Introduction

Part A consists of one chapter, Chapter 0 (*Questions and Answers*), which provides introductory information in a question-and-answer format. Each of the questions raised and answered is identified in the following table of contents.
Questions and Answers*

0.1 Background
  0.1.1 What is a joint venture?
  0.1.2 What is a distribution waterfall?
  0.1.3 What is a promote?
  0.1.4 What is a promote hurdle?
  0.1.5 What is a preferred return/return of capital hurdle?
  0.1.6 What is an IRR hurdle?
  0.1.7 How does one determine the amount (balance) of the prototype preferred return/return of capital hurdle at any given time?
  0.1.8 What is an internal rate of return?
  0.1.9 How does one determine the amount (balance) of the prototype IRR hurdle at any given time?
  0.1.10 Is a preferred return/return of capital hurdle the same as an IRR hurdle if the rates used for the IRR and preferred return are the same?

0.2 Interim Accruals: Practical Method vs. Theoretical Method
  0.2.1 How does the return accrue during partial compounding periods?
  0.2.2 Would you illustrate graphically the difference between the practical and theoretical methods?
  0.2.3 Would you illustrate the difference between the practical and theoretical methods with a numerical example?
  0.2.4 Are the disparities between the practical and theoretical methods worth worrying about or are we just talking about rounding errors?

* The author thanks David Weiss for providing comments on the presentation materials upon which this chapter is based.
0.2.5 For each of the IRR hurdle and the preferred return/return of capital hurdle, is it common to use the practical method or the theoretical method?

0.3 Negative Hurdle Balances (Recycling Profits)

0.3.1 If distributions are more than enough to achieve the hurdle, what happens to the surplus distributions?

0.3.2 How does the prototype preferred return/return of capital hurdle balance avoid becoming negative?

0.3.3 How does the prototype IRR hurdle balance ever become negative?

0.3.4 Can you walk us through an example of how negative hurdle balances (recycling profits) can be a material concern?

0.3.5 Can you make the IRR case in Example 0.3A reach the same result as the prototype preferred return/return of capital case in Example 0.3A by simply excluding the surplus (i.e., 50/50) distributions in the IRR calculation?

0.3.6 If you don’t include surplus distributions in the IRR calculation, then aren’t you artificially inflating the investor’s IRR?

0.3.7 So what is wrong with negative hurdle balances (recycling profits)? Given that a prototype IRR calculation includes all distributions (including surplus distributions), if you don’t allow negative balances (recycling profits), aren’t you giving the investor too much?

0.3.8 Isn’t the negative balance (recycling) issue typically addressed in other ways?

0.4 IRR and Preferred Return/Return of Capital Hurdles: More Questions

0.4.1 How did we come to have these two alternative hurdle approaches?

0.4.2 Once you have achieved a promote hurdle, is it achieved forever (or is it possible to achieve the hurdle and then fail to achieve the hurdle in the future)? If future failure is possible, how?

0.4.3 After you have achieved a promote hurdle, do additional capital contributions always result in a new hurdle?

0.4.4 When are these two hurdle types the same?

0.4.5 Can you fashion a preferred return/return of capital hurdle to replicate the results of the prototype IRR hurdle (which uses the theoretical method and recycles profits)?

0.4.6 And what about the reverse? Can you fashion an IRR hurdle to replicate the results of the prototype preferred return/return of capital hurdle (which uses the practical method and does not recycle profits)?

0.5 Soft Hurdles

0.5.1 Would you give an example of a “soft” hurdle?

0.5.2 Do you frequently encounter soft hurdles?

0.6 XIRR

0.6.1 Some commentators have discouraged references to computer programs to define IRR hurdles. But we see many IRR hurdles that are defined by reference to the so-called XIRR. What is your view of this practice?

