LECTURE 1.3

MULTI-PERIOD MODELS

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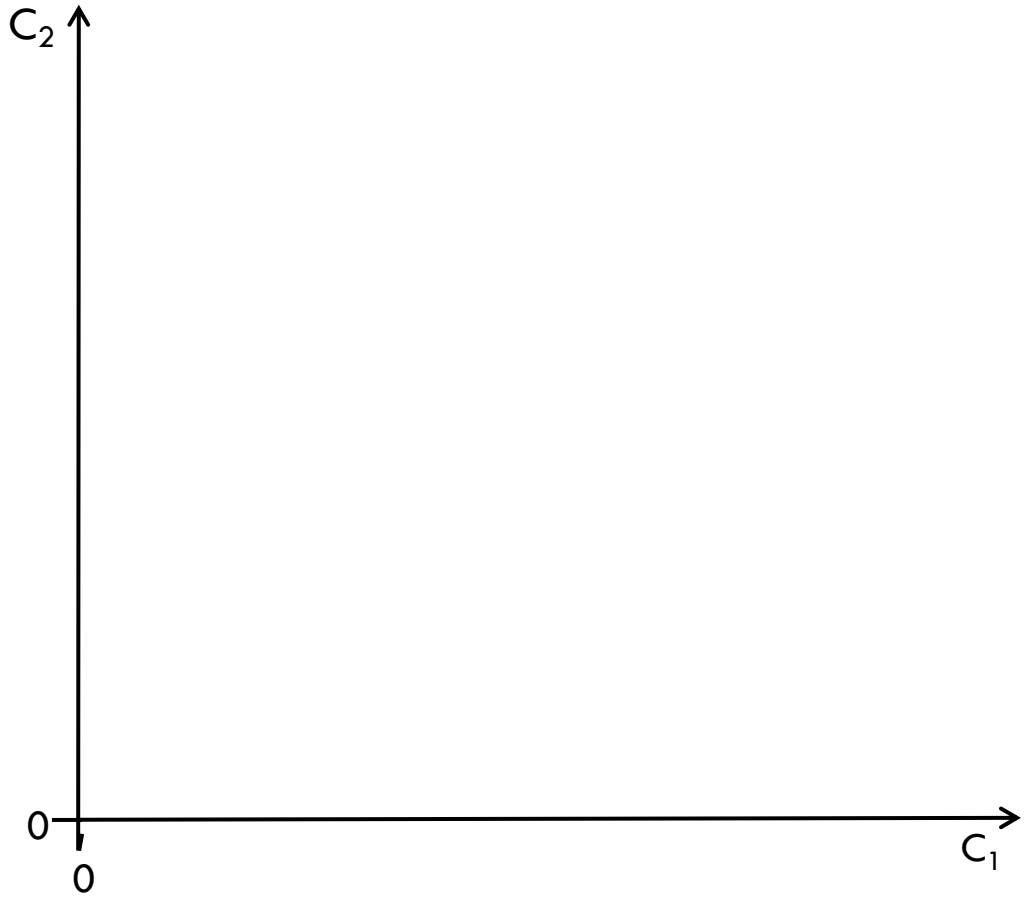
We can generalize the question of choice to one where we consider the choice over consuming today versus consuming tomorrow, i.e. an inter-temporal allocation.

Consider the example of Mary who is deciding about how to allocate her savings and higher future income from studying a Masters program. (You can find this example in Chapter 2 of Brickley et al.)

- She has savings of $25,000.
- Her employer has promised her that once she completes her post-graduate qualification they will pay her a salary of $75,000.
- Interest rate of 5% for borrowers and savers.
- Assume that Mary's consumption decision is limited to two periods: today and tomorrow.

