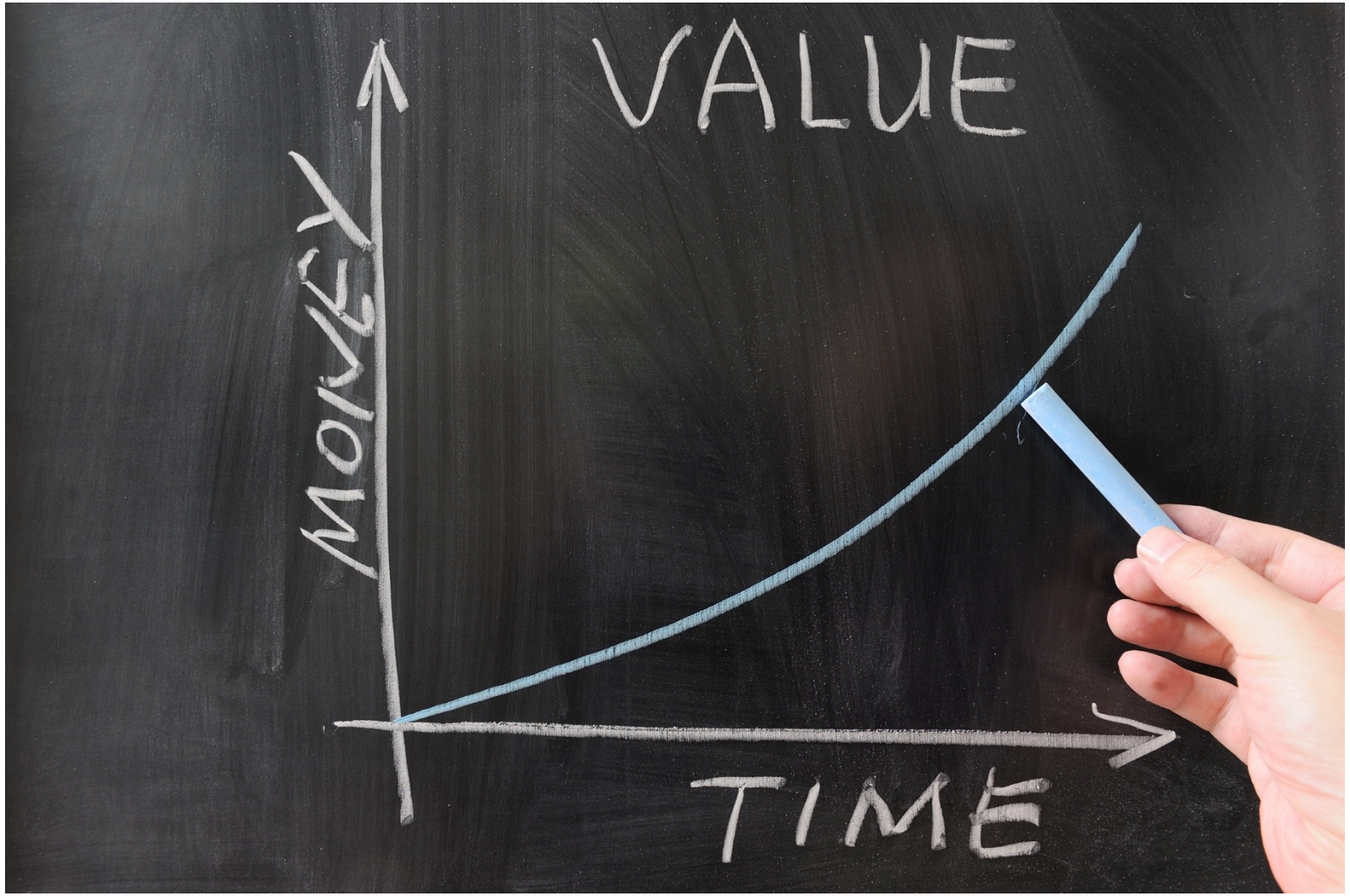
Introduction to Time Value of Money



Let’s Start with a Simple Question…

Would you rather have $100 today or $100 a year from now?

Why?

Money Today or Money Tomorrow

If you invest $100 today – what do you expect 5 years from now?

Today

Next Year

5 Years from Now

The “value” of your investment increases over time.

Time Value of Money

Money Today or Money Tomorrow

If you put $100 in your piggy bank today – what do you expect 5 years from now?

Today

Next Year

5 Years from Now

The “value” of the $100 decreases over time, due to inflation.