0.7 Effective Rates: Is Confusion More Prevalent with IRRs?

0.7.1 What is a 12% annual rate, compounded monthly?

0.7.2 What is a 12% annual IRR, compounded monthly?

0.7.3 Does the effective monthly hurdle rate tell you what the effective annual hurdle rate is?
0.1 Background

0.1.1 What is a joint venture?

A “joint venture” (sometimes called a “JV”) is a contractual business undertaking for profit between two or more parties. For example, an institutional real estate investor might team up with a local real estate developer/operator to acquire, develop, and operate a real estate project. Such a joint venture would typically take the form of a limited liability company or limited partnership. Regardless of the form of the JV, the participants often refer to themselves as “partners.” For convenience, partnership terminology will be adopted for this discussion and it will be assumed that there are only two partners—an investor and an operator.

0.1.2 What is a distribution waterfall?

Cash from the partners typically comes into the JV in the form of contributions or loans. For simplicity, unless otherwise stated, it will be assumed that all cash infusions from the partners take the form of contributions. Assuming (as is generally being assumed here) there are no loans from the partners to the JV, and setting aside fees (which are generally attributable to services rather than investment), cash generally comes out of the partnership to the partners in the form of distributions. Again, to keep things simple, it will also be assumed, unless otherwise stated, that the only relevant cash receipts of the partners from the partnership are distributions.

Distributions can be “straight up” (i.e., made in fixed proportions to the partners) or they can be more complicated. We will focus on the more complicated variety, where there are multiple levels of distributions, each with a different sharing ratio. However, for simplicity, we will assume that there are only two levels, with each distribution being made at the first level until a certain limit is reached and the balance being made at the next level. The distribution levels are sometimes called the “distribution waterfall” or simply the “waterfall” because the excess at each level pours over to the next level, much like a champagne waterfall, where rows of glasses are stacked and once a row is filled, the champagne pours over to fill the next row.

Comments:

(1) Some partnerships have more than one distribution waterfall. For example, there can be separate waterfalls for distributions from operations (e.g., from rent), on the one hand, and distributions from capital events (e.g., from sale or financing proceeds), on the other hand. There may also be separate waterfalls for different assets in multi-asset JVs. However, for simplicity, it will be assumed, unless otherwise stated, that there is only one distribution waterfall.

(2) The assumptions that cash coming into the partnership is limited to contributions and cash coming out of the partnership is limited to distributions should not result in gross distortions in the general analysis.

(continued)
0.1.3 What is a promote?

A “promote” (sometimes called a “carried interest”) is a share of profit distributions given to an operating partner that is not attributable to the operating partner’s capital contributions. It is a contingent payment that is generally intended to incentivize and reward good performance and to compensate for value creation when that value is established by cash profits received by the partnership. For example, the investor and the operator might form a partnership in which they share capital contributions 90% and 10%, respectively, and share distributions as follows:

First, each distribution is made 90/10 until the partners recoup their capital.

Second, the balance, if any, of such distribution is made 20% to the operator as promote, and the other 80% is split 90/10 (in accordance with the capital percentages).

In this example, 20% of the profits is paid as promote to the operator.

Comment:

For a more in-depth discussion of promotes, see Chapter 1 (Basic Concepts and Issues). The same economic arrangement may be described in a different way that involves a different promote amount, as discussed in Sections 1.3 and 1.4 of Chapter 1 (Basic Concepts and Issues).

0.1.4 What is a promote hurdle?

A “promote hurdle” is, as the name suggests, a hurdle that must be overcome in order for the promote to be payable. More specifically, it is what must be distributed in order for the promote to be payable. In the previous example, the promote hurdle is the return of capital: distributions must be made to return all capital in order for the promote to be payable.
Chapter 0: Questions and Answers

0.1.5 What is a preferred return/return of capital hurdle?

In real estate JVs, the partners typically get all their capital back plus a return, such as 12% per annum, compounded annually, before promote is payable. In this event, the promote hurdle is both the return of capital and the 12% return on capital. Thus, the distribution provisions might be written as follows:

First, each distribution is made 90/10 until the investor has received a 12% annual return, compounded annually, on its unrecovered capital contributions, and a return of all of its capital contributions (where each distribution under this first level is applied first to such 12% return and then to recoup capital contributions); and

Second, the balance, if any, of such distribution is made 20% to the operator as promote, and the other 80% is split 90/10.
The 12% return in the example above is called a “preferred return” because it is paid first before other distributions are made. Because this preferred return is coupled with a return of capital as the requirement for promote distributions, this joint requirement may be called a “preferred return/return of capital hurdle.”

