to peers. A comprehensive valuation using DCF, APV, and peer comparisons reveals significant upside potential. These findings support a BUY recommendation for the stock and reflect Vonovia's ability to deliver long-term value despite current economic headwinds.

Keywords

Real Estate, Equity Research, Vonovia, Germany, Europe, Residential, Financial Modeling, Financial Analysis, Valuation

This work used infrastructure and resources funded by Fundação para a Ciência e a Tecnologia (UID/ECO/00124/2013, UID/ECO/00124/2019 and Social Sciences DataLab, Project 22209), POR Lisboa (LISBOA-01-0145-FEDER-007722 and Social Sciences DataLab, Project 22209) and POR Norte (Social Sciences DataLab, Project 22209).

Table of Content:

1	Company Profile	1
1.1	Strategy	1
1.2	Portfolio Structure	2
1.3	Business Segments	2
1.4	Shareholder Structure	4
1.5	Management	4
1.6	Market Position	4
1.7	Deutsche Wohnen Deal	4
2	Economic Environment	5
2.1	Macroeconomic Environment	5
2.2	German Residential Market	6
2.3	Laws and Regulations	8
2.4	Transaction Market	8
3	Green Transition	9
3.1	Regulation in Germany	9
3.2	Challenges for Vonovia	9
3.3	ESG Valuation	10
4	Financials	11
4.1	Description Financials 9M24	12
4.2	Topline Rental Growth	12
4.3	Portfolio Value	13
4.4	Disposals	14
4.5	Developments	14
4.6	Dividends	15
4.7	Liabilities and Liquidity	16
5	Valuation	19
5.1	Historical Analysis Share Price	19
5.2	DCF	20
5.3	APV	21
5.4	Comparable Company Analysis	22
5.5	Valuation Outcome	23
5.6	Sensitivity of Earnings to Interest Rate Changes	24
5.7	Sensitivity of Disposals on Debt Metrics	24
6	Risks to the Investment Case	25
7	References	26
8	Appendix	I

List of Figures:

Figure 1: Vonovia's 4+2 strategy, Source: Company data	1
Figure 2: Portfolio Value and Monthly in Place Rent. Source: Company Data	2
Figure 3: Performance EPRA Index vs. 10-yr German Bund Yield. Source: Bloomberg	6
Figure 4: Historical Analysis Dividend. Source: Company Data, Own Estimates	15
Figure 5: Spread German Government 10yr Bund Yield vs. Dividend Yield VNA. Source: Bloomberg, Company Data, Own Estimates	16
Figure 6: Liability Analysis. Source: Company Data, Own Estimates	18
Figure 7: Spread NIY VNA vs. 10yr German Government Bund Yield, Source: Company Data, Bloomberg	18
Figure 8: Trading NAV Premium (Discount) Vonovia vs. Peers. Source: Bloomberg	19
Figure 9: VNA Total Shareholder Return vs. Indices. Source: Bloomberg	20

List of Tables:

Table 1: ESG Ranking Vonovia vs. Peers. Source: Company Data	10
Table 2: Cost of CO ₂ Tax Vonovia vs. Peers. Source: Company Data	10
Table 3: Scenario Analysis Additional CapEx. Source: Company Data	11
Table 4: Peer Comparison Ratios, Source: Bloomberg, Company Data, Own Estimates	22
Table 5: Sensitivity Analysis Interest Rate Change. Source: Own Estimates	24
Table 6: Sensitivity Analysis Disposals, Source: Own Estimates	25

1 Company Profile

Vonovia is headquartered in Bochum, Germany and is the country's largest residential real estate company, managing a portfolio valued at approximately €82.64bn as of September 30, 2024. Most of its properties are in Germany (89%), with smaller holdings in Sweden (7.9%) and Austria (3.4%). Vonovia specializes in developing, acquiring, and managing affordable housing and focuses on providing quality living spaces at reasonable prices. With a market capitalization of approximately €24.91bn, the company has been listed on the Frankfurt Stock Exchange since 2013 and is a member of key indices like the DAX 40 and DAX 50 ESG, among others (Bloomberg 2024). The company was formed in 2015 through the merger of Deutsche Annington and GAGFAH, two major German housing firms. Following its IPO in 2013 and operational improvements, Deutsche Annington rebranded as Vonovia. In 2016, it entered the Austrian market with the acquisition of Conwert. By acquiring BUWOG and Victoria Park AB in 2018 and Hembla AB in 2019, Vonovia expanded into Sweden. Its 2021 acquisition of Deutsche Wohnen added 152,000 units to its portfolio. During this period of rapid growth, Vonovia also committed to CO₂ neutrality by 2045 (Vonovia 2024).

1.1 Strategy

Vonovia's "4+2 Pillar Strategy," established during its 2013 IPO, is built to respond to major trends like urbanization, a widening housing supply-demand gap, climate change, and demographic shifts. The core pillars include¹:



Figure 1: Vonovia's 4+2 strategy, Source: Company data

¹ These pillars are complemented by acquisitions when strategic opportunities arise and selective international expansion, though both are currently paused due to the high-interest rate environment and balance sheet priorities.

1.2 Portfolio Structure

With a market value of around €82.64bn (9M24), the real estate portfolio includes 76% of residential properties, 23% of garage and parking and 1% of commercial buildings. The majority of properties are multifamily houses (MFH). Over the past ten years, the portfolio has grown with a CAGR of 23.53%. In FY23², the portfolio value dropped by 9.97% due to challenging economic conditions. By 9M24, while the downward trend persisted, the decline had slowed, with the portfolio value decreasing by only 3.29% compared to FY23. The average monthly in-place rent rose steadily, reaching €7.94/m² by 9M24, despite challenging market conditions. Over the past decade, it has grown at a robust CAGR of 8.87% (Vonovia 2024).

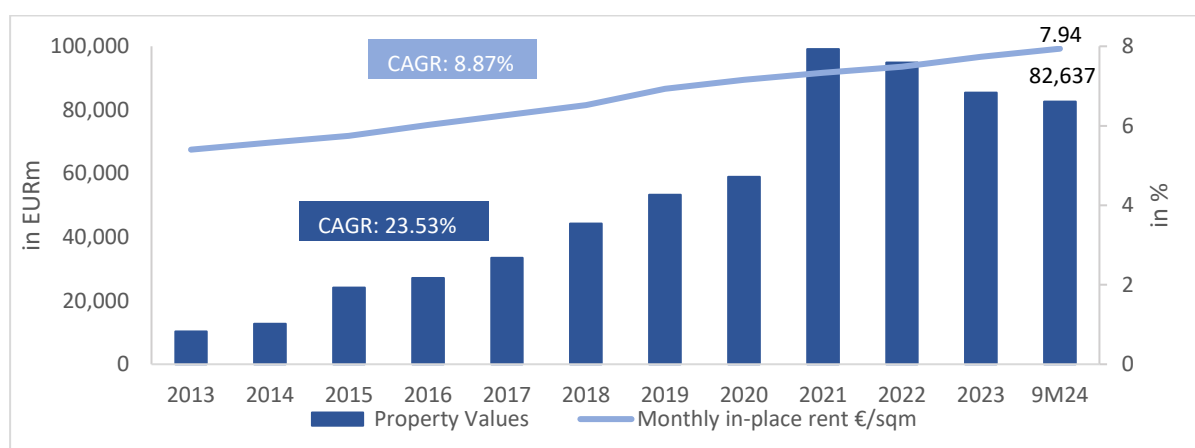


Figure 2: Portfolio Value and Monthly in Place Rent. Source: Company Data

1.3 Business Segments

Vonovia's business segments are split into four different units³:

Vonovia's **rental segment** focuses on managing and improving its residential properties across Germany, Austria, and Sweden. Until FY22, organic rental growth was mainly driven by modernization (48.5%), OVM⁴ (30.3%), and new construction (21.2%). However, in FY23,

² In this work, the term "FYXX" refers to the fiscal year covering the period from January 1, XX, to December 31, XX.

³ Following a strategic review during the merger, Vonovia decided to discontinue the nursing care activities previously managed by Deutsche Wohnen. These services are no longer part of the company's long-term strategy. As a result, they are categorized as discontinued operations in the group's financial reporting (FY23).

⁴ The OVM (local comparable rent) is a standardized measure used to determine fair rental prices based on the type, size, condition, location, and customary rents of similar apartments in a city. A more detailed explanation is available in 2.3.

rising inflation, higher interest rates, and increased construction costs shifted the focus, with Mietspiegel adjustments contributing 60.5% of growth, while modernization and new construction accounted for 26.3% and 13.2%, respectively. Overall, rental growth has stayed positive, ranging between +3.0% and +4.0%, with Vonovia targeting +4.0% going forward (Vonovia 2024). Vacancy rates have decreased consistently, from 2.4% in FY20 to 2.0% in FY23, remaining low compared to other players in the German residential sector⁵ (see Appendix AA) (Bloomberg 2024).

The **value-add segment** complements Vonovia's rental business with services like maintenance, modernization, tenant services, multimedia, and energy solutions. Growth has been driven by expanding these areas, with revenues increasing at a 1.18% CAGR over the past five years (FY19-23). Operating expenses (OPEX), however, rose significantly in FY22 and FY23 due to inflation, reaching a 4.64% increase from FY19 to FY23. In 9M24, the OPEX-to-Revenue ratio decreased by 6.91% year-over-year (YoY), signaling a modest market recovery (Vonovia 2023).

The **recurring sales segments** includes the sale of individual units, such as condominiums and single-family homes from its portfolio. Disposals of larger properties and entire buildings when opportunities arise are not part of the recurring sales segment and are reported separately. Revenues in the recurring sales segment fell by 41.24% YoY in FY23, reflecting the weakness in transaction markets. However, in 9M24 transaction markets showed recovery and revenues in the recurring sales segment increased 28.31% YoY (Vonovia 2023).

The **development segment** involves acquiring land, planning and building residential properties. These projects may be developed for sale or added to Vonovia's own portfolio, with a focus on selected, strategically important locations. The development segment was also hit by the higher interest rate environment and revenues fell 37.82% YoY in FY23 (Vonovia 2023).

⁵ Vacancy rates for FY23: 2.90% (LEG), 4.00% (TAG), 3.80% (GYC)

1.4 Shareholder Structure

Norges Bank (central bank of Norway) is the largest shareholder with a 14.9% stake, followed by Blackrock (8.4%) and APG (3.8%). 95.5% of the shares are free float (Bloomberg 2024).

1.5 Management

Vonovia's Management Board consists of five members: Rolf Buch (CEO since 2013), Philip Grosse (CFO since 2022), Arnd Fittkau (CRO since 2019), Daniel Riedl (CDO since 2018), and Ruth Werhahn (CHRO since 2023) (Vonovia 2024).

1.6 Market Position

Vonovia is the leading player in Germany's residential real estate market and outperforms its competitors in both size and market presence (Bloomberg 2024). In 2023, the German residential market comprised approximately 43.65m apartments, with Vonovia accounting for 1.11% of all residential units (Federal Statistical Office 2024). Vonovia's main peers are LEG, TAG, and Grand City Properties (GYC), all of which primarily focus on the acquisition, management, and development of residential properties in Germany. Despite their similar business focus, Vonovia's market capitalization is more than twice the combined market cap of these competitors (see Appendix Z for further calculation) (Bloomberg 2024).

1.7 Deutsche Wohnen Deal

On May 24, 2021, Vonovia announced its largest deal to date, the public takeover of Deutsche Wohnen⁶. The acquisition added 154,717 apartments in key cities like Berlin, Dresden, and Frankfurt, with an average rent of €7.17/sqm in 2021 and a low vacancy rate of 1.60% (Vonovia 2021). By the end of 2023, the portfolio's value rose to €24.08bn, with rents increasing 3.3%

⁶ Initially, Vonovia offered €53.03 per share (an 18% premium), but the bid failed to secure shareholder approval. The adjusted offer of €53.00 per share was accepted on September 30, 2021. Vonovia acquired 87% of Deutsche Wohnen, staying below the 90% threshold to avoid Germany's real estate transfer tax. In 2023, it moved to acquire the remaining 13%, transferring 20% to a joint venture with Apollo to retain control and optimize tax efficiency (Rbb24 2024).

YoY to €7.80/sqm. The deal was financed through a €20bn bridge loan, an €8.1bn capital increase, and bond placements with low interest rates (Vonovia 2023). The financials for FY23 still partially reflect one-time effects associated with this deal.

2 Economic Environment

Understanding the macroeconomic environment is essential for evaluating the value of a real estate company, as its business performance is influenced by economic and political conditions.

2.1 Macroeconomic Environment

Germany's economy has traditionally been built on globalization, which has supported rising wages and improved living standards. The economy is heavily focused on exports and closely connected to the US and Chinese markets. However, this growth model now faces significant pressure from increasing protectionism, increased energy prices resulting from the Ukraine conflict, and demographic challenges. Germany faced inflation rates of 6.9% in 2022 and 5.9% in 2023, alongside a sharp rise in Eurozone interest rates, which increased from 0% in mid-2022 to a peak of 4.5% (Bloomberg 2024). These factors have added strain to the economy. The ifo Business Climate Index, a key indicator of German business sentiment, improved slightly in October 2024 to 86.5 points after four months of decline. While companies expressed greater satisfaction with their current situation, expectations remain cautious, reflecting ongoing economic uncertainty (see Appendix Y) (ifo Institut 2024). In response to easing inflation, which dropped to 1.8% in the Eurozone by September (increased again to 2.3% in November 2024), the ECB began cutting interest rates, reducing them by 25 basis points at its last meeting to 3.25% (Eurostat 2024). Inflation in Germany is expected to align with the ECB's 2.0% target by 2025. The market expects interest rates to come down to 2.6%⁷ in 2025.

⁷ The macroeconomic forecast is derived from the average of estimates provided by the ECB and Bloomberg. For detailed calculations, please refer to Appendix Y.

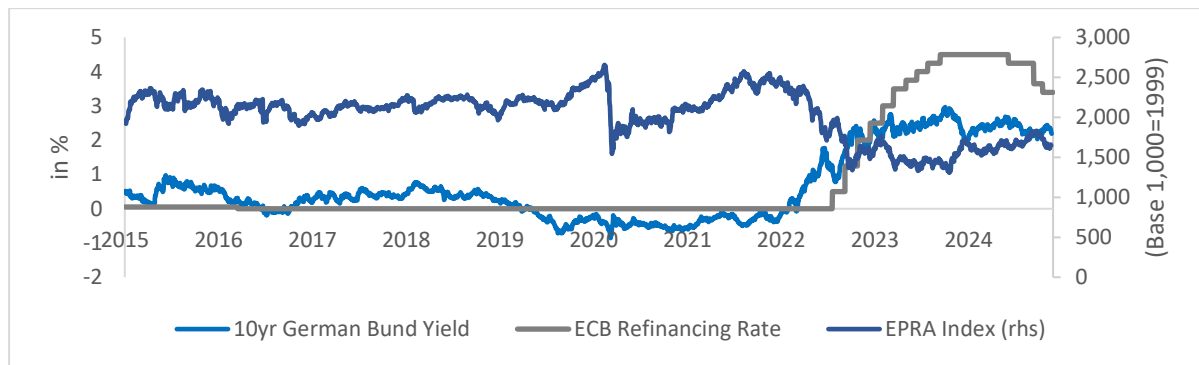


Figure 3: Performance EPRA Index vs. 10-yr German Bund Yield. Source: Bloomberg

Figure 3 underscores the real estate sector's sensitivity to monetary tightening represented by the EPRA Index⁸, and key interest rate indicators (10-year German Bund yield and the ECB refinancing rate). Low and steady interest rates between 2015 and 2021 kept financing costs low and increased investor demand for yield-generating assets, which in turn caused high real estate valuations. However early in 2022, rising interest rates caused valuations to drop significantly. A recovery in real estate values is expected as interest rates start to decline and are eventually predicted to remain around 2%.

2.2 German Residential Market

The German residential market is under considerable pressure as economic conditions shift. After nearly 20 years of steady price growth, 2023 marked a turning point, with the bulwiengesa-Immobilienindex⁹ showing stagnation in property prices (Bulwiengesa 2024). This change reflects wider economic challenges, including tighter credit, high inflation, and reduced purchasing power. Meanwhile, rental prices continue to rise, increasing by 5.3% for new and existing leases, as more people turn to renting due to affordability challenges in the housing market. JLL data shows that asking rents in Germany's Big 8 cities rose 5.0% above

⁸ The EPRA Index, developed in collaboration with FTSE and Nareit, is the leading global benchmark for listed real estate (Bloomberg 2024)

⁹ The Bulwiengesa Index tracks German property price trends for 47 years, serving as a key benchmark for real estate, urban development, and monetary policy (Bulwiengesa 2024).

the five-year average in 1H24, with Berlin leading at +11.4% YoY. In contrast, condominium prices declined by an average of 3.6% during the same period, though newly built units were more stable, down only 1.3% YoY, reflecting limited price flexibility due to high development costs (JLL 2024). The demographics of Germany have changed over the last ten years, with the country's total population increasing by about 4.8% to reach 84.67m in 2023. This growth has largely been driven by the arrival of refugees from Ukraine in 2022, which has significantly increased housing demand. Population growth in Germany's prime urban centers has been steady, with Berlin leading the trend at a 10-year CAGR of 2.60% (Federal Statistical Office 2024). With 30% of Vonovia's portfolio located in Berlin and a strong presence in other urban areas, the company is well-positioned to benefit from rising housing demand in these high-growth regions (Vonovia 2024).

Nevertheless, this demand has not been met by the supply of additional dwelling units. With deficits averaging 65,000–95,000 units per year from 2016 to 2022, the government has continuously fallen short of its yearly goal of 400,000 additional units. Only 219,561 additional units were completed in 2023 as a result of the gap widening further due to increased financing and construction service prices. The outlook for 2024 appears even more challenging, as only 116,833 units were built by the end of August (Federal Statistical Office 2024). According to JLL, the number of completed apartments is expected to decline in the coming years due to a lagged effect from fewer building permits issued recently. Many of the apartments completed in 2023 were based on permits obtained under more favorable conditions before 2022, when interest rates and construction costs were lower. With a 26.7% drop in building permits in 2023 (Federal Statistical Office 2024), future completions will likely fall short, as fewer new projects have been initiated in response to increased costs and economic pressures. In November 2024, Vonovia announced to restart its construction program in 2025 to address the housing shortage and growing demand (Vonovia 2024).

