

## **PROVISIONAL NOTE ON PRESENTATION TO MIFI**

**DECEMBER 2010**

**ROBIN MATTHEWS**

Theories are inseparable from the experience of firms: (a) creative destruction in the sense of Schumpeter, (b) red queen effects (c) the logistic curve (d) capitalist financing. These theories, as we shall show, are interconnected.

### **Creative destruction**

According to Joseph Schumpeter the innovation is the dynamic of capitalism. Capitalism, he thought was unstable. It oscillates between boom and slump. An upswing results in a boom and is inevitably followed by a downswing and a recession or more severely a slump. What drives the upswing? According to Schumpeter, it is a spate of innovations that create new profit opportunities; new products, new technologies, new markets. What turns a boom into a downswing and eventually a recession? According to Schumpeter, this happens because eventually the rate of profit declines as profit opportunities are eroded by competition and market saturation. Creative destruction then occurs. Firms are either destroyed and go into bankruptcy, or they are forced by losses or declining profitability to seek new sources of profit. In any case as firms are destroyed, resources are freed up to await new profit opportunities resulting from a new phase of innovations. Destruction is creative in that it frees up resources; enables them to be transferred from the old to the new. It probably is a painful process; bringing unemployment, losses, bankruptcy, the death of firms. But it forces an economy to innovate.

### **The red queen effect**

In *Through the looking glass*, Alice, running after the red queen, finds that neither is moving. They remain exactly where they began and the red queen observes that "it takes all the running you can do, to keep in the same place." Similarly sometimes firms invest in innovation only to find that their profits are eroded by competitors who copy their innovation, and can sell their products cheaply, because they have not had to undertake the initial investment in innovation. They simply copy and hence the margins of the innovating firm are eroded they are no better off that when they started. This happens time and time again in new economy businesses such as telecoms, communication, information technology. It happens also in (so called) old economy businesses such as automobiles and pharmaceutical. To prevent this happening firms need somehow to create barriers to new competition, though patents, or scale economies that make the cost of entry into an industry prohibitive; that is by establishing some kind of monopoly power. Schumpeter maintained that monopoly power in this sense was a prerequisite for capitalism and innovation, because it enabled profit to be accumulated in the upswing of a cycle that could be used to finance innovation.

## The logistic curve

The logistic curve describes the typical growth pattern of a species; rabbits for example. Population growth begins slowly then accelerates into exponential growth. As the population of rabbits for example grows, this attracts in predators foxes for example. Predators, together perhaps with a rise in the number of rabbits relative to the food supply, causes the rate of growth of the population to decline and perhaps even to become negative; the population declines. It is easy to see how the logistic curve can be generalised into a business context. Market share in one year depends on market share in the previous year. When the share of the market is small, then increase in the market share are relatively easy; growth of market share is exponential. Eventually it as market share increases it becomes more and more difficult to increase market share and growth slows down and may even become negative. Similarly the same idea can be generalised to describe sales growth. Marketers speak of the product cycle. A new product is invented. First sales grow slowly then the product takes off and sales grow exponentially. Then, as a result of competition or market saturation the rate of growth of sales slows down and may even become negative (sales decline). Another business example of the logistic curve is the life cycle of firms. They begin small, then take off into rapid growth. Eventually the rate of growth declines. The firm reaches maturity. Perhaps at some point in the future the firm actually declines and becomes extinct.

## Capitalist financing

Projects can be financed by debt or equity but most companies finance their operations by borrowing short term from banks paying back when cash flows in then refinancing; thus **most** businesses are owned<sup>i</sup> by Banks<sup>ii</sup> (or by other financial institutions<sup>iii</sup>). Typical business projects are as follows.

1. There is a need to finance *up front* investments in tangible assets (machines, technology, training the workforce, developing a new product or service) and intangible assets (marketing, branding, public relations). These investments are expected to produce cash flows in the future. They are usually financed by the Banks: but only (i) if the bank considers the business case is good (ii) the Bank has no problems of its own that prevent it from lending. This is important because every business has learned over the past two years that it may have a perfectly good project capable of producing good cash flows and yet be unable to get finance.
2. There is also a need to finance operations (pay wages, raw material and on going costs of operating a business. The problem here is that cash outflow (on costs) happen before cash inflows (from revenues) so that businesses have to borrow to cover costs and then repay these operating loans from revenues. Then the problem arises again in the next period: they borrow and they repay. In other words they constantly have to finance and refinance their operations. Many businesses have become bankrupt because Banks have been unwilling to refinance (often good) businesses.

