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Austrian Business Cycle Theory: A Corporate Finance Point of View

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Abstract:

The Austrian Business Cycle Theory (ABCT) has been criticized for not being a true theory of the business cycle. The main emphasis of the ABCT has been on the theory of the upper-turning point—the artificial expansion of credit, the manipulation of interest rates, the malinvestments committed by entrepreneurs and then the credit crunch and/or real resource crunch. The analysis of "what follows the upper-turning point" has been underdeveloped in the past 80 years of the ABCT's existence. This paper attempts to take the ABCT the next step—to show how the liquidation of malinvestments is necessary for solid economic growth to occur. The paper provides an illustration (from a corporate finance point of view) of how a company can take a failing component from another business and turn it into a viable operation via the liquidation process. This paper then demonstrates how an economy can set itself on the path to recovery and makes recommendations for policies that can help stimulate economic recovery.

Introduction

The Austrian Theory of the Business Cycle is a bit of a misnomer. The theory has primarily focused on the causes of the downturn through the upper-turning point.[1] For example, the two classic Austrian works on the Great Depression, Lionel Robbins (1934) and Murray Rothbard (1963), focused on the events through the early 1930s. The liquidation and recovery phase have received little attention. Since the revival of Austrian analysis (the early 1970s), research on the recessionary phase has remained scant.

According to traditional Austrian business cycle analysis, the malinvestments that are built up during the artificial boom need to be liquidated in order for sustainable growth to occur. As Rothbard (1978) states,

> "The 'depression' is then seen as the necessary and healthy phase by which the market economy sloughs off and liquidates the unsound, uneconomic investments of the boom, and reestablishes those proportions between consumption and investment that are truly desired by the consumers. The depression is the painful but necessary process by which the free market sloughs off the excesses and errors of the boom and reestablishes the market economy in its function of efficient service to the mass of consumers. Since prices of factors of production have been bid too high in the boom, this means that prices of labor and goods in these capital goods industries must be allowed to fall until proper market relations are resumed." p. 85

What happens during the liquidation phase may be as important a topic to analyze as the cause of the downturn. To many, it may be more important. The general public might say, "Sure it was expanding credit that caused our problems and we promise not to do it again, but we don't care about that now. Just tell us how to best get out of this mess." The economist who simply states that we should, "Let the markets work," opens himself up to attack. Supporters of government interventionism could very easily claim that capitalism caused the recession and reject putting faith into the very system that

[1] See Garrison (2001) page 240 and Yeager (1997) page 232. See also Yetter and Cochran (2004) pp.1-2.

caused this problem. The first response by an Austrian would be to argue that the recession was not the fault of the market; the Austrian would thus fall into a trap. The Austrian would now be off topic and would lead back to the public's statement, "We don't care about that now. Just tell us how to best get out of this mess." I contend that this is precisely what happened during the great business cycle debates in the 1930s. The Keynesians said that they had a plan for recovery, while the Austrians said little more than "let the market work."

While little attention has been given to the recession phase of the business cycle, it does not mean that Austrians have nothing to say or add to the discussion. The Austrians, too, should have a plan for recovery. However, before such a plan can be constructed, the liquidation phase of the business cycle and how it becomes a recovery need to be examined in detail. The focus of this paper is to examine how the downturn becomes a recovery through the use of a pedagogical example designed for the classroom.

The Unsustainable Malinvestment Boom

The initial action that begins the business cycle is the artificial lowering of the interest rate by the central bank. Let us suppose that the central bank lowers the interest rate from 5% to 4%, a 20% reduction. From the point of view of the firm, the change will affect the net present value of both its working capital and its fixed capital.[2]

The value of working capital[3] is the following:

$$P_{WK} = P_{input} \cdot \left(1 + \frac{i}{t}\right), \qquad \text{(EQ 1)}$$

where P_{input} is the direct cost for labor and materials,

i is the rate of interest, and

t is the turnover rate of working capital.

Thus, the percentage change in the net present value of working capital when i becomes i' is:

$$\dot{P}_{WK} = \frac{i' - i}{t + i}. \qquad \text{(EQ 2)}$$

[2] This analysis follows that of Machlup (1935)

[3] Working capital is the outlay made for wages, materials, etc.

With a 20% reduction of interest rates (from 5% to 4%), there will be a reduction in the cost of working capital of 0.328%. Machlup (1935) explains that this is not a surprising result because there are three fractions at work: 1) the rate of working capital to total direct cost, 2) the interest rate on working capital, and 3) a fractional decrease in the interest rate.