2.3 Laws and Regulations

The Mietspiegel, Germany's official rent index, offers a standardized reference for local rents, reflecting typical agreements based on factors like size, location, and condition. It regulates rent increases, allowing landlords to adjust rents up to the local comparative level. In areas with high housing demand, the Mietpreisbremse, caps new rental agreements at 10% above the local reference rent. Most major regions, including Berlin, updated their Mietspiegel this year (BMWSB 2024). However, since the Mietspiegel is based on a six-year average, the recent inflationary pressures are only partially reflected in the updated figures, limiting their full impact. The Kappungsgrenze (cap limit), as outlined in Section 558 of the German Civil Code (BGB), limits rent increases for existing leases to a maximum of 20% over a three-year period, based on the local reference rent (Mietspiegel). In regions with high housing demand, such as Berlin, this cap is further reduced to 15% (BMWSB 2024). For Vonovia, this means that while the updated Mietspiegel allows for some rent growth, the Kappungsgrenze limits the immediate realization of these increases, especially in Berlin, where a significant portion of its portfolio is located.

2.4 Transaction Market

The decline in transaction volumes in 2023 was primarily driven by the discrepancies in price expectations between buyers and sellers and uncertainties related to the German Buildings Energy Act (GEG). In Q3 of 2024, the German residential transaction market continued its recovery with achieving a total investment volume of €5.3bn (+16% YoY) across 94 transactions for FY24. Berlin remains the leading market (over €1.8bn in investments), while other cities like Munich and Düsseldorf saw moderate activity. Large transactions exceeding €100m accounted for a significant share and were primarily driven by equity-rich investors like family offices and real estate funds. Prime yields in the Top 7 cities stabilized at 3.4% in Q3, with slight growth evident for premium properties. Looking ahead, transaction volumes are

expected to reach €8bn by year-end, supported by a well-filled pipeline and improving market sentiment. The ongoing stabilization of prime yields and potential compression in 2025 signal a gradual recovery for the sector (CBRE 2024).

3 Green Transition

The real estate sector contributes 30% of Germany's CO₂ emissions, making it a key player in the country's efforts to achieve net-zero targets and subject to strict regulatory oversight (Deutsche Bank 2023). Vonovia has implemented various programs to align with ESG standards (see Appendix X).

3.1 Regulation in Germany

In 2021, Germany implemented its national emissions trading system (nETS) to control transportation and heating emissions that were not covered by the EU ETS. The price of CO₂ began at €25 per ton in 2021, went up to €30 in 2022, and will reach €55 by 2025 before going to auction in 2026 (Clean Energy Wire, 2024). Initially, the CO₂ tax was fully passed on to tenants, meaning landlords did not bear direct costs in 2022. However, from 2023 onward, regulatory changes require the tax to be shared between landlords and tenants. The landlord's share depends on the building's CO₂ emissions, with higher-emission properties potentially facing up to 95% of the tax burden (Immowelt 2024). Property owners are further encouraged to embrace more sustainable methods by the new Building Energy Act (GEG) in Germany, which requires all heating systems installed in new buildings to be powered by at least 65% renewable energy as of January 1, 2024 (BMWK 2024).

3.2 Challenges for Vonovia

Vonovia faces considerable challenges in reducing its carbon footprint, with 97% of Scope 1 and 2 emissions linked to its property portfolio in Germany. A significant 96% of total emissions stem from tenant energy consumption, which Vonovia can only indirectly influence

through measures like efficient heating systems and tenant education (Vonovia 2024). To address this, the company is investing in energy efficiency upgrades, including facade insulation, heating system modernization, and window replacements. While these initiatives align with the Federal Climate Change Act's goal of a nearly climate-neutral portfolio by 2045 (under 5 kg CO₂ per m² of rental space), they require substantial investment and careful execution across Vonovia's extensive portfolio.

3.3 ESG Valuation

It is becoming increasingly important to comprehend a company's ESG performance because of the rising risks connected with stricter regulations and challenges in achieving climate change targets, particularly in the real estate industry. Vonovia ranks among the top companies in the real estate sector for ESG performance, consistently placing first or second among its peers. Sustainalytics ranks Vonovia 8th out of 1,007 real estate companies, with a score of 6.0.

Table 1: ESG Ranking Vonovia vs. Peers. Source: Company Data

	Sustainalytics	MSCI ESG	CDP Climate Change	ISS ESG	S&P Global CSA
GYC	301	N/A	N/A	N/A	58
LEG	11	AAA	B	C	N/A
TAG	2	A	C	C-	N/A
VNA	8	A	A-	C	63

I conducted an independent analysis of the ESG performance of Vonovia's property portfolio compared to its peers, focusing on the anticipated CO₂ tax burden under the newly introduced regulations. The assessment incorporates the energy efficiency levels of the buildings within each portfolio and a calculated company-specific emission factor, derived from their respective heating and energy mix (for detailed calculation refer to Appendix X).

Table 2: Cost of CO₂ Tax Vonovia vs. Peers. Source: Company Data

	% Cost of CO ₂ tax	Energy level A/ A+	kg/CO ₂ sqm
LEG	53.5%	0.9%	36.78
TAG	38.5%	3.4%	29.25
GYC	73.5%	0.5%	50.82
VNA	43.3%	1.2%	29.58

Vonovia demonstrates solid ESG performance, ranking favorably among peers, with only TAG achieving a slightly better position. Vonovia outperforms LEG and GYC in terms of CO₂ tax

burden and energy efficiency, assuming an average cost responsibility of 43.3% under the new regulations. The majority of buildings are categorized in classes C, D, and E, corresponding to cost contributions ranging from 30-60%. Despite above-average nationwide investments, Vonovia's refurbishment rate declined to 1.2% in FY23 due to market challenges, well below its 2017 target of 3.5–4.0%. However, the company aims to increase this rate to 1.9% in the coming years, with 98% of new investments achieving an A-energy efficiency rating or higher. In terms of capital expenditures for environmentally sustainable activities (taxonomy-aligned), Vonovia significantly exceeds the peer average, with 31.2% of Capital Expenditures (CapEx) allocated in 2022 and 27.1% in 2023 to sustainable activities, compared to peer averages of 7.8% and 21.6%, respectively. This highlights Vonovia's stable and strong commitment to sustainability, even during challenging market conditions. I conducted a scenario analysis to assess the impact of additional environmental CapEx in FY25E on the company's financials and valuation. While the investments slightly boost portfolio value by improving asset quality and energy efficiency, they also put short-term pressure on cash flows. This results in a minor increase in LTV and a slight drop in the calculated DCF share price, reflecting investor concerns about short-term risks before long-term benefits, like cost savings or higher rents, are realized.

Table 3: Scenario Analysis Additional CapEx. Source: Company Data

	2025E	After CapEx Change		Difference	
		(+)€100m	(+)€150m	(+)€100m	(+)€150m
FCFF	1,666.3	1,566.4	1,516.4	-6.0%	-9.0%
LTV (%)	46.7	46.7	46.8	0.1%	0.2%
Portfolio Value	78,605.6	78,705.6	78,755.6	0.1%	0.2%
DCF Share Price	33.54	33.43	33.37	-0.3%	-0.5%

4 Financials

To perform a robust valuation, each relevant line item has been forecasted based on company targets, macroeconomic indicators, historical trends, and industry benchmarks. Detailed assumptions and methodologies are outlined in the Appendix for added context and support.

4.1 Description Financials 9M24

The 9M24 report aligned with sector trends, showing stabilization in property values. Reported EBIT was €127.6m, while adjusted EBITDA grew 4% YoY, supported by a 58% YoY increase in recurring sales, despite lower margins. Financial expenses rose 17.02% YoY, keeping shareholder profit at €-546.7m, a notable improvement from €-3,513.5m in 9M23. Property values declined 8.88% YoY but stabilized with just a 0.20% decrease since 1H24.

The non-rental business saw adjusted EBITDA grow 99% YoY, driven by value-add services, while organic rent growth held steady at 3.8%, supported by Mietspiegel adjustments (2.2%) and modernization efforts (1.3%). Leverage improved with LTV at 46% and net debt/EBITDA at 15.1x, alongside an Interest Coverage Ratio (ICR) increase to 3.7x.

4.2 Topline Rental Growth

The rental growth forecast is divided across the German, Swedish, and Austrian portfolios, with the German portfolio receiving the most detailed focus due to its importance and the availability of comprehensive data. For the German portfolio, rental growth is driven by Mietspiegel adjustments, modernization efforts, tenant fluctuation, and other factors. FY23 rental growth did not fully reflect inflationary pressures due to Mietspiegel calculations relying on a six-year average. Over the forecast period, Mietspiegel adjustments are expected to play a significant role, particularly in FY24E (2.5%) and FY25E (2.2%), before stabilizing at 1.6%. While 56% of apartments still have room for Mietspiegel adjustments, the upside is forecasted conservatively limited by delays and higher caps in cities like Berlin. Modernization is anticipated to contribute a low double-digit percentage to rental growth based on company data, with an estimated upside of 10%. The fluctuation rate stood at 8.2% in 9M24, indicating a relatively low level. As interest rates stabilize, no further declines are anticipated, and the rate is expected to remain below the 5-year average of 9% due to the ongoing impact of inflation on

household incomes and rental affordability. For FY24, like-for-like rental growth in the German portfolio is forecasted at 4.00%, followed by 3.85% in FY25, and 3.51% from FY26E onwards. In Austria, steady rental growth of 3.5% by FY25E is expected, supported by affordable housing policies and strong urban demand, despite rising construction costs (Investropia 2024). Sweden is forecasted to show the strongest growth among Vonovia's markets, stabilizing at 4.0% annually from 2025 onwards, driven by high demand and a stable rent-setting system (Global Property Guide 2024) (for further explanation see Appendix B). Overall, rental growth across all portfolios is expected to be 4.05% in FY24E, 3.08% in FY25E, and 3.56% annually from FY26E onwards. Net rental income is calculated by applying rental growth, subtracting losses from disposals, and adding income from new developments. Gross rental income includes ancillary costs, which are projected to grow at 2.4% in 2024, 3.0% in FY25E, and 2.6% annually from FY26E onward as the energy market stabilizes (see Appendix O).

4.3 Portfolio Value

The portfolio value decreased significantly in 2023, ending the year at €81.12bn compared to €92.30bn in 2022. This decline was driven by the sharp rise in interest rates, which pushed capitalization rates upwards and negatively impacted property valuations. In FY24, the portfolio value is expected to decline to €78.44bn, with negative fair value adjustments decreasing substantially to €1.783bn as interest rates begin to stabilize and inflation growth slows. By 2025 and beyond, with anticipated interest rate cuts reducing capitalization rates further, the portfolio value is expected to grow by 0.21% in FY25E and 1.9% in FY26E, driving the portfolio value upward to €90.27bn by 2028. This recovery reflects the expected normalization of the macroeconomic environment and improved investor sentiment. The forecast assumes no future acquisitions, as Vonovia shifts its focus to modernization and deleveraging, rather than expanding through acquisitions. For simplicity, the portfolio value is calculated by taking the beginning-year value, adding CapEx, subtracting the forecasted

disposals, and adjusting for net income from fair value adjustments of investment properties (see Appendix C). The Gross Yield is projected to rise to 4.4% in FY25E (up from 4.0% in FY23) and is expected to stabilize at 4.3% by FY28E.

4.4 Disposals

In FY23, Vonovia made strong progress with its sales strategy, exceeding its original target of €2bn by reaching a total of €4bn in disposals¹⁰. Vonovia has successfully met its 2024 disposal target of €3bn with its 9M24 reporting. One key transaction was the sale of 4,500 units from the Prima Portfolio in Berlin, generating €700m. Additionally, Vonovia secured €300m from the divestment of 27 nursing homes from the Deutsche Wohnen portfolio. Vonovia also completed two significant agreements with HIH Invest, transferring 21 development projects valued at €1bn to co-managed funds. Disposals are expected to increase as Vonovia continues to prioritize deleveraging and addressing upcoming bond maturities. By the end of 9M 2024, the company had already sold 5,429 units, underscoring its focus on generating liquidity. With property values showing signs of stabilization and bid-ask spreads narrowing, market conditions have become more favorable, making additional disposals more feasible. This strategic approach is aimed at improving debt metrics and ensuring compliance with key financial covenants. Disposals are projected to rise to 5,600 units in FY24E and stabilize at 6,500 units annually from FY25E onwards, supported by improved market liquidity, narrowing bid-ask spreads and Vonovia's focus on achieving target debt KPIs. Gross profit margins are expected to improve from 6.0% in FY24E to 15.0% by FY27E (see Appendix D).

4.5 Developments

Vonovia's management has emphasized a strategic shift towards liquidity generation over price optimization in its development activities. As a result, with improving market conditions and a

¹⁰ €3.3bn are reflected in FY23 numbers

strong focus on enhancing liquidity, the number of units developed for sale is expected to increase. By the end of 9M24, Vonovia had already completed 1,534 apartments for sale (+33% YoY). For FY25E, I anticipate an increase in development volumes to 1,800 units, followed by 2,000 units in FY26E, and a steady level of 2,200 units annually from FY27E onward (see Appendix E). This growth is expected to drive development margins to 26.2% in FY25E and 33.3% in FY26E. The increasing gross profit margin in the development forecast is primarily driven by Vonovia's strategic focus on developments in prime locations, where properties can command higher sales prices compared to their book values.

4.6 Dividends

In FY23, Vonovia declared a dividend per share (DPS) of €0.90, slightly up from €0.89 in FY22. Shareholders had the option to receive the dividend in either cash or as a scrip dividend, to support the company's balance sheet. In the coming years, dividends per share (DPS) are anticipated to return to the historical range of €1.40 to €1.50. The management of Vonovia highlighted that ensuring consistent dividend payments—even in challenging times—remains a top priority (Vonovia 2023). The dividend payout ratio fell to its lowest point of 34% in FY22 and is projected to increase to 45% in FY24E, with a long-term forecast of around 52%. However, this remains significantly below pre-COVID levels, which were around 70%.

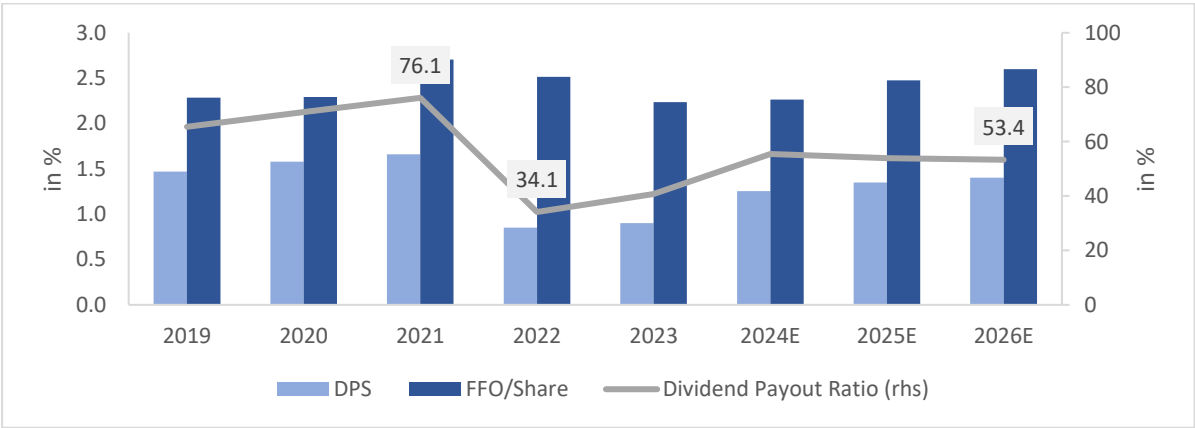


Figure 4: Historical Analysis Dividend. Source: Company Data, Own Estimates

In 2024, the new dividend policy will be structured around 50% of adjusted EBT, along with any surplus liquidity from the OFCF after accounting for the equity portion allocated to the investment program. To maintain a conservative approach, the forecast assumes that exactly 50% of EBT will be paid out as dividends, without factoring in the potential use of surplus liquidity for additional payouts.

The spread between Vonovia's dividend yield and German Bund yields narrowed in 2022, coinciding with the peak in Bund yields. However, with projected improvements in Vonovia's dividend yield (as implied by the target price, see 5.5) in the coming years and German Bund yields expected to remain stable, this spread is anticipated to widen again¹¹.

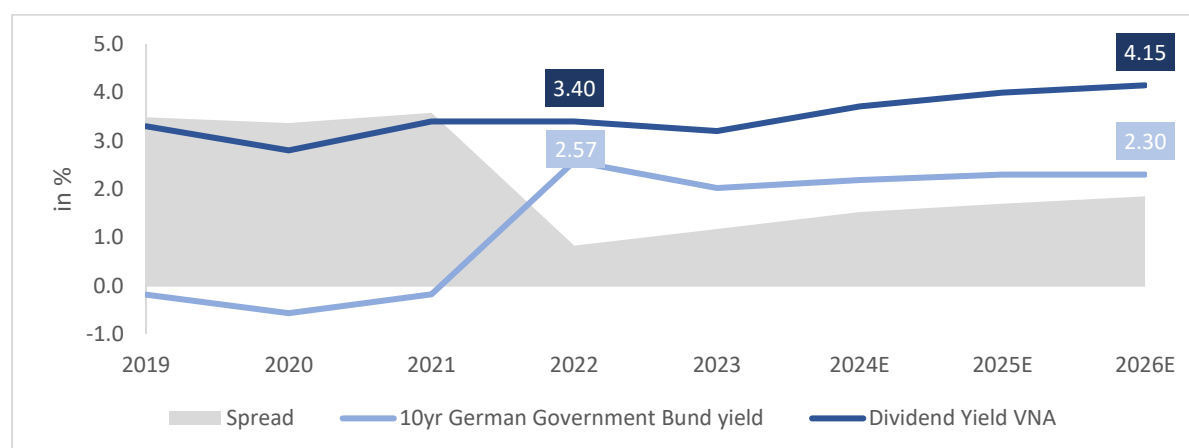


Figure 5: Spread German Government 10yr Bund Yield vs. Dividend Yield VNA. Source: Bloomberg, Company Data, Own Estimates

4.7 Liabilities and Liquidity

Vonovia has taken on a high portion of leverage in the past years. The target for the upcoming years is to focus on reducing the leverage ratio with reducing the LTV pro forma (47.9% in 9M24) to levels ranging from 40-45%, net debt/EBITDA pro forma (15.7x in 9M24) to 14-15x and ICR to at least 3.5x. Vonovia's reported cost of debt has increased from 1.1% in FY21 to 1.7% in FY23, while its LTV increased from 45.4% to 47.3% respectively. Vonovia's refinancing rate was significantly impacted by the higher interest rate environment. The yield

¹¹ this is a positive development, as it highlights the increasing attractiveness of Vonovia's dividend yield relative to low-risk alternatives like Bunds, potentially drawing more investor interest.

on its 2029 Euro bond increased from 0.7% in Dec-21 to 5.58% (30.03.2023) and is now at around 3.17% (Bloomberg 13.12.2024), indicating that market conditions have eased. On April 10, 2024 Vonovia issued an 10yr unsecured social bond with a 4.25% coupon rate, when in contrast the company issued a 6yr bond in Nov-22 with costs of 4.875% (Vonovia 2022). With interest rates peaking this year and further declining in 2025, the marginal cost of debt in FY24E are expected to decrease compared to FY23, but not reaching pre-crisis levels.

