

There are two articles explaining Austrian Business (Trade) Cycle Theory and then a third article is a critique of Austrian Economics.

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When Anticipation Makes Things Worse

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Among the great contributions of Austrian economic theory, Austrian business-cycle theory (ABCT) explains the **previously inexplicable reoccurring boom-bust cycles experienced throughout economic history**. By increasing the supply of money through loans in excess of savings, banks by creating loans out of thin air from demand deposits lower interest rates, sending a false signal that tricks investors into making expansive long-term investments unjustified by the supply of savings. After interest rates rise and prices in the economy adjust to the new supply of money, these investments experience widespread losses – a **collection of errors** that send the economy into a recession. Through ABCT, Austrian economists have a clear and compelling explanation of the boom-bust cycle.^[1]

Of the many **critiques of ABCT**, **rational-expectations theory** provides one of the most cogent arguments. According to this view, ABCT could possibly explain the first boom-bust in history, and it could perhaps explain the next few. Nevertheless, it could not continue to explain its reoccurring nature for hundreds of years **because market participants would learn to respond rationally to bank-credit expansions rather than continually fall prey to the same trick**. Instead of continuing to make the same mistake over and over again, individuals would alter their actions in response to the reoccurring governmental interventions, preventing them from falling for the same trick repeatedly.

A large variety of critics with very different economic views have responded to ABCT along these lines. For example, Gordon Tullock,  Bryan Caplan, Tyler Cowen, John Quiggin, and Matt Yglesias, among others, have criticized ABCT for allegedly ignoring rational expectations. For a representative defense of this position in the words of one of its proponents, Bryan Caplan remarked,

Since the central bank's inflation cannot continue indefinitely, it is eventually necessary to let interest rates rise back to the natural rate, which then reveals the underlying unprofitability of the artificially stimulated investments. **The objection is simple: Given that interest rates are artificially and unsustainably low, why would any businessman make his profitability calculations based on the assumption that the low interest rates will prevail indefinitely?** No, what would happen is that entrepreneurs would realize that interest rates are only temporarily low, and *take this into account*. In short, the Austrians are assuming that entrepreneurs have strange irrational expectations.... **The ABC requires bizarre assumptions about entrepreneurial stupidity in order to work:** in particular, it must assume that businesspeople blindly use current interest rates to make investment decisions. (emphasis in original)

At a glance, this critique seems to have a lot of merit. If anything, the thoughtful criticism of ABCT from Caplan and other proponents of rational expectations makes too limited of an argument, confining it to a subset of economic actors whose rational expectations should in their view deter business cycles. In particular, they confine their inquiry to entrepreneurs who borrow money from banks, declaring that they would not be tricked repeatedly. In contrast, they should broaden their fundamental question: Why don't the rational expectations of *economic actors* in general negate the significance of ABCT?

To respond to this broader critique, as well as its subset, we will divide economic actors into three general categories: bankers, speculators, and entrepreneurs. For the purposes of this essay, we will define bankers as individuals who loan money at a rate of interest,^[2] speculators as individuals who buy and sell existing products with the intent to make money through price differences over place and time, and entrepreneurs as the individuals who attempt to coordinate production based on their expectations of future demand. As will be shown below, rather than ending the significance of ABCT, economic actors within any of these three categories rationally responding to knowledge of ABCT will *exacerbate* the boom-bust cycle.

Bankers

Curiously, although the banking sector itself appears to be the natural starting place for inquiring about the effects of rational expectations on ABCT, the supporters of rational expectations rarely address the question of why bankers would loan the money in the first place. If bankers would simply rationally expect that easy credit results in widespread malinvestments that punish the bankers through the associated losses, then the business cycle would not occur. Why do the rational expectations of bankers fail to prevent them from loaning easy credit in the first place?

In his excellent book *What Has Government Done to Our Money?*, Murray Rothbard provides a lucid account of how government interventions in the banking sector have developed.^[3] As explained by Rothbard, the government over time removed the natural checks on inflation within the banking sector, eliminating the free-market regulations that would otherwise restrain easy credit. Among the many governmental interventions into the banking sector important in relation to rational expectations, the government allowed banks to ignore their contractual obligations via "bank holidays," created a central bank as a lender of last resort that manages inflation, and created the Federal Deposit Insurance Company (FDIC) to insure deposits at banks.^[4] All of these interventions

reduced the risks of easy credit, enabling for bankers to provide it without fear of its consequences.

By instituting bank holidays since the War of 1812, the federal government trained bankers to expect rationally the existence of future bank holidays, convincing them that expanding credit would be a safe venture protected by the government. **Whereas the strict enforcement of contractual obligations would have resulted in the bankruptcies of banks that had significantly expanded credit and would have taught bankers to be cautious when expanding credit**, the instituting of bank holidays ingrained the opposite rational expectation, leading to greater credit expansions as time passed. Bank holidays convinced bankers to expand credit more recklessly, knowing full well that the government would institute bank holidays when needed.

Further expanding the impetus for easy credit, **the creation of the Federal Reserve in 1913 constructed a federal agency designed to manage inflation through the banking system while acting as a lender of last resort**. Prior to the Federal Reserve, banks with tighter credit checked banks with easier credit by redeeming the notes of the easy-credit banks, necessarily restraining the volume of loans that banks could make in excess of the amount of liquid cash they had. By institutionalizing a banking cartel, the Federal Reserve ended this free-market regulation, transforming banks into cooperating inflationary agents. Additionally, by acting as a lender of last resort, the Federal Reserve provided banks direct access to money in case of emergencies, continuing to remove concerns bankers had of a lack of liquidity. Primarily for these two reasons, the formation of the Fed continued to mold the rational expectations of bankers so that they would not concern themselves with the bust phase of the business cycle.

With the creation of the FDIC, the federal government removed one of the final free-market checks on the banking sector, eliminating most of the remaining inhibitions of bankers. Prior to the FDIC, bankers needed to maintain sufficiently large reserves so as to maintain the confidence of depositors. If a bank ever lost their confidence, then it would suffer from a bank run, leading to the bankruptcy of the bank. Bank runs acted as a powerful check on the credit expansion of banks. Following the formation of the FDIC, depositors were ensured that any banking problems would not affect them. Banks no longer had to fear bank runs, enabling them to expand credit further without this fear.

As Rothbard explained, these measures taught bankers that the government would protect them from problems associated with easy credit. Due to special governmental privileges and through bailouts from the Fed, bankers learned to expect rationally that they would receive the benefits of easy credit while being protected from the costs.

Since the publication of Rothbard's book, the governmental interventions have only expanded. In particular, the federal government has deemed entities "too big to fail" and shown a willingness to bail them out. For example, the federal government bailed out Amtrak and New York City in the 1970s, savings-and-loans institutions in the '80s, Long-Term Capital Management (LTCM) in the '90s, and most recently American International Group (AIG), the large automobile companies, and the largest banks that made poor and reckless investment decisions. As long as a company is large enough, employs enough people, relates significantly to the financial system, or in some way qualifies as "too big to fail," the federal government has clearly signaled that it will bail it out in hard times. The largest banks now know that their profits can be privatized and their losses can be socialized, removing the checks associated with risk and creating perverse incentives among bankers.

Given this structure, how would bankers who believe ABCT rationally react? Due to the combination of a removal of the checks on easy credit and the socializing of any large losses, the rational expectations of bankers incentivize them to expand easy credit with neither fear of any of the free market checks on this expansion nor significant concern of the risks associated with the investments. In fact, bankers who believed ABCT would *exacerbate* the recession since they would know that they would receive very large short-term profits during the boom without having to suffer from the socialized long-term losses during the bust. By insulating bankers from the costs of easy credit, the federal government has created an institutional structure within which bankers reap large rewards for expanding and profiting from the boom phase of the business cycle.

Speculators

In a free society devoid of a trade cycle, speculators serve very important social purposes. By buying undervalued resources or shorting overvalued resources, **speculators alter prices to reflect future consumer preferences better**. Due to the actions of speculators, these new prices communicate information to entrepreneurs, helping them expand or contract production in line with future demand and thus assisting them in producing the most valuable products for society. Despite the condemnations they often receive for "villainously" driving up prices to the harm of honest Americans or of benefiting from downturns through the "malicious" process of short selling, speculators aid greatly in coordinating production over time in line with consumer demand, making their services a nearly indispensable prerequisite of a prosperous society.[5]

Despite the benefits of speculators in a society without a central bank or fractional-reserve banking, speculators who know ABCT *exacerbate* the malinvestments that occur during booms, fueling larger and worse bubbles. A speculator aware of ABCT would know to focus closely on the interest rates and the supply of money, noting that a rapid increase in the supply of money in the form of loans along with artificially low interest rates create bubbles in the sectors that the newly created money enters. With this rational expectation that a bubble will form, a speculator will speculate in the bubble sector, further driving up the prices of that sector. For example, by predicting in advance that a bubble would form in housing, a speculator would invest *more* in housing, further increasing the prices of housing and the profitability of housing construction. Rather than attempt to deter the bubble by shorting the sector that experiences malinvestments, speculators would realize the potential for profits in the booming sectors of the economy and act accordingly, expanding the bubble. Therefore, due to the easy-credit-induced separation of profits from consumer demand, the pursuit of profits by speculators during a boom increases the malinvestments in the economy.

Whereas the rational expectations of bankers lead them to create bubbles due to the laws that reduce or eliminate various risks to them, speculators aware of ABCT in an economy experiencing a boom naturally pursue profits in the booming sectors, needing no additional institutional incentives to make money. Unlike bankers, whose rational expectations exacerbate bubbles due to the institutional framework within which they invest, speculators who act based on their knowledge of ABCT *inherently* exacerbate bubbles. Far from irrational, the expectations-induced actions of these speculators represent *rational exuberance*.

Interestingly, though speculators primarily receive rampant condemnations from society during the bust phase of the trade cycle, the much-needed actions of speculators during the bust phase greatly aid the economy. While speculators with knowledge of ABCT exacerbate booms by expanding them, these same speculators *expedite* busts by quickly realizing which sectors experienced malinvestments and shorting those sectors, sending signals to entrepreneurs to reduce production in those sectors. Therefore, during the bust phase when economic resources

need to be reallocated, speculators who quickly realize the presence of widespread malinvestments necessarily promote a quicker and less painful economic recovery. Paradoxically, speculators receive praise (or at least not condemnations) when they harm the economy during booms and condemnations when they aid the economy during busts, directly contrasting with their contributions to a prosperous economy.

Entrepreneurs

Unlike bankers and speculators, entrepreneurs repeatedly engaging in a collection of errors seems to contrast starkly with the view that entrepreneurs are those best able to predict the future. As both Ludwig von Mises and Rothbard repeatedly stated, the market process acts as a testing ground for entrepreneurial talent, with those best able to predict future demand rewarded with profits and those least able punished with losses. In the [words](#) of Rothbard,

Profits and losses ... perform the function of getting money out of the hands of the bad entrepreneurs and into the hands of the good ones. The fact that good entrepreneurs prosper and add to their capital, and poor ones are driven out, insures an ever smoother market adjustment to changes in conditions.[\[6\]](#)

Given that entrepreneurs represent the class of individuals trained to study market phenomena and predict future demand, it does seem at first unlikely that they would continually make the same mistakes in response to artificially low interest rates and an expansion of easy credit.

Indeed, among other reasons, this realization led Rothbard to reject Joseph Schumpeter's seemingly appealing theory of the business cycle. In Schumpeter's view, **the business cycle ensued from new technology replacing old technology over time with bursts of technological innovation causing booms and the end of that innovative burst resulting in a bust, a process he termed *creative destruction***. Among other problems with this business-cycle theory, Rothbard notes that it **fails to explain the *cluster of errors***. Simply put, why don't entrepreneurs predict the changing states of technology and invest accordingly? As Schumpeter has no convincing reason to explain this **lack of foresight** among the class of individuals trained in foreseeing future demand, Rothbard correctly concludes that Schumpeter's theory inadequately explains the business cycle.[\[7\]](#)

Whereas Schumpeter had no reason to explain why entrepreneurs should continually make the same mistakes related to innovations, Austrian economists have determined two very compelling reasons to explain why the boom-bust cycle continues despite (or because of) the rational expectations of entrepreneurs.

Firstly, the artificially low interest rates create a **Nash equilibrium** in which the dominant strategy of every individual entrepreneur creates collective misfortune.

Secondly, even entrepreneurs who wanted to act based on their knowledge of artificially low interest rates would have no way of knowing the free-market rate in order to make future predictions, meaning that the low interest rates disrupt their knowledge of market phenomena and disrupt their ability to perform their entrepreneurial functions.[\[8\]](#) By combining these two reasons with the analysis above on

bankers and speculators, both of these reasons can be expanded to make the entrepreneurial errors even more understandable.

Entrepreneurial Error 1: Business Cycles as Nash Equilibriums

Regarding the first reason, Austrian economists have shown that the artificially low interest rates create a deleterious Nash equilibrium. Providing a particularly thoughtful account of this phenomenon, Gene Callahan [remarks](#),

Let us, for simplicity, divide entrepreneurs into classes A and B.... Class A entrepreneurs are those who are currently profitable, i.e., those most able to interpret the current market conditions and predict their future. Class Bs are struggling, money-losing, or, indeed, unfunded "want-to-be" entrepreneurs, less capable at anticipating the future conditions of the market. Now, let us go to the start of the boom. It is 1996, and the Fed begins to expand credit. To where does this new supply flow? The As are not necessarily in need of much credit. If they wish to expand, they have available their cash flow....

