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A Comparative Study of International Financial Models to Increase Longterm Rental Housing Supply in South Korea

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A Review of German Pfandbriefe (Covered Bonds): Implications for Enhancing the Affordable Rental Housing Supply in South Korea

OVERVIEW

This review is part of the 5th Joint Research initiative between The Wilson Center in Washington D.C. and The Housing And Urban Guarantee Corporation (HUG), a South Korean public company offering housing and rental guarantees to improve housing opportunities and general welfare. As part of a research initiative to identify financial models to increase long-term middle-income rental housing supply, American researchers from the Wilson Center, American University, U.S. Department for Housing and Urban Development, and the University of Pennsylvania studied housing finance models in various countries and their potential applicability within South Korean housing markets.

The University of Pennsylvania team researched the use of the Pfandbriefe (covered bonds) model for affordable rental housing financing in Germany. The team started with a landscape study, looking at historical housing regulations, market conditions, such as tenant household status and homeownership rates, and the current public and private rental housing supply. In the second half of the study, the team analyzed the implications of the covered bond model in the South Korean market and the overall feasibility of implementing a similar model.

INTRODUCTION

This study provides analysis of the potential use of covered bonds as used in the German rental housing market for increasing long-term rental housing supply in South Korea for middle-income households, as well as the debt burden of public housing providers. Based on the concept note and conversations with HUG, this analysis explores the following aspects of covered bond as they are used in Germany, and how the model could be applied to the current South Korean rental housing market in four sections:

- Section 1: German rental housing market characteristics
- Section 2: German regulatory and policy environment as it applies to public and private rental supply
- Section 3: Characteristics of the German Pfandbriefe (covered bonds) and newer social covered bond
- Section 4: How covered bonds can be used to reduce public debt burden for rental housing. Implications for how HUG, supervised by MOLIT, could incorporate covered bond financing within its business practices.

KEY MESSAGES

In Germany (as well as the Netherlands and Denmark), housing finance has adapted to unique structural and socio-economic conditions that have supported social housing and rental markets for over 120 years. This environment has allowed banks to offer social covered bonds to meet affordable housing market demand.

1. **Germany has the second lowest homeownership rate in the OECD. Unlike countries like encourages rentals, especially in urban areas**. These post-World War II policies shape housing "backstop agreement that gives WSW unlimited access to state funding if needed." Due to those

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investment decisions across Germany. As real estate prices increase, these policies are negatively affecting household wealth distribution. It is worth noting, however, that Germans enjoy a strong social insurance system (education, health, childcare, social housing and pensions) that reduces household savings requirements.

2. **Affordable housing strategies are an integrated federal/state/local strategy in Germany due to a mix of centralized and decentralized powers.** Land use and zoning are decentralized policy responsibilities and municipalities are given considerable planning powers. However, Federal agencies have regulatory control over housing through legal frameworks for rental housing rights, national tax incentive and rent control programs, support for social housing organizations, and urban development and affordable housing funds.

3. **Covered bonds (Pfandbriefe) were invented in Germany over 200 years ago and constitute 42% of the German residential secondary mortgage market. The market is highly regulated and conservative.** Until 2008, few countries adopted this financing model. As a result, German banks have deep expertise in adapting this bond instrument to Germany's housing market conditions, especially rental housing. South Korea has been using covered bonds since 2013. Three South Korea Banks (KHFC, Kookmin, KEB Hana) are members of the 'Covered Bond Label.' This enhances South Korea's status as a leader in the global covered bond market. However, our research indicated recent ESG bonds have been used to achieve homeownership goals and have not yet been used for affordable rental housing investments.

The German covered bond (Pfandbrief) model has a demonstrated capacity for reducing public debt burden for affordable housing and ensuring repayment obligations are met to investors. However, the effectiveness of social covered bonds in South Korea remains unclear due to differences in housing markets and the potential role of HUG in the management and/or guarantee of these products.

4. **Whether mortgage-backed or publicly owned, covered bonds for housing investments are highly stable attractive investments because they are designed to ensure 100% repayment to bond holders.** Covered bonds balance risk and liquidity by collateralizing a fenced pool of mortgages which remain on the bank's asset sheet (dual resource) and never exceed 60% of the underlying value of the assets. This financing model ensures that bond holders are given absolute repayment priority in case of insolvency or default. The pool can absorb losses (risk) because banks are required to replace defaulting mortgages in the pool with other mortgages. This model gained popularity after the 2008 financial crisis and more than 30 countries now allow covered bonds.

5. **Strong regulatory environment for affordable housing in Germany and Netherlands allows German and Dutch banks to sell ESG bonds to build affordable housing for low and middle-class renters.** Bonds are tied to assets that meet strict affordable housing criteria. Existing rental housing regulations provide a legal framework for assessing and monitoring assets to ensure they meet ESG goals.

6. **The Netherlands requires social housing covered bond offerings to have a guarantee from the Social House-building Guarantee Fund (WSW).** WSW is a nonprofit foundation that guarantees loans to Dutch social housing associations. The participating housing associations and WSW are self-owned foundations but are government-related entities. The national government provides a

guarantees, S&P considers them equal to sovereign funds and gives the WSW an 'AAA' rating. In the Netherlands Social Housing Associations are registered entities with a history back to the 1902 Dutch Housing Act.

2. Affordable housing strategies are an integrated federal/state/local strategy in Germany due to a mix of centralized and decentralized powers. Land use and zoning are decentralized policy responsibilities and municipalities are given considerable planning powers. However, Federal agencies have regulatory control over housing through legal frameworks for rental housing rights, national tax incentive and rent control programs, support for social housing organizations, and urban development and affordable housing funds.

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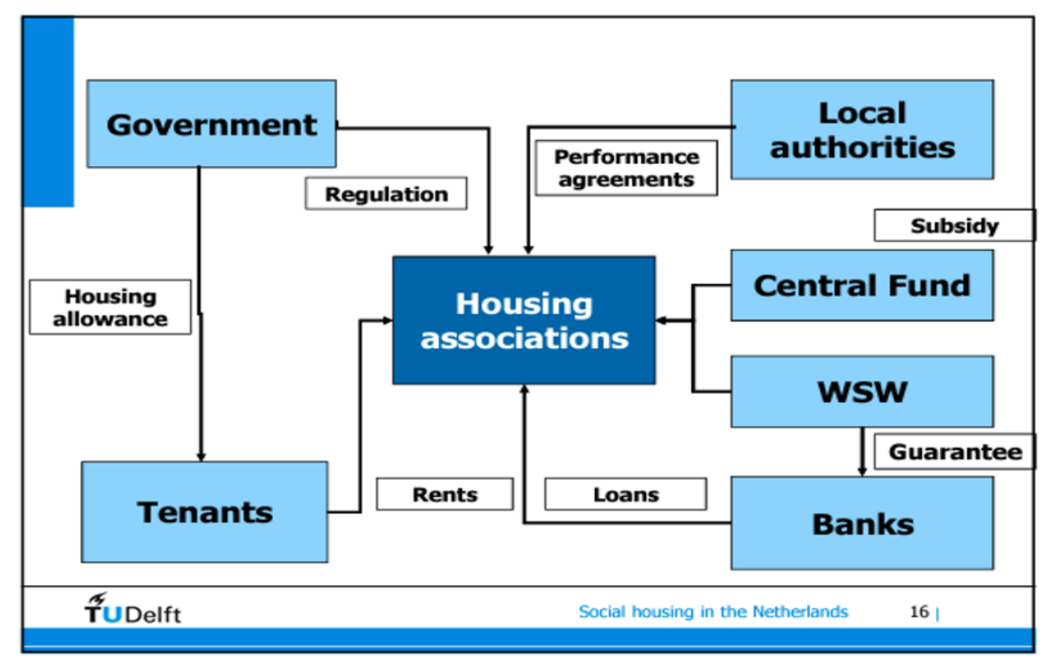

Figure 1.Role of WSW guarantees in the Dutch social housing model. Source: Marja Elsinga, OTB Research Institute for the Built Environment, TU Delft, 'Dutch Social Housing at Risk,' 2013.