Overall cost of debt will increase due to additional refinancing needs to 1.81% in FY24E and 1.92% in FY25E.

The debt schedule forecast assumes that 90% of maturing debt is repaid using operational cash flows, while 10% is refinanced (based on historical trends). Scheduled repayments are aligned with the company's reported maturities, with no major acquisitions planned during the forecast period. The interest rate for new debt is calculated by adding a credit spread to the projected base rate, derived from historical trends and assuming Vonovia's BBB+ credit rating remains stable (for further explanation see Appendix F).

Refinancing needs in 2023 were especially high due to the economic environment. Net debt is projected to decrease from €39.77bn in FY24E to €37.06bn in FY26E, primarily driven by increased asset disposals, which will reduce refinancing requirements during the forecast period. The forecasted LTV for FY24E is 48.1%, exceeding the company's target, primarily due to a significant decline in property values. As property values stabilize and begin to rise slightly in FY25E, coupled with a reduction in net debt, the LTV is expected to fall within the company's target range of 40-45% by FY26E.

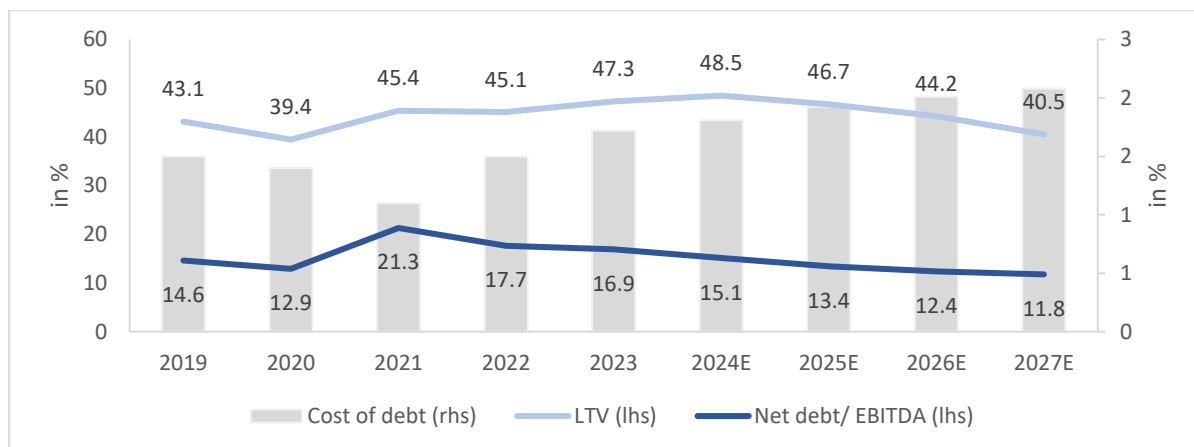


Figure 6: Liability Analysis. Source: Company Data, Own Estimates

Over the past few years, Vonovia's Net Initial Yield (NIY)¹² has steadily decreased from 3.5% in FY19 to 2.6% in FY21, with the spread to the 10-year German Bund yield reaching its lowest point at the end of FY22. Since then, the spread has started to widen again and is expected to continue increasing in FY25E, as yields are anticipated to stabilize around 2.3%, lower than their peak 2.57% in 2022. Meanwhile, the NIY is expected to remain relatively stable throughout the forecast period (see Appendix W). This widening spread benefits Vonovia's stock by making it more appealing to income-focused investors.

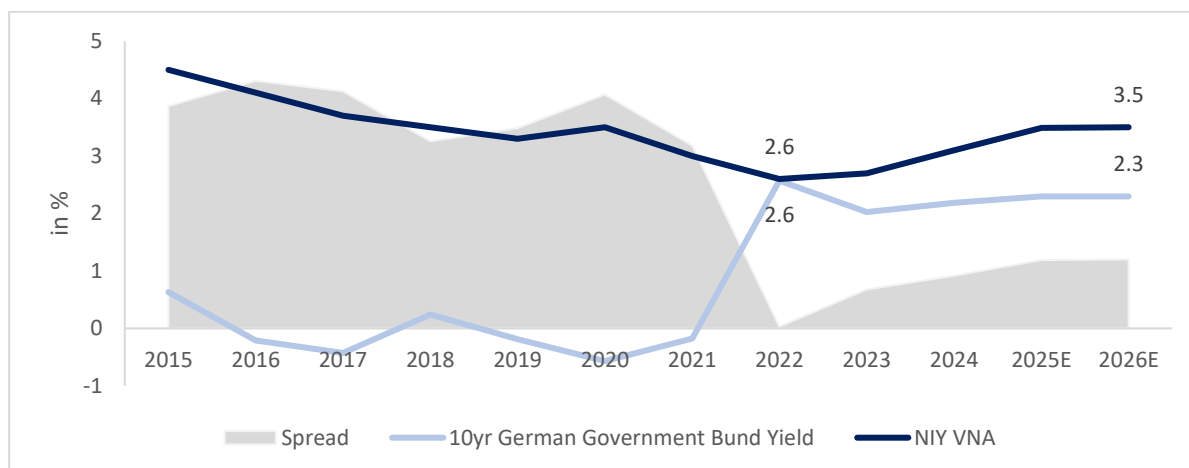


Figure 7: Spread NIY VNA vs. 10yr German Government Bund Yield, Source: Company Data, Bloomberg

¹² The Net Initial Yield (NIY) is a key metric in real estate that measures the annualized rental income generated by a property as a percentage of its current market value (Vonovia 2023).

5 Valuation

To arrive at a well-rounded valuation, a detailed forecast was prepared, and multiple valuation methodologies were utilized to determine a single target price. December 31, 2023 was used as the valuation date to align with the full-year reporting, while integrating the 9M24 report data to ensure the 2024 forecast captures the most recent developments.

5.1 Historical Analysis Share Price

Vonovia has performed consistent with peers and above the EPRA index consistently over the past 10 years. TAG and LEG have been outperforming Vonovia in the past two years (see Appendix AA). Since 2021, Vonovia and its peers have been trading at a discount to Net Asset Value (NAV)¹³, with Vonovia currently showing a slightly higher discount (32%) compared to its peers (30%). Historically, Vonovia has proven to be more resilient than its competitors, often trading at a premium to NAV before 2021 due to its efficiency, and market position. While the current discount may have reached its peak, the stock still offers an attractive opportunity. Improvements in its balance sheet with ongoing deleveraging efforts, and a potential recovery in property valuations could drive significant upside. As market conditions stabilize and interest rates potentially come down, Vonovia's valuation could move closer to historical levels. Its focus on ESG initiatives and operational efficiency also supports its strong long-term outlook.

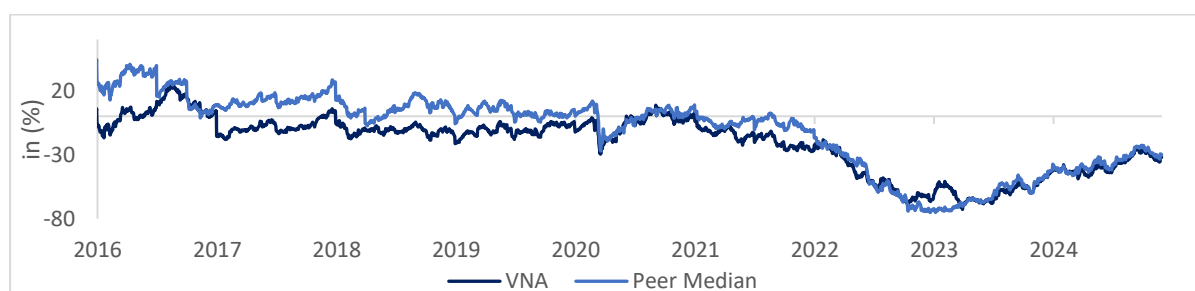


Figure 8: Trading NAV Premium (Discount) Vonovia vs. Peers. Source: Bloomberg

¹³ Real estate companies have traded at a discount to NAV due to rising interest rates, which increased financing costs and reduced investor demand for Real Estate. Inflation, higher construction expenses, and economic uncertainty further pressured property values and weakened transaction activity.

Vonovia has demonstrated a strong historical Total Shareholder Return (TSR) compared to major market indices such as the EPRA Index, MSCI Europe, and the STOXX Europe 600. The company significantly outperformed in years like 2017, with a TSR of 42.6%, and showed resilience in recovery years like 2023 and 2024 with achieving returns of 19.1% and 23.9%, respectively. While the real estate sector faced challenges in 2022, Vonovia's ability to rebound highlights its solid position in the market and strong long-term performance relative to broader benchmarks.

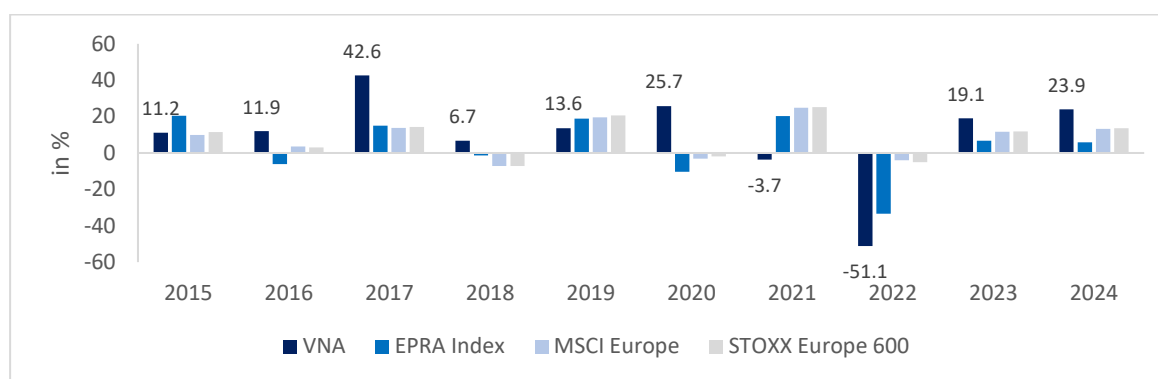


Figure 9: VNA Total Shareholder Return vs. Indices. Source: Bloomberg

5.2 DCF

With the DCF method, I value Vonovia's equity at €27,323.1m, or €33.54 per share using a 5.47% WACC. The WACC is based on a cost of equity of 12.73% and a cost of debt of 1.79%. The cost of equity was determined using the risk-free rate from a 10-year German government bond, the expected market return for the sector and region (from Bloomberg), and the calculated levered beta¹⁴. For the WACC calculation, the market value of equity as of December 13, 2024, and the reported market value of debt from 1H24¹⁵ were used. EBIT including disposals and developments is used, as these activities are part of Vonovia's recurring business. Revaluations are excluded since they do not reflect cash flows. For 2024E–2028E, my own calculated estimates are applied, while beyond this, adjusted EBIT is set at 55% of the top line, based on

¹⁴ Detailed explanation about the calculation is available in Appendix S

¹⁵ This approach was necessary due to incomplete data on current bond prices in Bloomberg.

historical trends. Tax expenses in 2023 were driven by deferred taxes, resulting in a 1.7% tax rate. From 2024, an 8% tax rate is applied, gradually increasing to 11% to reflect typical real estate tax levels. From 2029E onward, a constant €50m D&A is assumed to take a conservative approach, avoiding overestimation given historical volatility. CapEx is deducted, set at 20% of the top line for the 2029E–2033E period, aligning with historical averages. For FY24-FY28, CapEx is forecasted cautiously due to historically volatile levels and ongoing economic uncertainty, with a 9% annual growth for investment properties and proportional increases for developments, aligning with Vonovia's €2bn target by 2028. For the base case terminal value calculation, a terminal growth rate of 2% was assumed, consistent with Germany's GDP growth forecast. A sensitivity analysis was performed, showing that a +/-25 basis point adjustment in the growth rate results in a +16.67% or -14.33% change in the share price (see Appendix T).

5.3 APV

The APV valuation estimates Vonovia's equity value at €28,883.8m, corresponding to a share price of €35.46. The unlevered cost of capital (r_u) was determined using the 10-year German government bond as the risk-free rate, along with the unlevered beta for Vonovia (see Appendix S). The same assumptions as in the DCF calculation were applied to maintain consistency (see Appendix U). I used the DCF tax rate in my APV valuation to calculate the tax shield, as it reflects actual cash taxes paid and excludes the impact of non-cash deferred taxes, which are typically high in the real estate sector. The APV method may provide a more accurate valuation for Vonovia because it better reflects the company's focus on deleveraging and the associated changes in its debt levels during the forecast period (unlike the DCF, which assumes a constant WACC). Due to its complexity and greater reliance on assumptions, the APV is weighted equally with the DCF when calculating the target price to balance precision with practicality.

5.4 Comparable Company Analysis

I compared my own estimates for the next three years of key financial metrics in real estate with Bloomberg consensus estimates for Vonovia's main peers: LEG, TAG, and GYC.

Vonovia's FFO per share demonstrates consistent growth, outpacing the peer average, while its dividend yield remains competitive and offers reliable income for investors. The company's lower EPRA NIY reflects the high regulatory constraints in Berlin, where 30% of its portfolio is located, alongside its focus on higher-quality assets. The company's deleveraging efforts are evident in the projected decline in its LTV ratio and Net Debt/EBITDA and signal increased financial stability. By 2026, Vonovia is expected to achieve an LTV ratio below the peer average. Vonovia's dividend yield of 3.71% for 2024E exceeds the peer average of 3.42%, making the stock the most attractive within its peer group for income-seeking investors. These results support a positive investment outlook.

Table 4: Peer Comparison Ratios, Source: Bloomberg, Company Data, Own Estimates

	LTV (%)			Net Debt/EBITDA (x)			EPRA NIY (%)		
	2024E	2025E	2026E	2024E	2025E	2026E	2024E	2025E	2026E
LEG	50.69	48.43	46.23	14.80	14.07	13.45	4.94	4.99	4.99
GYC	N/A	N/A	N/A	9.73	9.95	9.45	5.08	5.12	5.08
TAG	46.48	44.90	43.55	12.40	11.41	10.58	5.70	5.82	5.90
Mean	48.59	46.67	44.89	12.31	11.81	11.16	5.24	5.31	5.32
VNA	48.47	46.67	44.23	15.11	13.40	12.36	3.45	3.49	3.50

	FFO per share			Dividend yield (%)			EPRA NTA/ share		
	2024E	2025E	2026E	2024E	2025E	2026E	2024E	2025E	2026E
LEG	N/A	N/A	N/A	3.09	3.26	3.40	123.66	131.64	141.20
GYC	1.06	1.07	1.04	4.30	5.61	5.61	22.82	24.06	25.27
TAG	0.99	1.01	1.08	2.86	3.33	3.51	14.47	19.86	21.44
Mean	1.02	1.04	1.06	3.42	4.07	4.17	53.65	58.52	62.64
VNA	2.26	2.48	2.60	3.71	4.00	4.15	46.42	48.12	51.64

For a comprehensive valuation, a comparable company analysis using the EV/EBITDA, P/FFO, and P/NAV multiples was performed. The P/NAV multiple is considered the most accurate for real estate companies, as it directly reflects the value of the underlying property portfolio. For the peer comparison, companies were selected based on the following criteria: market capitalization, industry and region. The most comparable peers are LEG, TAG, and GYC, as

they are primarily focused on the residential real estate market in Germany. To provide a broader perspective and capture underlying macroeconomic trends and sector valuations, Gecina, Metrovacesa, and Aroundtown were also included. This approach complements the DCF and APV valuations, which already account for the specifics of the German rental market. For the EV/EBITDA multiple, Vonovia's forecasted EBITDA (NTM) of €2,583.80m was multiplied by the median multiple of 24.00x, and net debt (€40,300.7m) was subtracted to derive equity value, resulting in a share price of €26.65, with a range of €25.86 to €29.73. For the P/FFO multiple, forecasted FFO (NTM) of €1,861.54m was multiplied by the median multiple of 13.69x, leading to a share price of €30.97, with a range of €29.64 to €32.83. Lastly, for the P/NAV multiple, the NAV of €41,778.48m was multiplied by the median multiple of 0.66x, resulting in a share price of €33.51, with a range of €30.21 to €37.83. The ranges for each method reflect valuations at the 25th and 75th percentiles to provide additional context for potential variation (see Appendix V). The EV/EBITDA multiple is the least suitable for real estate companies like Vonovia because it fails to account for the capital-intensive nature of the industry and the importance of property valuations. Similarly, the P/FFO multiple may underestimate Vonovia's share price as it focuses solely on recurring cash flows, excluding potential growth in property values and other long-term factors. However, P/FFO is still included in the overall valuation as it provides valuable insight into the company's operational performance and cash flow generation.

5.5 Valuation Outcome

The valuation of Vonovia results in a target share price of €33.79, based on a weighted average of the calculated share prices, with the greatest emphasis placed on the DCF and APV methods, as they provide the most accurate results (see Appendix W). The target price reflects a significant upside potential of **11.92%** compared to the current share price of €29.76 (closing price 14.12.2024, Bloomberg 2024). Supported by the share price analysis and peer

comparison, these findings confirm the upside potential and lead to a **BUY** recommendation for Vonovia.