**Comment:**
The example above illustrates one of many ways a preferred return/return of capital hurdle may be worded. Some common alternative formulations are described in Section 0.3.2. Another potential variation is that the preferred return and the return of capital are written as separate distribution levels. In any case, the preferred return is often, if not typically, paid before the return of capital (as suggested in the parenthetical text in the previous example). But not always. For a discussion of the order of application of distributions to these two components of the preferred return/return of capital hurdle, see Appendix 2A (Distributions to Satisfy Preferred Return Hurdle: Order of Application) to Chapter 2 (IRRs vs. Preferred Returns).

### 0.1.6 What is an IRR hurdle?

An “IRR hurdle” is a hurdle that is based on the achievement of an internal rate of return. In the previous example, the hurdle is the investor’s receipt of its capital and a 12% annual compounded return on that capital. Such a hurdle is often written instead as the investor achieving a 12% annual IRR, in which event the distribution provisions might be written as follows:

*First,* each distribution is made 90/10 until the investor achieves a 12% annual IRR; and

*Second,* the balance, if any, of such distribution is made 20% to the operator as promote, and the other 80% is split 90/10.

### 0.1.7 How does one determine the amount (balance) of the prototype preferred return/return of capital hurdle at any given time?

Determining the amount (or balance) of the prototype preferred return/return of capital hurdle at any given time is easy to understand by comparing it to more familiar concepts. For example, imagine a hypothetical bank account for which the interest rate is the preferred return rate, the deposits are the contributions, and the withdrawals are the distributions (which are applied first to accrued interest and then to the principal balance). The amount of the prototype preferred return/return of capital hurdle at any given time is simply (with an exception described in Comment (2)) the balance of this hypothetical account. Alternatively, one can think of the investment as a loan for which the loan advances are the contributions and the loan payments are the distributions;
under this approach, the amount of the prototype preferred return/return of capital hurdle is simply (with an exception described in Comment (2)) the balance of the loan.

**Comments:**

(1) The reference to “prototype” preferred return/return of capital hurdle is explained in Section 0.1.10.

(2) One of the key characteristics of the prototype preferred return/return of capital hurdle is that its balance never goes negative. Setting aside overdrafts, this feature seems consistent with the bank account and loan models: a bank account holder typically does not withdraw more than the balance of its account, and a borrower typically does not make payments in excess of the balance it owes. However, with the prototype preferred return/return of capital hurdle, there may be distributions in excess of the hurdle balance, and the excess is simply ignored for purposes of the hurdle calculation. Obviously, the bank account and loan models must be tailored to incorporate this feature in order to match the prototype preferred return/return of capital hurdle.

### 0.1.8 What is an internal rate of return?

An *internal rate of return* (or *IRR*) can be defined in several ways. Here is a typical definition:

- An IRR for a set of cash flows is a compound rate that makes the net present value (or NPV) of the cash flows equal to zero. For this purpose, the cash flows are broken into two types:
  1. “*cash outflows,*” which are the amounts invested and are typically identified by negative numbers in the net present value calculation; and
  2. “*cash inflows,*” which are the amounts returned from the investment and are typically identified by positive numbers in the net present value calculation.

