

## Chapter 21 Appendix

### Participating Mortgages

Suppose, in our previous example, that Bob really wants to purchase the property for \$12,222,000, and he really needs the full \$9,167,000 loan amount he originally requested. One possibility that might then be considered is a **participating mortgage** rather than a conventional straight loan. In a participating mortgage, the lender receives some equity-like participation in the property investment. This will increase the lender's expected return above what would be implied purely by the **base contract interest rate** on the loan, and it also may reduce the risk of the loan from the perspective of the lender's *real* return, net of inflation. As a result, participating mortgages are appealing to some lenders and generally offer a base interest rate that is lower than that of a straight mortgage. The lender may also accept a higher ILTV ratio if the participation gives the lender sufficient expected return.

From the borrower's perspective, although some upside potential is lost to the lender, the lower base interest rate provides some compensation for that.

Typical participating mortgages often give the lender some equity **participation** in both the annual operating income and the reversion from the property investment. For example, a lender might be entitled to receive a specified percentage of the annual net operating income of the property above a specified threshold or after the **base** interest debt service is taken out. In addition, the lender might be entitled to a certain fraction of the property resale proceeds above a threshold or after the loan balance is taken out.<sup>1</sup> The equity participation

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<sup>1</sup> If the property is not sold prior to loan maturity, the reversion value participation might be based on an appraisal of the property as of the time of loan maturity.

payments are often referred to as **conditional interest**, or **kickers** in popular parlance (because they kick in above the stated threshold or base earnings).

To make this concept more concrete, let's continue the example of Bob's loan application to Sioux. Suppose that, in addition to their life insurance company source of capital for straight loans, Sioux also operates as a mortgage broker for a pension fund, the Sioux Fund (Sioux for short). The Sioux Fund wants to invest in participating mortgages because of the fund's need to match its future cash inflow with its future pension liability obligations that will be adjusted to inflation.<sup>2</sup> Sioux might therefore offer the following deal to Bob. Sioux will loan Bob his entire original \$9,167,000 request in a 6 percent interest-only loan even though such a loan would slightly exceed the standard 75 percent ILTV criterion, and even though the 6 percent stated base interest rate provides virtually no default-risk premium. In return, however, the loan would specify that, in addition to the 6 percent base interest, Sioux will receive conditional interest in the form of a 40 percent participation on any annual NOI in excess of \$800,000 and any gross resale proceeds in excess of \$12,250,000.

The expected cash flow in this participating mortgage is shown in Exhibit 21A-1 for both Bob and Sioux. For example, in year 1 the 6 percent loan has a base interest debt service of \$550,020 ( $6\% \times \$9,167,000$ ). This base interest payment is due and payable no matter what the NOI of the property turns out to be. In addition, there is a projected participation payment of \$120,000 in the first year, computed as 40 percent of the \$300,000 difference between the projected \$1,100,000 NOI and the \$800,000 threshold above which the participation kicks in. The exact amount of the participation payment (if any) is less certain than the base interest, because it depends on the uncertain future NOI amount. Similarly, in the

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<sup>2</sup> The pension payments of the Sioux Fund's beneficiaries have a cost of living adjustment (COLA) that is pegged to the general inflation rate.