5.6 Sensitivity of Earnings to Interest Rate Changes

A sensitivity analysis was performed on the sensitivity of earnings to interest rate deviations from the consensus of the mean interest rate forecast of 2.6% for FY25E. With ongoing economic and political uncertainties, understanding these potential impacts is key to assessing risks and opportunities in the current macroeconomic environment. A change in interest rates, whether 25bp/ 50bp, is expected to have only a small impact on the Group's FFO (+/- 0.4% and +/- 0.7%, respectively). This limited effect is primarily due to the historically low financing costs secured in prior years and the relatively low refinancing requirements projected for 2025.

Table 5: Sensitivity Analysis Interest Rate Change. Source: Own Estimates

FY25E	cost of debt	Interest expense	FFO
(+) 25bp	1.94	764.9	2,072.7
% Change	1.0%	1.0%	-0.4%
(+) 50bp	1.96	772.3	2,065.2
% Change	2.0%	2.0%	-0.7%

5.7 Sensitivity of Disposals on Debt Metrics

The sensitivity analysis highlights that further disposal have a positive impact on debt metrics and everything beyond the target could serve as a potential upside trigger for the stock. While gross rental income experiences a slight decline (-0.2% in 2025E and -0.3% in 2026E), FFO per share improves by 0.7% in both years. The LTV ratio also benefits, decreasing by 0.1% in 2025E and 0.3% in 2026E, reflecting the positive effects of asset sales on financial stability¹⁶. Despite these improvements, EPRA NTA per share remains largely stable, with only a minor decline of -0.1%/-0.2%, indicating limited downside risk to net asset valuation.

¹⁶ fewer disposals (-1000 units) lead to a slightly lower change in FFO/share (-0.6% vs. +0.7%), indicating that FFO is less sensitive to reduced disposals than to additional disposals. However, LTV increases more significantly (+0.6% and +0.3%) with fewer disposals, highlighting greater leverage sensitivity (see Appendix D).

Table 6: Sensitivity Analysis Disposals, Source: Own Estimates

	Current estimates		After Disposals		Difference	
	2025E	2026E	2025E	2026E	2025E	2026E
Disposals (units)			(+) 1000	(+)1000		
Rental Income	3,469.4	3,562.5	3,463.7	3,550.7	-0.2%	-0.3%
FFO p/share	2.48	2.60	2.50	2.62	0.7%	0.7%
LTV (%)	46.67	44.23	46.62	44.11	-0.1%	-0.3%
EPRA NTA p/share	48.12	51.64	48.06	51.52	-0.1%	-0.2%

6 Risks to the Investment Case

While Vonovia presents a solid investment case, risks must be carefully considered. Increased yields may result in write-downs in the portfolio's value, which would have a negative impact on Vonovia's NAV and create greater pressure on its debt ratio. Regulatory risks are still high, especially in the German residential real estate market, where regulations constraining rental growth or raising operating costs could result from measures like rent caps or ESG-related requirements. Challenging macroeconomic conditions, such as slower rental growth driven by inflationary pressures, could limit revenue growth. Additionally, rising construction and development costs may reduce margins on modernization projects, which are critical for driving future rental income. Delays in selling non-core assets or achieving suboptimal prices could reduce Vonovia's ability to meet its deleveraging targets. Despite these risks, Vonovia is well-positioned to take advantage of upcoming opportunities. Faster asset disposals and stronger rental growth present significant upside potential. Moreover, a more stable macroeconomic environment, coupled with Vonovia's commitment to operational efficiency and deleveraging, supports a positive long-term outlook. While challenges remain, the opportunities outweigh the risks and support a confident **BUY** recommendation.

7 References

- BMWK. “What Is Where? The Buildings Energy Act in Three Minutes,” Accessed November 10, 2024. <https://www.bmwk-energiewende.de/EWD/Redaktion/EN/Newsletter/2024/02/Meldung/news1.html>.
- BMSB. “Mietspiegel” Accessed November 05.2024. <https://www.bmwsb.bund.de/Web/BMWSB/DE/themen/stadt-wohnen/wohnungswirtschaft/fakten-wohnungsmarkt/mietspiegel/mietspiegel-node.html>.
- Bloomberg L.P. 2024 “Database“, Accessed December 13, 2024 from Bloomberg Terminal.
- Bulwiengesa. “bulwiengesa-Immobilienindex 2024 | Bulwiengesa,” Accessed November 10, 2024. <https://bulwiengesa.de/de/publikationen/bulwiengesa-immobilienindex-2024>.
- CBRE. “Germany’s Residential Real Estate Investment Market Continued to Pick up in the Third Quarter.” Germany’s Residential Real Estate Investment Market Continued to Pick up in the Third Quarter, October 11, 2024. <https://news.cbre.de/en/germanys-residential-real-estate-investment-market--continued-to-pick-up-in-the-third-quarter/>.
- Clean Energy Wire. “Germany’s Carbon Pricing System for Transport and Buildings,” June 4, 2024. <https://www.cleanenergywire.org/factsheets/germanys-planned-carbon-pricing-system-transport-and-buildings>.
- Deutsche Bank. “Residential Real Estate – Leading to Net Zero.”, May 14, 2023. <https://www.db.com/files/documents/csr/sustainability/Residential-Real-Estate--Leading-to-Net-Zero.pdf>
- Eurostat. “Euro Area Annual Inflation up to 2.3%.” Eurostat, November 29, 2024. <https://ec.europa.eu/eurostat/web/products-euro-indicators/w/2-29112024-ap#:~:text=Close%20Print-,Overview,office%20of%20the%20European%20Union>.
- Federal Statistical Office. “43,4 Millionen Wohnungen in Deutschland Zum Jahresende 2022,” Accessed December 13, 2024.

https://www.destatis.de/DE/Presse/Pressemitteilungen/2023/07/PD23_297_31231.htm

1

Federal Statistical Office. “Building Permits for Building Construction in Germany,”

Accessed November 14, 2024. <https://www.destatis.de/EN/Themes/Economic-Sectors-Enterprises/Construction/Tables/permits.html>.

Federal Statistical Office. “Population by Nationality and Sex,” Accessed November 14,

2024. <https://www.destatis.de/EN/Themes/Society-Environment/Population/Current-Population/Tables/lrbev02a.html>.

Global Property Guide. “Sweden’s Residential Property Market Analysis” Accessed

November 10, 2024. https://www.globalpropertyguide.com/europe/sweden/price-history#_Rental_Market

Grand City Properties S.A. Annual Report 2023. Luxembourg: Grand City Properties S.A.,

2024. <https://www.grandcityproperties.com>.

Ifo Institut. “ifo Geschäftsklimaindex gestiegen (Oktober 2024),” Accessed December

10.2024. <https://www.ifo.de/fakten/2024-10-25/ifo-geschaeftsklimaindex-gestiegen-oktober-2024>

Immowelt. “CO2-Steuer – das müssen Mieter und Vermieter 2025 wissen,” November 27,

2024. <https://www.immowelt.de/ratgeber/vermieten/co2-steuer#:~:text=Bei%20Wohnungen%20mit%20einer%20besonders,die%20CO%E2%82%82%2DAbgabe%20alleine%20zahlen>.

Investropa. “The real estate market in Austria: 2024 forecast. Accessed November 10, 2024.

<https://investropa.com/blogs/news/austria-real-estate-market>

JLL. “Housing Market Overview - H1 2024 |” August 30, 2024. Accessed November 10,

2024. <https://www.jll.de/en/trends-and-insights/research/housing-market-overview>.

LEG Immobilien SE. Annual Report 2023. Düsseldorf: LEG Immobilien SE, 2024.

<https://www.leg-wohnen.de>.

Rbb24 Website. “Vonovia Nutzt Bei Übernahme Der Deutsche Wohnen Steuerschlupfloch,”

Accessed November 12, 2024.

<https://www.rbb24.de/wirtschaft/beitrag/2024/10/berlin-vonovia-uebernimmt-deutsche-wohnen-share-deal-steuerschlupfloch.html>

TAG Immobilien AG. Annual Report 2023. Hamburg: TAG Immobilien AG, 2024.

<https://www.tag-ag.com>.

Vonovia SE. Annual Report 2023. Bochum: Vonovia SE, 2024. <https://www.vonovia.de>

8 Appendix

Appendix A	Output Financial Statements	II
Appendix B	Forecast Topline Rental Growth	IV
Appendix C	Forecast Portfolio Value.....	VIII
Appendix D	Forecast Disposals.....	IX
Appendix E	Forecast Developments	X
Appendix F	Forecast Debt Schedule	XI
Appendix G	Forecast Financial Result	XIII
Appendix H	Forecast Personnel Expenses	XIV
Appendix I	Forecast Tax Rates	XV
Appendix J	Forecast Dividends.....	XVI
Appendix K	Forecast CapEx	XVI
Appendix L	Forecast Capitalized Internal Expenses.....	XVII
Appendix M	Forecast D&A	XVII
Appendix N	Forecast Deferred Tax Liabilities.....	XVIII
Appendix O	Forecast Other Line Items	XVIII
Appendix P	FFO calculation	XXII
Appendix Q	LTV calculation.....	XXIII
Appendix R	EPRA NAV/NTA calculation	XXIII
Appendix S	Calculation Discount Rates:	XXIV
Appendix T	DCF Valuation	XXVII
Appendix U	APV Valuation	XXIX
Appendix V	Comparable Company Anaylsis.....	XXXI
Appendix W	Valuation Output.....	XXXIV
Appendix X	ESG Analysis	XXXVI
Appendix Y	Macroeconomics	XL
Appendix Z	Market Size Calculation	XLII
Appendix AA	Vonovia vs. Peers.....	XLIII

Appendix A Output Financial Statements

Income Statement:

in EUR million	2023	2024E	2025E	2026E	2027E	2028E
Revenues from property letting	4,706.9	4,851.1	4,995.9	5,130.1	5,267.1	5,407.0
Rental income	3,259.6	3,368.8	3,469.4	3,562.5	3,657.7	3,754.8
Ancillary costs	1,447.3	1,482.3	1,526.5	1,567.5	1,609.4	1,652.1
Income from rents	4,874.5	5,012.1	5,157.6	5,296.8	5,433.5	5,575.2
Other revenue from property management	167.6	161.0	161.7	166.7	166.4	168.3
Cost of materials	2,100.5	2,080.0	2,217.8	2,330.6	2,553.8	2,620.4
Capitalized internal expenses	470.4	512.7	558.9	609.2	664.0	723.8
Personnel expenses	766.3	738.3	756.0	771.4	786.8	802.5
NOI	2,478.1	2,706.6	2,742.8	2,804.0	2,757.0	2,876.1
Income from disposals	78.1	65.5	130.0	156.0	195.0	195.0
Income from development	49.4	21.8	155.0	207.2	273.6	273.6
Depreciation and amortization	410.8	94.5	94.7	96.5	102.2	108.7
Other operating income	390.9	198.2	202.2	206.2	210.3	214.5
Other operating expenses	461.6	360.0	367.2	374.6	382.1	389.7
Revaluation	10,726.9	1,782.9	1,225.0	2,450.0	5,512.5	6,063.8
EBIT	8,602.8	754.7	3,992.9	5,352.4	8,464.1	9,124.5
Financial result (net)	582.4	563.2	610.8	637.5	651.9	650.3
Financial income	227.8	182.2	146.6	132.4	113.9	113.9
Financial expenses	810.2	745.4	757.4	770.0	765.8	764.2
EBT	9,185.2	191.5	3,382.2	4,714.8	7,812.2	8,474.2
Taxes	2,577.1	38.3	676.4	943.0	1,562.4	1,694.8
Group profit from continuin op.	6,608.1	229.8	2,705.7	3,771.9	6,249.7	6,779.4
Discontinued operations	148.1	0.0	0.0	0.0	0.0	0.0
Group profit	6,756.2	229.8	2,705.7	3,771.9	6,249.7	6,779.4
DIAG hybrid capital investors	0.0	0.0	0.0	0.0	0.0	0.0
Minority interest	471.1	475.8	480.6	485.4	490.2	495.1
Shareholder's profit	6,285.1	705.6	3,186.3	4,257.2	6,740.0	7,274.5
Weighted average number of shares	806.3	822.9	839.8	848.2	856.7	865.2
Fully diluted number of shares	814.6	822.9	831.1	839.5	847.8	856.3
DPS	0.9	1.3	1.4	1.4	1.4	1.5

Each line item of the income statement was carefully forecasted for every year to ensure a detailed and accurate reflection of expected performance.

Cash Flow Statement:

in EUR million	2023	2024E	2025E	2026E	2027E	2028E
Profit for the period	6,756.2	229.8	2,705.7	3,771.9	6,249.7	6,779.4
Depreciation and amortization	464.7	94.5	94.7	96.5	102.2	108.7
Interest expenses/income	456.1	563.2	610.8	637.5	651.9	650.3
Income tax	2,622.8	38.3	676.4	943.0	1,562.4	1,694.8
Revaluation gains/ losses	10,826.1	1,782.9	1,225.0	2,450.0	5,512.5	6,063.8
Result from disposals	59.8	87.4	285.0	363.2	468.6	468.6
Changes in working capital	340.2	0.0	0.0	0.0	0.0	0.0
Income tax paid	154.3	128.5	128.5	128.5	128.5	128.5
Others	87.6	0.0	0.0	0.0	0.0	0.0
Operating Cash Flow	1,901.2	2,416.3	2,449.2	2,507.2	2,456.8	2,572.5
Proceeds from disposal of IP	588.4	1,521.5	1,300.0	1,300.0	1,300.0	1,300.0
Proceed from disposals of other assets	651.6	0.0	0.0	0.0	0.0	0.0
Proceeds from disposal of financial assets		0.0	0.0	0.0	0.0	0.0
Capex	1,103.7	894.3	974.8	1,062.6	1,158.2	1,262.4
Payments for investment in other assets	716.7	0.0	0.0	0.0	0.0	0.0
Payments for acquisitions		0.0	0.0	0.0	0.0	0.0
Payments for acquisition financial assets	314.0	0.0	0.0	0.0	0.0	0.0
Interest received	68.5	0.0	0.0	0.0	0.0	0.0
Investing Cash Flow	825.9	627.1	325.2	237.4	141.8	37.6
Capital contributions on the issue of new shares		0.0	0.0	0.0	0.0	0.0
Cash paid to shareholders	372.9	515.6	561.3	588.1	596.6	624.0
Cash paid to non-controlling interests	40.5	40.0	40.0	40.0	40.0	40.0
Cash paid to hybrid capital investors						
Proceeds from issuing financial liabilities	4,310.3	1,070.8	2,530.3	2,575.9	3,109.0	3,149.4
Prepayments of financial liabilities						
Cash repayments of financial liabilities	6,191.2	2,730.2	4,374.9	3,665.3	4,609.2	4,345.8
Cash repayments of lease liabilities	36.8	30.2	30.2	30.2	30.2	30.2
Payments for transaction costs	2.7	98.3	98.3	98.3	98.3	98.3
Payments for other financing costs	0.8	19.9	19.9	19.9	19.9	19.9
Payments in connection with disposal	0.3	18.7	18.7	18.7	18.7	18.7
Proceeds for the sale of share	2,091.6	0.0	0.0	0.0	0.0	0.0
Interest paid	719.3	563.2	610.8	637.5	651.9	650.3
Financing Cash Flow	961.0	2,945.4	3,223.8	2,522.2	2,955.9	2,678.0
FX and other adj. on cash	42.3	0.0	0.0	0.0	0.0	0.0
Change in cash	72.0	98.0	449.5	222.4	357.3	67.9
Beginning	1,302.4	1,374.4	1,472.4	1,022.9	1,245.3	888.0
Cash Ending	1,374.4	1,472.4	1,022.9	1,245.3	888.0	820.1

The Cash Flow Statement was forecasted using inputs from the income statement, debt schedule, CapEx schedule, and the portfolio value forecast. For any line items that couldn't be

directly derived, they were either assumed to stay constant based on historical averages or set to “0” where appropriate.

Payments for acquisitions and other investments were forecasted as “0”, consistent with the model’s overall assumption that no acquisitions will take place. For dividend payments, I included only 50% of the total dividends in the cash flow statement, since Vonovia has historically paid out half of its dividends in scrip (shares) and half in cash. For interest paid, since accrued interest is not separately reported on the Balance Sheet, the forecast assumes the same figure as the interest expense from the income statement. This approach maintains consistency across the Cash Flow Statement and the calculation of FFO (Funds From Operations).

For the forecast, no change in Net Working Capital (NWC) is assumed, as NWC typically has minimal impact on real estate companies like Vonovia. Rental income is predictable and contract-based, while operating expenses and payables remain stable over time. Additionally, the capital-intensive nature of real estate operations focuses more on long-term financing and property values rather than short-term working capital fluctuations. This assumption aligns with historical trends and simplifies the model without materially affecting accuracy.