The impact that a change of the interest rate has on the net present value of fixed capital is much more significant. Suppose that the firm has a unit of capital equipment that produces a stream of net revenue, $R - P_{WK}$, over the next n years. The discounted net present value of the fixed capital equipment would be:

$$NPV_{FK} = \frac{R - P_{WK}}{1+i} + \frac{R - P_{WK}}{(1+i)^2} + \ldots + \frac{R - P_{WK}}{(1+i)^n}, \qquad \text{(EQ 3)}$$

or

$$NPV_{FK} = \text{Net } R \cdot \left(\frac{(1+i)^n - 1}{i \cdot (1+i)^n} \right). \qquad \text{(EQ 4)}$$

Thus, the percentage change in the net present value of fixed capital is:

$$\dot{NPV}_{FK} = \left(\frac{i}{i'} \right) \cdot \left(\frac{(1+i)^n}{(1+i')^n} \right) \cdot \left(\frac{(1+i')^n - 1}{(1+i)^n - 1} \right) - 1. \qquad \text{(EQ 5)}$$

The impact of the change in interest rates from 5% to 4% changes with the longevity of capital equipment. If n = 1, the impact is only 0.962%. If n = 5, the impact is 2.826%. With n = 10 or 20, the impact is 5.040% and 9.052% respectively.

It is clear that the impact of the change in interest rates has as significantly greater impact on fixed capital than that of working capital. It becomes a simple capital budgeting decision. Thus, with the reduction in the interest rate, firms will not only invest to expand production, they expand the most in the longest lived fixed capital goods. Firms will also expand working capital in order to support the expansion of the fixed capital. Together, these are the malinvestments that are built up during the boom phase of the business cycle. The funds are made available through the artificial credit expansion conducted by the central bank. Finally, output expands as these investments come on line.

Suppose that a firm is considering a 10-year project upon the "stand alone principle." The cost of materials, wages, etc. is $983.61. The interest rate is currently at

5%. If the turnover rate of working capital is 3 times a year, the outlay of working capital per year is P_{WK} = $1000.00. Further suppose that the revenue from the project is $1040.00 per year and the purchase price of the capital equipment for the project is $324.44. When the net present value of the project is calculated (using EQ 3), it is $308.87, which is below the outlay for the fixed capital equipment. Thus, the firm does not choose to engage in that project.

Now suppose that the central bank lowers the interest rate from 5% to 4%. Consequently, the net present value of the project is $324.44, the same as the price of the fixed capital equipment. The (marginal) firm will now invest the project.

During the course of the artificial boom, malinvestments are built up. As the firms compete for resources, input prices are driven up. The central bank has a decision to make: either halt the expansion or expand the money supply at a faster rate. The central bank may choose to halt the expansion and increase interest rates out of a fear of rising price levels. The effect of this policy is a credit crunch. If, instead, the central bank continues along an expansionist policy, input prices rise and reflect the real resource crunch.

The Crunch

When the crisis hits, there are two problems facing the entrepreneur: increasing interest rates and rising input costs. With an increase in interest rates, there is an impact on both working capital and fixed capital. Continuing with the example above, suppose that the interest rate increases by 25%, from 4% to 5%. The effect this change will have on the above firm is a 0.329% increase in the cost of working capital. Assuming that input and output prices are constant, the increase of the rate of discount on the future cash flows from the fixed capital will diminish the value of that capital equipment. For capital equipment that has only another year of longevity, the impact is a change of -0.952%. If n = 5, the impact is -2.748%. With n = 10 or 20, the impact is -4.798% and -8.301% respectively. The longer lived the capital equipment, the greater the impact.

While the impact is significantly greater on fixed capital than on working capital, the impact from a change in the price differential between inputs and outputs has an even greater effect on the profitability of the firm. From Equation 1, we can see the impact

that the price of the input has upon working capital. Thus, the percentage change in the value of working capital when P_{input} becomes P'_{input} is:

$$\dot{P}_{WK} = \frac{P'_{input} - P_{input}}{P_{input}}. \qquad \text{(EQ 6)}$$

In other words, the percentage change in the cost of the input is the same as the percentage change in the amount of working capital outlay for production. For example, suppose that the project witnesses a cost increase in labor and materials by 10%. That would directly translate into a 10% increase in the amount of working capital needed to maintain production.