The situation for the Bs is quite different, however. Their businesses are marginal, or perhaps nonexistent.... Even if they *could* tell that they are witnessing an artificial boom, it might make sense for them to "take a flier" anyway....

As the Bs create and expand businesses, the boom begins to take shape.... Although the most skilled [Class A] entrepreneurs suspect that the expansion is artificial, most can't afford to shut down their business for the duration of the boom. But if they can't, they must increasingly compete with Bs for access to the factors of production....

However, in order to do so, [Class A] must take advantage of the same easy credit that [Class B] is using to back its bids.... So the A entrepreneurs, willy-nilly, are forced to participate in the boom as well. Their hope is that, in the downturn, the basic soundness of their business and the fact that they have expanded less enthusiastically than the Bs will see them through, perhaps with only a few layoffs.^[9]

As can be seen from Callahan's excellent analysis, the artificially low interest rates and the easy credit create a calamitous Nash equilibrium. Although the ideal state of affairs would be for every entrepreneur to forego the benefits of easy credit, the presence of any entrepreneurs who use the easy credit to their advantage compels other entrepreneurs to use it to compete with this advantage, creating a situation in which individuals pursuing their own interest conflicts with the collective good. Whereas Adam Smith correctly pointed out centuries ago that entrepreneurs in a free market act as if guided by an invisible hand such that their individual interest corresponds with the collective interest, the interventions in the credit market distort this fundamental harmony, creating a situation in which individual interest harms the collective interest.

Despite the general veracity of his statements, Callahan's descriptions seem to suggest that the Class A entrepreneurs restraining themselves mitigates the bubble at least somewhat. In his view, although the Class B entrepreneurs drag the Class A entrepreneurs into expanding the bubble, the hesitance of the skilled class would make the downturn at least less disastrous. Nevertheless, as can be inferred from a more complete analysis of this event combined with some of the reasoning listed above on bankers, Callahan does not take his argument far enough. In fact, the rational expectations of the Class A entrepreneurs *exacerbate* the crises.

As Callahan correctly remarks, increasing the supply of money and lowering the interest rates draws marginal entrepreneurs into production – specifically the entrepreneurs who would not have received access to credit without this intervention. If Class A entrepreneurs restrain themselves from borrowing money to any extent due to their rational expectations, then the demand for loanable funds falls, resulting in even lower interest rates. As a result, a *greater* number of marginal entrepreneurs receive access to credit which they otherwise would not receive, making the overall skill of the entrepreneurs in society worse. Consequently, with less skilled entrepreneurs managing the economy, the malinvestments and losses in the economy would be greater than without the restraint of the Class A entrepreneurs.

To clarify, let Class A continue to represent the skilled entrepreneurs who would receive credit regardless of the artificially low interest rates, and let us redefine Class B entrepreneurs and introduce Class C entrepreneurs. We shall redefine Class B entrepreneurs to be a specific subset of marginal unskilled entrepreneurs. They represent the entrepreneurs who would not receive credit (or as much credit) without the artificially low interest rates but would receive credit regardless of the rational expectations of Class A entrepreneurs. Representing the rest of the unskilled entrepreneurs, Class C shall be defined as the unskilled entrepreneurs who only receive credit during a bubble *if* Class A entrepreneurs respond to their rational expectations of a bubble by restricting the credit they obtain.

Clearly, if Class A fails to predict the bubble and responds to artificially low interest rates as if they represent the true savings of society, then only Class A and B will receive access to credit. However, consider the case in which Class A *does* respond to the artificially low interest rates by reducing their demand for credit somewhat due to rational expectations that the policy contributes to a bubble. As a result of the rational expectations of Class A, the demand for loanable funds falls, reducing the interest rates on the loan market. As a result of the even lower interest rates, Class B entrepreneurs receive even more credit than they otherwise would, and Class C entrepreneurs receive credit they would not receive at all – even during a period of easy credit. Consequently, by adjusting their behavior to the expectations of a bubble, Class A entrepreneurs partially reverse the process described in the above Rothbard quotation of allocating capital to those entrepreneurs best able to use it, thus *exacerbating* the bubble by expanding credit to even more unskilled entrepreneurs.

A possible objection to this point would be to note that the less skilled entrepreneurs have a greater risk premium than more skilled entrepreneurs, meaning that the increased risk associated with their loans may deter the expansion of credit to them. Yet, upon examination, this counterargument proves unsatisfactory for two reasons.

Firstly, as seen in the banking section above, the institutional framework within which banks function substantially reduces their personal risk of losses associated with making risky loans. As a result, the risk premium on the interest rate would be lower than without the institutional privileges granted to banks *even though* the actual risk of default has not changed. Consequently, the institutional framework again divorces the collective benefit of society from the individual benefit of market actors – in this case bankers – by incentivizing them to provide loans with higher default rates without any meaningful change in the market economy to justify it. Whereas a high risk premium would deter the expansion of credit to unskilled entrepreneurs, the comparatively lower risk premium further expands the number of Class C entrepreneurs who receive access to credit.

Secondly, even with a high risk premium, the *total* interest rate would still be lower than if it were not for the artificially low interest rates and the rational expectations of Class A

entrepreneurs. For example, consider three different interest rates for the different circumstances. Without easy credit, Class C may have a 5 percent rate plus a 3 percent risk premium for a total of 8 percent. With easy credit and without entrepreneurial restraint among Class A, the rates of Class C may be reduced to a 3 percent rate plus a 3 percent risk premium for a total rate of 6 percent. Finally, with easy credit and the rational expectations of Class A, the rates of Class C may reduce further to a 2 percent rate plus a 3 percent risk premium for a total rate of 5 percent. The total interest rate of the Class C entrepreneurs falls notably regardless of the risk premium, thus incentivizing an expansion of credit to unskilled entrepreneurs.

Whereas an unexpected boom-bust creates malinvestments throughout the economy, a boom-bust expected by skilled entrepreneurs exacerbates the harm. Motivated by their rational expectations of a bubble, Class A entrepreneurs restrain their access to easy credit, thus inadvertently leading to less-skilled entrepreneurs receiving even more credit and ensuring that more malinvestments and errors occur. By weakening the link between entrepreneurial skill and access to credit, the rational expectations of Class A entrepreneurs set the foundations for a bust led by less capable entrepreneurs.

Entrepreneurial Error II: Distorted Prices Disrupting Knowledge

Regarding the second reason that rational expectations do not prevent the bubble, **Austrian economists have noted that entrepreneurial awareness that the interest rate does not reflect the free-market rate provides little information about the unhampered interest rate.** Indeed, Austrian economists and many entrepreneurs have known that the Federal Reserve has been keeping interest rates artificially low for much of the last 15 years. Nevertheless, it would not have been possible in 2002 to determine what rate would have existed without Federal Reserve interventions. In fact, with rates constantly increasing and decreasing, there are times it may not even be possible to determine if the rate is too high or too low. Entrepreneurs who know that the interest rate does not reflect the free-market rate and who wish to use the free-market rate to guide their actions cannot do so since the information cannot be determined with any accuracy.

Despite the validity of this line of reasoning, it confines itself unnecessarily to the interest rate. By doing so, it represents an incomplete account of the full effects described by ABCT. Two primary features bring about the results described by ABCT: artificially low interest rates and an increasing supply of money. Although Austrians have correctly focused on how the former denies entrepreneurs important knowledge, both features hinder the ability of entrepreneurs to coordinate production.

Just as the artificially low interest rates remove entrepreneurial knowledge of the free-market interest rate, the increasing supply of money disrupts entrepreneurial knowledge by distorting relative prices throughout the economy, most notably increasing the prices where the newly created money flows. Due to this flow of money, the prices of products sold to consumers and of the costs of production change. Resulting from this disruption in prices, entrepreneurs have a much greater difficulty knowing the appropriate prices of the factors of production they purchase and the prices of the products they sell.

Combined with the artificially low interest rates, entrepreneurs must thus guess as to the natural interest rate, the natural prices of the products they sell, and the natural costs of their factors of production. Although perhaps not as insurmountable as the socialist-calculation problem, all of these distortions certainly make the job of entrepreneurs very difficult, leading them to make

widespread errors. Indeed, by disrupting the prices of both costs and products, these price distortions would make the entrepreneurial job difficult even for Class A entrepreneurs who refuse to partake in any of the easy credit. Given this economic climate, it is unclear how an entrepreneur with rational expectations could reasonably use them to coordinate production effectively.

As if these problems were not enough, speculators as explained above add another layer of disturbance to entrepreneurial actions. Whereas speculators in a free market provide entrepreneurs essential knowledge of future demand through prices, speculators who rationally expect a bubble *exacerbate* the price distortions, further misleading entrepreneurs. As a result, entrepreneurs need to determine the appropriate prices within an economy in which speculators communicate *misinformation* to entrepreneurs about future consumer demand. Rather than an ally of the entrepreneurs as in a free market, speculators during a boom make the functions of entrepreneurs all the more difficult.

In an economy in which all of the most important prices to entrepreneurs have been distorted by easy credit and further distorted by speculators, it is natural that even entrepreneurs with rational expectations would be unable to act in line with future consumer demand. Far from being gods among men, entrepreneurs represent humans prone to error. In a free economy, they use the information communicated to them through prices to organize production as well as they can. With all of their signals for coordinating production disrupted, they will necessarily make mistakes that result in malinvestments and losses.^[10]

Conclusion

ABCT often receives condemnations for ignoring rational expectations and foolishly believing that entrepreneurs will continue to fall for the same tricks. As has been shown, market participants with knowledge of ABCT can do little to combat it. In fact, bankers, speculators, and entrepreneurs who rationally expect a bubble will *exacerbate* it.

In the case of bankers, the institutional structure that substantially reduces the risks of easy credit and enables them to privatize profits and socialize losses incentivizes their role in forming the bubble.

For speculators, their knowledge that prices and profits will rise during a boom incentivizes them to profit through speculations in the booming sectors, further expanding the bubble.



For entrepreneurs, the easy credit creates a harmful Nash equilibrium in which the dominant strategy for entrepreneurs incentivizes a collective failure, and the distorting effects of easy credit on the interest rate and relative prices disrupts their ability to anticipate future demand effectively.

Additionally, the institutional framework of bankers and the role of speculators increase the errors of entrepreneurs, with the former reducing risk so as to facilitate less-skilled entrepreneurs gaining access to credit and the latter further distorting the price signals necessary for entrepreneurs.

Instead of an argument against ABCT, market actors rationally expecting a bubble would make it much worse. Therefore, rather than hoping for market actors to adapt to easy credit in a way that ends the business cycle, the government interventions that enable easy credit itself should be discontinued, and the economy should be allowed to grow, free from central planning.

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Notes

[1] So as to focus on a criticism of it, the general merits of ABCT shall be assumed for the purposes of this essay. For readers interested in a more detailed account of ABCT, here [📖](#) is a compilation of several essays formally defending it, and [here](#) is a shorter as well as more fun and interesting explication and defense of it by Robert Murphy.

[2] Given that this term is slightly misleading, it should be clarified. A better term for the definition given would be "investors," because there are individuals who fulfill the definition provided who are not bankers. In fact, since they lack the special privileges listed below that are granted to bankers, their rational expectations should

mitigate the ABCT if they use this knowledge to avoid financing temporarily booming investments. Therefore, when I use the term "bankers," I really mean the subset of investors granted the special privileges described below in the article, and I exclude other investors without these special privileges granted by the government.

[3] Murray Rothbard, *What Has Government Done to Our Money?*, (Auburn: AL, Ludwig von Mises Institute, 2008 [1963]), pp. 49-87.

[4] For the purposes of this essay, I am simply analyzing the effects of regulations on fractional reserve banking assuming its existence, and I take no position on whether or not fractional reserve banking itself represents fraud. For people who consider it fraud, they can add to the analysis the original choice of the government to recognize fractional reserve banking as legitimate.

[5] In addition to sending signals that enable entrepreneurs to coordinate production in the most valued tasks over time, speculators serve other important social purposes such as increasing the stability of prices over time, drawing attention to risky or fraudulent endeavors, etc. Of their other services, the only one I believe might relate to the topic of this essay would be their task of maximizing value across locations, which might potentially lead to an influx of credit from foreign nations to a country with a large boom. I leave it to others to determine if and how coordinating prices based on geographical locations could potentially exacerbate bubbles within a world of many countries that have different currencies, monetary policies, and particularly degrees of credit expansion.

[6] Murray Rothbard, *Man, Economy, and State: A Treatise on Economic Principles ; with Power and Market : Government and the Economy* (Auburn: AL, Ludwig von Mises Institute, 2009 [1962, 1970]), p. 1069.

[7] Murray Rothbard, *America's Great Depression* (Auburn: AL, Ludwig von Mises Institute, 2000 [1963]), pp. 72-75. Also, whereas Schumpeter's theory proves inadequate in explaining the business cycle, the idea of creative destruction represents a very powerful defense of profits and very effectively explains one of the methods in which the economy grows, making the theory an ingenious description of the economy that simply goes a little too far in attempting to explain business cycles.