MULTI-PERIOD MODELS



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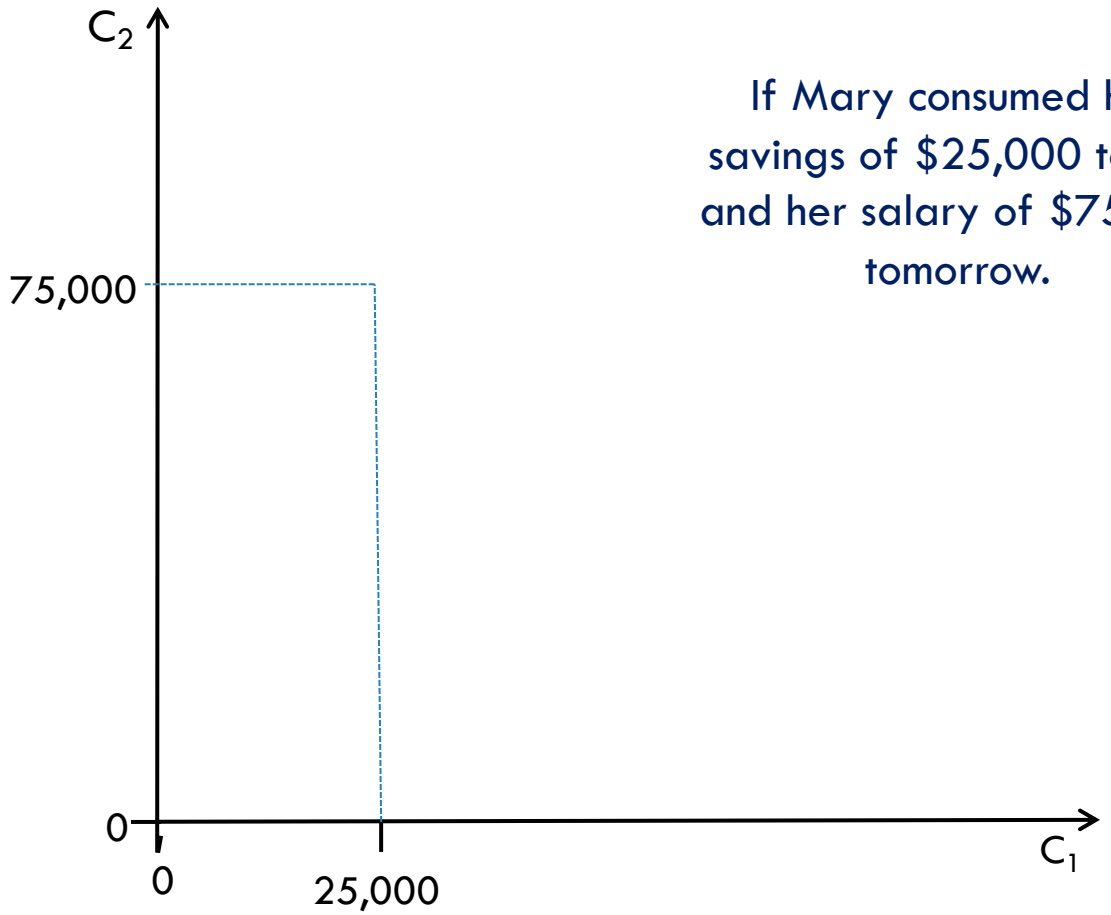

If Mary consumed her savings of $25,000 today and her salary of $75,000 tomorrow.