The difference between cash inflows (revenues) minus cash outflows (operating costs plus interest costs on debt and taxes) is profit. I prefer to call it expected net cash flow<sup>iv</sup>. Net cash flow can be used to pay off debts and pay dividends or retained to finance further investment. Some businesses have gone bankrupt even though they were profitable; the problem being

that their suppliers or their customers were unable to refinance their operating costs and therefore were unable to pay their bills. The situation is illustrated in Figure 1<sup>1</sup>.

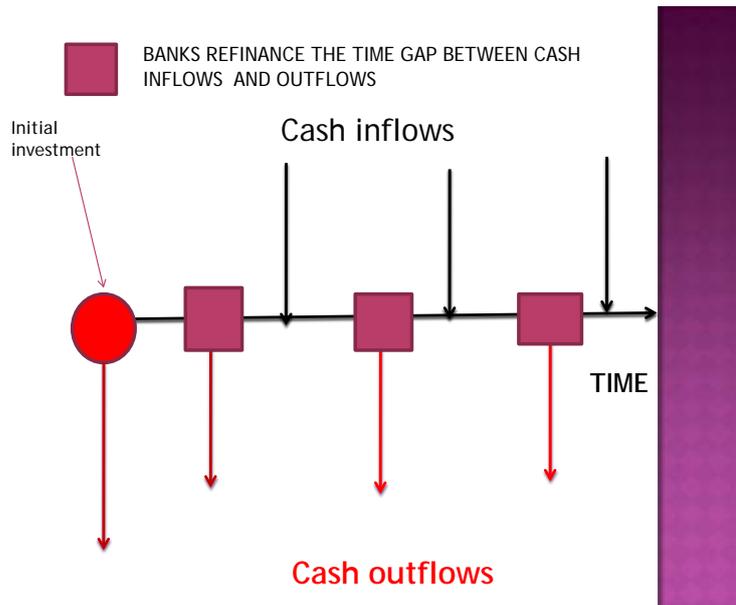


Figure 1<sup>2</sup>

In Figure 1 a business project is shown to begin with an initial investment, illustrated by the red circle. Usually at least part of the investment uses borrowed funds. In addition there are operations costs that are usually incurred before revenues from sales are received. Also a firm has expenses such as working capital etc.

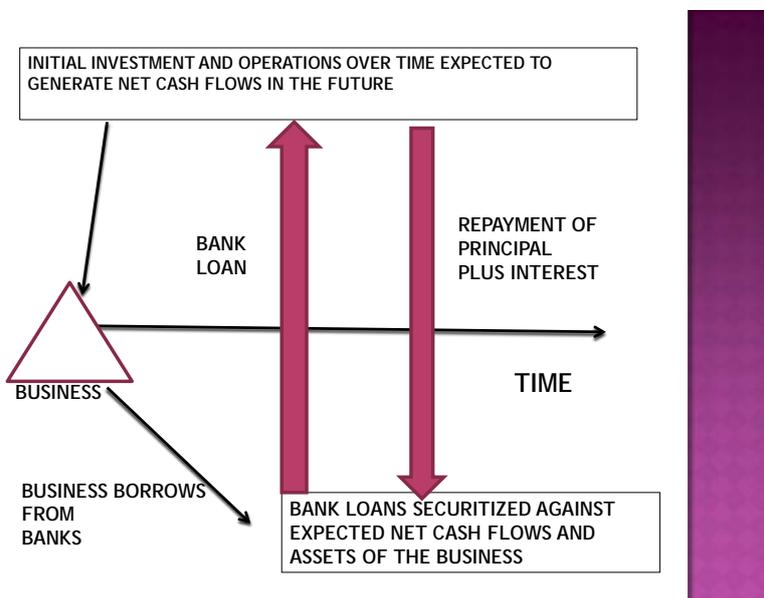


Figure 2

<sup>1</sup> The discussion here draws on the work of Hyman Minsky; see Minsky, H. (2008). *Stabilising an unstable economy*, McGraw Hill London.