Such an increase in the cost of inputs reduces the profitability of the firm to a greater extent than the increase in interest rates. Once the firm has purchased the fixed capital (and assuming that it was paid up front and not financed), the cost of the outlay is sunk and is not relevant to the output decision of the firm. Thus when the firm is considering the size of output, the only factors that are considered are the revenues against the size of the working capital outlays. Thus, the level of profit (net revenue) for the project would be the same as the discounted net present value of the fixed capital. Therefore the percentage change in the net present value of the project, when only the prices of the inputs change, would be:

$$\dot{NPV}_{Project} = \frac{P_{WK} - P'_{WK}}{Rev - P_{WK}}. \qquad \text{(EQ 7)}$$

Using the example presented above, suppose that after one year, interest rates return to 5% (from the artificially lowered rate of 4%) and that input prices increase 1%. The new price of a firm's inputs is P'_{input} = \$993.45. At an interest rate of 5% and a turnover rate of 3 times per year, the working capital outlay is P'_{WK} = \$1010.00. If we assume that revenue is held at a constant \$1040.00, the net present value of the project is \$213.23. The net present value of the project has dropped over 30.96%.[4] (If the profit margin is smaller the percentage decrease in profit is greater.) Such a drop causes the firm to experience an economic loss (if not an accounting loss as well). To stop the loss, the firm must liquidate the fixed capital (the malinvestment).

[4] -4.798% of this loss is due to the change in the interest rate from 4% to 5%, -25% of the loss is due to the 1% increase in the price of the inputs, and the remaining -1.162% is due to the fact that 1 year has elapsed.

The Liquidation Phase

So far we have observed that during the expansionary phase of the business cycle, firms have an incentive to expand production due to the reduction of interest rates. The rate reduction has an impact on both working and fixed capital investments; however, the effect is greater on fixed capital. During the crunch phase of the business cycle, we have seen that both interest rates and input prices rise. The change in interest rates has the smallest effect on working capital, while the change of input prices has a largest effect on the profitability of the project, even larger than the impact the interest rate increase has on fixed capital.

When interest rates and input prices rise the firm is able to scale back the amount working capital and inputs it employs, but it is literally stuck with the fixed capital equipment. During the recession, while the firm may be experiencing an accounting profit, the important fact is that it is experiencing an economic loss—the rate of return of the project is below that of the opportunity cost of the funds. In the example above for the next year, the firm has an outlay of $1010.00 and will receive only $1040.00. This is a rate of return of 2.97%, well below the 5% rate of interest in the rest of the market. The firm is losing ground if it continues along this course. Thus, the firm will have to liquidate the project if only to take the proceeds and put them in the bank at the 5% rate of interest.

A firm that purchases the fixed capital equipment from this first firm will view this as a new investment decision. Thus at a 5% interest rate, a 9-year project that has a net return of $30.00 per year will have a net present value of $213.23. It is at this price that the project and the capital equipment will be sold to the new company. This liquidation process is how the malinvestments are converted into new fixed capital equipment. The second firm will be able to make a normal rate of return on the fixed capital equipment because the purchase price is so low. This process is necessary for normal economic growth to occur.

Implications

There are five important implications that can be derived from the above analysis:

1) Keynesian policy cannot pull an economy out of a recession.

2) Monetarist policy cannot pull an economy out of a recession.
3) Increasing interest rates might not be enough to cause a downturn; they have to be coupled with an increase in input prices.
4) Fixed capital equipment has to be sold-off at reduced prices in order to transform the malinvestments into legitimate capital equipment.
5) An increase in savings is needed to allow the transformation process to occur.

Keynesian policies are designed to keep aggregate demand high. Such policies cannot pull an economy out of a recession. Any increase in aggregate demand will put pressure on input prices to also rise. The problem illustrated above is that after the crunch phase, the return on capital has fallen considerably. In order to maintain profitability by increasing output prices, the output prices have to either keep pace with or outstrip the increases in the input prices. The situation is escalating inflation coupled with falling levels of output as evidenced by the late 1970s and early 1980s. The output levels cannot be maintained due to the real resource crunch that is pressuring input price increases.