Appendix B Forecast Topline Rental Growth

German Portfolio										
Forecast Like-for-like rental growth	2019	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E
Fluctuation rate (% of portfolio)	9.5	9.3	9.7	8.8	7.9	8.0	8.5	8.5	8.5	8.5
Upside from new tenants (%)						10	10	10	10	10
contribution						0.8	0.9	0.9	0.9	0.9
Mietspiegel (% of portfolio)						56	56	56	56	56
Upside from Mietspiegel (%)						2.5	2.2	1.6	1.6	1.6
contribution						1.4	1.2	0.9	0.9	0.9
Modernization rental growth (% of portfolio)						10	10	10	10	10
Upside from Modernization (%)						10	10	10	10	10
contribution						1.0	1.0	1.0	1.0	1.0
Other (% of portfolio)						26.0	25.5	25.5	25.5	25.5
Upside from other						3.0	3.0	3.0	3.0	3.0
contribution						0.8	0.8	0.8	0.8	0.8
Like-for-Like rental growth						4.00	3.85	3.51	3.51	3.51

Sweden Portfolio										
Forecast Like-for-like rental growth										
	2019	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E
Like-for-Like rental growth	5.0	4.1	2.7	2.7	4.4	4.6	4.0	4.0	4.0	4.0
yoy		-18%	-34%	0%	63%	5%	-13%	0%	0%	0%
CPI	1.8	0.5	2.2	8.3	8.6	2.9	1.4	1.8		

Austrian Portfolio										
Forecast Like-for-like rental growth										
	2019	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E
Like-for-Like rental growth	1.5	2.1	1.1	3.8	3.5	3.6	3.5	3.5	3.5	3.5
yoy		40%	-48%	245%	-8%	4%	-4%	0%	0%	0%
CPI	1.5	1.5	2.8	8.5	7.9	3.0	2.2	2.1	2.0	2.0

Calculation Like-for-like rental growth										
	2019	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E
Portfolio Split										
Germany					85%	85%	85%	85%	85%	85%
Austria					4%	4%	4%	4%	4%	4%
Sweden					11%	11%	11%	11%	11%	11%
Like-for-like rental growth										
Germany						4.0	3.8	3.5	3.5	3.5
Austria						3.6	3.5	3.5	3.5	3.5
Sweden						4.6	4.0	4.0	4.0	4.0
Total Portfolio Like-for-like rental growth						4.05	3.85	3.56	3.56	3.56

Calculation Rental Income										
	2019	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E
Topline										
Beginning						3,260	3,369	3,469	3,563	3,658
Lfl growth						132.1	129.7	123.6	127.0	130.4
Acquisition						0.0	0.0	0.0	0.0	0.0
Disposals						30.8	37.1	38.4	39.7	41.1
Development						7.9	7.9	7.9	7.9	7.9
Net Rent	2,077.9	2,288.5	2,571.9	3,191.3	3,259.6	3,368.8	3,469.4	3,562.5	3,657.7	3,754.8
YoY		10.1	12.4	24.1	2.1	3.4	3.0	2.7	2.7	2.7
Ancillary cost	762.9	780.9	893.1	1,556.1	1,447.3	1,482.3	1,526.5	1,567.5	1,609.4	1,652.1
YoY		2.4	14.4	74.2	7.0	2.4	3.0	2.7	2.7	2.7
Gross Rent	2,840.8	3,069.4	3,465.0	4,747.4	4,706.9	4,851.1	4,995.9	5,130.1	5,267.1	5,407.0
YoY		8.0	12.9	37.0	-0.85	3.1	3.0	2.7	2.7	2.7

Germany:

For the German portfolio, rental growth is driven by Mietspiegel adjustments, modernization efforts, tenant fluctuation, and other factors (see Appendix B). FY23 rental growth did not fully reflect inflationary pressures due to Mietspiegel calculations relying on a six-year average. Over the forecast period, Mietspiegel adjustments are expected to play a significant role, particularly in FY24E (2.5%) and FY25E (2.2%), before stabilizing at 1.6%. While 56% of apartments still have room for Mietspiegel adjustments, the upside is forecasted conservatively, limited by delays and higher caps in cities like Berlin

Modernization is anticipated to contribute a low double-digit percentage to rental growth based on company data, with an estimated upside of 10%. The fluctuation rate stood at 8.2% in 9M24, indicating a relatively low level. As interest rates stabilize, no further declines are anticipated, and the rate is expected to remain below the 5-year average of 9%, due to the ongoing impact of inflation on household incomes and rental affordability. For other factors, a historical conservative rate of 3% was assumed.

The forecast was calculated by analyzing the percentage of the portfolio affected by each driver and estimating the upside contribution to like-for-like rental growth for each factor. For FY24, like-for-like rental growth in the German portfolio is forecasted at 4.00%, followed by 3.85% in FY25, and stabilizing at 3.51% from FY26 onwards. This approach reflects conservative assumptions to account for market uncertainties and regulatory constraints.

Austria:

The rental growth forecast for the Austrian portfolio takes into account several important factors shaping the market. The Austrian government has implemented policies to promote affordable housing, which helps maintain stability in the rental market. However, rising costs for new construction, driven by stricter sustainability requirements, are adding financial pressure. Given

strong demand and increasing urbanization trends, existing properties, especially in prime locations, are expected to retain their value.

The long-term outlook for the rental market, particularly in cities, is positive. The Austrian portfolio is forecasted to have modest rent growth, marking it as the lowest among market rent expectations according to Vonovia. However, it is expected to remain steady at a solid 3.5% by FY25E, supported by favorable demand conditions.

Rents are anticipated to see a slight increase in 2024 compared to 2023, driven by the delayed impact of the high CPI figures from FY23, which stood at 7.90% YoY. This forecast also aligns with expectations for Austria's CPI, which points to moderate inflation and suggests that rents will grow at a steady pace (Bloomberg, 2024).

Sweden:

The Swedish rental market remains strong, with gross rental yields averaging 5.64% in Q3 2024, slightly below 5.68% in Q1 2024 but an improvement from 5.29% in Q3 2023. Nationwide rents grew by 6.1% in 2024, following 5.2% growth in 2023, driven by strong demand and high inflation, which peaked at 8.4% in 2022 and 8.7% in 2023. Sweden's rent-setting system, which ties private rents to social housing through tenant-landlord agreements, has helped maintain stability in the market. Looking ahead, Sweden is expected to see the strongest rental growth among Vonovia's portfolios, with like-for-like rental growth rebounding strongly in 2023 (4.4%), rising to 4.6% in 2024, and stabilizing at 4.0% annually from 2025 onwards. This optimistic forecast is underpinned by strong demand for rental properties and a cooling inflation environment, with CPI projected to fall from 8.6% in 2023 to 2.9% in 2024, and further stabilize between 1.4%-1.8% in the following years (Bloomberg, 2024).

Appendix C Forecast Portfolio Value

Portfolio Value						
in € million	2023	2024E	2025E	2026E	2027E	2028E
Beginning	92,300.1	81,120.3	78,443.3	78,605.6	80,125.8	84,872.1
Additions	228.7	0	0	0	0	0
Additions Acquisitions		0	0	0	0	0
Capex	820.5	894	975	1,063	1,158	1,262
Grants received	66.0	0	0	0	0	0
Transfer to PP&E	45.9	0	0	0	0	0
Transfer from PP&E	48.5	0	0	0	0	0
Transfer to down payments made	1.6	0	0	0	0	0
Transfer from down payments made	161.9	0	0	0	0	0
Transfer from real estate inventories	649.8	0	0	0	0	0
Transfer to real estate inventories	384.5	0	0	0	0	0
Transfer to assets held for sale	740.4	0	0	0	0	0
Transfer to discontinued operations	619.4	0	0	0	0	0
Other transfer	13.3	0	0	0	0	0
Disposals	319.5	1,788	2,038	1,992	1,924	1,924
Net income from fair value adjustments of investment properties	10,844.2	1,783	1,225	2,450	5,513	6,064
Revaluation of assets held for sale	18.4	0	0	0	0	0
Revaluation from currency effect	4.4	0	0	0	0	0
Impairment of investment properties	68.4	0	0	0	0	0
Ending	81,120	78,443	78,606	80,126	84,872	90,274
Portfolio growth (%)	-12.1	-3.3	0.2	1.9	5.9	6.4
Calculated Gross Yield %	4.0%	4.3%	4.4%	4.4%	4.3%	4.2%
Disposals calculation						
Carrying amount of assets sold	808.0	1,026.9	1,170.0	1,144.0	1,105.0	1,105.0
yoy	-74.5%	27.1%	13.9%	-2.2%	-3.4%	0.0%

The portfolio value experienced a significant decline in 2023, ending the year at €81.12bn, down from €92.30bn in 2022. This drop was largely driven by the sharp rise in interest rates, which increased capitalization rates and negatively affected property valuations. For 2024, the portfolio value is forecasted to decrease further to €78.44bn, with negative fair value adjustments reducing significantly to €1.78bn as interest rates stabilize and inflation slows.

From 2025 onward, the portfolio value is expected to recover, growing by 0.2% in 2025 and 1.9% in 2026, as anticipated interest rate cuts reduce capitalization rates, supporting higher property valuations. By 2028, the portfolio value is projected to reach €90.27bn, reflecting the normalization of macroeconomic conditions and improved investor sentiment.

The forecast assumes no future acquisitions, as Vonovia shifts its focus to modernization and deleveraging, rather than expanding through acquisitions. For simplicity, the portfolio value is calculated by taking the beginning-year value, adding CapEx, subtracting the forecasted disposals, and adjusting for net income from fair value adjustments of investment properties. This approach reflects a cautious but realistic outlook, incorporating current macroeconomic trends and Vonovia's strategic priorities.

Appendix D Forecast Disposals

in € million	2023	2024E	2025E	2026E	2027E	2028E
Units (#)	3,838.0	5,600.0	6,500.0	6,500.0	6,500.0	6,500.0
yoy	80.6	45.9	16.1	0.0	0.0	0.0
Recurring Sales	1,590.0					
Non core	2,248.0					
Net sales proceeds	867.7	1,092.5	1,300.0	1,300.0	1,300.0	1,300.0
% Net sales proceeds per unit	0.2	0.2	0.2	0.2	0.2	0.2
Carrying amount of assets sold	808.0	1,026.9	1,170.0	1,144.0	1,105.0	1,105.0
Gross profit margin (%)	9.7	6.0	10.0	12.0	15.0	15.0
Earnings from disposals	78.1	65.5	130.0	156.0	195.0	195.0
Impact Disposals Topline						
Total units managed	617,343.0					
Net rent/unit annually	5,280.0	5,491.2	5,702.5	5,902.7	6,109.9	6,324.5
yoy	2.8%	4.0%	3.8%	3.5%	3.5%	3.5%
Loss Net Rent Disposals		30.75	37.07	38.37	39.71	41.11

I factored in the company's strong progress in FY23, where disposals reached €4bn, and its 9M24 performance, which already saw 5,429 units sold. For FY24, I project 5,600 units to be sold, reflecting continued efforts to capitalize on stabilizing property values and narrowing bid-ask spreads. From FY25 onwards, disposals are expected to stabilize at 6,500 units annually, assuming Vonovia maintains a steady and measured approach to asset sales.

I also assumed a gradual recovery in gross profit margins, starting at 6.0% in FY24 and improving to 15.0% by FY27, as the focus shifts towards higher-value transactions. Net sales proceeds are forecasted to rise from €1.1bn in FY24 to €1.3bn annually from FY25 to FY28. These assumptions reflect a more favorable market environment and Vonovia's ability to

execute disposals efficiently while balancing liquidity generation with long-term portfolio sustainability.

Sensitivity Analysis impact of (+)/ (-)1000 units of Disposals:

	Current estimates		After Disposals		Difference	
	2025E	2026E	2025E	2026E	2025E	2026E
Disposals (units)			(+) 1000	(+)1000		
Rental Income	3,469.4	3,562.5	3,463.7	3,550.7	-0.2%	-0.3%
FFO p/share	2.48	2.60	2.50	2.62	0.7%	0.7%
LTV (%)	46.67	44.23	46.62	44.11	-0.1%	-0.3%
EPRA NTA p/share	48.12	51.64	48.06	51.52	-0.1%	-0.2%

	Current estimates		After Disposals		Difference	
	2025E	2026E	2025E	2026E	2025E	2026E
Disposals (units)			(-) 1000	(-)1000		
Gross Rental Income	3467.49	3558.76	3473.19	3570.57	0.2%	0.3%
FFO p/share	3.00	3.01	2.98	3.00	-0.6%	-0.6%
LTV (%)	45.52	42.43	45.64	42.67	0.3%	0.6%
EPRA NTA p/share	47.72	51.43	47.75	51.50	0.1%	0.1%

Appendix E Forecast Developments

in € million	2023	2024E	2025E	2026E	2027E	2028E
Development for sale						
Units (#)	1,116.0	1,484.3	1,800.0	2,000.0	2,200.0	2,200.0
Revenue from disposals real estate	354.0	198.2	746.1	829.0	911.9	911.9
% Revenue per unit	0.3	0.1	0.4	0.4	0.4	0.4
cost of sale real estate inventories	304.6	176.4	591.1	621.7	638.3	638.3
% cost of revenue	0.9	0.9	0.8	0.8	0.7	0.7
Gross profit margin	16.2	12.4	26.2	33.3	42.9	42.9
Earnings from developments	49.4	21.8	155.0	207.2	273.6	273.6
Development own apartments						
Units (#)	1,309.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Units size	63	63	63	63	63	63
Estimated Rent (EUR, sqm, mth)	10	11	11	11	11	11
Vacancy Rate (%)	0.1	0.1	0.1	0.1	0.1	0.1
Contribution Topline	9.4	7.9	7.9	7.9	7.9	7.9

To forecast developments, I assumed Vonovia's strategic shift towards liquidity generation over price optimization would continue to drive higher development activity. With improving

market conditions and a focus on enhancing cash flow, I expect the number of units developed for sale to steadily increase. By the end of 9M24, Vonovia had already completed 1,534 apartments for sale, reflecting a +33% YoY growth.

For FY25E, I project development volumes to rise to 1,800 units, increasing to 2,000 units in FY26E and stabilizing at 2,200 units annually from FY27E onward. These assumptions are supported by Vonovia's focus on developments in prime locations, where higher sales prices relative to book values drive stronger margins. As a result, I expect development gross profit margins to improve to 26.2% in FY25E and further to 33.3% in FY26E, highlighting the profitability potential of this strategy in a stabilizing market.

Appendix F Forecast Debt Schedule

Schedule including 1H24							
Debt Category	Book value 2023 (€m)	Nominal Obligation Dec. 31, 2023 (€m)	Nominal Obligation Dec. 31, H1 2024 (€m)	Interest rates for the new issuance (H1 2024)	Average Interest Rate 2023 (%)	Average Interest Rate 2024 (%)	Maturity 2024 Repayment (€m)
Bond (CHF)			159.3	4.55			2029
Bond (GBP)			465.1	4.16			2036
Bond (US dollar)*	-						2023
Bond (SEK)*	113.1	121.2	139.7	4.51	5.29		2026 48.5
Bond (EMTN)*	18,330.5	18,464.0	17,799.3	1.05	1.05		2030 1,814.0
Bond (EMTN Green Bond)*	2,119.5	2,136.9	2,136.9	2.8	2.8		2031 -
Bond (EMTN Social Bond)*	2,062.0	2,075.7	2,925.7	2.77	2.77		2027 -
Bond (Deutsche Wohnen)*	1,803.5	1,760.7	1,760.7	1.12	1.12		2030 -
Registered bond*	624.3	600.0	600.0	1.68	1.68		2031 -
Bearer bond*	1,352.2	1,260.2	1,260.2	1.77	1.77		2032 -
Promissory note loan*	1,047.6	1,045.0	1,045.0	2.57	2.57		2029 -
Mortgages**	14,716.5	14,755.4	14,442.0	2.24	2.24		2030 671.1
Commercial paper	497.4	500.0					500.0
Deferred Interest	230.5						
Total	42,897.1	42,719.1	42,733.9		1.7	1.8	3,033.6

Nominal Obligation 2024	2025 Repayment (€m)	Nominal Obligation 2025	2026 Repayment (€m)	Nominal Obligation 2026	2027 Repayment (€m)	Nominal Obligation 2027	2028	From 2029
72.7	-	72.7	-	72.7	72.7	-	-	-
16,650.0	2,594.4	14,055.6	1,800.3	12,255.3	2,000.0	10,255.3	1,724.9	8,530.4
2,136.9	-	2,136.9	-	2,136.9	-	2,136.9	-	2,136.9
2,075.7	-	2,075.7	610.5	1,465.2	750.0	715.2	715.2	-
1,760.7	589.7	1,171.0	-	1,171.0	-	1,171.0	-	1,171.0
600.0	-	600.0	100.0	500.0	70.0	430.0	50.0	380.0
1,260.2	-	1,260.2	-	1,260.2	33.5	1,226.7	10.0	1,216.7
1,045.0	-	1,045.0	50.0	995.0	309.0	686.0	60.0	626.0
14,084.3	1,646.6	12,437.7	1,435.8	11,001.9	1,777.1	9,224.8	2,119.2	7,105.6
-	-	-	-	-	-	-	-	-
40,309.9	4,830.7	35,479.2	3,996.6	31,482.6	5,012.3	26,470.3	4,679.3	21,166.6

Debt Schedule							
in € million	2023	2024E	2025E	2026E	2027E	2028E	2029E
cost of debt	1.72	1.81	1.92	2.01	2.08	2.15	2.19
(%) refinancing of total debt		3.8%	7.6%	7.6%	9.5%	9.8%	7.8%
bp over interest rates		0.6	0.8	0.8	0.8	0.8	0.8
Interest rate new debt		4.0	3.3	3.1	2.8	2.8	2.8
Interest rates Eurozone (%)	4.0	3.5	2.6	2.3	2.0	2.0	2.0
Credit rating Vonovia (S&P)	BBB+	BBB+	BBB+	BBB+	BBB+	BBB+	BBB+
Debt year beginning	42,719.1	41,237.7	39,393.1	38,303.7	36,803.5	35,607.1	34,418.8
Repayments scheduled		3,033.6	4,830.7	3,996.6	5,012.3	4,679.3	4,345.8
repayment refinancing 2024			30.3	27.3	24.6	22.1	19.9
repayment refinancing 2025				48.6	43.7	39.4	35.4
repayment refinancing 2026					40.7	36.7	33.0
repayment refinancing 2027						51.2	46.1
repayment refinancing 2028							48.3
Total repayments			4,861.0	4,072.5	5,121.3	4,828.7	4,452.4
Repayment from operations		2,730.2	4,374.9	3,665.3	4,609.2	4,345.8	4,070.9
Refinancing need repayments		303.4	486.1	407.3	512.1	482.9	381.5
Additional Financing needs		1,248.8	2,500.0	2,500.0	3,000.0	3,000.0	3,000.0
Total debt year end		41,237.7	39,393.1	38,303.7	36,803.5	35,607.1	34,418.8
Interest expense		745.4	757.4	770.0	765.8	764.2	747.2
yoy			2%	2%	-1%	0%	11%

The debt schedule forecast is based on Vonovia's current repayment schedule and includes key assumptions about refinancing and cash flow allocations. Scheduled repayments for existing debt, including bonds, loans, and mortgages, were derived directly from the company's debt

schedule, which outlines specific maturities up to 2028. For repayments, it is assumed that 90% of maturing debt will be covered by cash flows from operations, based on historical trends that demonstrate Vonovia's strong ability to generate sufficient liquidity. The remaining 10% is expected to be refinanced. While the company aims to reduce its overall debt levels, this approach acknowledges that some refinancing will still be necessary to meet its obligations effectively.