[8] Robert Murphy categorizes the broad arguments into this short, convenient framework in [this](#) article.

[9] Gene Callahan, *Economics for Real People: An Introduction to the Austrian School*, (Auburn: AL, Ludwig von Mises Institute), pp. 226-228. Also, for more on rational expectations, see the rest of chapter 13, particularly after the subheading "But What about Expectations?"

[10] Given the general thesis of this essay, the scope of this argument should be clarified. Whereas the first entrepreneurial error shows how expectations exacerbate the trade cycle, this error has the more limited effect of showing how difficult it would be for entrepreneurs to act effectively during a bubble. Although this argument does not show that expectations worsen the trade cycle, it does show that even Class A entrepreneurs aware of ABCT will have great difficulty coordinating production in line with consumer demand during a bubble and are still bound to make errors.

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The Importance of Capital Theory

Mises Daily: Monday, October 20, 2008 by [Robert P. Murphy](#)

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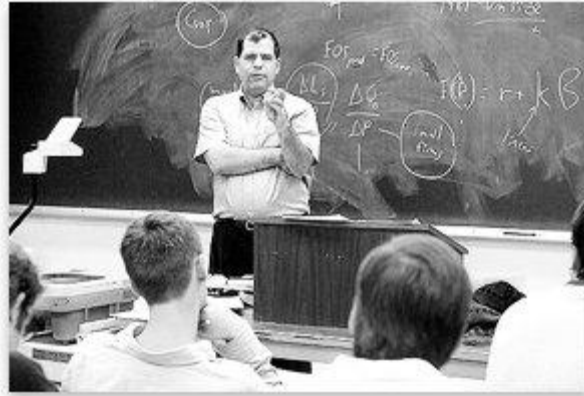


As I have read countless analysts, including professional economists, offer "solutions" to the financial crisis, I have become more convinced of the importance of capital theory. You see this with the dichotomy people keep drawing between the financial markets and the "real economy," a distinction that is useful for some purposes but which in this context often reinforces the idea that the [stock market is really just a casino](#).

When the Paulson Plan was first being debated, even sharp, free-market thinkers who are otherwise very solid were [recommending instead that "bank recapitalization"](#) was the way to fix things. But if our troubles stem from a diversion of real resources into the housing sector – if too many and too big homes were built at the expense of other possible uses for those inputs – then government financial transfers per se won't do anything except redistribute the losses.

Once we understand how our [present problems are due to a Fed-induced distortion](#) in the capital structure, it becomes clear that the *worst* recommendation is for the Fed to cut interest rates and pump in ever more "liquidity." It was [artificially cheap credit that fueled the housing boom](#) in the first place. Greenspan brought the federal funds target rate down to a ridiculous 1 percent – meaning the interest rate was actually negative, once we adjust for price inflation – and held it there for a year. He did this in order to (apparently) obviate the need for a harsh recession in the "real economy" after the dot-com crash. But in fact he sowed the seeds for our present crisis. If Bernanke continues shoveling in hundreds of billions to needy bankers, five years from now Americans (and the rest of the world) may look back fondly on the present the way the 2001 downturn now seems like a minor inconvenience.

Krugman and Cowen Ridicule the Austrian "Hangover" Theory



Tyler Cowen Teaching Macroeconomics

Rather than start from scratch, in this article I will illustrate the importance of a solid theory of capital by showing how very intelligent economists – one of whom is now a Nobel laureate – make elementary mistakes in their critique of Austrian business cycle theory (ABCT). For the sake of brevity, I won't recapitulate the theory here; in the links above you can see my own watered-down expositions, or go [here](#) for Roger Garrison's amazing PowerPoint presentation, or [here](#) for a more comprehensive introduction. Now then, assuming the reader understands the basic Austrian story, let us quote [Tyler Cowen's recent discussion](#) of Paul [Krugman's *Slate* critique of ABCT](#):

[Paul Krugman:] Here's the problem: As a matter of simple arithmetic, total spending in the economy is necessarily equal to total income (every sale is also a purchase, and vice versa). So if people decide to spend less on investment goods, doesn't that mean that they must be deciding to spend more on consumption goods – implying that an investment slump should always be accompanied by a corresponding consumption boom? And if so why should there be a rise in unemployment?

[Tyler Cowen commenting on the above quote:] But I think the point is more effective in reverse. Why should the boom be a boom in the first place? The shift toward investment goods, and thus away from consumption goods production, should mean falling real wages, not rising real wages. In other words, the Austrian theory doesn't generate the very high degree of comovement found in the data.

These are actually two separate points; i.e., Cowen did more than simply "reverse" the argument, he slightly changed the point. To help the reader understand my response, let me paraphrase (what I take to be) Krugman's and Cowen's similar (but distinct) objections to the Mises-Hayek theory.

The basic Austrian story is that during the artificial boom, workers' labor and other resources get channeled into investment projects that aren't compatible with the overall level of real savings. Sooner or later, reality rears its ugly head, and the unsustainable projects have to be abandoned before completion. Entrepreneurs realize they were horribly mistaken during the boom, everybody feels poorer and slashes consumption, and many workers get thrown out of jobs until the production structure can be reconfigured in light of the revelation.

Now then, Krugman is saying that this story doesn't make sense. We can stipulate that certain producers (such as builders) expanded too aggressively in a boom, and then they suddenly discover that their customers no longer want to buy their products (urban office buildings, let's say). But, Krugman explains, people in the economy have to spend their income *somewhere*. If the income isn't going towards \$10 million office buildings, it must be getting channeled into movie tickets, or electric generators, or copies of [Peter Schiff's book](#). So it's not at all obvious, Krugman concludes, why massive *unemployment* should accompany the onset of the "hangover" from the credit binge. The jobs destroyed in the "higher-order" (in Austrian jargon) stages ought to be offset by newly created jobs in the lower-order stages.

Tyler Cowen's objection is similar, but as I said, it's not quite the same. Cowen wants to know why people should feel rich during the Fed-induced boom, as the Austrians allege. In fact, because workers and materials are shifted into producing higher-order goods like tractor trailers and orange cones for road crews, the fact of scarcity implies that there should be *fewer* consumption goods (TVs, steak dinners, sports cars) being cranked out when the boom first sets in. If fewer consumption goods are being produced, then per capita real income has to fall, which again is the opposite of what the Austrians claim.

I have done my best to paraphrase what I understand to be Krugman's and Cowen's points. I must confess that even while typing out the above, the non sequitur in each objection jumped out at me. For Krugman, his argument relies on a static conception of income and spending. Just using that accounting tautology – without indexing for time – Krugman could also argue that real income can *never* change in an economy, even if the government announced that the most productive 10% of workers in every firm would be shot. (After all, total income would still equal total spending.)

As for Cowen, he seems to be assuming that "real income" is equivalent to "real consumption." I don't know what to say except, "No it isn't." If a worker gets a job in a silver mine and gets paid in ounces of silver that he stores in his basement, he can have very high "real wages" even if his consumption is very low. In fairness, Cowen fired off the above on his blog, not in a refereed journal article; I would hate to see a collection of the dumbest things *I've* ever said on [my blog](#). So let's assume that he meant to say that ABCT makes us expect real consumption (not income) to fall during the boom period. Cowen's point is that this doesn't match with the data. During the boom, we see increased investment in new (and more "roundabout" in Austrian lingo) projects, *and* we see workers getting paid more and hence buying more consumer goods. But shouldn't this be impossible, Cowen asks, if, as the Austrians claim, during the boom, resources are pulled away from consumption goods (like iPhones) and instead are devoted to the production of investment goods (like tractor trailers)? In the next section we'll see what Cowen is overlooking.

A Sushi Model of Capital Consumption



Recent Nobel Laureate Paul Krugman

Above I've pointed out some of the basic flaws in Krugman's and Cowen's arguments. (Other Austrians have responded to Krugman in the past. See the replies of [Garrison](#) and [Cochran](#).) More generally, they are ignoring the all-important notion of *capital consumption*. This is why one needs to understand capital theory, as pioneered by Carl Menger and Eugen von Böhm-Bawerk, in order to make sense of what the heck just happened in the US economy. Any talking head on CNBC who doesn't understand capital consumption is going to give horrible policy recommendations.

When thinking about this article, I went back and forth. I have decided that I should spell out a "model" of intermediate complexity, because if I simplify it too much, it might not really click with the reader, but if I go overboard with it, no one in his right mind would finish the article. Without further ado, let's examine a hypothetical island economy composed of 100 people, where the only consumption good is rolls of sushi.

The island starts in an initial equilibrium that is indefinitely sustainable. Every day, 25 people row boats out into the water and use nets to catch fish. Another 25 of the islanders go into the paddies to gather rice. Yet another 25 people take rice and fish (collected during the previous day, of course) and make tantalizing sushi rolls. Finally, the remaining 25 of the islanders devote their days to upkeep of the boats and nets. In this way, every day there are a total of (let us say) 500 sushi rolls produced, allowing each islander to eat 5 sushi rolls per day, day in and day out. Not a bad life, really, especially when you consider the ocean view and the absence of Jim Cramer.

But alas, one day Paul Krugman washes onto the beach. After being revived, he surveys the humble economy and starts advising the islanders on how to raise their standard of living to American levels. He shows them the outboard motor (still full of gas) from his shipwreck, and they are intrigued. Being untrained in economics, they find his arguments irresistible and agree to follow his recommendations.

Therefore, the original, sustainable deployment of island workers is altered. Under Krugman's plan for prosperity, 30 islanders take the boats (one with a motor) and nets out to catch fish. Another 30 gather rice from the paddies. A third 30 use the fish and rice to make sushi rolls. In a new twist, 5 of the islanders scour the island for materials necessary to maintain the motor; after all, every day it burns gasoline, and its oil gets dirtier. But of course, all of this only leaves 5 islanders remaining to maintain the boats and nets, which they continue to do every day. (If the reader is curious, Krugman doesn't work in sushi production. He spends his days in a hammock, penning essays that blame the islanders' poverty on the stinginess of the coconut trees.)

"Any talking head on CNBC who doesn't understand capital consumption is going to give horrible policy recommendations."

For a few months, the islanders are convinced that the pale-faced Nobel laureate is a genius. Every day, 606 sushi rolls are produced, meaning that everyone (including Krugman) gets to eat 6 rolls per day, instead of the 5 rolls per day to which they had been accustomed. The islanders believe this increase is due to use of the motor, but really it's mostly due to the rearrangement of tasks. Before, only 25 people were devoted to fishing, rice collection, and sushi preparation. But now, 30 people are devoted to each of these areas. So even without the motor, total daily output of sushi would have increased by 20%, assuming the islanders were equally good at the various jobs, and that there were plenty of fish and rice provided by nature. (In fact, the contribution of the motor was really only the extra 6 rolls necessary to feed Krugman.)

But alas, eventually the reduction in boat and net maintenance begins to affect output. With only 5 islanders devoted to this task, instead of the original 25, something has to give. The nets become more and more frayed over time, and the boats develop small leaks. This means that the 30 fishermen don't return each day with as many fish, because their equipment isn't as good as it used to be. The 30 islanders making sushi are then in a fix, because they now have an imbalance between rice and fish. They start cheating, by putting in smaller pieces of fish into each roll. The islanders continue to get 6 rolls per day, but now each roll has less fish in it. The islanders are furious – except for those who are repulsed by the idea of ingesting raw fish.

Being a trained economist, Krugman knows what to do. He suggests that 2 of the rice workers and 2 of the sushi rollers switch over to help the fishermen. Now with 34 workers, the islanders are able to catch almost as many fish per day as they were in the previous months, even though they are now using tattered nets and dilapidated boats. Krugman – being very sharp with numbers – moved just enough workers so that the fish caught by the 34 islanders matches up perfectly with the rice picked by the remaining 28 islanders who go to the paddies every day. With this amount of fish and rice, the 28 workers in the rolling occupation are able to produce 556 sushi rolls per day. This allows everyone to consume about 5 and a half rolls per day, with a bonus roll left over for Krugman.

The islanders are a bit concerned. When they first followed Krugman's advice, their consumption jumped from 5 rolls to 6 per day. Then when things seemed to be all screwed up, Krugman managed to fix the worst of the discoordination, but still, consumption fell to 5.5 rolls per day. Krugman reminded them that 5.5 was better than 5. He finally got the crowd to disperse by talking about "Cobb-Douglas production functions" and drawing IS-LM curves in the sand.

Because this is a family-friendly website, we will stop our story here. Needless to say, at some point the 5 islanders devoted to net and boat production will decide that they have to cut their losses. Rather than trying to maintain the original fleet of boats and original collection of nets with only 5 workers instead of 25, they will instead focus their efforts on the best 20% of the boats

and nets, and keep them in great shape. At that point, it will be physically impossible for the islanders to prop up their daily sushi output. In order just to return to their original, sustainable level of 5 sushi rolls per person per day, the islanders will need to suffer a period of privation where many of them are devoted to net and boat production. (We can only hope that Professor Krugman has been rescued by the Swedes by this time.)