The Monetarist prescription for curing a recession is to stimulate investments by keeping interest rates relatively low and stabilizing the growth of the money supply. Such a prescription also cannot pull an economy out of a recession, since it ignores the malinvested capital that is locked into unproductive arrangements. The case study of the failure of employing both Keynesian and Monetarist prescriptions is Japan since 1990.[5]

The next implication is that increasing interest rates might not be enough to cause a downturn. The percentage change in the profitability on the firm seems disproportionately small relative to the impact on the changes in input prices. We have seen the Fed cut back on monetary growth when inflation (for both final goods and input goods) is high and such actions have preceded a recession. However, there is a new Fed policy which is to cut back on monetary expansion long before the effects of inflation reveal themselves in prices. My research has shown that typically the yield curve inverts 4 to 5 quarters prior to a recession.[6] However, in the U.S. the yield curve has been

[5] See Powell (2002) for an excellent survey of the failure of both Keynesian and Monetarist policies.
[6] See Cwik (2004), particularly pages 1-4.

inverted for almost five quarters and there currently is no recession on the horizon. A possible reason for this breaking of the empirical relationship may lie with the lack on increases in input prices. In other words, the Fed has increased interest rates, which according to the typical Austrian theory should lead to a credit crunch. However, the crunch has not happened (yet). This paper contends that input prices play a more significant role in the crunch and the recessionary phases of the business cycle than increasing interest rates do. Put simply, without rising input prices, the inverted yield curve is not leading the economy to a recession like it has in the past.

A complication to determining input prices is that as businesses fail, the demand for inputs falls. However, those firms that supply the inputs may also fail, thus decreasing the supply available. This analysis shows that the price of the inputs based upon failing businesses cannot by determined *a priori*.

The fourth implication that the fixed capital equipment has to be sold-off at reduced prices in order to transform the malinvestments into legitimate capital equipment does not seem to explain the duration of the recession phase. There are two stumbling points that tend to reduce the smooth transition of the fixed capital into productive structures. The first is that capital is not an amorphous mass, a homogeneous blob of "K." Capital goods have differing degrees of specificity, complementarity and substitutability. It is not simply a question of lowering the price and then plugging the machine into another production process. The project in the example illustrated above was self-contained, but in the real world, such projects are rare. Typically, projects need to be integrated into other existing firms. Austrians have long argued that merely investing capital does not lead to economic growth, but correctly arranged capital structures guided by the market process are the mechanism for growth. Rearranging prices is simply not enough to pull an economy out of a recession. Some of the more specific capital may have to be thrown away—scrapped—if no other firm could make a profit from it. A liberalization of merger and acquisition laws could improve the situation. Furthermore, the elimination of other obstacles found in bankruptcy laws could help expedite the transfer of malinvestments into productive ventures.

The second stumbling point is that savings are needed in order to facilitate this transformation process, which is also the fifth implication from the above analysis. In

order for the second firm to purchase the capital equipment from the first firm, the purchaser will need the funds to complete the transaction. Newly created credit will only start the boom/bust cycle again. Only real savings (a reduction in consumer goods in favor of investment goods) can allow the transformation process to occur. This observation means that in order to stimulate an economy, savings need to be increased. A government interested in helping an economy out of a recession has to then do the following: first, not interfere with the price adjustment process; second, not reinflate the money supply; and finally, try to increase the amount of savings in the country. It could do this through liberalizing its laws to allow for increased savings to flow in from abroad and it could also cut taxes on domestic savers. By increasing the amount of savings, the amount of malinvestments that could be transformed into profitable investment increases. Increasing the amount of savings available for investment quickly can shorten the duration of a recession.

Conclusion

Of all the implications presented above, perhaps the most significant point is that the Austrians were correct to spend so much energy explaining the cause of the business cycle. It is only an understanding of the cause that allows us to determine the best policies to follow to generate an economic recovery. If the government follows policies that are contrary to the Austrian prescription, the situation will not only fail to improve, it will worsen. The lesson is that as long as output prices stay up (through Keynesian policies) and the Monetarists keep interest rates from rising (or maybe push them lower), if input prices are rising (a real resource crunch), we will have a recession. And the only way out is through the painful but necessary liquidation process.

The best means to transform malinvestments into viable economic activities is through increasing savings. This means that one of the government's most effective policies is to cut taxes on the savers. Those who are savers are usually labeled as "the rich." Unfortunately, the prescriptions of "get government out of the market" or a "tax cut for the rich" tend not to be politically popular.[7] Nevertheless, it is the duty of the economist to present the truth. The economist cannot state that the government should do

[7] However, the idea of "tax cuts are for the tax payers" has had some success.

nothing. Such a policy was tested in the 1930s. The modern economist needs to present the case that the government caused the recession and only by removing the government from the equation can the economy truly recover.

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