The interest rate for new debt is calculated by adding a credit spread to the projected base interest rate, with the credit spread derived from Vonovia's historical trends and aligned with industry standards. Additionally, it is assumed that Vonovia's BBB+ credit rating remains stable, which ensures continued access to favorable financing terms. The total debt is expected to decline gradually, starting at €42.7bn at the end of 2023 and reducing to €38.6bn by 2029, in line with the company's deleveraging strategy. Interest expenses were calculated based on the average cost of debt, which is forecasted to rise slightly in the short term due to elevated refinancing costs (1.9% in 2024, increasing to 2.1% in 2025) before stabilizing at 2.0% from 2026 onward.

Appendix G Forecast Financial Result

in € million	2023	2024E	2025E	2026E	2027E	2028E
Interest Income	227.8	182	147	132	114	114
Interest rates ECB	4.0	3.2	2.6	2.3	2.0	2.0
% Change interest rates		0.2	0.2	0.1	0.1	0.0
Interest Expense	810.2	745.4	757.4	770.0	765.8	764.2
Interest Expenses from non-derivative financial liabilities	765.1	745.4	757.4	770.0	765.8	764.2
Financial result	582.4	563.2	610.8	637.5	651.9	650.3

The financial result forecast reflects a decline in interest income, driven by projected changes in the European Central Bank's (ECB) key interest rate, which is expected to decrease from 4.0% in 2023 to 3.2% in 2024 and further in subsequent years. The primary component of the financial result is interest expenses from financial liabilities, which were forecasted based on

the average cost of debt (see Appendix F). To simplify the forecast, other interest expenses have been aligned with those from financial liabilities. The forecast assumes higher average refinancing costs in the future, leading to a gradual increase in interest expenses. This is due to higher refinancing rates, which are detailed in the accompanying debt schedule. As a result, total interest expenses are expected to rise from €745m in 2024 to €847m in 2029, while the financial result shows a declining trend over the forecast period.

Appendix H Forecast Personnel Expenses

in € million	2023	2024E	2025E	2026E	2027E	2028E
Wages and salaries	628.3	625.8	640.8	653.9	667.0	680.3
Social security, pension and other employee benefits	138.1	112.4	115.1	117.5	119.8	122.2
Total	766.4	738.3	756.0	771.4	786.8	802.5
Workforce	11,977.0	11,265.3	11,265.3	11,265.3	11,265.3	11,265.3
YoY	-1%	-6%	-	-	-	-
Wages and salaries/ employee	52,458.9	55,554.0	56,887.2	58,044.0	59,204.8	60,388.9
Benefits/ employee	11,530.4					
Percentage of Wages	18%	18%	18%	18%	18%	18%
CPI Germany	5.9	2.4	2.0	2.0	2.0	2.0

The forecast for personnel expenses assumes a stable workforce and ties wage growth to inflation trends in Germany. Over recent years, excluding the one-time effect of the Deutsche Wohnen acquisition, the number of employees has remained steady, and this stability is expected to continue, with the workforce projected at approximately 11,265 employees throughout the forecast period.

Wages and salaries are forecasted to grow in line with the Consumer Price Index (CPI) in Germany, which is expected to stabilize at 2% annually from 2025 onwards. This results in a gradual increase in average wages per employee, reaching €60,388.9 by 2028. Benefits, including social security and pensions, are forecasted to grow proportionally, maintaining a consistent relationship of around 18% of wages, which reflects historical trends.

This forecast reflects a conservative and realistic approach, balancing stable workforce levels with inflation-driven wage adjustments

Appendix I Forecast Tax Rates

in EUR million	2023	2024E	2025E	2026E	2027E	2028E
EBT	9,185.2	191.5	3,382.2	4,714.8	7,812.2	8,474.2
Current income tax	228.8					
Tax rate current income tax	-2.5%					
Prior-year current income tax	16.6					
Deferred tax temporary differences	2,959.3					
Deferred tax - unutilized loss carryforwards	136.8					
Tax expenses Income Statement	2,577.1	38.3	676.4	943.0	1,562.4	1,694.8
Tax rate Tax expenses Income statement	28.1%	-20%	20%	20%	20%	20%
Taxes Paid Cash Flow Statement	154.3					
Tax rate Taxes Paid Cash Flow statement	1.7%					
Tax rate DCF	1.7%	8%	8%	8%	10%	10%

Tax expenses for real estate companies like Vonovia are particularly complex due to the nature of their business. While Vonovia benefits from certain tax advantages, such as the ability to defer taxes on property value adjustments and losses, it is still subject to corporate income tax and trade tax on all taxable income. The significant role of deferred taxes adds another layer of complexity, as these can be highly volatile and influenced by changes in property valuations, refinancing activities, and accounting treatments. In recent years, Vonovia's tax expenses have been highly volatile, with significant negative impacts due to deferred taxes linked to negative EBT and large fair value adjustments. By assuming a 20% tax rate, I have taken a simplified approach, anticipating that the company will gradually transition to a more stable tax position as profits stabilize and prior losses are fully utilized which will lead to reduced reliance on tax shields over time.

Appendix J Forecast Dividends

in EUR million	2023	2024E	2025E	2026E	2027E	2028E
Adjusted EBT	1,866.2	2,062.4	2,245.2	2,352.5	2,386.4	2,496.2
50% Adjusted EBT		1,031.2	1,122.6	1,176.3	1,193.2	1,248.1
Free liquidity available from OFCF		1,004.0	1,064.9	1,118.8	1,130.0	1,179.9
surplus liquidity from recurring operations		27.3	57.7	57.5	63.2	68.2

Dividends are forecasted in line with Vonovia's new policy of distributing 50% of EBT. To maintain a conservative approach, the forecast assumes that exactly 50% of EBT will be paid out as dividends, without factoring in the potential use of surplus liquidity for additional payouts.

Appendix K Forecast CapEx

in € million	2023	2024E	2025E	2026E	2027E	2028E
Acquisitions	6.50	-	-	-	-	-
Development	291.20	387.30	469.68	521.86	574.05	574.05
Investment properties	820.50	894.35	974.84	1,062.57	1,158.20	1,262.44
Other						
Total	1,118.20	1,281.64	1,444.51	1,584.44	1,732.25	1,836.49
Investment properties	81,120.3	78,443.3	78,605.6	80,125.8	84,872.1	90,273.9
% Of investment properties	1%	2%	2%	2%	2%	2%
Calculations Forecast						
in € million	2023	2024E	2025E	2026E	2027E	2028E
Units (#) Development	1116.0	1484.3	1800.0	2000.0	2200.0	2200.0
yoy	33.5	33.0	21.3	11.1	10.0	0.0
Investment properties	820.5	894.3	974.8	1062.6	1158.2	1262.4
yoy	34.3	9.0	9.0	9.0	9.0	9.0

CapEx has been forecasted with a prudent approach, in line with Vonovia's target to gradually increase spending to €2bn by 2028, while recognizing the challenges of maintaining consistent investment levels in the past. Economic pressures like COVID-19, inflation, and rising interest rates have led to significant CapEx volatility, making a cautious outlook essential.

CapEx for investment properties is projected to grow by 9% annually, reflecting the growth rate anticipated in 2024. For developments, CapEx is calculated proportionally based on the

expected increase in the number of development units. Together, CapEx for investment properties and developments form the total CapEx, which is forecasted to equal 2% of total investment property values. This conservative level aligns with historical trends and Vonovia's focus on cost discipline and deleveraging, prioritizing modernization efforts over aggressive expansion.

Appendix L Forecast Capitalized Internal Expenses

in € million	2023	2024E	2025E	2026E	2027E	2028E
Capitalized Internal Expenses	470.4	512.7	558.9	609.2	664.0	723.8
yoy	-30.1%	9.0%	9.0%	9.0%	9.0%	9.0%
Capex Investment Properties	820.5	894.3	974.8	1,062.6	1,158.2	1,262.4
Growth rate Capex Investment Properties	-34.3%	9.0%	9.0%	9.0%	9.0%	9.0%

The forecast for capitalized internal expenses primarily reflects modernization costs carried out by the group's own craftsmen organization. These expenses are closely tied to the company's modernization efforts, which are expected to increase in the coming years. The company has set a target to raise total CapEx to €2 billion by 2028.

However, given the historical volatility of CapEx, a more conservative approach has been adopted in this forecast. A modest 9% annual growth rate has been applied, balancing the company's expansion goals with the potential for fluctuations in future spending. This approach ensures a realistic alignment with both historical trends and the company's strategic targets while accounting for potential uncertainties.

Appendix M Forecast D&A

in € million	2023	2024E	2025E	2026E	2027E	2028E
D&A	410.8	94.5	94.7	96.5	102.2	108.7
Property Values	81,120.3	78,443.3	78,605.6	80,125.8	84,872.1	90,273.9
% of Property Values	-0.51%	-0.12%	-0.12%	-0.12%	-0.12%	-0.12%

In 2021, D&A was notably higher due to the Deutsche Wohnen acquisition. The data for 2020 has been excluded from the analysis, as it was significantly impacted by COVID-19 and not

reflective of typical trends. Instead, the forecast is based on the average of 2022 to 2024, using estimated values derived from 9M24 results to ensure a more reliable baseline.

To standardize the projection, D&A has been forecasted as a constant 12% of property values over the entire period. This percentage reflects a conservative assumption that aligns with historical averages and provides consistency despite the volatility in past depreciation trends. This approach recognizes the difficulty of precisely forecasting D&A for real estate companies, where external factors like acquisitions, market conditions, and property revaluations can significantly influence outcomes. The forecast balances historical data with a realistic, steady-state assumption for future periods.

Appendix N Forecast Deferred Tax Liabilities

in € million	2023	2024E	2025E	2026E	2027E	2028E
Deferred tax (net)	16,741.3	16,142.4	16,102.8	16,369.8	17,331.4	18,464.6
Deferred tax liabilities	15,713.2	15,043.3	15,074.4	15,365.9	16,276.1	17,312.0
% Deferred tax	94%	93%	93%	93%	94%	93%

Deferred taxes on the disposal portfolio for the EPRA NTA calculation were forecasted based on historical averages as a percentage of the overall portfolio value. This approach is straightforward and ensures the forecast aligns with past trends, making it both reliable and practical. Since disposals typically follow a consistent pattern relative to the portfolio size, this method provides a reasonable and accurate basis for projecting deferred taxes.

Appendix O Forecast Other Line Items

Ancillary Costs:

The forecast for ancillary costs reflects a balanced approach, considering historical trends and recent market dynamics. Ancillary costs were exceptionally high in 2022 due to the impact of the Russia-Ukraine war, which led to significant volatility in energy markets and rising energy prices. Given the ongoing economic uncertainty and fluctuating energy costs, forecasting ancillary costs remains challenging.

For 2024, I have assumed a growth rate of 2.4%, reflecting some stabilization compared to the peak in 2022 but remaining above pre-2022 levels. For 2025, the growth rate is projected at 3.0%, incorporating expectations of gradual market adjustments. From 2026 onwards, I have applied a moderate 2.6% annual growth rate, aligning with a potential return to steadier energy market conditions but acknowledging the possibility of sustained higher cost levels compared to previous years. This forecast reflects a cautious yet realistic outlook, factoring in recent market disruptions while assuming a long-term trend of moderation.

Other Revenue from Property Management:

The forecast for other revenue from property management takes into account the nature of this income stream, which includes government grants. These grants tend to be higher during periods of crises, such as the COVID-19 pandemic or the recent inflationary and high-interest-rate environment, as governments provide additional support to mitigate economic challenges. For the projection, I have assumed a 2% annual growth rate to account for inflation adjustments, reflecting a conservative approach. This growth rate assumes no extraordinary government interventions in the future but incorporates a steady baseline increase aligned with general inflation trends.

Cost of Materials:

The forecast for cost of materials reflects expected changes in modernization and maintenance activities. In 2024, costs are projected to be lower due to reduced spending on modernization and maintenance, as the company adapts to economic uncertainty. From 2026 onwards, costs are expected to return to more typical levels, aligning with the 5-year average, as modernization efforts stabilize and construction costs decrease, driven by improved supply chains and easing inflationary pressures.

As a percentage of income from rents, cost of materials is forecasted to rise gradually, starting at 41.5% in 2024E and stabilizing at 47% from 2027E onwards.

Other Operating Income:

Other operating income is forecasted to grow at an annual rate of 2% and reflects alignment with projected inflation trends. In 2023, the company's Other Operating Income increased by €406 million, primarily due to two key factors. First, the reversal of previously recorded impairment losses on its investment in Deutsche Wohnen shares contributed significantly, as the value of these shares recovered during the year. Second, the company generated book gains from the early repayment of its bonds through a public buyback offer. Since the reversal of impairment losses in 2023 is expected to be a one-time event, other operating income has been projected based on historical trends, with growth aligned to Germany's projected annual inflation rate.

Other Operating Expenses:

Operating expenses were unusually high in 2023, mainly due to consultancy costs from integrating Deutsche Wohnen. Looking ahead, these expenses are expected to come down compared to 2023 and 2022 but will still be higher than pre-COVID levels because of increasing overall costs. Other operating expenses is forecasted to grow at an annual rate of 2% and reflects alignment with projected inflation trends.

Revaluation:

The forecast for the revaluation of investment properties reflects a gradual recovery in property values following significant challenges in 2023. In 2023, rising interest rates pushed cap rates

upwards, leading to a sharp negative fair value adjustment of €10,844.2m, driven by the increase in financing costs and downward pressure on property prices.

Looking ahead to 2024, while interest rates are expected to remain high, they are projected to decrease slightly. This will lead to a reduced negative impact on property values, with the fair value adjustment forecasted to improve significantly to €1,783m in 2024.

From 2025 onward, with further interest rate cuts anticipated, cap rates are expected to decline, supporting a recovery in property values. The forecast shows positive fair value adjustments of €1,225m in 2025, €2,450m in 2026, and continuing to grow to €6,670m by 2029, reflecting improving market conditions and the stabilization of the investment property market.

This shift highlights the expected return of investor confidence and a more favorable environment for property valuations over the forecast period.

Minority Interest:

I have forecasted an additional 1% decline in minority interest each year as a conservative approach to account for potential ongoing challenges in subsidiaries with minority shareholders. This reflects the possibility of continued financial pressures, like high refinancing costs, property revaluations, and operational inefficiencies to ensure that the forecast stays cautious and realistic.

Number of Shares:

The forecast assumes a 1% annual growth in the number of diluted shares, reflecting Vonovia's stated goal to focus on share buybacks rather than issuing new equity. However, this assumption is tempered by the company's historical trend of frequent equity raises to fund acquisitions or manage financial pressures, which could still occur under certain circumstances. This approach

balances Vonovia's current strategic direction with a realistic acknowledgment of its historical practices.

Appendix P FFO calculation

in EUR million	2023	2024E	2025E	2026E	2027E	2028E
Profit for the period	6,608.1	229.8	2,705.7	3,771.9	6,249.7	6,779.4
Financial result (excl. from other investments)	454.9	563.2	610.8	637.5	651.9	650.3
Income taxes	2,577.1	38.3	676.4	943.0	1,562.4	1,694.8
Depreciation (incl. on financial assets)	444.4	94.5	94.7	96.5	102.2	108.7
Revaluation	10,726.9	1,782.9	1,225.0	2,450.0	5,512.5	6,063.8
EBITDA (IFRS)	2,441.0	2,632.1	2,862.6	2,998.9	3,053.8	3,169.5
Non-recurring items	147.9	93.4	93.4	93.4	93.4	93.4
Other (non-core Disposals)	12.1	19.8	19.8	19.8	19.8	19.8
Intragroup profits	17.7	18.6	18.6	18.6	18.6	18.6
Gross Profit Development to hold	0.0	0.0	0.0	0.0	0.0	0.0
Others	0.5	0.0	0.0	0.0	0.0	0.0
Adj. EBITDA (Total)	2,583.8	2,724.2	2,954.8	3,091.0	3,145.9	3,261.6
Adj. EBITDA margin (%)	53.0	54.4	57.3	58.4	57.9	58.5
Adj. Net Financial Result	625.1	563.2	610.8	637.5	651.9	650.3
Intragroup profits	17.7	11.2	11.2	11.2	11.2	11.2
Depreciation	110.2	109.8	110.0	112.2	118.8	126.4
Adj. EBT	1,866.2	2,062.4	2,245.2	2,352.5	2,386.4	2,496.2
Depreciation	110.2	109.8	110.0	112.2	118.8	126.4
Change in NWC	340.2	0.0	0.0	0.0	0.0	0.0
Carrying amount of recurring sales assets sold	239.4	315.5	250.0	250.0	250.0	250.0
Capitalized maintenance	296.3	313.8	314.4	320.5	339.5	361.1
Dividends paid to JV minorities & other	40.5	120.0	120.0	120.0	120.0	120.0
Income tax (w/o taxes on non core sales)	124.0	128.5	128.5	128.5	128.5	128.5
Operating Free Cash Flow	1,414.8	1,925.5	2,042.4	2,145.7	2,167.3	2,263.0
60% equity contribution for investment		921.6	977.5	1,027.0	1,037.3	1,083.1
Free liquidity available for distribution	958.0	1,004.0	1,064.9	1,118.8	1,130.0	1,179.9
% of OFCF	68%	52%	52%	52%	52%	52%
Interest expense FFO 1	619.6	745.4	757.4	770.0	765.8	764.2
Current income taxes FFO 1	180.3	128.5	128.5	128.5	128.5	128.5
Consolidation/ others	17.7	11.2	11.2	11.2	11.2	11.2
Group FFO	1,801.6	1,861.5	2,080.1	2,203.8	2,262.9	2,380.2
yoy(%)	9.1	3.3	11.7	5.9	2.7	5.2
Group FFO per share (Euro)	2.23	2.26	2.48	2.60	2.64	2.75

To calculate FFO and FFO per share, the forecasted line items from the Income Statement were used as the primary basis. For any missing items, a constant value based on historical averages

was assumed, or, if the impact was expected to be negligible or impossible to reliably forecast, the value was set to 0. This approach ensures a balanced and practical estimation of FFO. Capitalized maintenance expenses were calculated as a percentage of investment properties, reflecting their strong historical correlation with the value of the portfolio. For depreciation used to calculate adjusted EBIT, a straight-line depreciation rate of 14% of investment properties was applied, based on historical averages. This figure differs from the depreciation in the Income Statement as it excludes adjustments or revaluations, providing a clearer reflection of recurring expenses tied directly to the portfolio. FFO per share was calculated by dividing FFO by the weighted average number of shares outstanding, as it is equivalent to EPS. This approach ensures FFO reflects earnings attributable to common shareholders to provide a consistent measure for per-share performance.

