## Derivatives

Contracts between financial institutions that lay out how much and under what conditions money will be paid by or to the parties involved are commonly referred to as derivatives because their values are derived from other instruments. For example, Freddie Mac may contract to pay a premium to a company in exchange for some reimbursement if enterprise-owned or -guaranteed mortgages default.

From an institution's perspective, purchasing a derivative to hedge against risks is a prudent option when the risks of loss outweigh the costs of the derivative contract. Along these lines, the enterprises use derivatives to insure against risks that come from having large portfolios laden with long-term fixed interest rate mortgage assets. Such assets are susceptible to various risks, such as rising interest rates, prepayment, and defaults.

### Rising Interest Rate Risk

While a 3.5% fixed mortgage interest rate of return might be a good asset in today's market, its value is vulnerable to rising rates. In 1998, for example, the prevailing interest rate for 30-year fixed-rate mortgages was nearly 7%.[1] If interest rates climb back to that level in the next 15 years, the enterprises could be stuck with a portfolio of mortgage assets that are paying half the going rate. To hedge against such risk, the enterprises use an interest rate guarantee derivative.

> **Interest rate guarantees:** The enterprises contract with a financial institution to swap payments from some of their fixed-interest rate investments with payments from their counterparties' fluctuating (or floating) interest rate investments. This protects the enterprises because the additional cash from the floating-rate interest payments will offset the declining value of their fixed-rate mortgages.

### Prepayment Risk

Alternately, interest rates may fall. If they do, then scores of mortgagees may refinance and pay off their higher-rate loans. This will cause the enterprises to lose expected income because—with prevailing rates lower than 3.5%—they will be unable to reinvest their principal at the prior higher rate. To guard against prepayment risk, the enterprises use written option derivatives.

> **Written options:** The enterprises pay a premium to a financial institution in exchange for the option to have it pay them if interest rates fall below an agreed-upon rate.

## Default Risk

As 2008's housing crisis demonstrated, the enterprises face the risk of defaults on mortgages they own or guarantee. Although they may foreclose upon the properties securing their mortgages, they may still suffer significant losses in the event of default, particularly if housing prices decline. The enterprises protect themselves against default risk with short-term guarantee commitments.

> **Short-term guarantee commitments:** In exchange for a premium, the enterprises essentially obtain insurance from financial institutions for an agreed period (e.g., six months) against defaults. During the agreed period, the institutions commit to pay a certain amount if mortgagees default on the properties securing their assets.

Together, such derivatives help the enterprises manage risks associated with mortgage assets by partly transferring such risks to their counterparties.[2]

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1 Freddie Mac, *30-Year Fixed-Rate Mortgages Since 1971*. Accessed: March 26, 2013, at www.freddiemac.com/pmms/pmms30.htm.

2 Federal Housing Finance Agency Office of Inspector General, "Pre-conservatorship Examination Results," *The Housing Government-Sponsored Enterprises' Challenges in Managing Interest Rate Risks*, WPR-2013-01, at 26 (March 11, 2013). Accessed: March 26, 2013, at www.fhfaoig.gov/Content/Files/WPR-2013-01_2.pdf.