<sup>2</sup> Apologies for the poor reproduction of Figures 1 and 2.

Figure 2 illustrates the relationship with the Banks. Banks lend to business if they are satisfied that sufficient net cash flows will be generated to cover interest payments and the debt and to pay off the principal. Usually investments by firms are long term and they borrow short term from the banks hoping that the banks will refinance the loan as time goes on.

If we look at the firm's balance sheet we will see the firm's assets (their tangible capital and shareholder funds) balanced against their liabilities (debt to the bank). If we look at the bank's balance sheet we will see their assets (which include loans to business for projects such as we describe here) balanced against their liabilities which include deposits by customers (and shareholder funds of the Bank).

### **Connections**

It is not too difficult to see how the four concepts are connected. Creative destruction and the logistic curve both involve cycles. The growth cycles of populations of firms or industries or species; the idea of growth, maturity and decline. A spate of innovation (Schumpeter brings) brings about growth but the growth or product cycle comes to an end. The firm, the product matures, reaches saturation and eventually declines and a new cycle, eventually begins. The red queen effect emphasises a different aspect of cycles; an aspect that is implicit in the other two theories. Cycles take place over time and they include feedback effects. In the industry example innovation by one firm is copied by another so the innovating firm is faced by competition that its own actions (the innovation) have brought about, which in turn feeds back on its profitability and as it is forced to reduce price, then this feeds back on the competitor who is forced in turn perhaps to reduce price further; eroding profitability and margins. Alice's experience with the red queen perhaps illustrates the fact that evolutionary progress is perhaps necessary even to stay still. The red queen also explains to Alice that valley may become hills and hills become valleys depending on which direction you are going or which way you look at things. Valleys and hills like upswings and downswings in cycles are part of the same process. In logistic curve example, growth of the rabbit population encourages growth of the predator population and makes demands on the food supply which in turn feeds back on the rabbit population and as the rabbit population declines so does the population of foxes and perhaps the food supply is regenerated. Similarly Schumpeter's idea proposes that creation and destruction, like hills and valleys, are two ways of looking at the same thing. Put in another way, movement and stillness are part of the same phenomenon. To survive capitalism must evolve (innovate). Growth, maturity and decline like life and death are part of the same process. Every moment becomes extinct and a new moment is born. In the limit (in the instantaneous moment) movement contains stillness and stillness moves because (as Heraclitus notes) "we cannot step into the same river twice".

The mechanism for financing project illustrated in the figures above is typical

## **A new economy business: telecoms**

Telecoms illustrate typical situation facing new economy businesses that have reached a level of maturity. Technology moves quickly. So there is a need to invest. Invest involves large setup costs, not only in R&D and product development and testing, but in marketing sales and setting up distribution networks. Firms have a choice either they invest or they wait for competitors to invest, save some setup costs and perhaps learning costs, but lose market share. If they invest, then competitors quickly follow making the product cycle short, reducing margins through price competition. Thus it is difficult to recoup setup costs because margins on operations costs are so low. Alternatively if they wait and follow they are subject to the same processes: they may save on setup costs but they lose market leadership. Most companies follow the same pattern. Margins on additional services associated with telecoms are usually higher. So they invest in add on services. The same process results however. Margins are eroded. So the red queen process proceeds.

## **Distribution: old and new economy**

For reasons that will be clear, the firm has to be anonymous; so call it firm X. Firm X is a private company, distributing low value pharmaceutical products. It bought pharmaceutical equipment and accessories from suppliers, stored them and then sold them to their customers, hospitals and clinics. Their market and their share of the market was growing exponentially: Firm X was on the exponential phase of the logistic curve.