The 5 people looking for ways to synthesize gasoline and motor oil will have to abandon that task, because it was never appropriate for the islanders' primitive capital structure. The islanders will of course discard the motor brought to the island by Krugman once it runs out of gas.

Finally, we predict that during the period of transition, some islanders will have nothing to do. After all, there will already be the maximum needed for catching fish with the usable boats and nets, and there will already be the corresponding number of islanders devoted to rice collection and sushi rolling, given the small daily catch of fish. There would be no point in adding extra islanders to boat and net production, because then they would end up building more than could be sustained in the long run. Hence, the elders rotate 10 people every day, who are allowed to goof off. They could of course go try to catch fish with their bare hands, or go gather rice that would just be eaten in piles by itself, but everyone decides that this is a waste of time. Given the realities, it is decided that during the transition, 10 people get the day off, even though everyone is hungry. That is just how bad Krugman's advice was.

Conclusion

As our simple story illustrates, in modern economies workers use capital goods to augment their labor as they transform nature's gifts into consumption goods. Because of the time structure of production, it is possible to temporarily boost everyone's consumption, but only at the expense of maintaining the capital goods (the boats and nets), which are thus "consumed." At some point, engineering reality sets in, and no "stimulus" policies can prevent a sharp drop in consumption.

Although the story of the sushi economy was simplistic, I hope that it illustrated essential features of a boom-bust cycle. When the islanders first implement Krugman's advice, they all feel richer. After all, they really are eating 6 rolls per day instead of 5; there is no arguing with results. And they would have no reason to suspect an unsustainable restructuring, either: after all, they are using a new outboard motor. This is analogous to the arguments about the "New Economy" during the dot-com boom, or the confidence placed in the new financial instruments used during the housing boom. During every boom, people can always come up with reasons that "this time it's different."

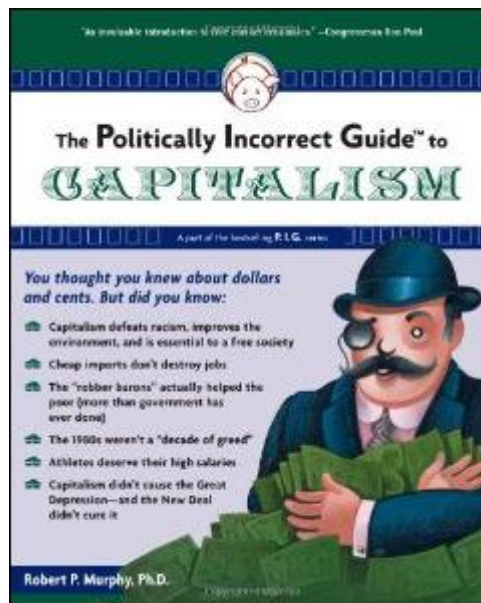
In the sushi economy, this initial prosperity was illusory. Although there were indeed benefits from the new technology, the bulk of the extra consumption was being financed through capital consumption, i.e., by allowing the boats and nets to deteriorate. This is analogous to Americans' consuming a massive amount of imported consumption goods during the housing boom, because they erroneously thought their rising house values would more than compensate. In other words, had Americans realized that their real-estate holdings would plummet in a few years, they would not have consumed nearly as much. They were consuming capital without realizing it, just as the islanders didn't realize that their extra sushi consumption was largely financed through neglect of their boats and nets.

Note too that this aspect of the story answers Cowen's objection: people consume more during the boom — i.e., the villagers eat more sushi per day — even while new, unsustainable investment projects are started. (In our sushi economy, the unsustainable project was looking for gasoline for

the newfangled outboard motor.) Cowen is right that a *sustainable* lengthening of the capital structure initially requires a reduction in consumption; what happens is investors abstain and plow their savings into the new projects. But during a central-bank-induced boom, there hasn't been real savings to fund the new investments. That's why the boom is unsustainable, but it also explains why consumption increases at the same time. It's true that this is impossible in the long run, but in the short run it *is* possible to increase investment in new projects, and to increase consumption at the same time. What you do is neglect maintenance on critical intermediate goods, just as our islanders were able to pull off the feat for a few months. A modern economy is very complex, and it can take a few years for an unsustainable structure to become recognized as such.

Finally, our sushi economy showed why unemployment increases during the retrenchment. People don't like to work; they would rather lounge around. In order for it to be worthwhile to give up leisure, the payoffs from labor have to be high enough. During the "recession" period, when the islanders had to cut way back on output from the fish, rice, and sushi-roll "sectors," there weren't 100 different tasks worth doing. In our story, we stipulated that only 90 people could be usefully integrated into the production structure, at least until the fleet of boats and supply of nets start getting restored, allowing more of the "unemployed" islanders to once again have something useful to do.

In the real world, this also happens: during the recession following the artificial boom period, resources need to get rearranged; certain projects need to be abandoned (like hunting for gasoline in the sushi economy); and critical intermediate goods (like boats and nets) need to be replenished since they were ignored during the boom. It takes *time* for all of the million-and-one different types of materials, tools, and equipment to be furnished in order to resume normal growth. During that transition, the contribution of the labor of some people is so low that it's not worth it to hire them (especially with minimum-wage laws and other regulations).



The elementary flaw in Krugman's objection is that he is ignoring the time structure of production. When workers get laid off in the industries that produce investment goods, they can't simply switch over to cranking out TVs and steak dinners. This is because the production of TVs and steak dinners relies on *capital goods* that must have already been produced. In our sushi

economy, the unemployed islanders couldn't jump into sushi rolling, because there weren't yet enough fish being produced. And they couldn't jump into fish production, because there weren't enough boats and nets to make their efforts worthwhile. And finally, they couldn't jump into boat and net production, because there were already enough islanders working in that area to restore the fleet and collection of nets back to their long-run sustainable level.

People in grad school would sometimes ask me why I bothered with an "obsolete" school of thought. I didn't bother citing subjectivism, monetary theory, or even entrepreneurship, though those are all areas where the Austrian school is superior to the neoclassical mainstream. Nope, I would always say, "Their capital theory and business-cycle theory are the best I have found." Our current economic crisis – and the fact that Nobel laureates don't even understand what is happening – shows that I chose wisely.

Robert Murphy runs the blog [Free Advice](#) and is the author of *The Politically Incorrect Guide to Capitalism*. Send him [mail](#). Comment on the [blog](#).

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Why I Am Not an Austrian Economist

by

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Preface

I was first introduced to Austrian economics during my senior year in high school, when I first read and enjoyed the writings of Mises and Rothbard. The summer before I began my undergraduate work at UC Berkeley, I was able to attend the 1989 Mises Institute summer seminar at Stanford, where I met Murray Rothbard and many of the leading Austrian economists for the first time. It is now eight years later; I have just completed my Ph.D. in economics at Princeton, and will be joining the faculty of the economics department at George Mason in the fall. I thus find this a natural point in my career to articulate precisely why I no longer consider myself an Austrian economist - as I certainly did eight years ago.

I do not deny that Austrian economists have made valuable contributions to economics. Rather, as the sequel will argue, I maintain that:

- (a) The effort to rebuild economics along foundations substantially different from those of modern neoclassical economics fails.
- (b) Austrian economists have often misunderstood modern neoclassical economics, causing them to overstate their differences with it.
- (c) Several of the most important Austrian claims are false, or at least overstated.
- (d) Modern neoclassical economics has made a number of important discoveries which Austrian economists for the most part have not appreciated.

Given this, I conclude that while self-labeled Austrian economists have some valid contributions to make to economics, these are simply not distinctive enough to sustain a school of thought. The task of developing an alternate Austrian paradigm has largely failed, producing an abundance of meta-economics (philosophy, methodology, and history of thought), but few substantive results. Whatever Austrian economists have that is worth saying should be simply be addressed to the broader economics profession, which (in spite of itself) remains eager for original, true, and substantive ideas.

Needless to say, I have many friends who think more highly of Austrian economics than I do. I hope that this piece will spark interest and discussion without sparking any kind of personal acrimony.

1. Austrian Economics, what

Since there is considerable dispute about the meaning of "Austrian economics," let me *stipulate* at the outset that I use the term to refer to the economics of Ludwig von Mises, Murray Rothbard, and other scholars' work consistent with their fundamental outlook. If any two economists ever belonged to the same "school," Mises and Rothbard did; and while they did have disagreements, these can be counted on one hand.[1] Thus a refutation of the one will almost always be a refutation of the other - an important point to remember, since the sequel relies more heavily on Rothbard's defenses of Mises' views than on Mises himself. In most cases, Mises and Rothbard think so similarly that to provide textual support from *both* Rothbard and Mises would be redundant.

My equation of Austrian economics with Mises and Rothbard rather than F.A. Hayek is bound to be controversial. The primary justification for this is simply that Mises and Rothbard clearly rejected many of the key elements of modern neoclassical economics, while Hayek did not. If Mises and Rothbard are right, then modern neoclassical economics is wrong; but if Hayek is right, then mainstream economics merely needs to adjust its focus.[2] The secondary justification is that Mises and Rothbard spent the bulk of their careers making substantive contributions to economics, while Hayek turned almost entirely to philosophy, law, and intellectual history after the 1930's. In consequence, there is simply much more to say about the economics of Mises and Rothbard than about the economics of Hayek.



2. Foundations of Microeconomics

Modern neoclassical economics derives from a few crucial microeconomic building blocks. Prominent among these are utility functions, indifference analysis, and the Kaldor-Hicks (or "cost-benefit" or "potential Pareto improvement") approach to welfare economics. Mises and Rothbard reject all three of these elements, building economic theory upon a different foundation. This is definitely a sufficient basis for an alternative Austrian school of thought. However, Mises and Rothbard reject the foundations of modern neoclassical economics too quickly, and their substitutes are inadequate.

2.1. Utility Functions vs. Value Scales

Modern neoclassical economists habitually use "utility functions" to describe individuals' preferences. For example, they may posit that an individual's utility $U = a \cdot \ln(\text{quantity of apples}) + (1-a) \cdot \ln(\text{quantity of oranges})$. Rothbard instead preferred to discuss the "value scales" of individuals. For example, an individual's preferences might be given by { 1st apple, 2nd apple, 1st orange, 3rd apple,... }. Both approaches provide an obvious interpretation of "utility maximization": for neoclassicals, an individual selects the highest feasible value of U , while for Rothbard, a maximizing individual satisfies the highest-ranked feasible preferences on his value scale.

Both approaches seem quite similar; so similar, in fact, that neoclassical economists might call them identical. But Rothbard noted some underlying differences, and concluded that the "value scale" approach was the right one. Why? According to Rothbard, the mainstream approach credulously accepted the use of cardinal utility, when only the use of ordinal utility is defensible. As Rothbard insists, "Value scales of each individual are *purely ordinal*, and there is no way whatever of measuring the distance between the rankings; indeed, any concept of such distance is a fallacious one." [3]

At first, Rothbard appears to limit his criticism solely to "Those writers who have vainly attempted to measure psychic gains from exchange" by their consumer's surplus. [4] But it soon becomes clear that Rothbard rejects the entire utility-function approach as incoherent: "The chief errors here consist in conceiving utility as a certain quantity, a definite function of an increment of the commodity... Utilities are not quantities, but ranks..." [5] As if to emphasize the strength of his disagreement with the mainstream approach to utility, Rothbard goes on to dismiss the standard intermediate micro theorem "that in equilibrium the ratio of the marginal utilities of the various goods equals the ratio of their prices. Without entering in detail into the manner by

which these writers arrive at this conclusion, we can see its absurdity clearly, since utilities are not quantities and therefore cannot be divided." [6] What initially appeared to be a slight difference in nomenclature yields serious disagreement about some fairly basic issues.

As plausible as Rothbard sounds on this issue, he simply does not understand the position he is attacking. The utility function approach is based as squarely on ordinal utility as Rothbard's is. The modern neoclassical theorists - such as Arrow and Debreau - who developed the utility function approach went out of their way to *avoid* the use of cardinal utility. [7] Let a neoclassical theorist say "bundle one offers utility of 8, while bundle two offers utility of 7," and Rothbard concludes that he believes in cardinal utility. But the language here is technical; to parse it, you must return to the underlying definitions. Upon doing so, you will find that the meaning of "bundle one offers utility of 8, while bundle two offers utility of 7" is nothing more or less than "bundle one is preferred to bundle two." A utility function is just a short-hand summary about an agent's ordinal preferences, not a claim about "utils." [8] This is why neoclassicals say that the utility function is uniquely defined *up to a monotonic transformation*. You can rescale any utility function however you like, so long as you re-scale it monotonically. [9]

What about the theorem - that Rothbard dismissed - which claims that utility-maximizing individuals equalize the marginal utilities of goods consumed divided by their prices? Doesn't this show that neoclassicals believe in cardinal utility? No, it does not; statements made in technical jargon often sound absurd if you forget the underlying definitions. A utility function just uses numbers to *summarize* ordinal rankings; it doesn't commit us to belief in cardinal utility. Deriving the marginal utility of individual goods from this function commits us to nothing extra. [10]

Rothbard's rejection of the utility function approach led him to make strange ad hoc concessions to it elsewhere in his writings. Using his value scale approach, Rothbard was able to derive the laws of demand and supply as theorems. [11] But then inexplicably in his later discussion of labor and land, Rothbard conceded the theoretical possibility of "backward" bending supply curves. [12] Furthermore, in his discussion of the economics of taxation, Rothbard admits the theoretical possibility that greater taxation of labor income could induce an *increase* in labor supply - even going so far as to mention a "substitution" and an "income" effect which his initial treatment of utility theory and demand utterly failed to mention. [13] What is interesting is that Rothbard was unable to derive the substitution and income effects from his value scale approach. Rather, he borrowed it from the standard utility function analysis, which shows that there are two different channels by which a price change induces a change in the quantity demanded. Thus, not only does Rothbard inappropriately dismiss the neoclassical approach to utility theory, but deemed it sufficiently fruitful that he borrowed its implications on an ad hoc basis.