Both German and Dutch covered bond finance models provide examples of how South Korea and HUG might use social covered bonds for affordable middle-income housing. Although South Korea's National Housing and Urban Fund targets homeownership, it could support social rental housing. HUG's strong history of creating housing guarantee products gives HUG the expertise to develop criteria for rental housing and social covered bond offerings. However, the stark contrast between the German social housing model and South Korea's support for homeownership creates significant barriers. German-style non-profit and community housing foundations and banks, federal rent controls and renter rights, and urban housing markets that incentivize rental properties are all unfamiliar territory for the South Korean housing sector. A deeper exploration by HUG researchers is needed to determine the feasibility of adapting social covered bonds guarantees for affordable rental housing in South Korea.

7. **Important Differences in German and South Korean Housing Market and Regulatory Environment**

Like the U.S., South Korea places a premium on homeownership as a wealth generator for the middle class. In Germany, rental housing dominates in large part because the market does not prioritize homeownership. In fact, rental housing, considered investment products, are given preferential tax incentives. Due to the strong rental market, the German government has created a substantial portfolio of subsidy programs and housing laws that protect tenants including a long post-war history of policy decisions that encourage private investment in rental housing, with controls.

8**. Using Covered Bonds and ESG Social Variants in South Korea**

There are advantages to using covered bonds and its social variant to increase long-term rental supply in South Korea. Where it may not in profitable to use MBS, the safety of covered bonds may offer a feasible alternative. As demonstrated by Germany, covered bonds can be mortgage-backed or publicly funded. This offers an option to reduce government debt burden for long-term investments in rental housing, even if private investments are limited. With Aaa ratings, these issues are attractive international investments.

9. **The potential for ESG covered bonds for affordable housing requires further research coordination between MOLIT, HUG, the Korea Housing Finance Corporation.**

Although case studies in Germany and Netherlands demonstrate that covered bonds can be structured for affordable housing, this is an emerging sector and model and relies on a supportive policy environment for rental housing investment. The financial implications (including profitability) and the feasibility of using them in South Korea, (including assigning them to private institutional experts) needs further research. Although South Korea has taken an early lead in the use of ESG covered bonds to support homeownership goals (mortgages for marginalized or other targeted groups), they have not been used for rental housing investment. The use of the National Housing Urban Fund (NHUF) lies with MOLIT, which has decision-making authority regarding the operation of the National Housing Urban Fund (NHUF). The Korea Housing Finance Corporation has experience with MBS and the ESG bonds recently used to support homeownership goals.

10. **We recommend that HUG's capacity for managing asset selection and guaranteeing and/or certifying the performance of ESG bonds is included in MOLIT's evaluation of ESG bonds for affordable rental housing.** HUG could borrow from the Berlin Hyp model in this report, which includes a Sustainable Finance Commission to manage the process of project evaluation and asset selection. The commission ensures that the projects in the covered bond pool meet ESG criteria such as the EU Taxonomy (Climate Delegated Act of June 2021), as well as German sustainability and affordable housing regulations. It is important to emphasize that the Berlin Hyp fund risk (as determined by second party opinion) is low due to supportive policy environment in German, including experience with covered bonds.

PART ONE: THE GERMAN RENTAL HOUSING MARKET

Starting around 2008, Germany has seen a rising mismatch between housing demand and supply as urban population increases (due to natural increase and refugee migration) strain existing supply. Low- and middle-income households have been burdened by price increases as new construction investment favors the upper end of the market. In response, the German government increased rent regulations to slow price increases in 2015. Then, in 2018, the government announced a plan to build more than 1.5 million units. Nearly all the demand is for affordable rental units.

DEMOGRAPHICS

In Germany, more than half the population live in rental units. As shown in Figure 1, the population rate by housing type shows a steady rate around 56% for rental units ("flat"). However, rental rates are significantly higher in cities such as Berlin [83%] and Hamburg [76%] than more rural states (Rhineland Palatinate [42%], Saarland [36%]). This creates strong geographic implications for government responses to housing demand and the impact of ownership and tenant housing policies.

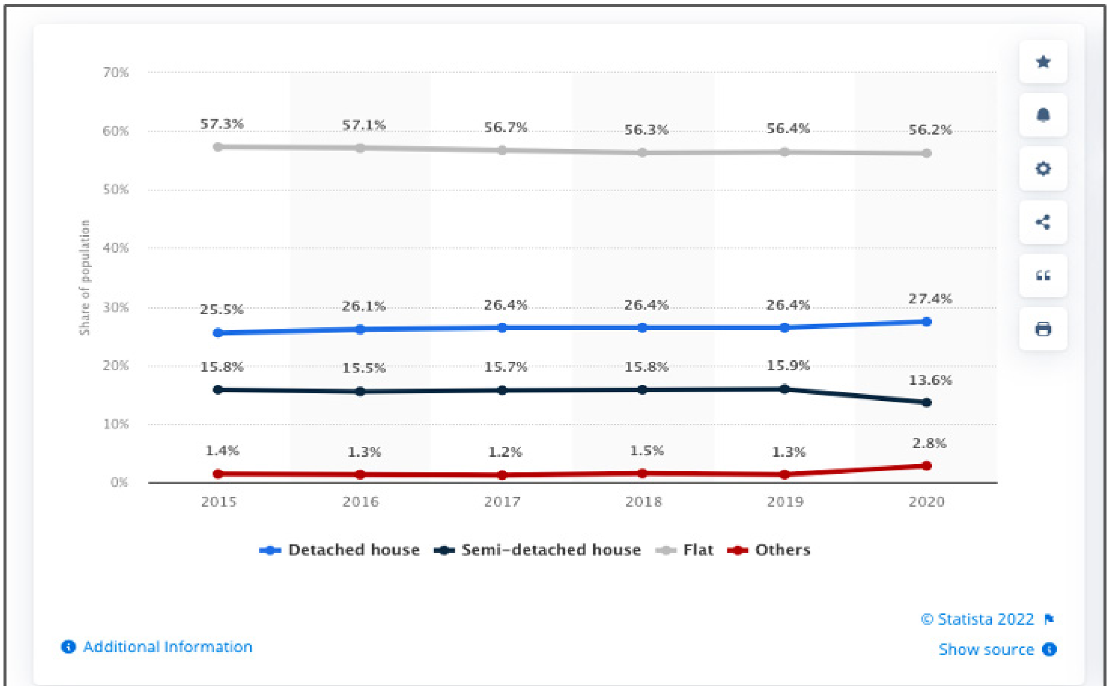

Figure 1. Distribution of German Population between 2015-2020, by dwelling type (Statista, 2022)

HOUSING STOCK

The vast majority, 90%, of the rental unit stock are small multi-family buildings. Private (or non-professional) landlords own more than 60% of these units; housing associations, about 25%; and the ten largest publicly traded companies, less than 5 %. Small private landlords tend to invest in row houses or low-rise buildings, living in one unit while renting out the other (s). Only about 20% of multi-family housing stock is larger than 13 units, concentrated in large cities.

