

Can You Quickly Approximate the Internal Rate of Return (IRR) in a Leveraged Buyout?

Got Mental Math?



Quick Approximations for IRR

*“Can you **quickly** approximate the IRR of a leveraged buyout? I don’t want to set up an entire model to calculate it.”*

“Also, don’t you have to know this so you can answer ‘paper LBO model’ questions in case studies and check your work in modeling tests?”

Quick Approximations for IRR

- **SHORT ANSWER:** Yes, you can “kind of” approximate IRR, but only if specific conditions are true
- **Longer Answer:** There is a trick if it’s a **simple upfront investment and exit**, with no cash flows in between
- **Problematic:** Anything *other* than a simple M&A exit (e.g., an IPO in which the stake is sold off gradually) will throw this off
- **Also:** Dividends in between, dividend recaps, asset sales, etc. will also distort the rules and the math



Quick Approximations for IRR – Outline




- **Part 1:** The Rules and Rules of Thumb for IRR
- **Part 2:** How to Apply the Rules to a Simple LBO Model
- **Part 3:** How to Apply These Rules to a Real-Life Scenario
(A 3-Hour Private Equity Case Study)



The Rules and Rules of Thumb

- **Real IRR:** The Discount Rate at which the NPV of cash flows from an investment equals 0:

$$0 = \sum_{t=0}^N \frac{CF_t}{(1 + IRR)^t}$$

- **Real IRR:** It has to be solved with “trial and error” – guess a number, go lower or higher, then try again... Excel does this automatically 
- **Meaning:** IRR is the “effective compounded interest rate” – invest \$100 today, earn 10% to get \$110, earn 10% to get \$121... if you end up with \$150 after 5 years, what interest rate did it take to get there? 
- **Approximation:** Calculate the Money-on-Money (MoM) Multiple and the investment period, and memorize a few simple IRRs 

The Rules and Rules of Thumb

- **QUESTION:** If you double your money in 2 years, what is the IRR?
- **Intuition:** Doubling your money in 1 year is a 100% IRR... so if it takes 2 years, that's *roughly* a 50% return each year
- **BUT** due to the compounding, it's actually less than 50% → closer to 40% if you calculate it in Excel
- **Principle:** For “double your money” scenarios, take 100% and divide it by the # of years (e.g. $100\% / 3 = 33\%$ for 3 years)
- **Approximate IRR:** Will be about 75-80% of this value due to compounding ($\sim 25\%$ for 3 years, which is $75\% * 33\%$)



The Rules and Rules of Thumb

- **Double Your Money in 1 Year** → 100% IRR
- **Double Your Money in 2 Years** → 41% IRR → ~40% IRR
- **Double Your Money in 3 Years** → 26% IRR → ~25% IRR
- **Double Your Money in 4 Years** → 19% IRR → ~20% IRR
- **Double Your Money in 5 Years** → 15% IRR → ~15% IRR
- **Triple Your Money in 3 Years** → 44% IRR → ~45% IRR
- **Triple Your Money in 5 Years** → 25% IRR → ~25% IRR

The Rules and Rules of Thumb

- **Example:** Buy a company for 7.0x EBITDA → Price of €350 million
- **4.5x Debt/EBITDA**, so roughly 2.5x Equity → €125 million equity
- **Year 3 EBITDA:** ~€70 million
- **Year 3 Exit Multiple:** 8.0x
- **Year 3 Remaining Debt:** €225 million – €90 million = €135 million
- **Year 3 Exit Proceeds** = €70 million * 8 – €135 million = €425 million
- **Approximate IRR** = Just over 45% since the PE firm earned more than 3x its money back in 3 years

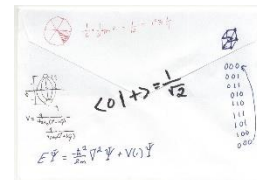
The Rules and Rules of Thumb

- **Reality:** IRR was around 43%
- **Why?**
- We ignored **transaction fees**, which increase the equity required
- We also ignored the **PIK interest**, which increases the debt principal
- And the Year 3 EBITDA figure was an approximation, not the exact #
- But still... pretty good for a **60-second estimate!**



Applying the Rules in Real Life

- **Scenario:** 3-hour private equity case study based on an **oilfield services** company
- **Assumptions:** Yes, they give you detailed numbers to use, and a partially complete Excel model... **BUT** you should resist the urge to jump in right away
- **Why:** The purpose is to make an **investment recommendation**, and it helps to know your decision in advance (plus, check your work!)
- **Recommendation:** Do a quick check of the numbers first...



Applying the Rules in Real Life

- **Purchase Price:** 5.5x EBITDA (\$100 million @ \$18 million EBITDA)
- **Leverage:** One Mezzanine tranche at 1x EBITDA, and “market rates” for Revolver and Term Loan → We can assume 3x for those
- **Leverage:** 4x EBITDA, so Equity = 1.5x EBITDA = \$27 million
- **Plus Fees:** \$3 million of fees, so Equity Required = \$30 million
- **Rollover Equity:** \$5 million, so PE contribution is \$25 million (~80%)
- **Amortization:** Term Loan amortizes over 3 years, Mezzanine stays in place → We’ll likely have ~\$40 million of debt at the end since the company can’t repay \$18 million / year with only \$18 million EBITDA

Applying the Rules in Real Life

- **Revenue:** 10% decline, 5% decline, then 10% growth in Years 3 – 5
→ We'll probably end up around 15% higher
- **Margins:** Gross margins stay the same, but SG&A increases 5% per year → Revenue falls at first, so our final margin is likely *lower*
- **Guesstimate:** Year 5 Revenue of \$80 million and EBITDA of \$20 million (25% margin, slightly lower than existing 26% margin)
- **Exit Enterprise Value** = $6x * \$20 \text{ million} = \120 million
- **Exit Proceeds to Equity Investors** = $\$120 - \$40 = \$80 \text{ million}$

Applying the Rules in Real Life

- **Rollover Equity** – Management owns ~20%, so the PE investors only get back \$64 million of the \$80 million
- **Returns:** \$64 million / \$25 million = ~2.5x multiple
- **Returns:** 2.5x multiple over 5 years → We're halfway in between doubling and tripling our money, so IRR is in between 15% and 25%
- **Approximate IRR:** Just over 20%, since the multiple is just over 2.5x
- **Conclusion:** We will *probably* lean toward a “Yes” in this recommendation and make sure our model supports that

Recap and Summary

- **Part 1:** The Rules and Rules of Thumb for IRR
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