Year	1	2	3	4	5	6	7	8	9	10	11
Market rent (net)/SF	\$12.12	\$12.24	\$12.36	\$12.49	\$12.61	\$12.74	\$12.87	\$12.99	\$13.12	\$13.26	\$13.39
Property rent (net)	\$11.00	\$11.50	\$11.50	\$11.50	\$12.00	\$12.00	\$12.00	\$12.99	\$12.99	\$12.99	\$12.99
Vacancy allowance	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.81	\$0.00	\$0.00	\$0.00
NOI/SF	\$11.00	\$11.50	\$11.50	\$11.50	\$12.00	\$12.00	\$12.00	\$12.18	\$12.99	\$12.99	\$12.99
NOI	\$1,100,000	\$1,150,000	\$1,150,000	\$1,150,000	\$1,200,000	\$1,200,000	\$1,200,000	\$1,218,214	\$1,299,428	\$1,299,428	\$1,299,428
Lease commission	\$0	\$0	\$0	\$0	\$0	\$0	\$0	—\$275,000	\$0	\$0	
Tenant improvements	\$0	\$0	\$0	\$0	\$0	\$0	\$0	—\$1,250,000	\$0	\$0	
Reversion @ 10% cap										\$12,994,280	
Less OLB										\$9,167,000	
Participation										\$297,712	
PBTCF	\$1,100,000	\$1,150,000	\$1,150,000	\$1,150,000	\$1,200,000	\$1,200,000	\$1,200,000	—\$306,786	\$1,299,428	\$14,293,709	
Base interest debt service	—\$550,020	—\$550,020	—\$550,020	—\$550,020	—\$550,020	—\$550,020	—\$550,020	—\$550,020	—\$550,020	—\$9,717,020	
Participation	—\$120,000	—\$140,000	—\$140,000	—\$140,000	—\$160,000	—\$160,000	—\$160,000	—\$167,286	—\$199,771	—\$199,771	
Loan CFs	\$670,020	\$690,020	\$690,020	\$690,020	\$710,020	\$710,020	\$710,020	\$717,306	\$749,791	\$10,214,503	
EBTCF	\$429,980	\$459,980	\$459,980	\$459,980	\$489,980	\$489,980	\$489,980	—\$1,024,092	\$549,637	\$4,079,205	
DCR	200%	209%	209%	209%	218%	218%	218%	221%	236%	236%	
BER @ market	45%	45%	44%	44%	44%	43%	43%	42%	42%	41%	

EXHIBIT 21A-1 Participating Mortgage for \$9,167,000 at 6% (Interest-Only), with 40% Equity Kickers (over \$800,000 NOI and \$12,250,000 Resale)

reversion cash flow projected for year 10, \$297,712 of participation proceeds are projected for the lender in addition to the \$9,167,000 loan principal balance. This is computed as 40 percent of the \$744,280 difference between the projected gross sale proceeds of \$12,994,280 and the \$12,250,000 base for the reversion kicker.<sup>3</sup>

Why does this proposed 6 percent participating mortgage look advantageous to Sioux? In this case, there are at least two reasons. First, the equity participation provides Sioux with an expected yield at least as great as what they could receive from a straight mortgage in the current market. This can be seen by computing the IRR of the loan cash flows, shown in Exhibit 21A-1, assuming an initial (year-0) cash disbursement of \$9,167,000. The IRR to the expected cash flow stream (including the participation payments) is 7.90 percent, which is slightly greater than the 7.87 percent yield prevailing in the market for straight mortgages.<sup>4</sup>

While this slightly greater expected return might not be sufficient to compensate Sioux for the extra default risk in a 79 percent ILTV mortgage if it were a straight loan, the participating loan actually reduces another type of risk, namely, **inflation risk**. If future inflation turns out to be greater than expected, Sioux's pension liabilities will be greater than expected, because of the COLA adjustment in their beneficiaries' pension plans. With

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<sup>3</sup> The annual and reversion kicker percentages need not be the same. For example, the kicker might be 30% on the NOI and 50% on the resale. Note also that in a properly constructed participating mortgage the equity participation payments (on both the annual income and reversion proceeds) are tax deductible to the borrower. The IRS classifies participation payments as interest, not dividends, because the lender does not have governing control over the property.

<sup>4</sup> However, this is only an approximation. To get more technical, the 7.90% estimate here is actually biased slightly on the low side, because the cash flow from the kickers results from a probability distribution that is truncated from below, giving it a mean that is higher than what is implied by the expected cash flows used in Exhibit 21A-1 (reflecting a nontruncated cash flow probability distribution) as the basis for computing the projected kicker cash flows. A more complete analysis would need to specify the entire cash flow probability distribution. To be even more complete, a "real options" based analysis could be performed, using methods similar to those described in Chapter 27.

a straight mortgage, Sioux's cash inflows would not change as a function of what future inflation turned out to be. However, with the participating mortgage, if future inflation turns out to be greater than expected, then Sioux's participation cash flows likely will turn out to be greater than expected, at least as regards the pure effect of inflation alone. This is because Bob's office building should be able to increase its nominal rents more in the long run if there is more inflation. This would probably increase both the annual and reversion participation payments to Sioux. Thus, the participating mortgage provides a bit of a hedge against inflation risk.

As a result of the inflation risk consideration, the 6 percent participating mortgage may well provide Sioux with a sufficient expected return.<sup>5</sup> But should Bob accept the offer? To answer this question, let's examine the expected 10-year IRR on Bob's levered equity investment with the participating mortgage.