TENANTS

Due to the high rental rates in Germany, tenant demographics are high across all age, occupational groups, and incomes. Rates across age groups include: 24-35 (85%); 36-44 (71%); 75 and older (+50%). Rental rates across occupational categories: white-collar private sector (55%); blue collar workers (46%).

The largest group in rental housing are single-person households or single-parent households in urban areas. Due to population growth and immigration, combined with rising urban land values and a construction slowdown after the 2008 recession, rental housing in metropolitan areas is in short supply. Major cities like Berlin have a chronic shortage of units, persistent overcrowding. Germany's federal statistical agency released a released 2021 survey showing 8.5 million people in overcrowded conditions in 2020, up from 6.4 million the previous year. This has generated calls for more government intervention and larger investments in affordable social housing. In major metropolitan areas like Berlin, the shortages are expected to worsen as private developers focus on the high-end luxury markets.

Despite the popularity of rentals, German homeownership is a good indicator of household wealth and rising inequalities. Owner household wealth amounted to €277,000 in 2017 compared to tenant households, with a median wealth of only €10,400 .

RENTAL HOUSING POLICY

Observers attribute the high rental rates in Germany to historical policy decisions in the post-World War II period when 12 million Germans were homeless and 20% of the housing stock was destroyed. Due to inflation and post-war poverty, most Germans did not have the savings to invest in homeownership. East and West Germany addressed the housing shortage problem differently. Socialist reconstruction solutions in the East resulted in the proliferation of state-owned apartment blocks (plattenbau). Despite homeowner incentives after reunification in 1990, 66% of households in former East Germany remain renters. Democratic approaches in West Germany after WWII -supported heavy subsidies to building associations, non-profit groups, and private developers to build social or low rent housing. After a commitment period, privately funded developments were turned over to market rates, increasing private supply. In Figure 2, German tenure distribution (highlighted) shows a significantly larger proportion of private rentals than South Korea.

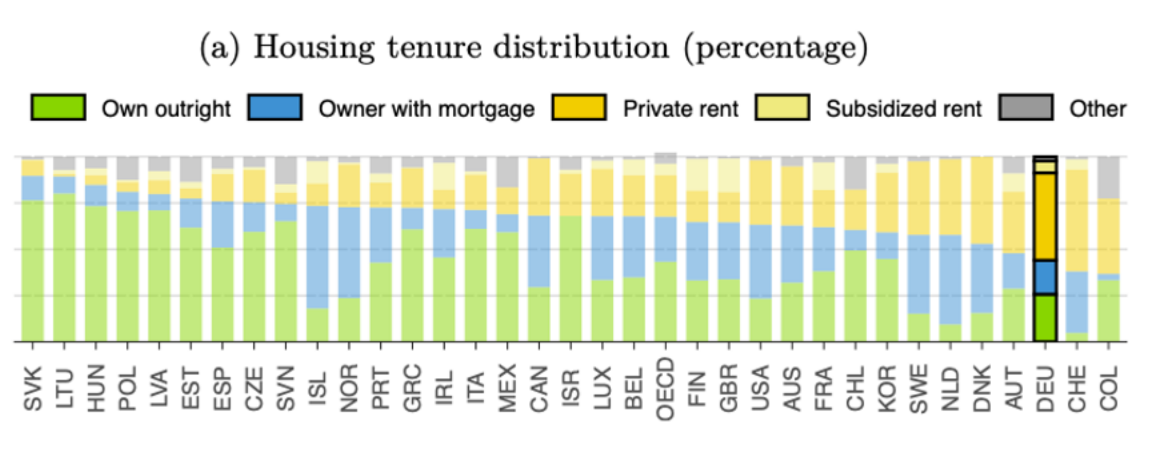

Figure 3. German (DEU) Housing Tenure Proportion, Housing Sector Country Snapshot, OECD,2021

Unlike the U.S. and South Korea, Germany does not promote home ownership over rental housing. German laws permit income tax deductions for carrying costs and expenses for rental units (investment property), but do not offer tax subsidies for owner-occupied homes (a consumer good). As a result, the transaction costs for owner-occupied home purchase and maintenance are much higher. Tenants also enjoy quality housing construction and strong tenant rights, with generous entitlements including open-ended leases, protection from eviction, and, more recently, rent control. German tenants are required to give landlords a 3-month deposit and leases are open-ended with limited re-negotiation options for landlords. These tenant rights and increased home ownership costs can discourage the transition from rental units to owner-occupied units, keeping demand for tenant housing high.

The OECD German Housing profile (Figure 4, below) highlights how the country's housing policies compare to other OECD economies.

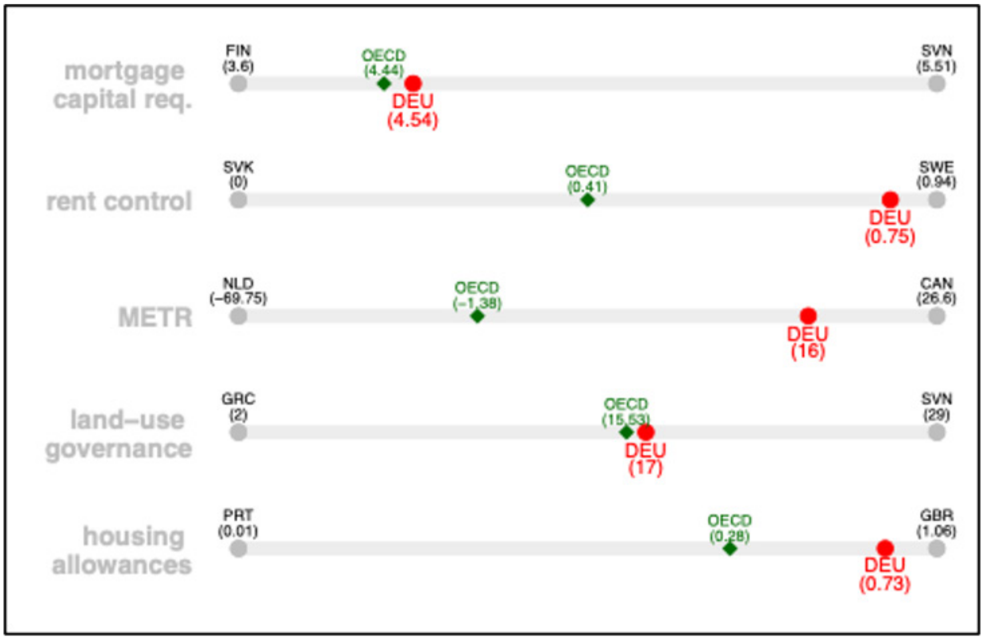

Figure 4. OECD Germany Country Profile, housing policies

Allowances and Rent Control: Germany has strong housing allowance and rent control policies. Per the German Federal Statistical Office, about 1.5% of households (618,200) received subsidies in 2020, an increase of 22.6% compared with 2019. Subsidies are available for renters or homeowners, based on the number of persons in the household and income levels. Allowance and controls are regulated by national rent rate tables reflecting local housing conditions. Due to the housing crisis, the pandemic and inflation, rent control have been big political issues in Germany in 2021-22. One of Germany's biggest landlords (Vonovia) expects that rising energy prices will cost tenants the equivalent of two months of additional rent by the end of 2022 and inflation will force landlords to raise rents faster than previous years (already high).