For example, what is an IRR for the following cash flows: a $100X cash outflow (represented by the negative amount $-100X) and a $112X cash inflow (represented by the positive amount $112X) received one year later? The answer is 12%, compounded annually. Why? Because the net present value of these amounts equals zero:

\[
\frac{-100X}{1.12} + \frac{112X}{1.12} = 0
\]

It is generally easier to work with positive numbers than with negative numbers. So let’s move all the negative numbers (i.e., the present values of the contributions) to the other side of the equation. In this way, we eliminate the need to “net” and we get
an equivalent and perhaps more intuitive definition (where the negative signage for cash outflows is not used):

- An IRR for a set of cash flows is a compound rate that makes the present value of the cash outflows equal the present value of the cash inflows.

Thus, in the example above, the 12% IRR is established by the following equation:

\[
\frac{100X}{1} = \frac{112X}{1.12}
\]

The time value equivalence that establishes an IRR may be made as of any point in time so it is not necessary to discount back to the time of the initial contribution. It is generally easier to multiply than divide, so let’s grow rather than discount and create what is hopefully an even more user-friendly definition:

- An IRR for a set of cash flows prior to a certain time is a compound rate that makes the future value of the cash outflows as of such time equal to the future value of the cash inflows as of such time.

Thus, in the example above, the 12% IRR is established by the following equation (immediately after the $112X distribution):

\[
100X \times 1.12 = 112X
\]

Therefore, if the investor’s contributions are the cash outflows and the investor’s distributions are the cash inflows (as is generally assumed in Section 0.1.2), then the investor’s IRR may be defined as follows:

The investor’s IRR is a compound rate that makes the future value of the investor’s contributions as of a particular time equal to the future value of the investor’s distributions as of such time.

**Comment:**

Consistent with Section 0.1.2, it is assumed, for simplicity, that the relevant cash flows for determining the investor’s IRR are its contributions and distributions. In particular, the IRR in the prototype IRR hurdle will take into account “all” distributions. This assumption is relatively common. Whether this assumption (either as to contributions or as to distributions) is appropriate is generally beyond the scope of this chapter, although the possible exclusion of certain distributions will be considered later in Section 0.3.5. For a discussion of different cash outflows that might be included or excluded in the promote hurdle calculation, see Section 1.7 of Chapter 1 (*Basic Concepts and Issues*); for further discussion of IRR definitions, see endnotes 8 and 9 of Chapter 2 (*IRRs vs. Preferred Returns*); for further discussion of IRR hurdles, see Appendices 8D.1 (*IRR Hurdles*) and 8E (*Promote Hurdles Using Theoretical Method*) to Chapter 8.
0.1.9 How does one determine the amount (balance) of the prototype IRR hurdle at any given time?

Recall (based on the assumption noted in Section 0.1.8) that the investor’s IRR is achieved when the future value of the investor’s contributions as of the time in question equals the future value of the investor’s distributions as of such time. Typically, the JV begins with contributions, and distributions don’t occur until later so that the future value of the investor’s contributions starts out as larger than the future value of the investor’s distributions. At some point, the future value of the investor’s distributions may catch up with the future value of the investor’s contributions, and it is at this point that the investor’s IRR is achieved (i.e., when the future value of the investor’s contributions equals the future value of the investor’s distributions, as noted earlier in Section 0.1.8). Thus, the prototype IRR hurdle balance at any point in time may generally be determined as follows (where future value refers to the future value as of such time):

\[
\text{future value of investor’s contributions} - \text{future value of investor’s distributions} = \text{IRR hurdle balance}
\]

In words:

The investor’s prototype IRR hurdle balance as of any given time equals (1) the future value as of such time of the investor’s contributions, minus (2) the future value as of such time of the investor’s distributions.

Comment:

The reference to “prototype” IRR hurdle is explained in Section 0.1.10.

0.1.10 Is a preferred return/return of capital hurdle the same as an IRR hurdle if the rates used for the IRR and preferred return are the same?