To sum up, Rothbard falsely accused neoclassical utility theory of assuming cardinality. It does not. There is nothing actually wrong with Rothbard's value scale approach, but because the neoclassical assumptions are in some ways less restrictive than Rothbard's [14], neoclassicals made the important discovery that price changes have both income and substitution effects - a discovery Rothbard was unable to derive from his own postulates but conceded without explanation. [15]

2.2. Indifference

The utility function approach has a final implication that Rothbard rejected. Recall that using standard neoclassical definitions, $U(a) > U(b)$ simply means that given the choice of a and b , a will be chosen, while $U(a) < U(b)$ means that b would be selected. But what if $U(a) = U(b)$; i.e., what if an agent is *indifferent* between two alternatives? Rothbard elaborated upon Mises by rejecting the very possibility as incoherent - and by implication rejecting the very use of *indifference curves*, a key building block of modern neoclassical theory.[16]

The essential objection to indifference curve analysis is that it is impossible for *action* to demonstrate indifference. Action demonstrates *preference*, not *indifference*. Rothbard puts it thusly "The crucial fallacy is *that indifference cannot be a basis for action*. If a man were really indifferent between two alternatives, he could not make any choice between them, and therefore the choice could not be revealed in action." [17]

The crucial assumption - shared by both Mises and Rothbard - is that no preference can exist which cannot be revealed in action. But why assume this? Is this not a peculiar importation of behaviorism into a body of economic thought which purports to be militantly anti-behavioral? Thus, in his introduction to Mises' *Theory and History*, Rothbard tells us that:

One example that Mises liked to use in his class to demonstrate the difference between two fundamental ways of approaching human behavior was looking at Grand Central Station behavior during rush hour. The "objective" or "truly scientific" behaviorist, he pointed out, would observe the empirical events: e.g., people rushing back and forth, aimlessly at certain predictable times of day. And that is *all* he would know. But the true student of human action would start from the fact that all human behavior is purposive, and he would see the purpose is to get from home to the train to work in the morning, the opposite at night, etc. It is obvious which one would discover and know more about human behavior, and therefore which one would be the genuine 'scientist.' [18]

Just as there is more to my action than my behavior, there is more to my preferences than my action. I can have all sorts of preferences that are not - *and could not be* - revealed in action. For example, my preference for ice cream yesterday can no longer be revealed, since I had no ice cream yesterday and any present action regarding ice cream would merely reveal a *present* preference for it, not a past one. And yet, I have introspective knowledge of my ice cream preferences from yesterday. Similarly, I can never reveal my preference for products at prices other than the market price, but by introspection I can know them.

In precisely the same way, I can know some cases in which I am indifferent. I am often indifferent between the colors of clothes; though I pick one color, I know that I *would have* picked the other if the prices were not equal. The behaviorist might deny the reality of my mental states, but clearly that is not the route Mises or Rothbard would want to take. Indeed, Mises and Rothbard themselves use hypothetical preferences in other contexts. The interaction of supply and demand let us observe but a single point - the equilibrium price and quantity - but nevertheless Rothbard draws demand *curves* showing the quantity desired at all possible prices. Similarly, one can only *observe* that I choose a green sweater; but this does not rule out the possibility that I was actually *indifferent* between the green sweater and the blue sweater.

2.3. Continuity

Mises and Rothbard have a final related objection to standard neoclassical utility theory: the assumption of continuity. Quoting Rothbard, "[H]uman beings act on the basis of things that are *relevant* to their action. The human being cannot see the infinitely small step; it therefore has no meaning to him and no relevance to his action." [16] The implications are broader than they may initially appear, because as a mathematician will tell you, you can't differentiate a function that isn't continuous. This means that if Mises and Rothbard is correct, the pervasive use of calculus in economics must be rejected in toto.

One obvious problem arises here. Without continuous preferences, it is also highly unlikely that e.g. supply and demand can ever be equal. If you draw the supply and demand curves continuously, then they are (almost) bound to intersect. But if you draw them as a discrete set of points, supply and demand in general don't have to intersect. Thus, the argument against calculus based upon the rejection of continuity also argues against even the use of simple algebraic constructs - like intersecting supply and demand lines - that fill Rothbard's works.

Of course, one could say that the unrealism of continuity is only minor. But this is precisely the reply that Rothbard considered and rejected: "Most writers on economics consider this assumption a harmless, but potentially very useful, fiction, and point to its great success in the field of physics... The crucial difference is that physics deals with inanimate objects that *move* but do not *act*." [19] Rothbard thereby runs into a serious contradiction. If the assumption of continuity is not a harmless fiction, then it is incumbent upon him to remove all of the supply and demand intersections in his works, and to state that supply equals demand only under extremely rare conditions (for without continuous pricing, the odds that supply and demand actually intersect are very slim). This position is certainly coherent (and since Mises used no diagrams, it would be less work for him to adhere to it), but rather peculiar. Alternately, Rothbard could concede that assuming continuity rarely alters substantive results, and accept *both* supply and demand intersections and the use of calculus as methodologically kosher in economics.

2.4. Welfare Economics

While Rothbard and Mises had similar objections to mainstream utility theory, Rothbard went one step further by "reconstructing" welfare economics along Austrian lines. His main conclusions are simple and austere: every market transaction benefits all participants, while every act of government intervention benefits some people *at the expense* of others. Rothbard goes on to make a seemingly stronger claim: "If we allow ourselves to use the term 'society' to depict the pattern of *all* individual exchanges, then we may say that the free market 'maximizes' social utility, since everyone gains in utility." [20] This claim might be re-phrased to say simply that each voluntary exchange benefits all participants, and the free market permits the implementation of *all* desired voluntary exchanges.

Hans-Hermann Hoppe, arguing for Rothbard's approach, makes a subtly stronger claim: "Pareto-optimality is not only compatible with methodological individualism; together with the notion of demonstrated preference, it also provides the key to (Austrian) welfare economics and its proof

that the free market, operating according to the rules just described, always, and invariably so, increases social utility, *while each deviation from it decreases it.*"[21] (emphasis mine) Strictly speaking, however, Rothbard could only claim the welfare effects of government intervention upon "social utility" are *indeterminate*; i.e., since the victim loses and the intervener gains, it is impossible to say anything about social utility without making a *verboten* interpersonal welfare comparison. This is an important point, because it shows that Rothbard's welfare economics provides a much weaker defense of the free market than usually assumed. In particular, Rothbard's own theory strips him of the ability to call *any* act of government "inefficient." By denying the ability to endorse state action in the name of efficiency, Rothbard also implicitly denies the ability to reject state action in the name of efficiency. This is no logical flaw in Rothbard's theory (although it does reveal a logical flaw in Hoppe's presentation of Rothbard's theory), but it's political implications are rather different than commonly assumed: Rothbard's welfare criterion justifies agnosticism about - not denial of - the benefits of statism.

There is however a more serious flaw in Rothbard's welfare economics - a flaw which again flows from his behaviorist insistence that only preferences demonstrated in action are real. Thus, Rothbard rejects the argument that the envy of a third party vitiates the principle that voluntary exchange increases social utility: "We cannot, however, deal with hypothetical utilities divorced from concrete action. We may, *as praxeologists*, deal only with utilities that we can deduce from the concrete behavior of human beings. A person's 'envy.' unembodied in action, becomes pure moonshine from a praxeological point of view... How he feels about the exchanges made by *others* cannot be demonstrated unless he commits an invasive act. Even if he publishes a pamphlet denouncing these exchanges, we have no ironclad proof that this is not a joke or a deliberate lie." [22] Indeed, Rothbard could have taken this principle further. When two people sign a contract, do they actually demonstrate their preference for the terms of the contract? Perhaps they merely demonstrate their preference for signing their name on the piece of paper in front of them. There is no "ironclad proof" that the signing of one's name on a piece of paper is not a joke, or an effort to improve one's penmanship.

Rothbard's refusal to acknowledge unobserved preferences would have to impress even B.F. Skinner. What possible reason could we have to believe that utility is "moonshine" unless expressed in concrete actions? At every moment, by introspection we are aware of preferences unrevealed by our behavior. Figuring out the mental states of *other* people is obviously more difficult, but that hardly shows that their mental states do not exist. The statist could easily reverse Rothbard's objection, and claim that since there is no "ironclad proof" that third parties *do not* object to other people's voluntary exchanges, it is impossible to say whether that they *increase* social utility. Thus, Rothbard's welfare economics terminates in agnosticism about not only the benefits of intervention but the benefits of voluntary exchange.

Throughout his career, Rothbard harshly criticized the modern neoclassical approach to welfare economics, which considers reallocations "efficient" so long as they are "potentially Pareto superior." [23] While the justice of efficiency is far from evident, this criterion of efficiency has many advantages over Rothbard's approach. In particular, it actually allows one to make efficiency judgments about the real world - to judge, for example, that Communism was inefficient, or rent control is inefficient, or piracy was inefficient. This does not show that the

"potentially Pareto superior" welfare criterion is correct, but certainly provides a prima facie basis for reconsidering it more closely.[24]

2.5. Subjectivism

Innumerable Austrian essays and books use the word "subjectivism" in the title. This leaves one with the impression that other economists fail to embrace subjectivism - an impression that is simply false. What neoclassical economist claims that the value of a good derives from its labor content, or its intrinsic goodness, or anything other than individuals' preferences? It is true that academic papers often abstract from the heterogeneity of preferences, but this is merely a simplifying assumption. To assume, e.g., that everyone has the same log-linear utility function, is on par with assuming that the world contains only two people, Crusoe and Friday. It is not a statement about the world, but a method on focusing on one particular problem.

Neoclassical economists' propensity to declare certain situations "inefficient" may superficially appear to violate subjectivism (or alternately, to make an interpersonal utility comparison). As mentioned earlier, this is because "efficiency" has a technical definition somewhat different from its meaning in ordinary conversation.

3. Applied Topics

The theoretical foundations of Austrian economics, as developed by Mises and Rothbard, differ radically from those of modern neoclassical economics. This provides a large part of its "pedigree," its claim to represent an alternative school of thought. Foundational differences, however, are not enough; those foundations also need to make some important differences in applied theory. The sequel examines some of the most important applications of Austrian economics, and generally finds them to be wrong, over-stated, or already widely accepted by mainstream economists.

3.1. Economic Calculation and the "Impossibility" of Socialism

Mises considered the "socialist calculation argument" to be a decisive objection to the economic feasibility of socialism. There are other valid arguments against socialism; indeed, "No judicious man can fail to conclude from the evidence of these considerations that in the market economy the productivity of labor is incomparable higher than under socialism." [25] However, Mises insists, this does not decide the issue:

If no other objections could be raised to the socialist plans than that socialism will lower the standard of living of all or at least of the immense majority, it would be impossible for praxeology to pronounce a final judgment. Men would have to decide the issue between capitalism and socialism on the ground of judgments of value and of judgments of relevance. They would have to choose between the two systems as they choose between many others things... However, the true state of affairs is entirely different... Socialism is not a realizable system of society's economic organization because it lacks any method of economic calculation... Socialism cannot be realized because it is beyond human power to establish it as a social system.[26]

This conclusion is amazing, for Mises repeatedly insists that economic theory gives only *qualitative*, not quantitative laws? For example, in *Human Action*, Mises tells us that:

The impracticality of measurement is not due to the lack of technical methods for the establishment of measure. It is due to the absence of constant relations. If it were only caused by technical insufficiency, at least an approximate estimation would be possible in some cases. But the main fact is that there are no constant relations. Economics is not, as ignorant positivists repeat again and again, backward because it is not "quantitative." It is not quantitative because there are no constants. Statistical figures referring to economic events are historical data. They tell us what happened in a nonrepeatable historical case.[27]

If so, then how could he possibly know by economic theory alone that the negative effect of the lack of economic calculation would be severe enough to make socialism infeasible? Granted, the socialist economy would suffer due to the impossibility of economic calculation; but how, on his own theory, could Mises know that this difficulty is so severe that society would collapse?