METR: Germany's higher marginal effective tax rates (METR) on housing helps to contain price dynamics. In 2022, OECD released a report on METR across OECD countries noting that effective tax rates "vary substantially depending on the holding period, rate of return, tenure (owner-occupied or rented), financing scenario, and the inflation rate but do not vary much with the taxpayer's income and wealth or with the rate of return."

Land Use Governance. Another important policy factor is land use governance. Land use and housing are highly decentralized policy responsibilities in Germany and municipalities are given considerable planning power. Three cities – Berlin, Hamburg and Bremen - are federal states, giving them significant power to address housing. Planning policies are influenced by Federal funding allocation for states, districts, and municipalities, which are calculated by population. As a result, municipalities want to attract more people and will zone for denser housing rather than maximize tax receipts. To increase housing investments Germany reformed urban planning laws in 2017 to remove barriers to densification and mixed land use in urban areas by creating a new "urban territory" category (Urbanes Gebiet) in the building code.

RESIDENTIAL MORTGAGE FINANCING SYSTEM

The German mortgage system is the same for landlords or homebuyers, and in urban or rural states. Owners and landlords finance their investments through 25 to 30-year mortgages. They secure their mortgages from a variety of entities: state-owned regional banks (landesbanken) that depend on deposits for lending; state owned savings banks (sparkassen) and/or mutual building societies (bausparkassen) that depend on deposits; and banks or others licensed by the national government that can issue covered bonds. In 2021, outstanding residential mortgage loans were €1.6 trillion; covered bonds constituted 42% (€678) of the total. Interest rates for residential loans are low (1-2%) and mortgage affordability calculations are a bit higher in Germany (35-40% of income) compared to the US (28%).

A common strategy for households in Germany is to combine savings (20%), a bank mortgage loan (50%) and Bausparen loan (30%) to finance housing. Bausparen loans are offered by bausparkassen, mentioned above. Bausparkassen are "self-help" organizations, designed as a group savings account with contractual monthly savings requirements. Borrowing limits are determined by household contributions to the pool and lending regulations. Depositors are not required to borrow from Bausparkassen however, and can choose to finance a larger percentage through banks.

PART TWO: INSTITUTIONAL FINANCING: PFANDBRIEFE COVERED BONDS

Pfandbriefe covered bonds, invented in Germany over 200 years ago, constitute 42% of the residential secondary mortgage market in Germany. Only banks that meet strict regulatory Pfandbriefe criteria can aggregate mortgages in covered bond pools. These covered bonds allow banks and mortgage institutions to pool mortgages, collateralize them, and gain access to national or international bond markets. They are structured as an extremely secure asset class for bond holders with a zero-default record. Covered bonds as an asset class have been so successful, particularly since the 2008 financial crisis, that other countries have adopted variations of this model. Today, covered bonds are issued in 30 countries. Covered bonds are relatively recent in South Korea, with the passage of the 2013 Covered Bond Act of Korea. Although practiced in 30 countries, Denmark (€44 billion), Germany (€37 billion), and France (€35 billion) dominate the €2.91 trillion covered bond market. This is comparable to real estate investment trusts or REITs ($3.5 trillion) but of lower value than mortgage-backed securities, or MBSs, ($7.6 trillion).

Pfandbrief are collateralized with a package of assets whose underlying value always exceeds the value of the bond: no more than 60% of any mortgage can be placed in a covered bond pool. The asset pool is fenced but remains on a bank's asset sheet (dual recourse). This means the pool can absorb losses because banks are required to monitor pools monthly and defaulting mortgages must be replaced by the issuer with another mortgage. Bond holders are given absolute repayment priority in case of insolvency or defaults. The Pfandbrief market is highly regulated and legal provisions require independent monitoring of the cover assets. As a result of this structure, rating agencies give them AAA or 99% investment grade status, with a premium yield over sovereign bonds.

COVERED BONDS VERSUS MORTGAGE-BACKED SECURITIES

Mortgage issuers use covered bonds and mortgage-backed securities (MBS) for different purposes due to differences in their underlying framework and regulatory environments. Covered bonds are most commonly preferred for increased liquidity (reducing debt burden) and risk management (reducing moral hazards) . Importantly, research by the U.S. Federal Reserve in Chicago found that financial institutions consistently preferred to use covered bonds instead of MBS to increase liquidity when the bank has "relatively low return and high loan-to-deposits ratio."

The two models start off with the same concept of a separate pool of mortgages sold on the capital markets, are structured and used differently by banks. In the MBS framework, banks sell the loan pool to a shell company (or special purpose entity, SPE) which pays the bond holders. In countries like the U.S. the bank regulations are not applied to the SPE and a bank does not have to hold capital against the pool, transferring all the risk to bondholders. MBS loans, once sold, are a static pool, so they are designed with multiple tranches of mortgages to balance default risk. Covered bonds, in contrast, must remain on the issuing institutions balance sheets, ringed-off from other assets, and dynamically managed to ensure steady rates of return. Therefore, the transfer of risk to bondholders is less complete in the MBS model. This reduces the moral hazard of selling off subprime loans because the bank keeps the risk of covered bonds on their balance sheet.

Unlike MBS, Pfanbrief banks in Germany do not sell the whole value of the mortgage to bond holders. Rather, banks pool off only 60% of the asset value. As mentioned before, this acts as a hedge against insolvency or defaults. The key criterion for determining this ratio is the mortgage lending value (MLV). The MLV is a regulated calculation designed to avoid macroeconomic-related fluctuations and speculator-driven price increases. (see Figure 6).