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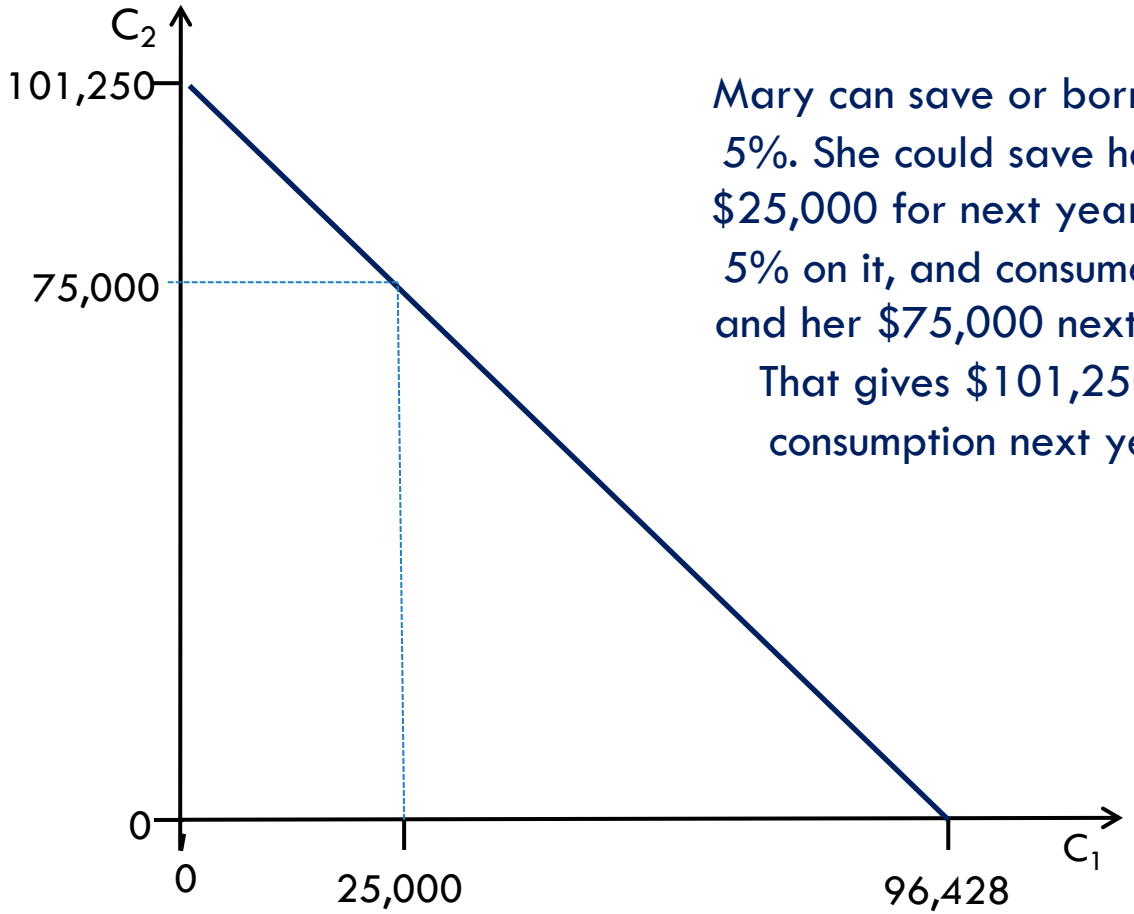

Mary can save or borrow at 5%. She could save her full $25,000 for next year, earn 5% on it, and consume that and her $75,000 next year. That gives $101,250 in consumption next year

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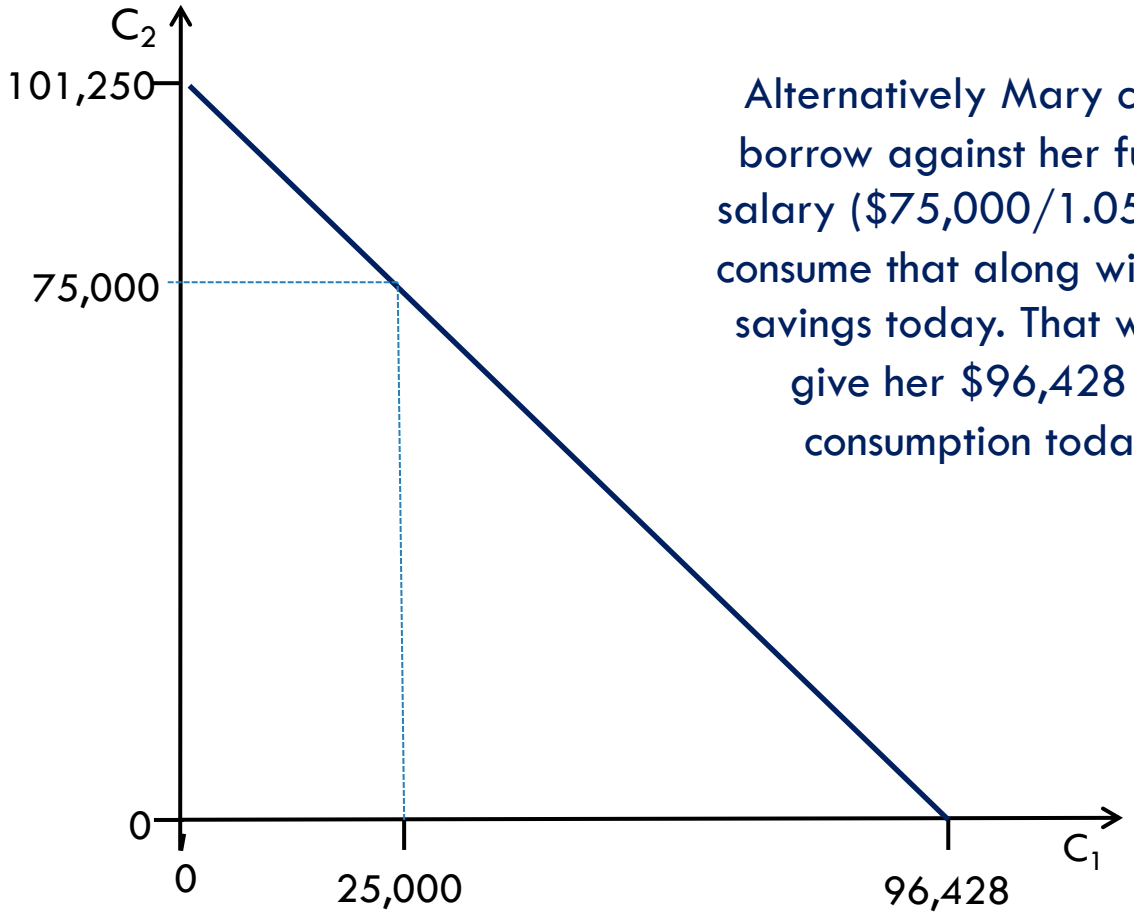