Appendix Q LTV calculation

in EUR million	2023	2024E	2025E	2026E	2027E	2028E
Interest bearing debt (ex. Hybrid)	42,933.0	41,237.7	39,393.1	38,303.7	36,803.5	35,607.1
Cash & cash equivalents	1,737.1	1,472.4	1,022.9	1,245.3	888.0	820.1
Other adj.	0.0	0.0	0.0	0.0	0.0	0.0
Net debt (reported)	41,195.9	39,765.3	38,370.2	37,058.4	35,915.6	34,787.1
Adjustments	895.2	0.0	0.0	0.0	0.0	0.0
Net debt adjusted	40,300.7	39,765.3	38,370.2	37,058.4	35,915.6	34,787.1
Fair value of the real estate portfolio	83,927.7	81,158.1	81,325.9	82,898.8	87,809.3	93,398.1
Loans to companies	814.3	3.3	0.2	1.9	5.9	6.4
Shares in other real estate companies	479.5	888.7	888.7	888.7	888.7	888.7
Adjusted fair value of the real estate portfolio	85,221.5	82,043.5	82,214.9	83,789.5	88,704.0	94,293.2
LTV ex Hybrid (in %)	47.3	48.5	46.7	44.2	40.5	36.9
Net debt/ EBITDA	16.9	15.1	13.4	12.4	11.8	11.0

Appendix R EPRA NAV/NTA calculation

in EUR million	2023	2024E	2025E	2026E	2027E	2028E
Shareholders' equity	25,682.6	25,649.5	27,420.8	30,501.7	36,048.5	42,074.9
FV of derivatives	13.4	13.4	13.4	13.4	13.4	13.4
Deferred tax (net)	16,741.3	16,142.4	16,102.8	16,369.8	17,331.4	18,464.6
EPRA NAV	42,410.5	41,778.5	43,510.2	46,858.1	53,366.5	60,526.1

EPRA NAV per share	52.1	50.8	52.3	55.8	62.9	70.7
yoy (%)	18.7	2.5	3.1	6.6	12.8	12.3
Goodwill	1,391.7	1,391.7	1,391.7	1,391.7	1,391.7	1,391.7
calculated NAV	41,018.8	40,386.8	42,118.5	45,466.4	51,974.8	59,134.4
calculated NAV per share	50.4	49.1	50.7	54.2	61.3	69.1
Deferred taxes on disposal portfolio	13,895.3	13,983.1	14,012.1	14,283.0	15,129.1	16,092.0
Intangible (IFRS)	32.0	32.0	32.0	32.0	32.0	32.0
Real estate transfer tax	5,787.4	0.0	0.0	0.0	0.0	0.0
EPRA NTA	43,928.2	38,195.5	39,995.7	43,347.7	49,740.5	56,729.8
EPRA NTA per share	53.9	46.4	48.1	51.6	58.7	66.2
yoy (%)	17.9	13.9	3.7	7.3	13.6	12.9

Appendix S Calculation Discount Rates:

VNA	2 year	5 year
Raw Beta	1.172	0.768
Adjusted Beta	1.07	0.845
	2023	2024
D/E	1.67	
Tax rate	37%	
EQRP	8.78	

TAG	2 year	5 year
Raw Beta	1.439	0.845
Adjusted Beta	1.216	0.897
	2023	2024
D/E	1.1056	
Tax rate	18%	
EQRP	10.78	

LEG	2 year	5 year
Raw Beta	1.028	0.667
Adjusted Beta	1.019	0.778
	2023	2024
D/E	1.2521	
Tax rate	21%	
EQRP	8.94	

GYC	2 year	5 year
Raw Beta	1.018	0.803
Adjusted Beta	1.012	0.869
	2023	2024
D/E	0.8676	
Tax rate	25%	
EQRP	8.95	

Beta	Unlevered 2yrs	Unlevered 5yrs
TAG	0.76	0.44
LEG	0.52	0.34
GYC	0.62	0.49
Average	0.62	0.41
VNA	0.57	0.37
Beta	Levered 2yrs	Levered 5yrs
VNA	1.26	0.84

Ru	
10-year German Bond	2.24
EQRP	8.31
Beta (Bu)	0.57
Ru	5.71%

CAPM	
	13/12/2024
10-year German Bond (%)	2.24
Expected Market Return (%)	10.55
Beta levered VNA	1.26
cost of equity (%)	12.73

WACC	
cost of equity (%)	12.73
cost of debt (%)	1.79
Debt (€m)	42,733.9
Equity (€m)	25,623.6
Weight Equity	37%
Weight Debt	63%
WACC (%)	5.47

Cost of Equity:

The cost of equity was calculated using the CAPM approach. For the risk-free rate, I used the 10-year German government bond yield of 2.24% from Bloomberg, as most of Vonovia's

portfolio is located in Germany, making it the most relevant choice. The expected market return of 10.55%, reflecting Vonovia's country and regional context, led to an equity risk premium of 8.31%.

To determine Vonovia's levered beta, I unlevered the betas of its key peers—LEG, TAG, GYC, and Vonovia itself—took the average, and then relevered it using Vonovia's current debt-to-equity ratio and effective tax rate. I chose the 2-year beta over the 5-year beta to capture recent market dynamics, such as rising interest rates, inflation, and changing investor sentiment in the real estate sector. This approach better reflects Vonovia's current risk profile, shaped by significant economic changes over the past two years. All data used was updated as of December 13, 2024.

WACC:

The WACC, used for the DCF and APV valuation, was calculated using the derived cost of equity, the current cost of Vonovia's debt (from the debt schedule), and the debt-to-equity ratio.

The equity value was based on the current market capitalization as of December 13, 2024.

Due to incomplete bond data in Bloomberg for some instruments, I used the market value of debt reported in Vonovia's 1H24 financial statements, which is the most recent available figure.

Incorporating these inputs along with the effective tax rate, the WACC was calculated at 5.47%.

Unlevered Cost of Capital:

The Unlevered Cost of Capital for the APV valuation was calculated using the same risk-free rate as the cost of equity, combined with the same equity risk premium, and Vonovia's own calculated unlevered beta.

Appendix T DCF Valuation

WACC	5.47%
Terminal Growth Rate	2.00%

	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
Income from property management	4,875	5,012	5,158	5,297	5,434	5,575	5,742	5,915	6,092	6,275	6,463
YoY		3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
EBIT	8,603	755	3,993	5,352	8,464	9,125					
(-) Revaluation	10,727	1,783	1,225	2,450	5,513	6,064					
Adjusted EBIT	2,124	2,538	2,768	2,902	2,952	3,061	3,158	3,253	3,351	3,451	3,555
% of topline	44%	51%	54%	55%	54%	55%	55%	55%	55%	55%	55%
Tax rate	2%	8%	8%	8%	10%	10%	11%	11%	11%	11%	11%
NOPAT	2,088	2,335	2,547	2,670	2,656	2,755	2,811	2,895	2,982	3,072	3,164
(+) D&A	411	94	95	97	102	109	50	50	50	50	50
(-) CAPEX	1,104	894	975	1,063	1,158	1,262	1,148	1,183	1,218	1,255	1,293
% of topline	-23%	-18%	-19%	-20%	-21%	-23%	-20%	-20%	-20%	-20%	-20%
(-) NWC	340	-	-	-	-	-	-	-	-	-	-
FCFF	1,055	1,535	1,666	1,704	1,600	1,601	1,712	1,762	1,814	1,867	1,921
WACC	5.47%	5.47%	5.47%	5.47%	5.47%	5.47%	5.47%	5.47%	5.47%	5.47%	5.47%
years	-	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
Discount Factor	1.0	1.1	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.7
NPV of CFs	1,055	1,455	1,498	1,452	1,293	1,226	1,244	1,214	1,184	1,155	1,128

PVs of CFs	12,849.6
Terminal value	56,414.2
Total DCF Value	69,263.8
(-) Net debt	40,300.7
(-) Minorities	4,262.0
(+) investment in other companies	2,622.0
(=) Equity Value	27,323.1
Number of shares	814.6
DCF share price	33.54

Sensitivity Analysis:

	WACC									
	33.54	4.47%	4.72%	4.97%	5.22%	5.47%	5.72%	5.97%	6.22%	6.47%
Terminal Growth Rate	1.00%	33.67	28.86	24.63	20.88	17.53	14.52	11.80	9.32	7.05
	1.25%	39.17	33.63	28.81	24.58	20.82	17.47	14.46	11.73	9.25
	1.50%	45.60	39.15	33.60	28.77	24.53	20.77	17.41	14.39	11.66
	1.75%	53.21	45.59	39.13	33.57	28.73	24.48	20.72	17.36	14.33
	2.00%	62.35	53.21	45.58	39.11	33.54	28.70	24.44	20.67	17.31
	2.25%	73.55	62.38	53.23	45.58	39.09	33.52	28.66	24.40	20.63
	2.50%	87.59	73.61	62.41	53.24	45.58	39.08	33.50	28.64	24.37
	2.75%	105.69	87.68	73.67	62.45	53.26	45.59	39.08	33.48	28.61
	3.00%	129.95	105.83	87.77	73.73	62.49	53.28	45.59	39.07	33.46

The DCF valuation is structured with income from property management as the top line. EBIT, including disposals and developments, is used as the starting point for calculating Free Cash Flow to the Firm (FCFF), as these activities are part of Vonovia's business strategy and represent recurring income. Revaluations, however, are excluded because they do not represent cash flows, resulting in adjusted EBIT.

For the forecast period 2024E–2028E, my own calculated estimates are applied. Beyond this period, to extend the DCF to a 10-year horizon, adjusted EBIT is calculated as 55% of the top line, reflecting consistent historical trends. Tax expenses in 2023 were primarily driven by deferred taxes, leading to a 1.7% tax rate for that year. Starting in 2024, a tax rate of 8%, gradually increasing to 11%, is applied to better reflect the taxes typically paid by real estate companies.

After calculating NOPAT, depreciation and amortization (D&A) is added back. From 2029E onward, a constant €50m D&A is assumed to take a conservative approach, avoiding overestimation given historical volatility. CapEx are deducted, set at 20% of the top line for the 2029E–2033E period, aligning with historical averages.

As no change in NWC is assumed, the resulting calculation provides the FCFF. By applying a WACC of 5.47%, the present value (PV) of cash flows amounts to €12,849.6m. For the base case terminal value calculation, a terminal growth rate of 2% was assumed, consistent with Germany's GDP growth forecast. This results in a total DCF value of €69,263.8m.

To determine the equity value, net debt and minority interests were deducted, while investments in other companies were added back. The resulting equity value was divided by the diluted number of outstanding shares, resulting in a share price estimate of €33.54. The sensitivity analysis illustrates how variations in the terminal growth rate and WACC impact the estimated share price.

Appendix U APV Valuation

WACC	5.47%
Ru	5.71%
Rd	1.79%
Terminal Growth Rate	2.00%

	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
Income from property management	4875	5012	5158	5297	5434	5575	5742	5915	6092	6275	6463
YoY	0	2.8%	2.9%	2.7%	2.6%	2.6%	3.0%	3.0%	3.0%	3.0%	3.0%
EBIT	-	-	-	-	-	-	-	-	-	-	-
(-) Revaluation	10,727	1,783	1,225	2,450	5,513	6,064	-	-	-	-	-
Adjusted EBIT	2,124	2,538	2,768	2,902	2,952	3,061	3,158	3,253	3,351	3,451	3,555
% of topline	44%	51%	54%	55%	54%	55%	55%	55%	55%	55%	55%
Tax rate	2%	8%	8%	8%	10%	10%	11%	11%	11%	11%	11%
NOPAT	2088	2335	2547	2670	2656	2755	2811	2895	2982	3072	3164
(+) D&A	411	94	95	97	102	109	50	50	50	50	50
(-) CAPEX	-1104	-894	-975	-1063	-1158	-1262	-1148	-1183	-1218	-1255	-1293
% of topline	-23%	-18%	-19%	-20%	-21%	-23%	-20%	-20%	-20%	-20%	-20%
(-) NWC	-340.2	0	0	0	0	0	0	0	0	0	0
FCFF	1,055	1,535	1,666	1,704	1,600	1,601	1,712	1,762	1,814	1,867	1,921
Ru	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%
years	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
Discount Factor	1.00	1.06	1.12	1.18	1.25	1.32	1.40	1.47	1.56	1.65	1.74
NPV of CFs	1,055	1,452	1,491	1,443	1,282	1,213	1,227	1,195	1,163	1,133	1,103
Terminal Value (unlevered)											52,834
WACC	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%
years	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
Discount Factor	1.00	1.05	1.11	1.17	1.24	1.31	1.38	1.45	1.53	1.62	1.70

NPV of CFs	1,055	1,455	1,498	1,452	1,293	1,226	1,244	1,214	1,184	1,155	1,128
Terminal Value (levered)											56,414
Interest Expenses	-810.2	-745.4	-757.4	-770.0	-765.8	-764.2	-764.2	-764.2	-764.2	-764.2	-764.2
Tax shield	-13.61	59.63	60.59	61.60	76.58	76.42	84.06	84.06	84.06	84.06	84.06
Rd	1.79%	1.81%	1.92%	2.01%	2.08%	2.15%	2.19%	2.19%	2.19%	2.19%	2.19%
years	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
Discount Factor	1.00	1.02	1.04	1.06	1.09	1.11	1.14	1.16	1.19	1.22	1.24
NPV of CFs Tax shield	-13.6	58.6	58.3	58.0	70.5	68.7	73.8	72.2	70.7	69.2	67.7
Terminal Value (Tax shield)											3,580

Unlevered Firm Value	66,590.5
Value Tax Shield	4,234.0
Total APV Value	70,824.5
(-) Net debt	40,300.7
(-) Minorities	4,262.0
(+) investment in other companies	2,622.0
(=) Equity Value	28,883.8
Number of shares	814.6
APV Share Price	35.46

Sensitivity Analysis:

Terminal Growth Rate	Ru									
		4.71%	4.96%	5.21%	5.46%	5.71%	5.96%	6.21%	6.46%	6.71%
	1.00%	20.25	20.04	19.84	19.64	19.45	19.26	19.07	18.89	18.71
	1.25%	23.54	23.33	23.13	22.93	22.74	22.55	22.36	22.18	22.00
	1.50%	27.24	27.04	26.84	26.64	26.44	26.25	26.07	25.88	25.70
	1.75%	31.45	31.24	31.04	30.84	30.65	30.46	30.27	30.09	29.91
	2.00%	36.25	36.05	35.85	35.65	35.46	35.27	35.08	34.89	34.71
	2.25%	41.81	41.60	41.40	41.20	41.01	40.82	40.63	40.45	40.27
	2.50%	48.29	48.09	47.89	47.69	47.50	47.31	47.12	46.94	46.76
	2.75%	55.97	55.77	55.57	55.37	55.18	54.99	54.80	54.61	54.43
3.00%	65.20	65.00	64.80	64.60	64.41	64.22	64.03	63.85	63.67	

For the APV valuation, the same FCFF calculated in the DCF valuation is used. However, unlike the DCF method, the FCFF is discounted using the unlevered cost of capital, and the value of the tax shield is calculated separately. This approach is particularly beneficial for Vonovia, given its high leverage, as it isolates the value created by the tax shield on interest payments and provides a clearer picture of how leverage impacts the company's valuation.

The tax shield is determined by multiplying the forecasted interest expenses by the tax rate, assuming a constant rate for simplicity starting in 2029E. The tax shield is then discounted using the cost of debt for the respective forecasted year. From 2029E onward, a steady, slightly higher cost of debt than in 2028E is assumed to maintain simplicity while accounting for the risk of future interest rate changes. This methodology ensures the APV valuation accurately captures the benefits of Vonovia's tax shield while reflecting its financial risk profile

For the terminal value, a growth rate of 2%, aligned with Germany's GDP forecast, was applied. This results in a terminal value for the tax shield of €3,579.9m and an unlevered terminal value for the firm of €52,834.3m. Using the same calculation for equity value and dividing it by the diluted number of shares, the APV share price is calculated to be €35.52. The sensitivity analysis illustrates how variations in the unlevered cost of capital and WACC impact the estimated share price.