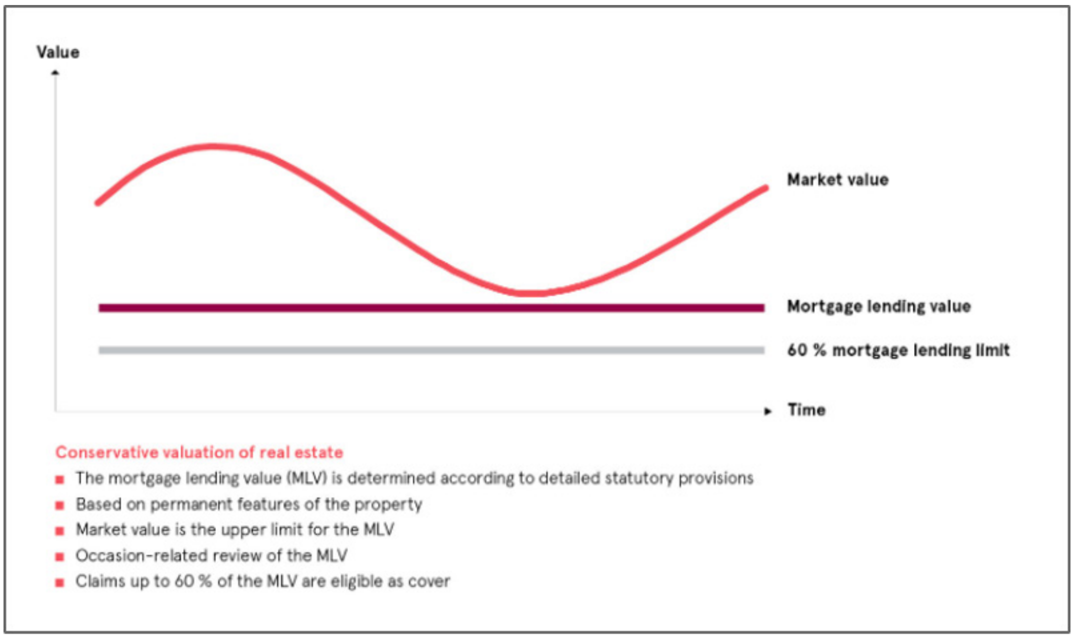

Figure 6. Pfandbrief Mortgage Lending Value. Source: VDP, German Pfandbrief Banks, https://www.pfandbrief.de/site/en/vdp/real_estate/valuation/mortgage_lending_value.html

Observers believe that the conservative nature of the covered bond contributed to the resilience during the 2008 financial crisis and the COVID-19 pandemic. This was demonstrated during the last two years as covered bond issues continued to receive AAA ratings even as financial experts forecasted a rise in German foreclosures and rapidly increasing housing costs during the pandemic. As bankers Frederick Kunze, Nordbank/LB and Maureen Schuller ING Bank observe, "It should be noted that covered bonds have once again proven themselves to be a crisis-proof asset class." Ratings agencies offer investors positive reviews of the market despite fluctuations. In February 2022, Fitch rating agency wrote that it "sees the impact of a potential [housing market] correction as limited for mortgage Pfandbriefe as an asset class. This is due to low Loan-to-Value (LTV) ratios in cover pools, based on conservative valuations and a good mix of seasoned and newly originated mortgage loans."

During the pandemic, residential covered bonds held up despite fears to the contrary. In fact, residential issuance increased from pre-pandemic times. Between 2019 and 2021, residential issuances increased 20%. Apartments led the rise (up 28%), and single family (up 24%) and multi-family (up 15%) followed. See Table 1.

COVERED BOND REGULATORY ENVIRONMENT

Covered bonds originated in the 18th century under the Prussian King Frederick II to provide credit for owners of large estates impacted by the Seven Year War. The law required landowners' universal participation in cooperatives (landschafts) that acted as intermediaries between lenders and borrowers and appraised each property. The landshaft issued bonds with a standard interest rate to the merchant classes. The landschaft was responsible for paying the coupon (usually 4%) received from the borrowers' interest payments. The system evolved with the German nation. Emerging from a loose confederation of 39 states into a nation in 1871 governed by a monarchy and rudimentary legislature (Reichstag), it established national banking laws. The 1900 Mortgage Bank Act restructured and unified the system, permitting private mortgage banks to issue covered bonds. They extended that right to public banks in 1927. The practice continued through the Great Depression, World War II, and the partition of Germany, and continues to shape the contemporary German housing market.

CURRENT LAWS AND REGULATIONS

Today, the 2005 Pfandbrief Act, along with six amendments from 2006-2021, regulates the use of covered bonds. The Act ensures strict legal standards and transparency, and outlines licensing responsibilities of approved Pfandbrief-issuing banks vis a vis listed supervisory authorities. Today, that is both the German central bank (Deutsche Bundesbank) and the European Central Bank, due to recent EU bond harmonization rules. Regulatory oversight belongs to the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin), which submits reports twice a year to supervising authorities and audits licensed Pfandbrief banks every three years. An independent cover pool monitor appointed by the BaFin assures cover value and the mortgage lending value (beleihungswert) are used correctly and Pfandbrief banks must publish quarterly pool performance.

PFANDBRIEF ISSUERS AND INVESTORS

Currently, 82 German entities are licensed to offer pfandbriefe by BaFin. Large issuers dominate the market: more than 70% of the pfandbriefe are offered by the top ten and 91% by the top twenty entities by volume (See Figure 7). Table 2 illustrates the top 10 issuers. They include universal banks, specialized mortgage issuers, international banks, and state-owned banks with a geographic focus. They vary in asset pool size (€.460 billion to €.27 billion).

Table 2. Largest Issuers (Norddeutsche Landesbank and DZ HYP are added together to reflect 2021 merger)

	ISSUE	TYPE	OWNER (HDQ)	% PFANDBRIEF MARKET (2021)	ASSETS
1	Norddeutsche Landesbank (DZY HP)	Commercial	Majority owned by Lower Saxony and Saxony Anhalt (Hanover)	16%	€.160 billion (2018)
2	Helaba	Commercial	Savings Banks and Giro Association of Hesse-Thuringia (Frankfurt and Erfurt)	10%	€.219. billion (2020)
3	Commerzbank	Universal Bank	Shareholders (Frankfurt)	9%	€.462 billion (2018)
4	MuHyp	Mortgage Bank	Cooperative (Munich)	8%	48.6 billion (2020)

5	UniCredit/Hypo Vereinsbank	Universal Bank	Wholly owned subsidiary of UniCredit (Munich)	7%	€.300 billion (2014)
6	Pbb Deutsche Pfandbriefbank	Specialized pfandbrief issuer	Shareholders (Garching)	7%	€.58.4 billion (2021)
7	Bayern LB	Universal Bank	Free state of Bavaria (Munich)	7%	€.220 billion (2019)
8	LBBW	Universal Bank	Savings Bank Association of Baden-Wuerttemberg (41%) Baden-Wurttemberg (25%)Stuttgart (19%) Landesbeteiligungen Baden-Württemberg (14%)	6%	€.282 billion (2021)
9	Berliner Hyp	Real Estate and Mortgage Bank	State of Berlin (LBB Holding) (Berlin)	4%	€ 27.2 billion (2018)
10	Aareal Bank	Commercial	Shareholders (Wiesbaden)	3%	€ 45.5 billion (2020)

Source: VDP, bank websites

Pfandbriefe are issued on the international capital market on various stock exchanges. They are the second largest bond class after government bonds in Germany and one of the largest in the EU. Investors can belong to any class interested in long term maturity periods and steady returns. Large investors in both regular and recent "jumbo" Pfandbrief offerings can include pension funds, insurance companies, and central banks. The term Jumbo is used for the larger more liquid segment of covered bonds with a minimum volume of EUR 1 billion.