Alternatively Mary could borrow against her future salary ($75,000/1.05) and consume that along with her savings today. That would give her $96,428 in consumption today

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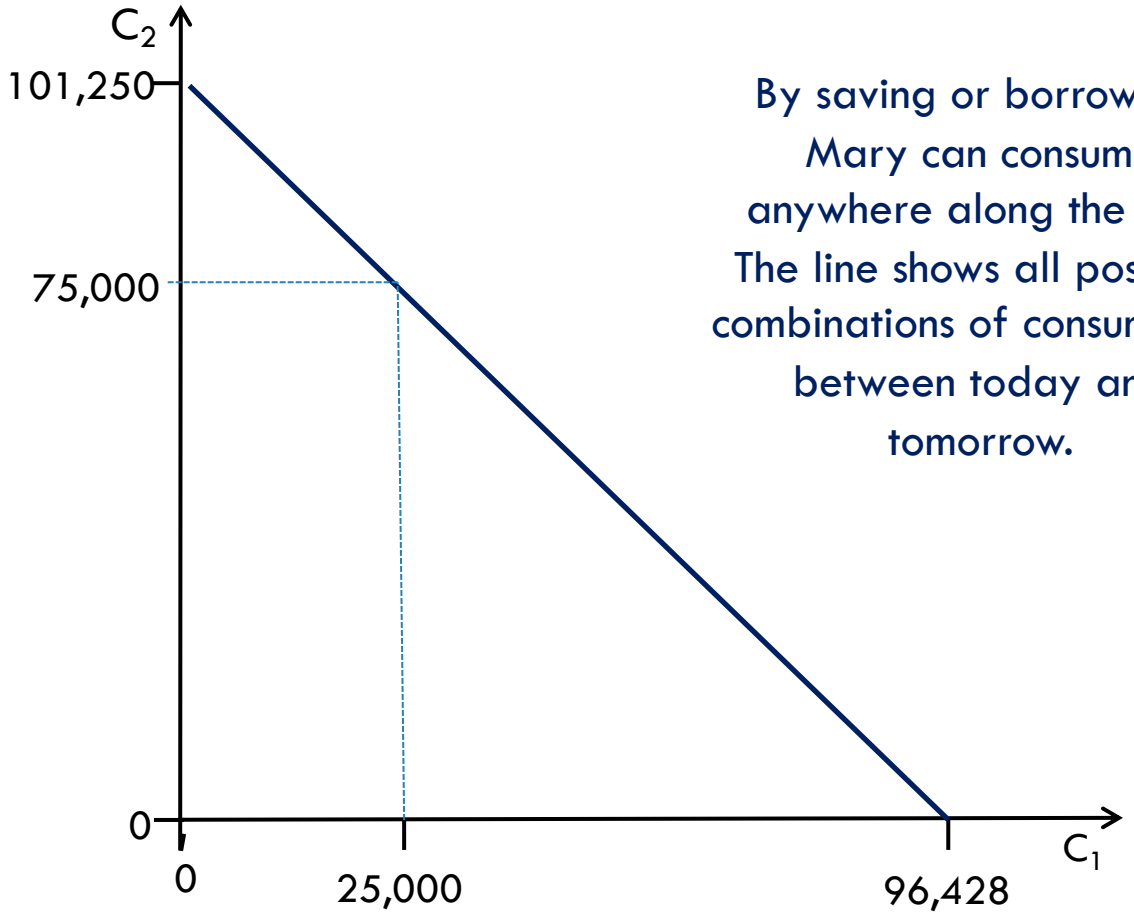