The EBTCF figures in Exhibit 21A-1 are Bob's expected cash flows after taking out the projected mortgage participation payments. With a \$9,167,000 loan and a property price of

\$12,222,000, Bob's up-front equity investment will be \$3,055,000. This results in a going-in levered IRR of 12.97 percent for Bob. Suppose, instead, Bob got the loan he originally asked for, the interest-only straight mortgage at 7.87 percent. Under the same underlying property cash flow projection as in Exhibit 21A-1, this would result in the EBTCF projection shown in Exhibit 21-7b in the textbook. Given the initial \$3,055,000 investment, this cash flow stream has an expected IRR of 12.83 percent, slightly less than what Bob could expect with the participating mortgage. This is because the debt component of the

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<sup>5</sup> Obviously, Sioux would consider the typical interest rates and kickers that are prevailing in the current market for participating mortgages, so as not to make an offer that is below market. In practice, however, the market for participating mortgages is often quite thin, and it may be difficult to identify loans that are exactly comparable in terms of risk and expected return. Thus, market rates and terms must be estimated approximately.

participating mortgage, that is, the debt service payments attributable to the 6 percent base interest rate, provides Bob with greater positive leverage in his equity investment than the 7.87 percent loan would do.

Of course, this does not mean that Bob is getting something for nothing in Sioux's proposal. The nature of Bob's risk has changed. The other component of the participating mortgage (the equity component) gives away some of Bob's upside expectations, but none of Bob's downside risk. So Bob's overall equity risk under the participating loan is a bit skewed, unfavorably for Bob. Nevertheless, Bob may well find Sioux's proposal agreeable.<sup>6</sup>

Although participating mortgages are often a successful solution to otherwise intractable underwriting problems, they do raise some difficult issues that need to be carefully considered. For one thing, there are legal liability and administrative issues not raised by straight loans that the lender needs to consider carefully. For example, the lender will need to be able to audit the borrower's accounts to make sure income and expenses are being recorded properly so that the lender is getting its fair share. How will the lender know if the borrower is padding expenses so as to effectively reduce the lender's participation? Do participating mortgages exacerbate potential problems of **moral hazard** for the lender? (Moral hazard is the term used to describe the situation in which the party in control of a decision can benefit from a course of action that harms the other party.) For example, does the participating mortgage give the property owner an incentive to skimp on capital improvement expenditures? Such expenditures may be borne entirely by the owner (if the lender's participation is based on NOI, before CI expenditures are taken out), yet

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<sup>6</sup> Although it is not much of an issue in Bob's case, another reason participating mortgages are appealing in some instances is that the lower base interest rate reduces pressure on the initial income coverage, as indicated by the initial DCR, for example. This is most important in situations in which the property net operating income can be realistically expected to grow significantly over the life of the loan. For this reason, participating mortgages are often most appealing when inflation expectations have driven up interest rates, and they may serve much the same purpose as the graduated payment mortgage (GPM) or the adjustable rate mortgage (ARM) with a low initial teaser rate.

they enhance property value and future rents that the owner must share with the lender.<sup>7</sup>

Key Terms

base contract interest rate	kickers
base (threshold) cash flow	moral hazard
conditional interest	participating mortgage
inflation risk	participation

Study Questions

1. What are the pros and cons of participating mortgages from both the borrower’s and lender’s perspectives, as compared to otherwise similar straight mortgage debt?
2. (Participating Mortgage) Bob is thinking of buying a property whose five-year net cash flow projection is shown in the following table (occurring at the end of each year). In addition, at the end of year 5, the property is expected to be worth 10 times its net cash flow that year.

Year 1	\$1,000,000
Year 2	\$1,100,000
Year 3	\$1,100,000
Year 4	\$800,000
Year 5	\$1,200,000

Bob can purchase this property for its \$11.4 million market value with an \$8 million loan. He has two choices of loans (both five-year interest-only loans with annual payments in

<sup>7</sup> Riddiough (1994) pointed out that participating mortgages may also raise adverse selection problems.

arrears). Loan 1 is a straight 8% loan. Loan 2 is a participating mortgage with 7% base interest and 45% kickers on any annual cash flow above \$1 million and any resale proceeds (or property appraised value at maturity) above \$11.4 million.

- a. What is the property market's expected return (going-in IRR) to the underlying property?
- b. Ignoring default risk, what is the expected return on loan 1?
- c. On loan 2?
- d. On Bob's levered equity with loan 1?
- e. On Bob's levered equity with loan 2?