INTERNATIONAL USE OF COVERED BONDS

Over the past twenty years, 30 countries have adopted Pfandbrief-style covered bonds. They include the EU and nations in the European Economic Area (EEA). In some markets like the U.S., the MBS and municipal bond markets are designed to be more favorable to investors. Their success since 2008, however, has increased interest in passing favorable legislation in the U.S. and countries such as Chile, China, India, Malaysia, and Mexico. In 2020 the MBS market still dominated bond issues, with 89% of the total €2.91 trillion market. In most countries, covered bonds account for 30% or more of their mortgage markets – in Denmark the figure is 100%, while in the U.K. it's under 10%. As mentioned previously, three countries (Denmark, Germany, France) have 40% of the market. Seven others (Canada, Italy, Norway, Sweden, Switzerland, Spain, The Netherlands and the United Kingdom) constitute another 46% of the market. Japan, Korea, Singapore, and Turkey entered the market much later and their combined share of the global total is just .5%. In 2019, the EU Parliament passed the Covered Bond Directive (CBD) to establish standard rules for covered bonds premised on the idea of "principled harmonization." The concept sets minimum requirements for key elements while allowing nations to legislate the detail. The CBD came into force in January 2020 and calls for national governments to amend their legislation accordingly by 2022. Germany completed its alignment in 2021, other nations are expected to follow suit.

In South Korea, covered bonds are issued by private issuers and state-run institutional issuers (e.g., Korea Housing Finance Corporation, Korea Development Bank). Covered bond issues were officially recognized with passage of the 2013 Covered Bond Act of Korea but Kookmin Bank (KB) and the Korea Housing Finance Corporation (KHFC) sponsored offshore issues as early as 2009, the first such issues in the Asia-Pacific region. South Korea's Covered Bond Act has similar regulations as the German 2005 Pfandbrief Act (dual recourse, segregation of assets, bankruptcy remoteness, public supervision) but they have some important differences. For example, the loan to value (LTV) limit is higher, 70%; the cover is higher, 5% or more; a cap on total issuance is set (4% of total assets) with the FSC (the national regulator) permitted to lower it to 2%. The KHFC Act does not specify valuation methods or appointment of a cover pool monitor; it has a cap on its issuance (50 times paid in equity).

Three South Korea Banks (KHFC, Kookmin, KEB Hana) are now members of the "Covered Bond Label" whose purpose is to highlight the quality of covered bonds to investors and enhance the trust in the asset class. This enhanced South Korea's status in the global covered bond market.

PART THREE: SPECIALIZED COVERED BONDS: ESGS FOR AFFORDABLE RENTAL HOUSING

A new class of covered bonds emerged in Europe has been spreading rapidly since 2019: Environment (Green or Sustainable), Social, and Governance covered bonds (known collectively as ESG) emerged in Europe and their use has been spreading rapidly since 2019. In 2021, the EU Commission issued standards for green bonds (EUGBS) as part of its program for implementing the European Green Deal and its goal of carbon neutrality by 2050. The Sustainable and Social covered bonds are linked to the Sustainable Development Goals (SDGs). Of the three, Green bonds are still by far the most popular (71% share of ESG) followed by Social (25%) and Sustainable (4%). The EU published a new taxonomy for green covered bonds in 2022 in part because of the lack of green residential assets and underwriting data. Figure 7 (below) shows how the largest investments are in Goal 11 - Sustainable Cities and Communities, due to the focus on affordable housing and public transportation. The second strongest is SDG 7 Affordable and Efficient Energy, because of its focus on energy efficient buildings.

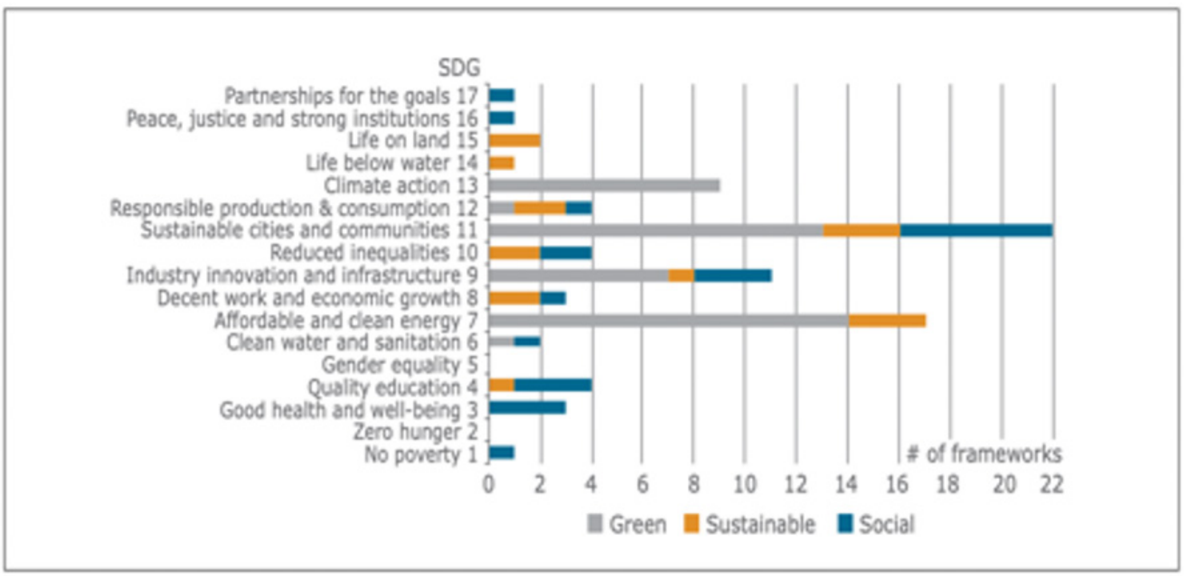

Figure 7. Covered Bonds investments as they relate to SDGs. Source: ING

ESG for Affordable Rental Housing

The Social covered bond type can be used for social rental housing investment. The Association of German Pfandbrief Banks (VDP) standards for Social covered bonds, premised on the UN's 17 SDGs, include criteria for affordable housing. The market framework for social Pfandbrief was established in 2021 using the International

Capital Market Association (ICMA) Social Principles. The ICMA principles look at four components over the covered bond offering : (1) Use of proceeds; (2) Process for project evaluation and selection; (3) Management of proceeds; and (4) Reporting. The dramatic rise in social-covered bonds for housing over the last two years is due to government responses to the COVID-19 pandemic on the economy.

In April 2022, Berlin Hype Bank issued their first social Pfandbrief to address rental housing, with a volume of EUR 750mn and a maturity in May 2032 that carries an interest coupon of 1.75%. It was rated AAA by Moody's. The yield at re-offer was 1.769%. It is the first social Pfandbrief specifically to increase affordable multi-family rental housing supply in Berlin, which is facing a severe housing shortage. This was the first social covered bond issue in Germany backed by mortgages. Two previous issues were backed by public sector lending. The funding will go to municipal social housing companies, which control 18% of the city's 1.89 million apartments in Berlin. In Berlin, 85% of the households rent and half the population qualifies for subsidized rents. Estimates put the need for affordable housing units in Berlin at 194,000 by 2030.

Eligible assets in this pool must be loans for *multi-family buildings* owned by:

- Non-profit oriented municipal housing companies
- Non-profit oriented housing co-operatives (Co-ops)
- Private housing companies and project developers, which are committed publicly to social responsibility and the offering of affordable housing

Assets must also be considered an *Affordable Tenant Housing* building. To be considered an affordable housing building asset, four selection criteria are applied.