The strength of this objection becomes even clearer when we consider the economic decision-making of Robinson Crusoe, alone on his island. As Mises explains, "Isolated man can easily decide whether to extend his hunting or cultivation. The processes of production he has to take into account are relatively short. The expenditure they demand and the product they afford can easily be perceived as a whole." [28] Crusoe runs his one-man economy simply by using "calculation in kind" - mentally weighing his preferences and opportunities to make decisions. Mises concedes that this situation is conceivable, adding only that this method is unworkable for a larger economy. "To suppose that a socialist community could substitute calculations in kind for calculations in terms of money is an illusion. In an economy that does not practice exchange, calculations in kind can never cover more than consumption goods. They break down completely where goods of higher order are concerned." [29]

This suggests some obvious questions. Does Crusoe's one-man socialism become "impossible" when Friday shows up? Hardly. What if 100 people show up? 1000? Mises' distinction between a modern economy and Crusoe's, and why the economic calculation argument applies only to the former, again shows that Mises has underlying *quantitative* assumptions in spite of his strictures against them. He is making a quantitative judgment that the lack of calculation would not greatly worsen Crusoe's economy, but would devastate a modern economy. Perhaps Mises was right, but pure economic theory did not give him the answer.

Ever since Mises, Austrians have overused the economic calculation argument. In the absence of detailed empirical evidence showing that *this* particular problem is the most important one, it is just another argument out of hundreds on the list of arguments against socialism. How do we know that the problem of work effort, or innovation, or the underground economy, or any number of other problems were not more important than the calculation problem?

The collapse of Communism has led Austrians to loudly proclaim that "Mises was right." Yes, he was right that socialism was a terrible economic system - and only the collapse of Communism has shown us how bad it really was. However, current events do nothing to show that economic calculation was *the* insuperable difficulty of socialist economies. There is no

natural experiment of a socialist economy that suffered solely from its lack of economic calculation. Thus, economic history as well as pure economic theory fails to establish that the economic calculation problem was a severe challenge for socialism.[30]

3.2. Monopoly Theory

Monopoly theory is one of the points of contention between Mises and Rothbard. Mises conceded the theoretical possibility of free-market monopoly - defining a monopolist as the single seller of a good *with an inelastic demand curve at the competitive-price point*. Rothbard rejected Mises' theory, arguing that there is no independent criterion for identifying the competitive price unless the government deliberately restricts competition.

Rothbard easily disposes of Mises' theory, but affords all too little attention to the modern neoclassical theory: namely, that there is *always* some degree of monopolistic distortion unless firms face a horizontal demand curve. For unless firms face a horizontal demand curve, a profit-maximizing firm sets its price above its marginal cost. In the absence of perfect price discrimination, this means that there is a "deadweight loss" - or *unrealized gains to trade*. In a footnote to *Man, Economy, and State*, Rothbard summarily dismisses this view without explanation: "A curious notion has arisen that considering *MR* [marginal revenue], instead of price, as the multiplier somehow vitiates the optimum satisfaction of consumer desires on the market. There is no genuine warrant for such an assumption." [31] Yet this is no assumption at all, but a conclusion. If, for example, a producer of a piece of software has to pay \$1 to produce an additional copy of his program, but facing a downward-sloping demand curve sets the profit-maximizing price at \$10, then there are unrealized gains to trade. Consumers willing to pay between \$9.99 and \$1.00 don't buy the program, even though it exceeds the marginal cost of production.[32]

Lest the reader presume that I uncritically embrace the ideal of perfect competition, let me emphasize that in my view, one of Rothbard's greatest achievements as an economist was to point out the innumerable ways that government creates monopoly.[33] Rothbard was right to explain why market monopoly is so difficult to maintain. Rothbard was right to point out that the existence of economies of scale, taste for variety, and other factors show that efforts to impose perfect competition by force are totally wrong-headed. Rothbard's should have just accepted the obvious drawbacks of imperfect competition, *then* pointed out its numerous attendant advantages.

Rothbard made some mistakes in monopoly theory, but in 1962 he was still far ahead of his time. The theory of perfect competition was indeed grossly abused by economists and policy-makers, who e.g. confusedly "proved" that deconcentration was efficient by first assuming the unimportance of economies of scale, or "proved" the inefficiency of advertising by assuming perfect information. Since Rothbard wrote *Man, Economy, and State*, however, the better neoclassical theorists have wised up. There is now a large literature showing how the benefits of imperfect competition outweigh its costs. Some economists have elaborated upon Schumpeter's observation that perfectly competitive firms have little incentive to innovate. Others have analyzed the trade-off between product variety and atomistic market structure. Still others have discovered the benefits of advertising. In short, in neoclassical jargon, a powerful case now

exists that free-market structures are "second-best" efficient: there is no feasible real-world way to improve upon them. Unfortunately, while Rothbard gave the Austrians a head start, this has not prevented neoclassical research from passing them by.

3.3. Public Goods

Rothbard's rejection of neoclassical public goods (as well as the related theory of externalities) is a logical application of his unusual utility theory:

As for the recipients, they are being forced by the State to pay for benefits that they otherwise would not have purchased. How can we say that they "benefit"? A standard reply is that the recipients "could not" have obtained the benefit even if they wanted to buy it voluntarily. The first problem here is by what mysterious process the critics know that the recipients would have liked to purchase the "benefit." Our only way of knowing the content of preference scales is to see them revealed in concrete choices. Since the choice concretely was *not* to buy the benefit, there is no justification for outsiders to assert that B's preference scale was "really" different from what was revealed in his actions.[34]

While the argument follows from Rothbard's utility theory, that utility theory, as previous sections argued, is seriously in error. To reiterate, contra Rothbard preferences can exist without being acted upon. Economists applying the public goods theory have indeed all too often failed to consider the *possibility* that consumers simply do not want the alleged "public good." But just because some people misuse an economic theory does not invalidate it. Rothbard was also correct to wonder why actors refrain from bargaining to solve the public goods problem; the vast transactions cost literature sparked by Ronald Coase provides most of the answer.

When Rothbard wrote his critique of public goods theory in 1962, almost all economists thought that it revealed a basic flaw in markets. Subsequent scholarship, however, has revealed that *any* institution, especially government, may suffer from this problem. Mancur Olson's *The Logic of Collective Action*[35] showed how the public goods problem can make government work poorly; a vast public choice literature is premised upon the same idea. Indeed, Rothbard's own analysis of the ex post utility of democratic action implicitly uses the same idea.[36] Rothbard's a priori rejection of the very idea of public goods was simply the wrong route to take; what he should have done was emphasize the public goods problems of government, along with voluntary solutions to genuine public goods problems on the free market.

No more successful is Rothbard's effort to accept *half* of the theory of externalities: "The problem of 'external costs,' usually treated as symmetrical with external benefits, is not really related... [E]xternal costs (e.g. smoke damage) are failures to maintain a fully free market, rather than *defects of* that market." [37] This purported distinction is mired in confusion. On the one hand, numerous negative externalities (or "external costs") are not physical, but psychic; a strip club in a churchy neighborhood is just as much a negative externality as air pollution, but a fully free market would only recognize the latter to be a property rights violation. Conversely, a positive externality can nevertheless be a trespass, for strict private property rights require not that an owner *benefit* from how other people use his property, but that the owner *consents* to how other people use his property. Suppose that my neighbor sets up a doughnut shop next door, and

the fragrant doughnut fumes spill over onto my property. Even though this is a positive externality - I love the odor of doughnuts - as the owner of my home I can insist that he cease his trespass. Why would I shoot myself in the foot by doing so? Perhaps I value the smell at \$10/year, and the doughnut shop earns \$1000/year in profit from staying open. It could then easily be in my interest to charge the doughnut shop owner \$100 for an easement to emit doughnut fumes over my land. Though I benefit from the fumes, I benefit more from the fumes plus \$100.

In short, it makes no sense for Rothbard to accept negative externalities but not positive ones. Negative externalities often don't violate property rights, and positive externalities can. While Rothbard deserves praise for analyzing the extent to which private property can solve externalities problems, his reformulation of the theory of externalities is decidedly unsuccessful.

3.4. The Austrian Theory of the Business Cycle

It is important to distinguish the correct and almost universally accepted aspects of the Austrian theory of the business cycle (henceforth ABC) from its incorrect and highly controversial components. Many discussions of the ABC derail because Austrians often fail to realize that part of their theory is now fully mainstream.

3.4.1. The Correct and Widely Accepted Aspects of the ABC

One important feature of business downturns is that unemployment increases. Mises and Rothbard emphasize two important facts about this unemployment:

Proposition 1: (Involuntary) unemployment is caused by excessive real wages.

Proposition 2: Using inflation to reduce real wages (i.e., if the wage is fixed in nominal terms, then *ceteris paribus* inflation reduces the real wage) is at best unreliable, and in any case not a long-term solution to the problem of unemployment.

In 1963, Rothbard noted that "Sophisticated Keynesians now admit that the theory of 'underemployment equilibrium' does not really apply to the free and unhampered market: that it assumes, in fact, that wages rates are *rigid downward*." [38] Indeed, Keynes himself quietly said this, and his contemporary Pigou wrote an entire treatise on unemployment explaining its inextricable connection with the real wage. What many Austrians barely realize is that by 1997, even quite unsophisticated economists essentially agree with Propositions 1 and 2. Milton Friedman said as much in his 1969 AEA Presidential address. Robert Lucas' work along these lines were one of the main reasons he recently received a Nobel prize. Subtleties aside, the Mises-Rothbard view of unemployment now prevails among academic economists. [39] They may not proclaim it as boldly as Mises or Rothbard would, and they may be more inclined to favor quick fixes instead of radical labor market deregulation, but mainstream and Austrian economists no longer disagree about this.

Though (almost) everyone acknowledges that downwardly rigid real wages are the fundamental cause of unemployment, most economists, including myself, would take issue with Mises and

Rothbard's over-simplified view of the *cause* of downwardly rigid real wages. A typical pronouncement from Rothbard: "Unemployment is caused by unions or government keeping wage rates above the free-market level." [40] While Rothbard's insight does much to explain unemployment in e.g. modern Europe, it leaves out a great deal. In one of his most ecumenical moments, Rothbard explains that:

Generally, wage rates can only be kept above full-employment rates through coercion by governments, unions, or both. Occasionally, however, the wage rates are maintained by voluntary choice (although the choice is usually ignorant of the consequences) or by coercion supplemented by voluntary choice. It may happen, for example, that either business firms or the workers themselves may become persuaded that maintaining wage rates artificially high is their bounden duty. Such persuasion has actually been at the root of much of the unemployment of our time, and this was particularly true in the 1929 depression. [41]

This quotation shows Rothbard at his best; in most of discussions, Rothbard like Mises concentrates exclusively on government and unions, entirely neglecting market-based impediments to market-clearing. [42] In addition to the ethical motivation Rothbard mentions above, other important reasons to avoid or delay wage cuts would exist even in a labor market free of regulation or unions. For example, employers might refrain from cutting wages to avoid damage to morale - potentially an important concern. It is also possible that formal contracts specifying wages (but not employment) exist, impeding wage adjustment for 1, 2 or even 3 years. Even without formal contracts, wage renegotiation can be expensive - it takes time to bargain, and risks the loss of mutual good will between employer and employee. Another possibility worth considering is that rather than actively coerce new hires, threatened "insiders" might informally haze, mistreat, or otherwise fail to cooperate newly-hired "outsiders." Put yourself in the shoes of the owner of a business. Would your automatic response to a depression be to cut wages to induce voluntary quits? Mightn't you be inclined instead to lay off a few workers without cutting the wages of the remaining employees?

Rothbard's tendency to attribute all wage rigidity to governments and unions probably explains why he repeatedly emphasizes that "there is no such thing as 'too little' or 'too much' money, *that, whatever the social money stock, the benefits of money are always utilized to the maximum extent.*" [43] How can this be reconciled with Rothbard's admission that *given* wage rigidity, increases in the money supply can increase employment, and decreases can reduce it? [44] In the final analysis, Rothbard's characteristic lucidity conceals an underlying confusion: while on occasion he conceded that wage rigidity could exist on the totally free market, and while he repeatedly acknowledged that the quantity of money could affect employment *given* wage rigidity, he also invariably maintained that the quantity of money is always "optimal" and harshly criticized monetarists, free-bankers, and other economists concerned about avoiding monetary contractions or compensating for shifts in money demand. [45]

3.4.2. The Incorrect and Controversial Aspects of the ABC

What then remains controversial about the ABC - and, as the sequel argues - incorrect? Some of the more important features of the ABC include:

Proposition 3: Monetary expansion distorts the structure of production in an unsustainable way.

Proposition 4: The ABC explains the "sudden general cluster of business errors."

Proposition 5: The ABC provides the best explanation for why downturns hit the capital goods sectors especially hard.

Proposition 6: Only the Austrian theory can explain the existence of inflationary depressions (or "stagflation").

Austrians along with almost all other economists accept that expansionary monetary policy tends to reduce interest rates (definitely real interest rates, and usually nominal rates as well) *in the short term*.^[46] There is no question that this change in interest rates tends to affect the profitability of different investments; as Austrians emphasize, with lower interest rates, more "round-about" investments will become profitable. Projects with returns further in the future previously might have had a negative present discounted value; lower the interest rate, and the PDV quite possibly might become positive. Bohm-Bawerk's capital theory - focusing on the intertemporal coordination of numerous stages of production - does incline Austrians to be particularly aware of the tendency of lower interest rates to stimulate more round-about projects. But modern neoclassicals would surely also accept the claim that lower interest rates alter PDV calculations in favor of investments with more distant returns.^[47]

Thus, it is readily conceded that (a) expansionary monetary policy reduces interest rates, and (b) lower interest rates stimulate investment in more round-about projects. Where then does the disagreement emerge? What I deny is that the artificially stimulated investments have any tendency to become *mal*investments. Supposedly, since the central bank's inflation cannot continue indefinitely, it is eventually necessary to let interest rates rise back to the natural rate, which then reveals the underlying unprofitability of the artificially stimulated investments. The objection is simple: Given that interest rates are artificially and unsustainably low, why would any businessman make his profitability calculations based on the assumption that the low interest rates will prevail indefinitely? No, what would happen is that entrepreneurs would realize that interest rates are only temporarily low, and *take this into account*.