The story begins in the early part of this century. The market was expected to grow even faster because of increase injections of government spending into the health sector. In other words the logistic curve was expected to shift upwards, signifying even faster logistic growth. Projections were that market growth would accelerate further over the next three or four years. As the market grew new firms could be expected to enter in the compete with X (entry barriers into the market were low). So unless X expanded it would lose market share and might even decline. The reason being that hospitals and clinics were expected to increase in size and expand their demand for products and since it is most economical for them to deal with a single supplier, unless X increased in size, held more products, to satisfy this increased demand, custom would switch to other suppliers. Also X needed to increase in size as the market grew to get better terms from its own suppliers by buying in bulk from them. A further risk was that suppliers to X might decide to sell directly to final customers (hospitals and clinics) and in so doing disintermediate X. Thus X's potential competitors included, not only existing competitors, but new entrants including new competitors augmented perhaps by existing suppliers.

X needed to expand. X's biggest most costly asset was working capital, in the form of goods held as stocks and accounts receivable; that is goods delivered to customers, who paid after a period of time. So X's cash flow was held up until accounts are settled. A further complication was that typically, although customers wanted delivery of goods throughout the year, because of their own cash flow situation (they were financed by the government) they

tended to settle accounts at the end of the year, November or December. So bills waited for up to 10 or 11 months before they were settled. This situation was understood to be unchangeable.

The first problem arose as to how to raise additional funds for working capital. X had little or no debt. It was funded by a single entrepreneur/investor. Should the funds be raised by issuing debt instruments, borrowing from the bank or by raising new equity? The latter would involve taking additional partners into the business which would, the current owner felt, possibly reduce his control over the business. Interest rates in the early years of the century were low, credit fairly easy to get. The owner raised funds skilfully; borrowing short term, selling off the real estate on which his warehouses were sited to another company, who then leased it back to him. Real estate was booming at the time so this was easy to do.

The second problem arose because at some point the owner wished to sell the business outright; maybe through public offering of shares, effectively reducing or even liquidating his own holding, or selling to a single investor. The question was; if and when should he do this? What is the best timing? What timing will result in the highest price for the company? In other words; at what point would the company have its highest expected net present value? The answer to those questions was that nobody could really know.

However, times were propitious. Asset prices were rising. The company was growing exponentially since the product curve continued to shift upwards. The hired a manager who had extensive logistics experience, paid him extravagant bonuses if to shave costs off the business. This the manager by drawing on his relationships with customers, and using information not only about their needs on average but about the variance of their needs, thus realigning stocks held by X not only with average demand but with variations in demand. This information was channelled to suppliers bringing the situation closer to just in time supply. Scheduling was also rationalised so that delivery was to a greater extent optimised.

All these things meant that the value of the firm increased. Three things determine the value of a firm; (a) the expected revenue stream, (b) the expected cost stream and (c) the cost of the firm's capital. The bigger are expected revenues and the smaller are expected costs the greater the value of a firm. The lower its cost of capital the higher the value of the firm.

As we explained revenues were growing and fortunately for the owner people's expectations are invariably based on recent experience. Similarly costs had been reduced. The cost of debt capital was low so there was a ready market for the firm. The owner, somewhat fortuitously chose to sell out at the end of 2006, when the growth rate of the firm was at the highest level he considered feasible. Asset prices generally were at their highest at that point in time. Had he sold one year later, in 2007, after the financial crash, and at a time when government expenditure was expected to fall then he would have got a considerably lower price. So we might argue, he obtained a windfall gain.

---

<sup>i</sup> Some investment is financed entirely by internal funds. But a business without overdraft facilities is rare. Strictly holders of business debt are creditors not owners. The owners are shareholders. However creditors have first call on the net cash flows of business and if the interest payments on debt are not covered or the repayment terms are not met then the business is forced into bankruptcy.

<sup>ii</sup> The only exceptions to this statement are businesses that are financed entirely out of the owners funds and have no debt: that is all equity firms. There are very few of them.

<sup>iii</sup> Financial institutions include Commercial Banks, Investment Banks (for example, brokers and dealers), asset managers (for example, hedge funds) and insurance companies.

<sup>iv</sup> Net cash flows are (cash receipts) minus (labour and raw materials cost plus other operating costs, plus new investment costs plus taxes plus interest payments) plus depreciation (depreciation charges are added because depreciation is a non cash expense).