- *Type of Borrower*: Differentiation between municipal housing companies, housing cooperatives and private housing companies and project developers.
- *Gross Basic Rent per Apartment*: In accordance with the "Housing Benefit Act Test", (*Wohngeld*) it is based on the total living space of the property, the total rent and the number of residential units.
- *Maximum Gross Base Rent*: Determined according to the Rent Level Regulations of the German Housing Benefit Act
- *Environmental Minimum Safeguards*: Social Bond eligible assets must be within the energetically best 70% of the national building stock and not already part of the Green Finance Portfolio.

These criteria can vary according to country. In the Netherlands a similar affordable housing bond (via NWB Bank) required:

- *Assets with a guarantee from the Social House-building Guarantee Fund (WSW).*
- 80% of units must be given to households with a maximum income of €35,739 per annum;
- Rents were capped at €710.68 per month; and
- 10% of the social housing stock was in "the Special Need Program."

To avoid double-counting assets Berlin Hyp's covered bond pool cannot be in their existing social finance portfolio. The following table shows Berlin Hyph's social finance portfolio versus the covered bond pool.

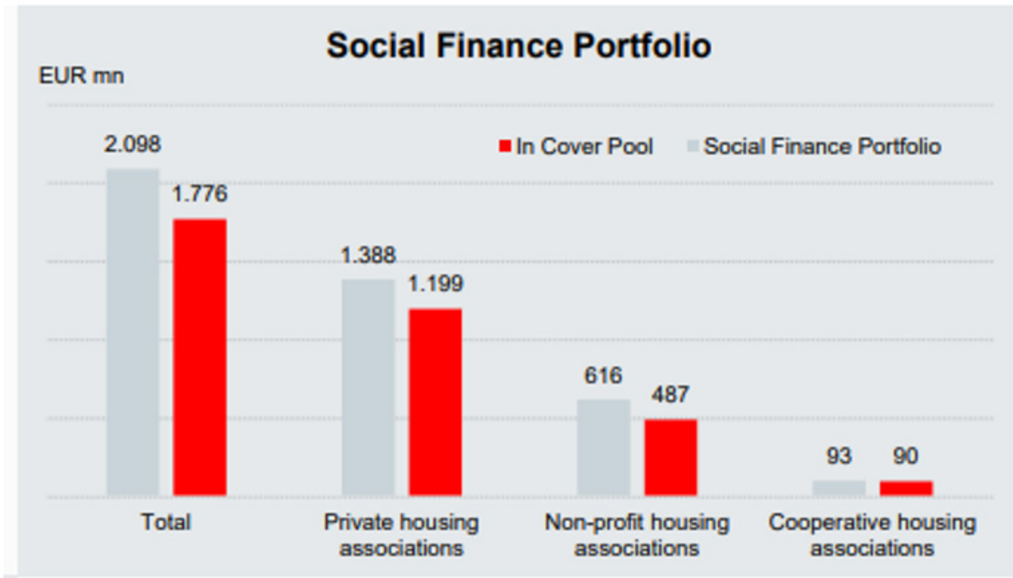

Figure 8. Breakdown of Building Ownership type in Covered Bond pool. Source: Berlin Hype 2022/03/30 Investor Presentation

The following table outlines how Berlin Hyp's deal aligns with the four components of the ICMA framework:

Table 1. Four components of the ICMA social principles review

USE OF PROCEEDS	(Re)financing of Eligible Social Assets that are aligned with Berlin Hyp's eligibility criteria for loans and investments for the i) acquisition, ii) construction, or iii) refurbishment of Affordable Housing Buildings. Additionally, buildings must comply with environmental minimum safeguards
PROCESS FOR PROJECT EVALUATION AND SELECTION	The Sustainable Finance Commission, consisting of representatives from several divisions of the Bank, regularly evaluates the eligibility criteria against best market practices and relevant regulation.
MANAGEMENT OF PROCEEDS	Prior to issuance Eligible Social Assets are already on the Bank's balance sheet (Social Pfandbrief: in mortgage cover pool); changes in eligibility criteria do not take effect retroactively (grandfathering); assurance of 10% surplus of Eligible Social Assets.
REPORTING	Annual reporting on allocation of proceeds and social impact of Eligible Social Assets.
EXTERNAL VERIFICATION	Second Party Opinion by ISS-ESG; annually re-verified Reporting.

EXAMPLE FROM SOUTH KOREA

The Asia Development Bank's research on the growth of ESG bonds highlights the substantial and fast growth of social bonds in South Korea since 2020. Social bond issues surged as COVID-19 pandemic affected economic recovery and issuance increased to $149.4 billion equivalent in 2020, an eightfold increase from 2019. The ADB emphasized that government institutional involvement is key to the growth of ESG bond markets, as there is a relative lack of private market experience using social bond frameworks in Asia. They also emphasize that there is great potential for Asian governments to continue using these social bonds to address other social problems even after the pandemic has passed.

Led by KHFC, South Korea has quickly become a world leader in the issuance of Social covered bonds over the last three years. In 2020 and 2021, South Korea issued 25% of the global total with KHFC leading the way with COVID-19 related social covered bonds in July 2020 (500 million euros). Proceeds are held in KHFC's treasury-liquidity portfolio and allocated to residential mortgage loans. Another €600 million is scheduled for 2022, contributing to South Korea's leading performance.

The KHFC's support for homeownership differs from the German and Dutch examples of funding affordable rental units. Per KHFC's 2021 annual report on social covered bonds impacts, the mortgage funding went to three types of homeownership loans: Bogeumjar, Didimdol, and Conforming Loans. Mortgages went to households with an average age of 44.7 years and an average annual income of KRW 36.2 million. Targeted vulnerable groups were single parent, multicultural and disabled, while policy support targeted first-time homebuyers, newlyweds, and multi-children households. Data shows vulnerable groups were a very low percentage of overall loans, and first-time homeowners dropped to zero in 2020.

Table 2. KHFC Social Covered Bond Data on social targets, 2021 Bond report

KHFC BOND	VULNERABLE GROUPS				POLICY SUPPORT TARGETS		
YEAR	Single-Parent	Multicultural	Disabled	First-time homebuyers	Newly-weds	Multiple children	Total Loans in Pool
2018, OCT.	6	32	132	1,143	186	194	5,209
2019, JUNE	5	39	101	646	174	1,4,15	5,300
2020, FEB	11	102	271	0	1477	276	12,996
2020, JULY	4	22	86	0	597	99	7,269
TOTALS	26	195	590	1,789	2,434	1,984	30,774

PART FOUR: IMPLICATIONS FOR LONG-TERM RENTAL HOUSING SUPPLIES IN SOUTH KOREA

Part Four explores the implications of the use of covered bonds for increasing long-term rental supply in South Korea. Opportunities, constraints, and implications will be broken down in three sections:

1. Differences in South Korean and German housing market characteristics and regulatory environment

2. Advantages and Challenges of Using Covered Bonds and ESG Social Variants

1. 1. Differences in German and South Korean Housing Market and Regulatory Environment

The underlying difference between German and South Korean housing regulations is the focus on homeownership. Like the U.S., South Korea places a premium on homeownership as a wealth generator for the middle class. In Germany, rental housing dominates in large part because the market does not prioritize homeownership. In fact, rental housing, considered investment products, are given preferential tax incentives.