Time Value of Money

Money Today or Money Tomorrow

What if you had the option of getting $100 today, o $500 5 years from now. What about this case?

$100
Today

$500
5 Years from Now

Your investment risk increases the longer the time frame.

Time Value of Money

Time Value of Money

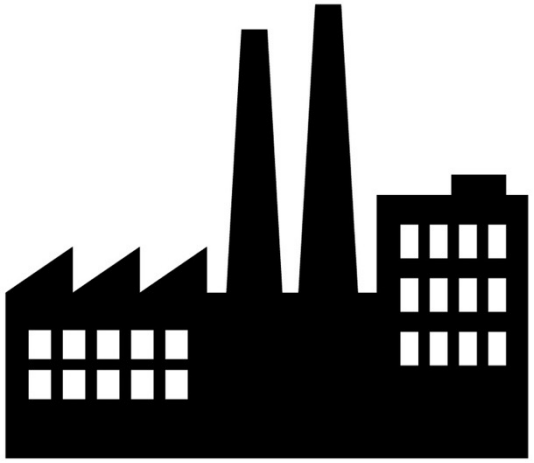
- The “value” of money is very time-dependent.
- The dependence is tied to the “interest rate” or “rate of return” one can achieve if the money was invested for the future.
- These rates are often related to “risk”
  - ✓ High Rates of Return = High risk of ever seeing the return
  - ✓ Low Rates of Return = Very certain you’ll get paid
- The value of a dollar today decreases over time due to inflation.

Time Value of Money, or TVM, relates the future value of money to its present value today through the rate of return of the investment.

The Concept of Cash Flows…

Cash Inflows

"Receipts"



Cash Outflows

"Disbursements"
"Expenditures"

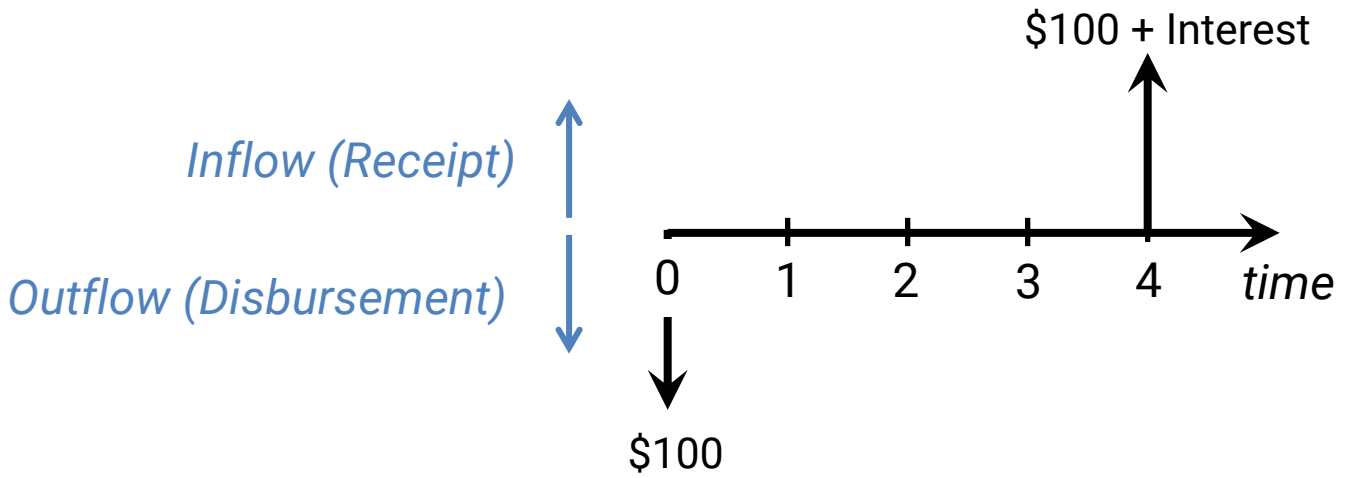
Cash Flow: the relationship between inflows and outflows.