By saving or borrowing, Mary can consume anywhere along the line. The line shows all possible combinations of consumption between today and tomorrow.

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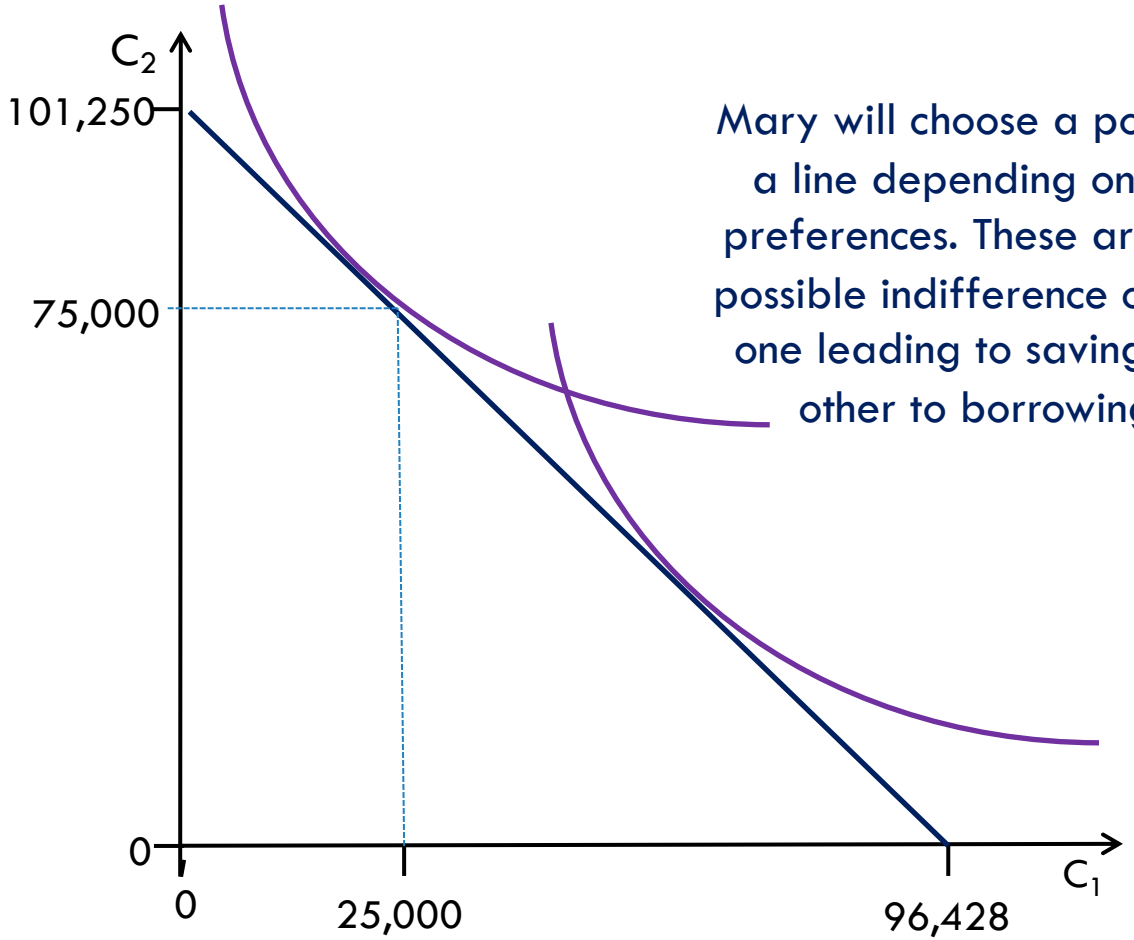

Mary will choose a point on a line depending on her preferences. These are two possible indifference curves, one leading to saving, the other to borrowing.