Appendix V Comparable Company Analysis

Company	Ticker	Market Cap (EURbn)	Net debt (EURm)	Enterprise Value (EURm)	EV/EBITDA (NTM)	P/FFO (NTM)	P/NAV
LEG Immobilien	LEG	6.430	9,101.0	15,003.8	26.45	13.69	0.68
TAG	TAG	2.653	3,149.0	5,542.7	24.25	15.33	0.81
Grand City Properties	GYC	2.135	3,408.0	6,954.3	21.24	11.34	0.46
Gecina	GFC	6.929	6,364.3	14,441.2	23.75	14.13	0.64
Metrovacesa	MVC	1.370	332.2	1,459.4	24.97		
Aroundtown	AT11	4.715	11,473.8	18,931.7	19.83	11.46	0.36
Vonovia	VNA	26.175	40,300.7	69,707.9	26.28	16.11	0.71
25th Percentile					23.75	13.10	0.595
Median					24.00	13.69	0.66
Average					24.13	13.62	0.65
75th Percentile					24.97	14.51	0.745

EV/EBITDA multiple	
EBITDA	2,583.80
EV/EBITDA (NTM)	24.00
Enterprise Value	62,011.20
(-) Net debt	40,300.70
Equity Value	21,710.50
Number of shares	814.64
Share Price	26.65
25th percentile share price	25.86
75th percentile share price	29.73

P/FFO multiple	
FFO	1,861.54
Number of shares	822.85
P/FFO (NTM)	13.69
Share Price	30.97
25th percentile share price	29.64
75th percentile share price	32.83

P/NAV multiple	
NAV	41,778.48
Number of shares	822.85
P/NAV (NTM)	0.66
Share Price	33.51
25th percentile share price	30.21
75th percentile share price	37.83

For a comprehensive valuation, I also performed a comparable company analysis using the EV/EBITDA, P/FFO, and P/NAV multiples. Among these, the P/NAV multiple is generally considered the most accurate for real estate companies, as it directly reflects the value of the underlying property portfolio and aligns closely with industry valuation practices. For the peer comparison, companies were selected based on the following criteria: market capitalization, industry, region, and whether they primarily operate in the real estate sector. The most comparable peers are LEG, TAG, and Grand City Properties, as they are primarily focused on the residential real estate market in Germany. To provide a broader perspective and capture

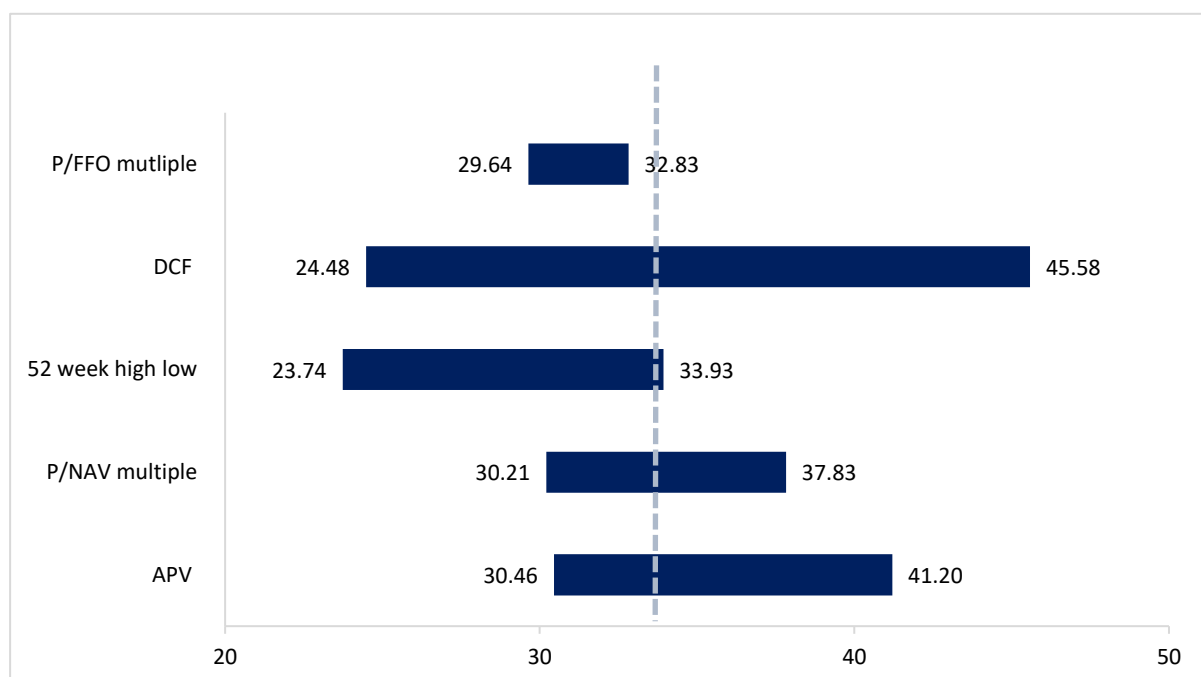
underlying macroeconomic trends and sector valuations, Gecina, Metrovacesa, and Aroundtown were also included. This approach complements the DCF and APV valuations, which already account for the specifics of the German rental market, such as the Mietspiegel. The share prices were calculated using EV/EBITDA, P/FFO, and P/NAV multiples based on the selected peer group. For the EV/EBITDA multiple, Vonovia's forecasted EBITDA (NTM) of €2,583.80m was multiplied by the median multiple of 24.00, and net debt (€40,300.7m) was subtracted to derive equity value, resulting in a share price of €26.65, with a range of €25.86 (25th percentile) to €29.73 (75th percentile).

For the P/FFO multiple, forecasted FFO (NTM) of €1,861.54m was multiplied by the median multiple of 13.69, leading to a share price of €30.97, with a range of €29.64 to €32.83.

Lastly, for the P/NAV multiple, the NAV of €41,778.48m was multiplied by the median multiple of 0.66, resulting in a share price of €33.51, with a range of €30.21 to €37.83. The ranges for each method reflect valuations at the 25th and 75th percentiles to provide additional context for potential variation. The EV/EBITDA multiple is the least suitable for real estate companies like Vonovia because it fails to account for the capital-intensive nature of the industry and the importance of property valuations. Similarly, the P/FFO multiple may underestimate Vonovia's share price as it focuses solely on recurring cash flows, excluding potential growth in property values and other long-term factors. However, P/FFO is still included in the overall valuation as it provides valuable insight into the company's operational performance and cash flow generation.

Appendix W Valuation Output

Valuation method	Low labels	Difference	High labels	Midpoint	Weight
EV/EBITDA multiple	25.86	3.9	29.73	27.8	
P/FFO multiple	29.64	3.2	32.83	31.2	20%
DCF	24.48	21.1	45.58	35.0	30%
52 weeks high low	23.74	10.2	33.93	28.8	10%
P/NAV multiple	30.21	7.6	37.83	34.0	10%
APV	30.46	10.7	41.20	35.8	30%
Target Price				33.79	100%



Valuation at Target Price:

Target Price	33.79
Current Price	31.04

	2019	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E
Leverage										
Net Debt/EBITDA	14.6	12.9	21.3	17.7	16.9	15.1	13.4	12.4	11.8	11.0
LTV	43.1	39.4	45.4	45.1	47.3	48.5	46.7	44.2	40.5	36.9
D/E	1.67	1.51	1.93	1.94	2.07	2.00	1.83	1.65	1.41	1.22
Net debt	23,058	23,368	45,225	43,320	40,301	39,765	38,370	37,058	35,916	34,787

Profitability										
FFO	1,218.0	1,345.6	1,694.4	1,981.6	1,801.6	1,861.5	2,080.1	2,203.8	2,262.9	2,380.2
FFO/ share	2.29	2.29	2.70	2.51	2.23	2.26	2.48	2.60	2.64	2.75
ROE	6%	14%	7%	-2%	-24%	3%	12%	14%	19%	17%
NOI margin	56%	56%	56%	51%	53%	56%	55%	55%	52%	53%

Valuation										
NAV/ share	52.0	55.7	65.0	62.1	50.4	49.1	50.7	54.2	61.3	69.1
Dividend yield (implied)	3.3%	2.8%	3.4%	3.4%	3.2%	3.71%	4.00%	4.15%	4.16%	4.31%
NIY	3.03%	2.96%	2.05%	2.61%	3.05%	3.45%	3.49%	3.50%	3.25%	3.19%
Dividend Payout Ratio	65%	71%	76%	34%	41%	55%	54%	53%	53%	52%

Key Metrics										
Adjusted EBITDA	1,760	1,907	2,254	2,606	2,584	2,724	2,955	3,091	3,146	3,262
Operating Free Cash Flow	1,760	1,907	2,254	1,821	1,415	1,926	2,042	2,146	2,167	2,263
Revenue	2,841	3,069	3,465	4,747	4,707	4,851	4,996	5,130	5,267	5,407

Appendix X ESG Analysis

ESG Programs Vonovia (2023):

Program	Description	Target/ Impact
Environmental		
PV Installation	Installed 1,353 PV systems, targeting 300 MW capacity by 2026	80 MW in 2024; roof coverage by 2050
Othermo	Monitors gas-fired heating systems, optimizing adjustments and reducing CO ₂ by ~15%	Real-time efficiency monitoring
VESG	Offers renewable electricity to tenants via Vonovia's distribution company	39,000 customers in 2022, saving 50 GWh/year
Social		
Foundations' Funding	Vonovia Mieterstiftung e. V. and "Stiftung Mensch und Wohnen" support tenants and local communities, focusing on social hardship, children, and the elderly.	€200,000 funding volume in 2023 to support social initiatives.
freiRaum Projects	Redesigning vacant spaces into inclusive community hubs for activities like education, social gatherings, and integration programs.	>9,800 m ² of discounted or rent-free commercial space repurposed for community use.
Governance		
Whistleblowing System	Web-based hotline available in multiple languages, open to employees, suppliers, customers, and stakeholders. Reports are investigated externally.	28 suspected cases in 2022 (down from 45 in 2021); no proven corruption cases or material compliance violations uncovered.

ESG Valuation CO2 costs:

Regulatory Changes:

CO2 Costs Since 2023		
Tenant	Landlord	annual kg CO ₂ / m ²
1.00	0	less than 12 kg
0.90	0.1	12-17 kg
0.80	0.2	17-22 kg
0.70	0.3	22-27 kg
0.60	0.4	27-32 kg
0.50	0.5	32-37 kg
0.40	0.6	37-42 kg
0.30	0.7	42-47 kg
0.20	0.8	47-52 kg
0.05	0.95	more than 52 kg

Calculation Vonovia:

Energy Level Portfolio Vonovia						
Rental area	2022 (%)	in kwh/sqm	in kg/CO2 sqm	% VNA	weighted average % of cost	weighted average kg/CO2 sqm
of which energy level A+	0.1					
of which energy level A	1.1	50	12.075	0	0	13.282
of which energy level B	10.5	75	18.112	20	210	190.176
of which energy level C	21.5	100	24.149	30	645	519.209
of which energy level D	25.6	130	31.394	40	1024	803.688
of which energy level E	18.9	160	38.639	60	1134	730.274
of which energy level F	10.4	200	48.299	80	832	502.305
of which energy level G	3.3	250	60.373	95	313.5	199.231
of which energy level H	1.8	>250		95	171	-
of which not disclosed	6.9					
Total					43.30	29.58

Heating consumption in the portfolio	MWh	tCo2/MWH
from renewable sources (%)	8.8	
Natural gas	2,507,943.0	0.20
% total (excl. Renewable)	46.7	
District heating	2,620,895.0	0.28
% total (excl. Renewable)	40.2	
from renewable sources (%)	17.8	-
Heating oil	148,415.0	0.29
% total (excl. Renewable)	2.8	
Electricity	55,785.0	0.73
% total (excl. Renewable)	0.4	
from renewable sources (%)	63.6	-
Coal	14,737.0	0.36
% total (excl. Renewable)	0.3	
Other (5)	17,269.0	
Total	5,365,043	
VNA emission factor	0.241	

Calculation LEG:

Rental area	2023 (%)	in kwh/sqm	in kg/CO2 sqm	% LEG	weighted average percentage of kg/CO2 sqm cost	weighted average
of which energy level A+	0.4			0	0	0
of which energy level A	0.5	50	11.462	0	0	5.73
of which energy level B	3.8	75	17.193	20	76	65.33
of which energy level C	12.5	100	22.924	30	375	286.55
of which energy level D	29.1	130	29.801	40	1164	867.20
of which energy level E	21	160	36.678	50	1050	770.24
of which energy level F	17.2	200	45.847	70	1204	788.57
of which energy level G	10.2	250	57.309	95	969	584.55
of which energy level H	5.4	250	57.309	95	513	309.47
Total	100.1				53.51	36.78

Heating consumption in the portfolio	MWh	tCo2/MWH
Natural gas	964,678	0.20
% total (excl. Renewable)	1	
District heating	400,539	0.28
% total (excl. Renewable)	0	
Heating oil	32,952	0.29
% total (excl. Renewable)	0	
Other (5)	34,815	0.37
% total (excl. Renewable)	0	
Total	1,432,984	
Total	100%	
LEG emission factor	0.229	

Calculation TAG:

Rental area	Total % portfolio	in kwh/sqm	in kg/CO2 sqm	% TAG	weighted average percentage of cost	weighted average kg/CO2 sqm
of which energy level A+	0.10			0	0	
of which energy level A	3.31	50	12.814	10	33	42.358
of which energy level B	25.43	75	19.221	20	509	488.752
of which energy level C	34.22	100	25.627	30	1027	877.046
of which energy level D	17.79	130	33.316	50	890	592.757
of which energy level E	9.24	160	41.004	60	554	378.727
of which energy level F	7.00	200	51.255	80	560	358.794
of which energy level G	2.43	250	64.068	95	231	155.726
of which energy level H	0.49	250	64.068	95	46	31.145
Total	100				38.49	29.25

Heating consumption in the portfolio	2022	tCo2/MWH
Natural gas	286,433	0.2
% total (excl. Renewable)	30%	
District heating	657,078	0.3
% total (excl. Renewable)	69%	
Heating oil	4,550	0.3
% total (excl. Renewable)	0%	
Electricity for heat	206	0.7
% total (excl. Renewable)	0%	
Total	948,267	
TAG emission factor	0.256	

Calculation GYC:

Rental area	% of portfolio	in kwh/sqm	in kg/CO2 sqm	% GYC	weighted average percentage of cost	weighted average kg/CO2 sqm
of which energy level A+	0.1				0	
of which energy level A	0.4	50	18.181	20	8	7.273
of which energy level B	9.1	75	27.272	40	364	248.174
of which energy level C	27.4	100	36.363	50	1370	996.334
of which energy level D	24.4	130	47.271	80	1952	1,153.420
of which energy level E	19.7	160	58.180	95	1872	1,146.148
of which energy level F	9.8	200	72.725	95	931	712.706
of which energy level G	5.7	250	90.906	95	542	518.166
of which energy level H	3.3	250	90.906	95	314	299.991
Total					73.52	50.82

Heating consumption in the portfolio	2022	tCo2/MWH
Natural gas	217,715,468	0.2
% total (excl. Renewable)	34%	
District heating	263,256,230	0.3
% total (excl. Renewable)	41%	
Heating oil		
% total (excl. Renewable)		
Electricity for heat	155,876,903	0.7
% total (excl. Renewable)	24%	
Total	636,848,601	
GYC emission factor	0.364	

Output ESG Valuation Peer Comparison:

	% cost of CO2 tax	Energy level A/ A+	kg/CO2 sqm
LEG	53.5%	0.9%	36.78
TAG	38.5%	3.4%	29.25
GYC	73.5%	0.5%	50.82
VNA	43.3%	1.2%	29.58

	Sustainalytics	MSCI ESG	CDP Climate Change	ISS ESG	S&P Global CSA
GYC	301	N/A	N/A	N/A	58
LEG	11	AAA	B	C	N/A
TAG	2	A	C	C-	N/A
VNA	8	A	A-	C	63

CapEx of environmental sustainable activities:

	2022		2023	
	in €m	(%) of Capex	in €m	(%) of Capex
GYC	14.7	3.49	4.4	3.86
LEG	101.0	11.6	208.7	46.2
TAG	31.3	8.3	25.2	14.7
Peer Average	49.0	7.8	79.4	21.6
VNA	774.0	31.2	326.0	27.1

Appendix Y Macroeconomics

CPI Forecast Germany:

Year	IMF	Ifo	Bloomberg Forecast	Mean
2024e	2.6	2.2	2.4	2.4
2025e	2.0	2.0	2.1	2.0
2026e	2.0	2.0	2.0	2.0

Construction Cost (2021=100) Germany:

Year	Quarter	Residential Buildings
	2024III	130.3
	2024II	129.4
	2024I	128.5
	2023IV	126.9
	2023III	126.4
	2023II	126
	2023I	125
	2022IV	121.7
	2022III	118.9
	2022II	115.9
	2022I	108.8
	2021IV	104.2
	2021III	102.1
	2021II	98.7
	2021I	95
	2020IV	90.9
	2020III	90.5

2020II	92.6
2020I	92.2
2019IV	91
2019III	90.5
2019II	89.9
2019I	89.2

Interest Rates Forecast Eurozone:

	ECB Forecast	Bloomberg Forecast	Mean
2024e	3.3	3.2	3.2
2025e	3.0	2.2	2.6
2026e	2.5	2.2	2.3

GDP Forecast:

GDP growth Eurozone	
Bloomberg	
2024e	0.8
2025e	1.2
2026e	1.3

GDP growth Sweden	
Bloomberg	
2024e	0.7
2025e	1.8
2026e	2.2

GDP growth Germany	
Bloomberg	
2024e	-0.1
2025e	0.7
2026e	1.2

GDP growth Austria	
Bloomberg	
2024e	-0.4
2025e	1.1
2026e	1.5

Ifo-Business Climate Index Germany:



Economic Data Austria:

Rental Cost:

Year		Cost per sqm	change (%)
2024	Q3	9.9	1.0%
2024	Q2	9.8	1.0%
2024	Q1	9.7	2.1%
2023	Q4	9.5	0.0%
2023	Q3	9.5	2.2%
2023	Q2	9.3	2.2%
2023	Q1	9.1	2.2%
2022	Q4	8.9	1.1%
2022	Q3	8.8	2.3%
2022	Q2	8.6	1.2%
2022	Q1	8.5	1.2%
2021	Q4	8.4	2.4%
2021	Q3	8.2	-1.2%
2021	Q2	8.3	

Inflation:

Year	2017	2018	2019	2020	2021	2022	2023	2024E	2025E	2026E
	2.1	2.0	1.5	1.5	2.8	8.5	7.9	3.0	2.2	2.1

Economic Data Sweden:

Inflation:

Year	2017	2018	2019	2020	2021	2022	2023	2024E	2025E	2026E
	1.8	2	1.8	0.5	2.2	8.3	8.6	2.9	1.4	1.8

Appendix Z Market Size Calculation

Total Number of Dwellings:

Year	Total Units Germany	YoY
2017	41,968,100	
2018	42,235,400	0.64%
2019	42,512,800	0.66%
2020	42,803,700	0.68%
2021	43,084,100	0.66%
2022	43,367,000	0.66%
2023	43,650,800	0.65%

Market Share VNA vs. Peers:

Market share Germany		
Company	Number of Units	% market
VNA	485,074	1.11%
LEG	166,546	0.38%
GYC	63,303	0.15%
TAG	84,682	0.19%

Appendix AA Vonovia vs. Peers

Share Price Performance



Vacancy Rates VNA vs. Peers:

