

BUILDING ECONOMICS  
BUSINESS & BUILDING CYCLES

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2004

PRIMARY SOURCE:

Bon, R. Building as an Economic Process. Prentice Hall, 1990.

CAPITAL RESTRUCTURING

Changes in business plans are the norm.

- It is unlikely that all individual business plans in a market economy are mutually consistent.
- Some business plans will consequently fail.
- The failure of one business plan affects the success or failure of another because business plans are interdependent.

Changes in capital structure are caused by changes in business plans.

- Business plans are based on planner's expectations.
- As long as a business plan is being fulfilled, the capital combination underlying it will be maintained.
- If unexpected changes are considered permanent, then planners change their expectations and change their business plans accordingly.

Changes in business plans may result in a reshuffling of capital combinations.

- Existing capital assets may take on new uses and existing staff may be retrained to carry out new duties.

New investment plays an important role in reshuffling existing capital goods.

- The incentive to invest depends on the expected effect of new capital on the earning capacity of old capital.
- New buildings are likely to compete with existing ones, especially in the same geographic area because buildings can often serve as substitutes for one another. This is even truer of rooms or floor spaces.

- Coping with the possibility of business plan failure includes gauging the potential substitutability of capital goods and the degree to which they may compete with each other under different economic conditions.

Changes in business plans may result in capital regrouping.

- Existing capital assets may be sold and new capital assets may be purchased. Existing staff may be laid off and new staff may be hired.
- Capital regrouping may precipitate a cumulative failure throughout the economy.
- Alternatively, capital regrouping may result in a reverse cumulative process.
- Capital gains and losses may offset each other.
- Capital losses can be positive. For example, the need for post-war reconstruction presented some countries with the impetus to replace outdated plant with more plant that is productive and equipment.

#### THE INTEREST RATE MECHANISM (DIAGRAM)

The interest rate mechanism co-ordinates saving and investment decisions.

- The market interest rate is determined by the supply of and demand for loanable funds.
- At the natural or equilibrium rate, the plans of savers and investors are consistent with each other.

The banks play the role of financial intermediaries between savers and investors.

- Under a neutral bank policy, the supply of credit is determined by the supply of planned saving.
- A rate of interest below the natural rate can persist only if the difference is made up by the creation of bank credit. In such a case, the bank policy is not neutral.

The dynamics of expansion involves a transmission mechanism that goes from money, to income, to prices, and finally to output.

- At an interest rate below the natural rate, planned investment will exceed planned saving.
- Producers' plans and consumers' plans will be temporarily out of alignment.
- If a non-neutral bank policy is pursued for a period long enough to be perceived as a permanent change in business condition, entrepreneurs will reshuffle their capital combinations to shift their output towards a more distant future.

- The share of durable production goods will increase, leading to a decrease in the output of consumption goods.
- Ultimately there will be an increase on ability to produce consumption goods.

## THE BUSINESS CYCLE

Business cycles involve periods in which business plans are persistently disco-ordinated.

- A mismatch of inputs to outputs results in unemployed resources.
- Entrepreneurs who can reallocate resources to superior uses will earn profits whereas those who fail will suffer losses.

Business cycles are not necessarily identical in terms of their pattern or intensity.

- Business cycles are now shorter, their amplitudes are less pronounced, their succession more frequent, and the cycles now tend to be less predictable.
- Uncertainty inherent in the process of capital formation may lead to a chance clustering of errors in a business plan due to inconsistencies with other business plans. (Uncertainty is lack of knowledge).
- These errors are not necessarily systematically biased in either direction. There is no reason to believe that inconsistencies in business plans are biased either towards capital gains or towards capital losses.

Business cycles may be an inevitable and unpredictable feature of market economies.

- It is possible that economic fluctuations have their origins outside the market place itself. For example, government intervention controlling prices and credit.

## THE BUSINESS CYCLE AND THE BUILDING PROCESS

A strong boom is characterised by a capital goods shortage, a weak boom by insufficient demand.

Capital regrouping, with its repercussions on maintenance and replacement, is central in both cases.

- Well-informed actors in a market that demonstrates a strong boom will eventually have misgivings about future yields and the cost of present projects.
- Capital reshuffling may become necessary after a weak boom because of the appearance of excess capacity.

- Under these conditions, the firm may decide not to maintain a part of its capital, or not to replace it as it wears out.
- The creditors of the firm may compel their debtors to dispose of a part of its capital.

The entire building process can be thought of as a mechanism for the transmission of knowledge about business conditions.

- For example, the behaviour of the designer and the contractor will be influenced by their backlogs of projects and the prospect of new projects for current clients.
- In the early stages of a boom, the backlog will increase, together with the likelihood of "repeat business".
- The early warnings of an expected slump will be transmitted to the owner through the building process itself.

#### TYPICAL BUSINESS CYCLE — EXPANSION

Lower interest rates, greater availability of funds.

- Building clients are enticed to consider new investment projects when interest rates are lower and availability of loanable funds is greater.

Initial focus on existing properties

- Initially, design and construction projects will focus on existing properties.

Clearing of backlog of deferred maintenance and replacement

- Buildings suffering from deferred maintenance and replacement are considered for renovation.

Elimination of under-utilised floor space.

- Under-utilised and wasted floor space is eliminated.
- There is expansion of business activities. Vacancy ratio reduces.

Increase in commissions for design firms.

- Design firms receive an increasing number of commissions for construction.

New orders for wholesalers and retailers of building materials.

Initial run down of inventories then replenishment of stocks.

- Wholesalers and manufacturers of building materials at first run down their inventories. As soon as they realise the market has tightened for a long haul, they will replenish their stocks.
- There is a trickle down effect upon the economy.

Development of new land.

- New land is developed, and an increasing proportion of derelict property is cleared and made available for new building projects.

Pressure on participants to expand own facilities

- Throughout the early stages of expansion, all the economic agents – client, designer, builder - experience increasing pressure to expand their own facilities. The increasing scale and rate of operations requires new space.
- This causes a secondary wave of building projects to spread through the economy in order to accommodate the space demanded by operations to satisfy initial demand.

## TYPICAL BUSINESS CYCLE — DIFFICULTIES

Price increases start.

- A cumulative process of price increases starts due to an increase in demand for initially scarce resources.

Difficulties with financing investment projects

- Building clients experience problems with financing their investment projects.

Loanable funds still available but interest rates climb.

- The interest rate climbs under the pressure of many competing projects in response to the increase in demands for loans
- Loanable funds will still be available.

Projects nearing completion are less profitable than initially anticipated.

- Some building projects nearing completion are somewhat less profitable than their builders had hoped.
- This is because expectations of profits were based on estimates of previously lower prices and interest rates.

Dampening of enthusiasm for new investment

Initial enthusiasm for new ventures involving considerable investment in capital is dampened.

Backlog of new orders for design projects start dwindling.

Plans for further expansion are postponed.

- Plans for further expansion are reconsidered and some plans are postponed.

Contractors experience difficulties obtaining interim financing at reasonable interest rates.

- Contractors experience management problems and run into financial trouble as many overlapping construction projects strain their ability to obtain construction loans for interim financing of these projects at reasonable interest rates.

Cash flow difficulties eventuate.

- Some clients default on payment to contractors.
- Some clients are unable to pay for construction services in accordance with the established schedules.

#### TYPICAL BUSINESS CYCLE — CONTRACTION

Many projects continue.

- Many construction projects continue even after the boom has been checked because the construction period for large projects are lengthy.
- This due to contractual obligations – liquidated damages.

Some contracts are cancelled before proceeding.

- Some contracts are cancelled before construction proceeds, which reduces the pressure but also signals of bad times ahead.
- For example, NZI Towers in Chancery Street. Building halted after carpark completed.

Many construction projects proceed even after the collapse of the expansion process.

- More profitable ventures proceed as part of capital combination

## FALSE EXPECTATIONS AND CAPITAL MALI INVESTMENT

Most investment projects are undertaken in the expectation that further investment will take place later.

- Investment projects can be regarded as links in a chain that can be completed by a sequence of interrelated projects.
- The first link in the chain will be undertaken only in the expectation that a certain rate of return, that is, rate of interest, can be earned throughout the investment process.

The first step in the chain of investment projects narrows the margin within which the total profits expected on the entire chain may fall.

- The profitability of further investment projects needed to complete the chain may remain unaffected by the reduced profitability of the initial project.
- If the initial fixed capital is difficult to convert to alternative uses, this fixed capital will continue to be used even if the return barely covers the cost of using it (excluding interest and amortisation).

The impact of an increase in the interest rate will directly affect only a small fraction of total investments — those that represent the initial stages of a new investment chain.

- The demand for those projects needed to complete existing investment chains will tend to be inelastic with respect to changes in the interest rate.
- This is because the opportunity costs of not completing part of a capital combination may be too high.

The profitability of capital goods created at the early stages of the process will progressively decrease as the interest rate rises.

- Malinvestment in early stage capital goods will become increasingly apparent, and will contribute to the ultimate collapse of the whole process.
- Long-lived capital goods will be more affected by increases in the interest rate than will short-lived capital goods.

Unfavourable business conditions will lead prudent entrepreneurs to revise their business plans to complete the investment chains earlier than originally expected.

- This will lead to an unanticipated shift from long-lived capital goods to short-lived capital goods needed for completion of investment chains.
- This amounts to a new round of capital restructuring.

The most common cause of widespread entrepreneurial errors is an unmaintainable increase in the supply of loanable funds through credit expansion.

- An artificial upswing will be checked by the scarcity of loanable funds needed for the completion of various investment chains.
- The abundance of unused capital goods is due to the scarcity of capital required to complete investment chains started under erroneous expectation of a permanent change in the availability of loanable funds.
- False expectations of a lower interest rate ultimately results in a larger increase in the interest rate than would have occurred otherwise had there been no initial expectation of such a low rate.

#### AFTERMATH OF MALINVESTMENT CYCLE

A process of contraction follows an abortive expansion.

- Entrepreneurs are forced to abandon plans to complete many investment projects.
- There will be initially be a round of unemployment that may spill over into the production of consumption goods.

Malinvestment ultimately requires adjustments in the capital structure.

- Adjustments cannot be made without additional investment expenditures.
- The period of adjustment will affect the long-lived capital goods the most.
- Existing capital goods introduce something akin to inertia into the economic system.



- Rapid changes in capital formation are limited or prevented by the nature of convertibility of capital.

A good proportion of the value of malinvested capital will be lost before its planned depreciation period can be completed.

- Buildings are especially susceptible to losses in value.
- The entrepreneurs owning these capital goods will need to find new uses for them.

Capital goods that cannot be turned to new and profitable uses will either be operated but not maintained or abandoned altogether.

- During contraction, capital maintenance and replacement activities will generally be neglected thus providing an essential precondition for the eventual expansion of investment activity sometime in the future.
- Deferred maintenance builds up to a level until it can be put off no longer.

The market process allows correction of entrepreneurial errors.

- An entrepreneur may make an error in anticipating the need for goods produced
- For example, the publishing market frequently over-estimates the demand for some books
- Sometimes the business plan may be misguided from the outset.
- The failure of a business plan implies capital losses because business plans embody capital goods, some of which may be very durable,
- In order to minimise capital losses it may be best to lower the price of a production good in order to make it more attractive to buyers who are able and prepared to make an alternative use of it.
- For example, a speculatively built office building may need to be leased or sold at a price significantly lower than expected so that a prospective buyers will find it sufficiently attractive to purchase for a lower use such as warehousing.

#### CAPITAL MAINTENANCE, OBSOLESCENCE, AND TECHNICAL CHANGE

The duration of an economic downturn depends on the durability of capital goods, which in turn depends on capital maintenance.

- The aftermath of the malinvestment cycle will involve redesign and reconstruction on a significant scale.

- The contraction will be followed by a period over which maintenance and replacement activities will be kept at a minimum.
- If the income stream generated by a capital good is not high enough, the capital good will be under-maintained and its useful life will subsequently be shortened.
- Existing buildings will gradually deteriorate to a point at which their redesign and reconstruction may help to generate a new expansion.
- If the economic life of a class of capital goods is shortened, then these capital goods need to be replaced.

The problem of capital maintenance translates into the problem of maintaining a permanent income stream from capital.

- One of the crucial roles of capital accounting is to make sure that involuntary infringements upon future income do not occur.
- The meaning of “maintaining capital intact” depends on how well an individual entrepreneur foresees (not foretells) the future.

Destruction of existing capital values occur in two regular forms — wear and tear, and obsolescence.

- These issues will be addressed more fully in a separate lecture.
- Wear and tear depends on the rate of capital utilisation.
- A part of income needs to be put aside for current maintenance.
- Obsolescence of capital occurs whenever its usefulness diminishes faster than it deteriorates physically.

In many cases, fixed capital must be made more durable than necessary more for technical reasons such as strength and hardness.

- Many technological innovation concerns finding a better match between economic and physical lives of durable goods.
- The economic life is generally much shorter than the potential physical life.

Changes in capital can be effected by means of maintenance and rehabilitation.

- Maintenance, rehabilitation, and replacement are usually regarded as rearguard actions to preserve the value of capital.
- Newbuild construction that adds to the stock of capital and replacement of existing stock are usually regarded as activities that create new capital.
- Appropriate maintenance and rehabilitation can also be used to create a new form of capital in response to changes.

- If so, then materials that are more durable should have ideally been incorporated into the building from the outset.

## THE IMPACT OF BUILDING TECHNOLOGY ON CAPITAL RESTRUCTURING

Entrepreneurs generally prefer short-lived to long-lived capital goods if such a choice is available.

- Entrepreneurs prefer the least durable among the long-lived capital goods that perform the same function, subject to the condition that the expected life cycles of these capital goods extend beyond their planning time-horizon.

Entrepreneurs put a special premium on the predictability of the life cycles of capital goods or their components.

Reduced durability of long-lived capital assets may contribute to a smoother process of capital restructuring and thus to a less painful economic recovery from recessions and depressions.

## PREDICTIONS.

There is a need for flexible buildings.

- Buildings undergo continual alterations as they are adapted to the needs of their owners.
- Changes cannot be foreseen.
- Buildings should therefore be designed and constructed so they can be adapted to a wide range of conditions.
- Building manageability should be an important design criterion.

Convergence of life cycle of plant and equipment

- The life cycle of plant and equipment will tend to converge.

Decreasing share of bricks and mortar

- There will be an increasing share of mechanical, electrical, and electronic equipment, and a decreasing share of "bricks and mortar" in building investment.

Innovations in building technology related to reliability

- There will be an increase in the innovations in building technology that will increase the reliability and reduce the life expectancies of the most durable building components and systems such as structural systems, exterior cladding, and roofing.

Shorter construction periods

- There will tend to be shorter construction periods thus reducing the time-interval over which the project is vulnerable to sudden changes in economic conditions.

## CONCLUSIONS

Long-lived capital goods such as buildings are especially sensitive to economic fluctuations.

In the aftermath of a malinvestment cycle, building owners need to reshuffle their capital combinations.

Some, but not all, buildings erected based on false expectations will find unexpected buyers or uses.

The threat of malinvestment motivates building owners to adopt general strategies to offset uncertainty.

These strategies affect the development of building technology and ultimately building design.