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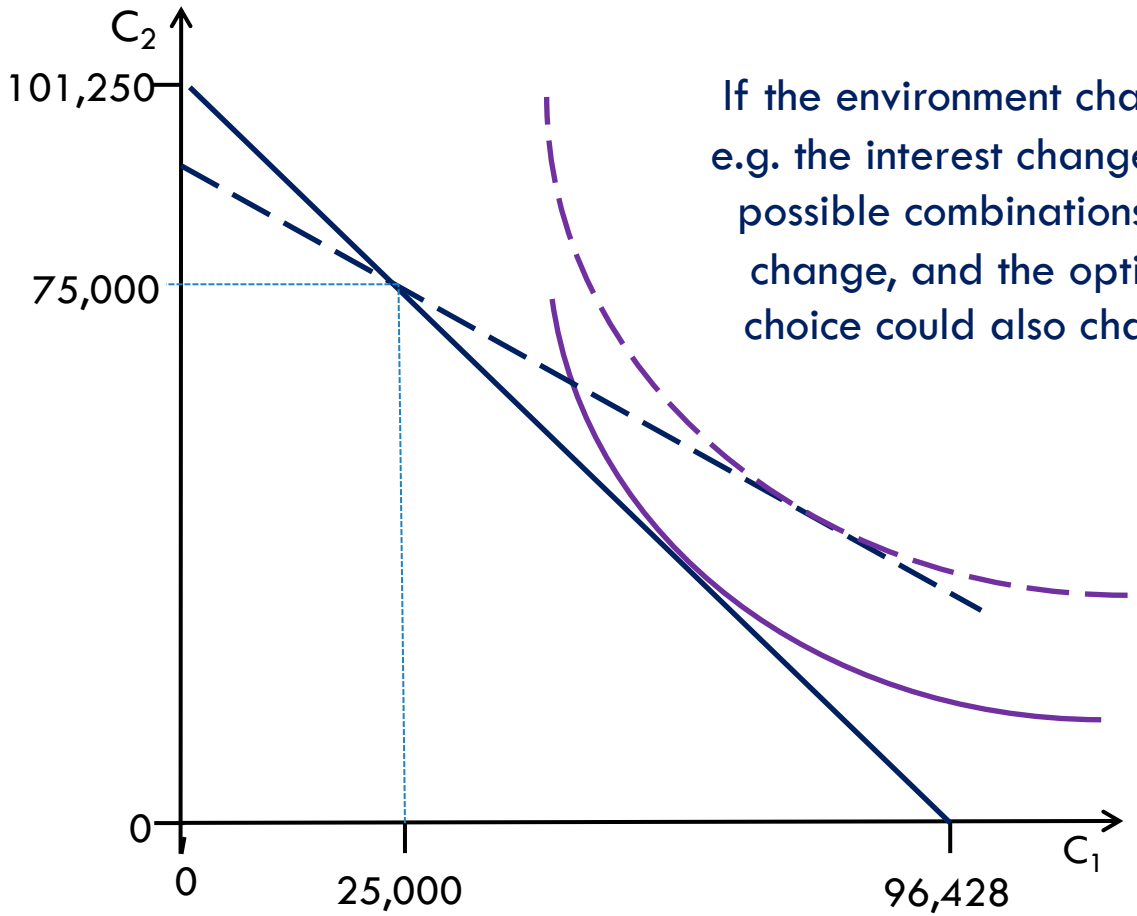

If the environment changes, e.g. the interest changes, the possible combinations will change, and the optimal choice could also change

MULTI-PERIOD MODELS

What if a firm needs to make an inter-temporal investment decision? Should that firm consider the inter-temporal preferences of its owners?

Consider a firm that has $100,000 that it could either distribute as cash dividends today, or invest to pay higher dividends to its owners tomorrow?

What if these owners are highly impatient and would prefer to consume today?

MULTI-PERIOD MODELS

Fisher Separation theorem

Assume:

- The presence of perfect capital markets, i.e. zero transaction costs, no taxes and perfect information
- Everyone agrees on the merits of an investment (in other words, that they agree whether or not it will increase the net present value of the company)

In this case, the financing of investment can be separated from the investment decision itself.

Individuals with different time preferences can just borrow or save to smooth consumption consistent with intertemporal preferences.