The answer to this question is not immediately obvious. And, as we will learn, IRR and preferred return rates that appear to be the same may in fact be different (and, of course, the answer may depend on how the hurdles are drafted). However, the answer
is often “yes” (or close enough that the parties don’t care). For example, the investor will achieve a 12% annual IRR at exactly the same time it gets its money back together with a 12% annual return, compounded annually, when there is a single contribution cash flow and all other cash flows occur annually thereafter (i.e., only on an anniversary of the date of the contribution). Consider the example in Section 0.1.8 when there is a $100 contribution cash flow and a $112 distribution cash flow one year later (and no other cash flows): A 12% IRR is achieved upon the $112 distribution and so is the 12% preferred return/return of capital hurdle. But the answer may also be “no” and the discussion in Sections 0.2 and 0.3 will focus on two potential differences:

1. how the return accrues during partial compounding periods; and
2. whether the hurdle balance can be negative.

Here is a summary of the two potential key differences:

<table>
<thead>
<tr>
<th>Table 0.1 Summary of Two Key Differences</th>
</tr>
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<tbody>
<tr>
<td>Prototype IRR Hurdle¹</td>
</tr>
<tr>
<td>(1) Negative Balances</td>
</tr>
<tr>
<td>(2) Accrual for Partial Compounding Periods</td>
</tr>
</tbody>
</table>

1. When we refer to the “prototype” IRR hurdle or the “prototype” PR/ROC (i.e., preferred return/return of capital) hurdle, we mean an IRR hurdle or preferred return/return of capital hurdle where the respective characteristics stated in this chart apply. These respective characteristics are often, if not usually, present. But not always. As will be observed in §§ 0.3.5, 0.4.5, and 0.4.6, it is possible (1) for a PR/ROC hurdle to be structured (and sometimes it is structured) to match the stated characteristics of the prototype IRR hurdle or (2) for an IRR hurdle to be structured (and sometimes it is structured) to have one of the characteristics of the prototype PR/ROC hurdle (namely, no negative balances).

2. The types of accrual identified in the bottom row of this chart are rarely stated expressly in a transaction involving a compound rate. The bottom row of the chart is intended to describe growth rates that are “equivalent” to the rates that are expressly stated (i.e., the “nominal” rates) for all partial compounding periods. Two nominal rates for a particular period (e.g., 21% per annum and 20% per annum) with different compounding periods (e.g., compounded annually and compounded semiannually, respectively) are “equivalent” if they yield the same effective rate for that particular period (e.g., in the cases noted above, 21% per annum); and for purposes of this discussion, if there is a nominal rate for a particular period, then an equivalent simple rate for that period means the effective rate for that period calculated on a simple basis (i.e., calculated on a proportionate basis for other periods). For example, the following rates per annum are equivalent because they all yield 21% for a one-year period: (1) a 21% simple annual rate; (2) a 21% nominal annual rate, compounded annually; (3) a 20% nominal annual rate, compounded semiannually (because $1 + 10\% \times [1 + 10\%] = [1 + 21\%]$); and (4) a 19.062% nominal annual rate, compounded continuously (because $e^{0.19062} = 1 + 21\%$, approximately). For more on equivalent rates, see Chapter 5 (The Language of Real Estate Finance).

### 0.2 Interim Accruals: Practical Method vs. Theoretical Method

#### 0.2.1 How does the return accrue during partial compounding periods?

There are two common alternatives:

- One is simple or linear growth, which is called the “practical method,” and is often used in preferred return formulations; and
- the other is continuously compounded or exponential growth, which is called the “theoretical method,” and is commonly used in IRR formulations.
0.2.2 Would you illustrate graphically the difference between the practical and theoretical methods?

Here are two illustrations:

**Illustration 0.2A:** Imagine a shallow lemon wedge with the straight side on top, and angle it so the straight side is rising from left to right.

The practical method takes the straight path on top and the theoretical method arcs its way up exponentially underneath. They both get to the same place at the end of the compounding period.