Cash Flow Diagrams…

The "CFD" is a useful tool to visualize cash flows

Ex. Your Savings Account at the Bank

- Today you deposit $100 into your savings account (a cash outflow).
- 4 Years from now you withdraw the amount: $100 + Interest (a cash inflow)



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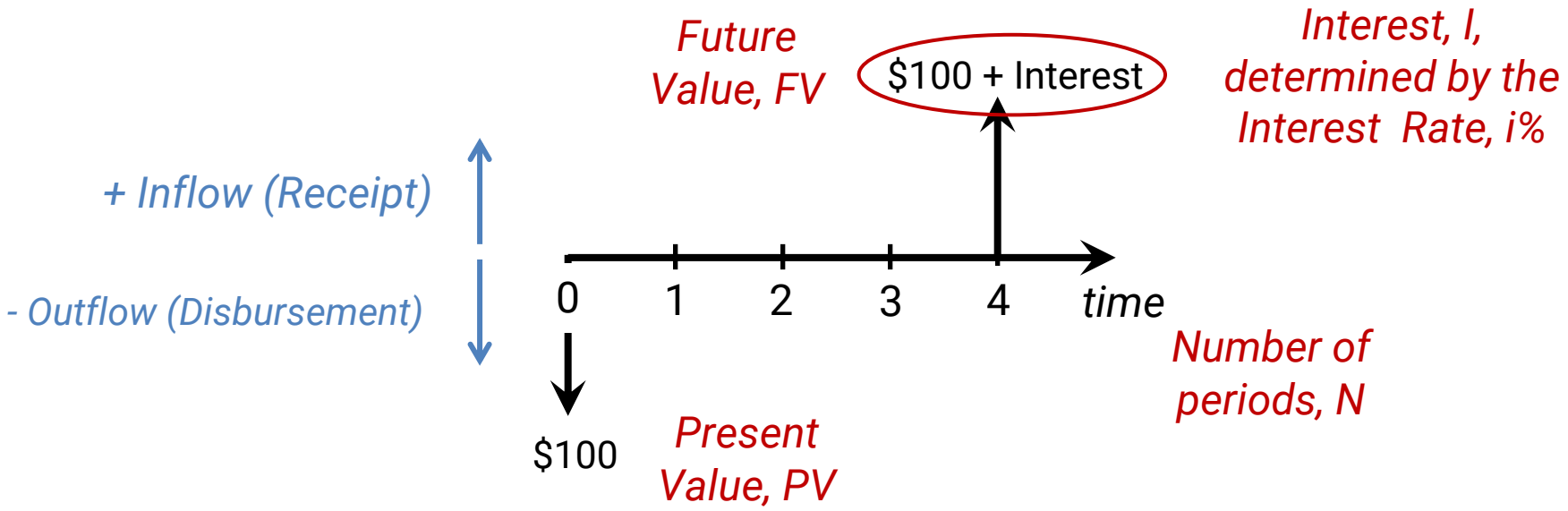
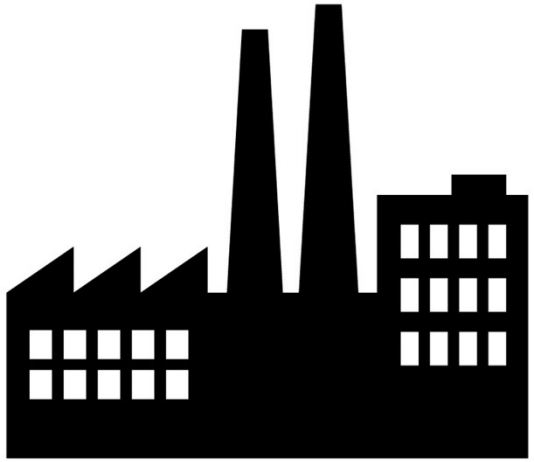


TVM and Cash Flows…

Companies make investments in people, equipment and new technologies (all cash outflows).



Ideally, the investments increase revenues (cash inflows) and market value of the company.

The Future Value, FV, of any initial investment is determined by the future cash flows generated by the investment.

If a company invests $1M today to launch a new product, the benefits of such an investment are determined by increased revenues and profitability, and therefore the rate of return on that investment is also determined by future cash flows.

Main Takeaways…

- The value of money is time-dependent.
- Money can be invested to grow its value in the future.
- Money held today will lose its value to inflation, eroding one’s purchasing power.
- Time Value of Money, TVM, relates the future value of an investment made today through the interest rate (rate of return).
- Cash flow diagrams illustrate cash inflows and cash outflows, making it easy to determine future value from an initial investment.

Next Time…

Simple and Compound Interest

Credits & References

Slide 1: Time value of money by raywoo, Adobe Stock (42064610.jpeg).

Slide 2-5: Dollars by Valerii Zan, Adobe Stock (72983495.jpeg).

Slide 7, 10: Black factory icons on white background by Anthonycz, Adobe Stock (93389062.jpeg).

Slide 12: Simple vs compound interest concept, flat tiny person vector illustration by VectorMine, Adobe Stock (321923382.jpeg).