In short, the Austrians are assuming that entrepreneurs have strange irrational expectations. Rothbard states this fairly explicitly: "[E]ntrepreneurs are trained to estimate changes and avoid error. They can handle irregular fluctuations, and certainly they should be able to cope with the results of an inflow of gold, results which are roughly predictable. They could not forecast the results of a credit expansion, because the credit expansion tampered with all their moorings, distorted interest rates and calculations of capital."^[48] Elsewhere, he informs us that: "[S]uccessful entrepreneurs on the market will be precisely those, over the years, who are best equipped to make correct forecasts and use good judgment in analyzing market conditions. Under these conditions, it is absurd to suppose that the entire mass of entrepreneurs will make such errors, *unless* objective facts of the market are distorted over a considerable period of time. Such distortion will hobble the objective 'signals' of the market and mislead the great bulk of entrepreneurs."^[49]

Why does Rothbard think businessmen are so incompetent at forecasting government policy? He credits them with entrepreneurial foresight about all market-generated conditions, but curiously finds them unable to forecast government policy, or even to avoid falling prey to simple accounting illusions generated by inflation and deflation. Even if simple businessmen just use current market interest rates in a completely robotic way, why doesn't arbitrage by the credit-market insiders make long-term interest rates a reasonable prediction of actual policies? The problem is supposed to be that businessmen just look at current interest rates, figure out the PDV of possible investments, and due to artificially low interest rates (which can't persist forever) they wind up making malinvestments. But why couldn't they just use the credit market's long-term interest rates for forecasting profitability instead of stupidly looking at current short-term rates? Particularly in interventionist economies, it would seem that natural selection would weed out businesspeople with such a gigantic blind spot. Moreover, even if most businesspeople don't understand that low interest rates are only temporary, the long-term interest rate will still be a good forecast so long as the professional interest rate speculators don't make the same mistake.

It should be noted that other Austrians, particularly Roger Garrison, attempt to handle the expectational objection. Garrison astutely notes that "[M]acroeconomic irrationality does not imply individual irrationality. An individual can rationally choose to initiate or perpetuate a chain letter... Similarly, it is possible for the individual to profit by his participation in a market process that is - and is known by that individual to be - an ill-fated process." [50] This is definitely a possible scenario. But does it make sense *in this particular case*? It does not. Naturally, entrepreneurs will not turn down lower interest rates. Rather, the rational response to artificially low interest rates is to (a) make investments which will be profitable even though interest rates will later rise, and (b) *refrain* from making investments which would be profitable only on the assumption that interest rates will not later rise. If entrepreneurs followed this rule, then there would be no tendency for policy reversals to produce malinvestments.

The Austrian theory also suffers from serious *internal* inconsistencies. If, as in the Austrian theory, initial consumption/investment preferences "re-assert themselves," why don't the consumption goods industries enjoy a huge boom during depressions? After all, if the prices of the capital goods factors are too high, are not the prices of the consumption goods factors too low? Wage workers in capital goods industries are unhappy when old time preferences re-assert themselves. But wage workers in consumer goods industries should be overjoyed. The Austrian theory predicts a decline in employment in some sectors, but an increase in others; thus, it does nothing to explain why unemployment is high during the "bust" and low during the "boom."

Even more striking is the Austrian theory's inability to explain why output declines during a depression; instead, it predicts a short-term *increase*. [51] Bohm-Bawerk's capital theory, on which Rothbard wisely built his work, implies that actually the short-run effect of switching to consumer goods production would be a period of *greater* production, followed by a period in which production is less than it would otherwise have been if longer period products had been used instead. [52] In short, the Austrian theory all-too-glibly identifies the period of artificially low interest rates with the boom, and the period of re-adjustment with the bust. Without extra assumptions, the theory does not predict an increase in employment during the boom, or a decrease during the bust. Moreover, it predicts an actual increase in current output during the bust. These are puzzling implications, to put it mildly, and they follow from the ABC.

A final supposed merit of the ABC is that it explains why capital goods industries suffer more than consumer goods industries during depressions.[53] Modern neoclassical economics however offers a simple alternative explanation. One interesting business cycle fact is that *durable* consumer goods production suffers along with the capital goods industries. A simple explanation for both phenomenon is that *any* durable good purchase, whether durable capital goods or durable consumer goods, is going to be much more sensitive to changes in income or profitability than non-durable purchases. In any period buyers of durable goods both replenish their stock to account for depreciation, *plus* adjust their desired total stock depending upon new information about profitability (for firms) or permanent income (for individuals). The arrival of a depression causes both forecasts to be adjusted downwards; often this means that there is no point even making up for depreciation, since natural wear-and-tear simply moves you closer to your new, lower total stock. The most basic model of demand for durable goods provides a coherent explanation for why producers' goods industries suffer more during depressions; and unlike the "acceleration" theory that Rothbard properly ridicules, the theory of demand for durable goods follows rigorously from basic microeconomics.

Another interesting argument made in favor of the Austrian theory is that it is the only theory capable of explaining stagflation - the simultaneous presence of high unemployment and high inflation. Rothbard, for example, describes the Austrian theory as "the only proffered explanation" of stagflation.[54] To the contrary, there were numerous theoretically rigorous explanations of stagflation, most of which were well-known to sophisticated academics in 1978 when Rothbard made this claim in favor of the ABC. To name a few:

- a. Natural resource shocks, e.g. oil (reduces supply, raising price and reducing output).
- b. The rational-expectations explanation: Workers wake up from their real/nominal wage confusion and demand a raise to compensate for inflation (again, reduces supply, raising price and reducing output). Lucas won the last Nobel prize for his work on this idea.
- c. Technology shocks (again, reduces supply, raising price and reduces output). The theory which attributes business cycles to technology shocks, known as real business cycle theory, has been a hot topic in macro theory for a decade.

Let me emphasize that all of the arguments in this section have been essentially theoretical, not empirical. The ABC requires bizarre assumptions about entrepreneurial stupidity in order to work: in particular, it must assume that businesspeople blindly use current interest rates to make investment decisions. Even if we accept the ABC, it has important internal inconsistencies: it does not in fact predict changes in employment, and predicts that output will increase during depressions. Moreover, the experience of stagflation is no argument for the ABC, because numerous other theories (most of them developed before stagflation became important) can also account for stagflation.

These objections to the ABC, as mentioned, solely apply to the "controversial" parts of the theory. Austrians were entirely correct to decry the dinosaur Keynesians' neglect of the interaction between wages and employment.[55] Government officials, journalists, the general public, and weaker academics still need to learn this lesson. But the modal academic economist

already knows the lesson. If the ABC has anything to contribute, it must *add* something further - something both original and true - to this lesson. There is little reason to believe that it can.



4. Method, Math, and 'Metrics

4.1. The Theory and Practice of Economic Theory

The reader will note that so far this essay has refrained from discussing any methodological issues. To many, this is where the divergence of Mises and Rothbard from mainstream neoclassical economics is most apparent. Mises and Rothbard both emphasize the primacy of economic theory over economic history; theory is derived from the necessary truth of the "axiom of action," and therefore economic history merely *illustrates* rather than "tests" economic theory.

Certainly, there is an enormous difference between what Mises and Rothbard *say* about the correct methodology of economics and what most neoclassical economists *say* about methodology. The difference between what they actually *do* is far narrower. An empirical study of the economics profession would reveal that pure theory plays an enormous role in the judgments of all economists whether they primarily do pure theory or applied empirical research. The pure theorists often live in near-total isolation from empirical work; indeed, even empirical researchers normally only know the empirical work done within their own specialization.[56] How do they form their views on other issues? Largely by combining well-understood economic theory and some plausible empirical assumptions. To many, this shows that economists are unscientific ideologues, but to my mind it shows instead that the practice of neoclassical economics is much sounder than its proclaimed methods. By implication, Austrian methodological criticisms of neoclassical economics are often wide of the mark precisely because mainstream economists don't practice the methods they preach.

4.2. Is Theory Enough?

Armchair economic theorizing can be and often is a productive way of learning about the world. Mises and Rothbard clearly proclaim this, I readily concede it, and most neoclassical economists frequently "act as if" they believe it. Mises and Rothbard however err when they say that

economic history can *only* illustrate economic theory. In particular, empirical evidence is often necessary to determine whether a theoretical factor is *quantitatively significant*.

Price theory shows us that a minimum wage in excess of the market-clearing price will increase unemployment. However, as Mises and Rothbard emphasize, economic theory tells us nothing about *how big* the increase in unemployment will be. Empirical studies of the imposition of minimum wages do more than merely illustrate economic theory; they help economists to learn which theoretically relevant factors actually matter. Paraphrasing Lord Kelvin, while economic theory is real knowledge, until you study some economic history your knowledge is of a meagre and unsatisfactory kind. An economist who attributes hyper-inflations to radically and continuing declines in the demand for money contradicts no economic theory. He is however still a bad economist, because his analysis of which factors are quantitatively significant is so far off.

Yes, it is possible for the quantitative importance of different factors to change over time and across different societies; but study of these differences is just another task to which good economists need to devote themselves. For example, population economists do more than just describe the causes behind population growth; they also generalize about why different causes matter more in different countries and times. An increase in the supply of food may greatly increase population growth in a poor country, without having any important impact in a richer country; both facts required empirical study to learn, the facts learned varied across time and place, and yet an underlying and important pattern still exists.

4.3. Mathematics, Econometrics, and the Progress of Economics

More than anything else, what prevents Austrian economists from getting more publications in mainstream journals is that their papers rarely use mathematics or econometrics, research tools that Austrians reject on principle. They reject mathematical economics on principle because of the assumptions of continuity and differentiability. These objections were examined in section 2.3 and found wanting. Similarly, Austrians reject econometrics on principle because economic theory is true a priori, so statistics or historical study cannot "test" theory. Fair enough, but as section 4.2 argued, econometrics and other empirical work can play a more modest role: to help determine how big (or trivial) various theoretically relevant factors actually are.

In short, the *principled* Austrian objections to mathematics and econometrics (M&E) fail. This does not mean, however, that M&E are immune to a weaker criticism: to wit, that they simply have not delivered the goods. When Mises wrote *Human Action* in 1949, economists' use of M&E was still in its infancy. There is now nearly fifty years' worth of research using M&E. The science of economics has made progress, but how much of it is due to the use of M&E?

Let us consider the question empirically. Here are a few of the best new ideas to come out of academic economics since 1949:

1. Human capital theory
2. Rational expectations macroeconomics
3. The random walk view of financial markets
4. Signaling models

5. Public choice theory
6. Natural rate models of unemployment
7. Time consistency
8. The Prisoners' Dilemma, coordination games, and hawk-dove games
9. The Ricardian equivalence argument for debt-neutrality
10. Contestable markets

Formal mathematics was the main language used to present these ideas in academic journals. But was math instrumental in the discovery of these ideas? Or did the journal articles merely take an interesting intuition and then work backwards to determine what mathematical assumptions implied it? Out of the whole list, there are few plausible cases where mathematics was more than an afterthought: maybe Idea #2, and possibly #3. Even there, intuition, not math, probably played the leading role.[57]

The contributions of econometrics to economics are similarly meager - particularly because econometrics has "crowded out" traditional qualitative economic history. The popularity of econometrics has made it very difficult to do research in any period lacking convenient "data sets"; it has also enforced an uneasy silence about any topic in economic history (like ideology) that is difficult to quantify. When simple econometrics failed to yield universal agreement among informed economists, this merely provided the impetus for econometric theorists to supply increasingly complex estimators and other tools. Truly, this is a case of looking for car keys underneath the streetlight because it is brighter there. The root cause of disagreement is simply that causation and correlation are different, yet almost everyone tends to interpret a correlation as causal if they find the results plausible, and as spurious if they do not.

Better experimental design - including the method of "natural experiments" - is a step back in the right direction, but it is only an uneasy beginning. My own view is the econometrics is not useless, but must become a subordinate tool of the economic historian rather than vice versa. Friedman and Schwartz's *A Monetary History of the United States* is close to the optimal mix - careful historical analysis supplemented with econometrics, rather than vice versa.[58]

M&E have had fifty years of ever-increasing hegemony in economics. The empirical evidence on their contribution is decidedly negative. This does not mean, however, that working economists ought to immediately cease to employ M&E in their work. This has been the Austrians' main response, and it has led to their extreme isolation from the rest of the economics profession. The simple fact is that M&E are the *language* of modern economics, much as Latin was the language of medieval philosophy. These professional languages waste a lot of time and make it difficult for laymen and academics to communicate. But once mastered, even dissident scholars can use these tools to speak their minds.