Due to the strong rental market, the German government has created a substantial portfolio of subsidy programs and housing laws that protect tenants. The country also has a long post-war history of policy decisions that encourage private investment in rental housing, with controls. Germany has national benchmark policies adjusted for local markets. The South Korean government appears to have a history of government funded social rental housing. The program in 2000 to create 1 million public rental units imposed a serious financial burden on the government agencies responsible for providing and managing most of the public rental units.

Despite research pointing to a significantly distorted distribution of wealth between homeowners and tenants, that factor is not sufficient to understand why Germans continue to stay tenants. Germany's social democracy principles has also created a social market economy that provides (via taxes) free higher education, healthcare, childcare benefits, and housing subsidies that greatly reduce the need for household wealth liquidity. Combined with strong tenant rights, early privatization of the housing supply, (fewer cumulative distortions) and a 75% urbanization rate, the urban housing stock continues to be largely rental. As a result, the need for covered bond products that address rental housing investments is strong. Contrast this with KHFC's social covered bond offers between 2018-2021, which funded single-family homeowners.

2. Advantages and Challenges of Using Covered Bonds and ESG Social Variant

Social covered bonds for long-term affordable rents could contribute to HUG's goals to the increase of the public rental housing supply (particularly for young and newlyweds), offer new financial products for the realization of social values and urban revitalization, and reduce debt burden of the central government. ESG covered bonds appear to align well with the paradigm shift outlined by HUG in 2020:

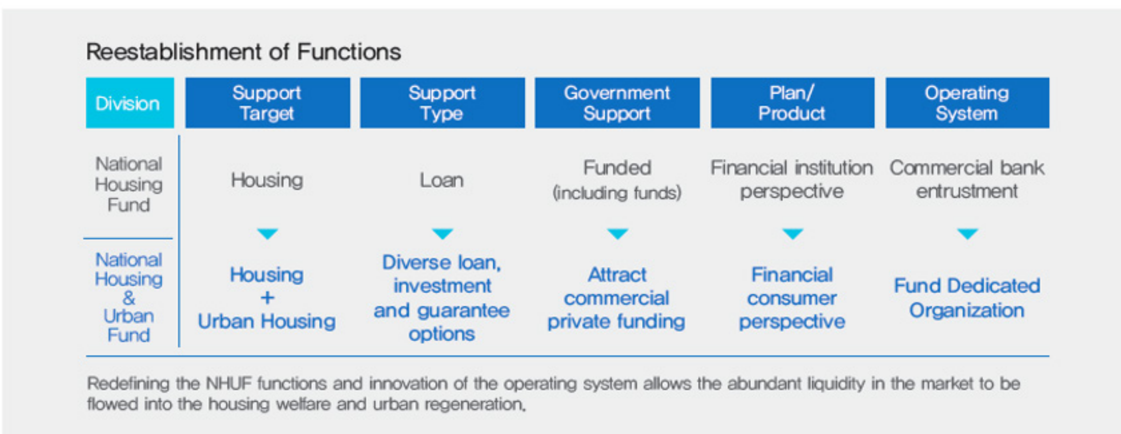

Figure 10. Paradigm Shift to Meet Environmental Changes, HUG 2020 Brochure

There are advantages to using covered bonds and its social variant to increase long-term rental supply in South Korea. Covered bonds offer an option to reduce government debt burden for long-term investments in rental housing in South Korea (e.g., the Housing and Urban Fund) even if private institution involvement is limited. As demonstrated by Germany, covered bonds can be mortgage-backed or publicly funded. This means that claims against a central government and public sector entities can cover the bonds. With AAA ratings, these issues are attractive international investments.

Social covered bonds are also attracting a new class – ESG investors. These include pension funds, insurance companies and sovereign funds eager to transform their portfolio to meet SDG goals or similar paradigm shifting social goals. With the growth of covered bond market harmonization (efforts such as the Covered Bond Label Foundation) and standardization of all three ESG covered bond frameworks, the market capitalization should continue to grow. Implications for the existing South Korea system, like the use of Jeonse for housing investments, were unclear.

Despite these advantages, South Korea has less experience than Germany with covered bonds. This extends to evaluating assets and risk in rental markets and managing related bond pools. German regulations require demonstrated expertise to be licensed Pfandbrief issuer by BaFin, the regulatory body. As a result, finance experts in Pfandbrief banks are very familiar with how to evaluate and manage real estate mortgages and valuation. With over 200 years of covered bond history, and 75 years of rental markets, German banks have a much smaller learning curve to incorporate new social covered bond variants, as well. KHFC already has some experience putting covered bond deals together in cooperation with private institutions. Korean banks such as Kookmin and KEB Hana and international banks such as ING have worked with KHFC to structure, sell, and manage these deals. However, KHFC social covered bonds have been focused on homeownership. *The need to evaluate rental housing markets and investment risk presents an opportunity to utilize HUG's expertise in guarantees.*

As mentioned previously, the Covered Bond Act in South Korea varies from the German model. These differences imply that the formulas institutions use to calculate the mortgage lending value (MLV) of properties and risk will require adaptation. It also means that During harmonization efforts in the EU, many observers pointed out that it is hard to duplicate Germany's regulatory and legal framework for Pfandbrief. The common approach for mortgage-backed securities is to 'date-base' the market value of properties. That approach is volatile and is the opposite of Pfandbrief's ability to float below market volatility (see Figure 6). *HUG's experience in guaranteeing many sub-types of housing finance and managing the NHUF could be very useful in developing a strong rental housing covered bond framework.*

Adopting international principles and standards is another variable that HUG should consider. ICMA social principles add a new layer of oversight across four areas: (1) Use of proceeds, (2) Process for project evaluation and selection; (3) Management of proceeds; and (4) Reporting. In Germany, this is an overlay on a very established 200-year-old market practice and German has been very active in EU covered harmonization efforts, green financing, and the EU Green Deal. In South Korea, harmonization and UCMA principles would be an overlay on a new use for covered bonds, adding complexity to the management and auditing of the pool. Reviewing the 2018-2020 social-covered bonds issued by KHFC, social targets accounted for 23% of the pool loans and used the ICMA Framework (audited by Sustainalytic). Without discussing the targets with KHFC officials it is unclear if KHFC considers the social covered bond model highly or moderately successful or the management or political challenges the process faced.

As part of in internal assessment, MOLIT and HUG could consider whether HUG may promote and supervise social covered bonds through its management responsibility for the NHUF. Although our understanding of the Housing and Urban Fund Act (HUFA) is basic, we understand that the authority to issue and use covered bonds lies with MOLIT. HUG is entrusted with NHUF management responsibility, and it appears HUG has the power to promote and manage covered bonds via that supervisory responsibility. This role in the context of covered bonds could be similar to oversight and certification role of Berlin Hyp's Sustainable Finance Commission, consisting of representatives from several divisions of the Berlin Hyp bank, and which regularly evaluates asset eligibility criteria against best market practices and relevant regulation.

Despite the challenges, the example of Germany's covered bond market does demonstrate advantages that MOLIT should consider where mortgage-backed securities are not considered desirable or profitable for increasing middle-income long-term rent housing supplies.

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