Conclusion

Austrian scholars have made important contributions to economics in recent years. I personally am most impressed by the work of Lawrence White and George Selgin on free banking and other monetary issues, though certainly other Austrians have made significant contributions too. Set in historical context, I also consider the economics of Mises and Rothbard to be a great

achievement in spite of my numerous reservations about it. Yet all too large a fraction of Austrian research has not been in economics at all, but rather in meta-economics: philosophy, methodology, and history of thought. Admittedly, much of the meta-economics stems out of the work of F.A. Hayek and his numerous interpreters, whose contributions to economics the present essay did not discuss save by implication. But the students of Mises and Rothbard have done more than their fair share of meta-economics too. Neoclassical economists go too far by purging meta-economics almost entirely, but there is certainly a reason to be suspicious of scholars who talk about economics without ever doing it. Paraphrasing Deng Xiaoping, "One should not talk of methodology every day. In real life, not everything is methodology." [59]

While the substantive contributions of Austrian economists to economics are significant, their sum from *Human Action* on is small compared to the progress that neoclassical economics has made over the same time period. The ten good ideas listed in section 4.3 are only the beginning of what economists have learned since 1949 - in spite of the large deadweight cost of mathematics and econometrics. Mises and Rothbard certainly produced an original alternate paradigm for economics - and applied this paradigm to a number of interesting topics. Unfortunately, the foundations of their new paradigm are unfounded, and their most important applied conclusions unsound or overstated. The reasonable intellectual course for Austrian economists to take is to give up their quest for a paradigm shift and content themselves with sharing whatever valuable substantive contributions they have to offer with the rest of the economics profession - and of course, with the intellectually involved public. In sum, Milton Friedman spoke wisely when he declared that "there is no Austrian economics - only good economics, and bad economics," [60] to which I would append: "Austrians do some good economics, but most good economics is not Austrian."

Notes

[1] There is no doubt that Rothbard was a self-conscious follower of Mises: see e.g. Murray Rothbard, *Man, Economy, and State* (Los Angeles: Nash Publishing, 1962), xi-xii, and Rothbard's essay "The Essential Von Mises," in Ludwig von Mises, *Planning for Freedom* (South Holland, Illinois: Libertarian Press, 1980), pp.234-270. Mises moreover expressed no reservations about Rothbard's economics when he reviewed *Man, Economy, and State*; see Ludwig von Mises, "A New Treatise on Economics" in *New Individualist Review* (Indianapolis, IN: Liberty Fund, 1981), pp.323-326.

[2] While modern admirers of Hayek often present his work as a radical alternative to mainstream economics, there is little evidence that Hayek thought this. Contrast Mises and Rothbard's stringent rejection of mathematical economics with Hayek's desire to "...avoid giving the impression that I generally reject the mathematical method in economics. I regard it as indeed the great advantage of the mathematical technique that it allows us to describe, by algebraic equations, the general character of a pattern even where we are ignorant of the numerical values determining its particular manifestation. Without this algebraic technique we could scarcely have achieved that comprehensive picture of the *mutual interdependencies* of the different events in the market." (F.A. Hayek, "The Pretense of Knowledge," in F.A. Hayek, *Unemployment and Monetary Policy* (Washington, D.C.: Cato Institute, 1979), p.28.

[3] *Man, Economy, and State*, p.222.

[4] *ibid*, p.223.

[5] *ibid*, p.263. Rothbard plainly follows Mises' approach: "Action sorts and grades; originally it knows only ordinal numbers, not cardinal numbers." (Ludwig von Mises, *Human Action* [Chicago: Contemporary Books, Inc., 1963], p.119).

[6] *ibid*, p.262.

[7] Rothbard is not alone in this confusion; a significant fraction of textbook authors also fail to understand this point.

[8] See e.g. David Kreps, *A Course in Microeconomic Theory* (Princeton, NJ: Princeton University Press, 1990), p.17-69.

[9] *ibid*, pp.31-32.

[10] It is worth noting that even if Rothbard's critique of neoclassical consumer theory were correct, he would still lack a basis for rejecting neoclassical producer theory. Here, both Rothbard and standard economic theory posit that entrepreneurs maximize profits - clearly, a cardinal quantity.

[11] *Man, Economy, and State*, p.107 and p.106 respectively.

[12] *ibid*, pp.515-516.

[13] *ibid*, p.797.

[14] Rothbard's use of discrete units serving discrete ends effectively eliminates the income effect, leaving only a substitution effect.

[15] What is the significance of recognizing *two* effects of price changes? A price increase is normally thought to reduce the quantity demanded because the actor switches to other goods (the substitution effect). But what if there were only *1 good*? In this case, it is clear that a price hike does not reduce quantity demanded because the agent switches to other goods. Rather quantity falls because with 1 good, constant income, and a higher price, the actor's real income is less.

[16] Mises strongly criticized Irving Fisher's anticipation of indifference curve analysis: "[I]t must first of all be objected that the peculiarly mathematical conception of infinitesimal quantities is inapplicable to economic problems. The utility afforded by a given amount of commodities, is either great enough for valuation, or so small that it remains imperceptible to the valuer and therefore cannot affect his judgment." (Ludwig von Mises, *The Theory of Money and Credit* [Indianapolis, IN: Liberty Classics, 1980], p.57). For further evidence that Mises shared Rothbard's rejection of neoclassical utility theory, compare *ibid*, pp.51-60, to *Man, Economy, and State*, pp.260-268.

[17] *ibid*, p.265.

[18] Ludwig von Mises, *Theory and History* (Washington, D.C.: Ludwig von Mises Institute, 1985), p.xiv.

[19] *Man, Economy, and State*, p.264.

[20] Murray Rothbard, *Power and Market* (Sheed Andrews and McMeel, Inc.: Kansas City, 1977), p.13.

[21] Hans-Hermann Hoppe, "Man, Economy, and Liberty: Essays in Honor of Murray N. Rothbard (book review)," *Review of Austrian Economics*, vol.4, p.258. Joseph Salerno claims to produce an argument for the claim that intervention actually reduces social utility, although he notes that this conclusion is stronger than Rothbard's. See Joseph Salerno, "Mises and Hayek Dehomogenized," *Review of Austrian Economics*, vol.6, no.2, p.131.

[22] *Power and Market*, p.18.

[23] In e.g. Rothbard's taped lecture series, "A Short Course on Free Market Economics," available at <http://www.lfb.org>.

[24] See the clever use of the neoclassical concept of efficiency in Steven Landsburg, *The Armchair Economist: Economics and Everyday Life* (NY: The Free Press, 1993), esp. pp.49-105.

[25] *Human Action*, p.678.

[26] *ibid*, pp.679-680.

[27] *ibid*, p.56.

[28] Ludwig von Mises, *Socialism: An Economic and Sociological Analysis* (Indianapolis, IN: Liberty Classics, 1981), p.98.

[29] *ibid*, p.102. Mises later balked at the term "calculation in kind": see *Human Action*, p.703.

[30] The history of Communism suggests that the incentive problem is actually the most severe of all. Forced collectivization - the expropriation and enserfment of peasant farmers - repeatedly triggered deadly famines. These resulted in five million deaths under Lenin, at least 7 million under Stalin, and a staggering 30 million under Mao. See my Museum of Communism FAQ: <http://www.princeton.edu/~bdcaplan/museum/faqframe.htm>. Moreover, the millions of slave laborers found in Communist regimes were typically unproductive; see Mises' discussion of the inefficiency of slave labor in his *Liberalism* (Irvington-on-Hudson, NY: Foundation for Economic Education, 1996), pp.20-23.

[31] *Man, Economy, and State*, pp.461-462.

[32] If there are unrealized gains to trade, why doesn't the monopolist change his pricing strategy? This is one of numerous cases where a situation is not Pareto optimal, but transactions costs make voluntary Pareto improvements unlikely. For example, the possibility of resale and the inability to determine a consumer's willingness to pay makes perfect price discrimination difficult.

[33] In not only *Power and Market*, pp.37-82, but also e.g. his excellent tape series "The American Economy and the End of Laissez-Faire: 1870 to World War II." Notably, in this tape series Rothbard always limits himself to explaining why free-market monopoly is difficult to maintain, and how government short-circuits market checks on monopoly. Rather than trying to define market monopoly out of existence, as he does as a theorist, Rothbard the historian treats it as an empirical question, yielding quite convincing results.

[34] *Man, Economy, and State*, p.890.

[35] Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge: Harvard University Press, 1971).

[36] See *Power and Market*, pp.18-23.

[37] *Man, Economy, and State*, p.944.

[38] Murray Rothbard, *America's Great Depression* (Kansas City: Sheed and Ward, Inc., 1975), p.43.

[39] Who unfortunately often only impart this wisdom to graduate students, teaching undergraduates and journalists discredited "dinosaur Keynesianism." See my essay "In Defense of Macroeconomic Theory," at <http://www.princeton.edu/~bdcaplan/macro.doc>.

[40] *Power and Market*, pp.204-205.

[41] *America's Great Depression*, p.45.

[42] Some writers who probably consider themselves "Misesians" do take a more subtle view of the wage-adjustment process on the free market. See e.g. Roger Garrison, "The Austrian Theory of the Business Cycle in the Light of Modern Macroeconomics," *Review of Austrian Economics*, vol.3; George Selgin, *The Theory of Free Banking: Money Supply Under Competitive Note Issue* (Totowa, NJ: Rowman and Littlefield, 1988).

[43] *Man, Economy, and State*, p.670.

[44] See e.g. *Man, Economy, and State*, pp.683-687, and *America's Great Depression*, pp.43-53.

[45] See e.g. Rothbard's perfunctory dismissal of arguments for secular growth in the money supply: "These economists have not fully absorbed the great monetary lesson of classical economics: that the supply of money essentially does not matter... There is therefore never any

need for a larger supply of money (aside from the nonmonetary uses of gold or silver)." in Murray Rothbard, *The Case for a 100 Percent Gold Dollar* (Meriden, CT: Cobden Press, 1984), p.28.

[46] The mechanism whereby monetary expansion affects interest rates would however be much more controversial. Mainstream economists typically emphasize the "real balance" or "liquidity" effect, while Austrians prefer to think of newly created money as increasing the supply of loanable funds. The specifics of the money-interest rate connection however make no difference for the following arguments.

[47] While modern neoclassical economists usually work with the assumption of atemporal production using homogeneous capital goods, in my view they normally take this as a convenient simplifying assumption rather than an accurate characterization of the fundamental nature of capital goods and production.

[48] *America's Great Depression*, p.38.

[49] *ibid*, p.76.

[50] Roger Garrison, "The Austrian Theory of the Business Cycle in the Light of Modern Macroeconomics," p.9.

[51] On a charitable reading, the Austrian explanation for the decline in output and employment is nothing more or less than wage rigidity combined with a monetary contraction. This would however be difficult to reconcile with Mises' relative indifference to deflation, and Rothbard's positive enthusiasm for its healing virtues. Mises, for example, informs us (in the third revised edition of *Human Action*, published in 1966) that "Deflation and credit restriction never played a noticeable role in economic history." (p.567) To make this statement after the deflations of the inter-war period is truly astonishing. Rothbard goes even further, positively praising deflation: "[D]eflationary credit contraction greatly *helps* to speed up the adjustment process, and hence the completion of business recovery, in ways as yet unrecognized." (*America's Great Depression*, p.25) See *ibid*, pp.25-26, for a discussion of Rothbard's purported benefits of deflation.

[52] Traditional measures of "output" (such as GDP) include business investment as output, and thus it is not necessarily true that on the Austrian theory output *thus measured* would actually decline during the transitional period when the structure of production is being lengthened. However, if we use a modified measure of output which excludes the production of capital goods, then my statement would be correct.

[53] See e.g. *America's Great Depression*, p.58: "There is only one way that the underconsumptionist can try to explain the problem of greater fluctuation in the producers' than the consumers' good industries: the acceleration principle."

[54] Murray Rothbard, *For a New Liberty: The Libertarian Manifesto* (New York: Libertarian Review Foundation, 1978), p.191.

[55] It is interesting that the empirical work of Gallaway and Vedder - interpreted by many as empirical support for the ABC - actually only provides evidence in favor of the wage-employment connection - the uncontroversial part of the Austrian theory. See e.g. Lowell Gallaway and Richard Vedder, "Wages, Prices, and Employment: Von Mises and the Progressives," *Review of Austrian Economics*, vol.1, pp.33-80; idem, "The Great Depression of 1946," vol.5, no.2, pp.3-31.

[56] Thus, I often find that economists have *more* sensible views on issues outside of their field of specialization!

[57] I invite others to come up with their own "best ideas" lists to repeat this casual experiment.

[58] In my experience, economists in informal discussion frequently say that Friedman and Schwartz convinced them of various points. I almost never hear them name econometric studies that permanently changed their view of the world.

[59] The original quote is: "One should not talk class struggle every day. In real life, not everything is class struggle." Quoted in Paul Johnson, *Modern Times: The World from the Twenties to the Nineties* (NY: HarperCollins Publishers, 1991), p.565.

[60] Quoted in Edwin Dolan, "Austrian Economics as Extraordinary Science," in Edwin Dolan, ed., *The Foundations of Modern Austrian Economics* (Kansas City: Sheed & Ward, Inc., 1976), p.4.