

An Austrian View of Expectations and Business Cycles

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Abstract

Austrian economists have contributed several important concepts to business cycle theory including: inter-temporal coordination of production and consumption, heterogeneous specificity of capital, non-neutrality of money, and the capital structure of production. Noticeably lacking, however, is a clear theory of expectations. Recent Austrian responses to rational expectations critiques—such as positing a prisoner's dilemma, heterogeneous entrepreneurs, and adverse selection—try to fill this gap. But much work remains to be done developing an Austrian theory of expectations, one where they are endogenous to the market process and market institutions. This paper explores how people adapt their expectations to changing market phenomena based upon their perceived costs and benefits of doing so. It then applies the theory to the 2008 financial crisis.

Keywords: Business Cycle, Expectations, Structure of Production, Financial Crisis, Information Costs, Austrian Economics, Interpretive Frameworks

JEL Codes: E21, E22, E32, E43, E51, E52

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1. Introduction

Since the pioneering work of Muth (1961), expectations have been an integral part of macroeconomic theory. The rational expectations revolution, premised on the fact that economists do not know more about future economic performance than the actors in their models do, has remained dominant to this day. Of course it has not gone unchallenged (Garrison 2001, Shiller 2006, Akerlof & Shiller 2010, Frydman & Phelps 2013) and may be waning. But what theory of expectations should replace it?

Austrian business cycle theory, originally called the monetary theory of the trade cycle, was primarily developed by Mises (2009 [1912], 1949) and Hayek (1933, 1935); though many economists before and after them have written about it. Garrison (2001) has made some important didactic contributions by graphically connecting the loanable funds market, the production possibilities frontier, and the capital structure of production. Austrians have made several important contributions to understanding how and why business cycles occur—including ideas about heterogeneous capital, non-neutrality of money, inter-temporal coordination, malinvestment, and the capital structure of production. According to the Austrian theory, artificial credit expansion causes business cycles by distorting interest rates, which then increase unsustainable investment and consumption decisions.

Artificially lower interest rates, including accommodation when interest rates should naturally rise, reduce the cost of borrowing and increase the net present value of longer-term investments. They also encourage greater consumption. Some Austrians argue that lower interest rates cause people to consume more because they reduce the incentive to save (Garrison 2001, Horwitz & Boettke 2009). Other Austrians argue that low interest rates reduce the return on bonds leading to more investment in substitutes like equities and real estate. The corresponding rise in asset values causes people to feel wealthier which leads them to increase

their consumption (Mises 1949, Salerno 2012). Either way, artificially low interest rates distort investment and consumption decisions.

According to the reasoning above, there would be no business cycle without government artificially expanding credit. Although it may be true that distorted signals were created through government involvement, the critics say, to pin everything on government intervention implies a type of perfect markets theory where there are never any bubbles or systemically inaccurate expectations. But what about the hundreds of bubbles across countries and throughout history (Kindleberger & Aliber 2011)? Surely government intervention did not cause all of them. And if some bubbles occur without government intervention, why not all of them? These critics claim that business cycles are driven by market excesses, not by government intervention (Keynes 2006 [1936], Krugman 2000, Shiller 2006, Minsky & Kaufman 2008, Akerlof & Shiller 2010, Kindleberger & Aliber 2011).

Incorporating endogenous expectations into ABCT answers these critics. By recognizing why people engage in speculation, make seemingly foolish, unrealizable plans, and how markets *usually* restrain this behavior, Austrian theorists can better explain exactly how government policies contribute to naturally occurring asset bubbles. Understanding how people form expectations highlights how governments often replace limited self-correcting asset bubbles with large bubbles by distorting entrepreneurs' and consumers' expectations. We need to understand how people interpret relative price changes, particularly with respect to their expectations of future prices. Unfortunately the mechanisms for how and why expectations change are largely ignored.

This paper sketches a theory, in the tradition of Menger, Mises, and Hayek, that expectations are endogenous to market processes and institutions. Endogenous expectations present a compelling alternative to exogenous theories of expectations, particularly rational expectations. It also forms the basis for an Austrian response to the “irrational exuberance” and

“animal spirits” theories advanced by Shiller (2006) and Akerlof & Shiller (2010). Although many Austrians understand the importance of expectations (Mises 2009 [1912], 1949, Lachmann 1943, Wagner 1999, Garrison 2001, Carilli & Dempster 2001, Evans & Baxendale 2008), an *analytical* theory of expectations remains largely absent from their theorizing. Surveying recent Austrian treatments of the 2008 financial crisis reveals little interest or awareness of the role played by individuals' interpretive frameworks or expectations.

David Prychitko's (2010) discussion of Minsky's theory of financial instability often refers to the expectations of entrepreneurs and businesses. He does not, however, offer commentary on how those expectations form or what they are based upon other than “relative prices” and market trends. This is not unusual. Most Austrians focus on false price signals—especially artificially low interest rates—rather than on the costs and benefits associated with improving one's expectations. In this minimalist treatment, entrepreneurs observe distorted prices and make “foolish” unsustainable investment decisions. But current observable price changes are not enough to explain individual behavior in a non *ceteris paribus* world of uncertainty and ignorance (Mueller 2013). Even theorizing about “heterogeneous” or “marginal” entrepreneurs fails to fully address the problem (Evans & Baxendale 2008, Engelhardt 2012).

Thomas Woods provides another example of minimizing expectations when he argues that Greenspan's prevention of a market correction after the internet bubble made it:

the only recession on record in which housing starts did not decline. Not coincidentally, that was the moment at which people began to buy into the bromides of the housing bubble: housing prices never fall, a house is the best investment one can make, house-flipping is a safe and easy way to make a living, and all the other delusions. (2009:81)

People formed unrealistic expectations, “bromides” and “delusions,” about housing prices because Greenspan stifled natural market signals: declining housing starts and falling house prices. During times of artificially cheap credit there is a clear tendency towards “excessive optimism” and “willingness to take on risk” (2009:27). Woods writes that psychological explanations of irrational beliefs and behavior “may play a role in determining exactly *which*

path the business cycle will take and which *specific assets* will be overvalued, but they cannot by themselves explain the bubble economy” (2009:85 original emphasis). Expectations may be important for explaining *where* the bubble ultimately forms but not *why* it forms.

Joseph Salerno (2012) argues that before the 2008 financial crisis people's expectations were based upon money illusion. He uses the terms “inflationary expectations” or “optimistic expectations” to describe the flawed expectations that people form after an artificial credit expansion. During the housing bubble “expectations lost contact with fundamentals” (2012:26). Salerno also explains that “volatile fluctuations of entrepreneurial confidence and expectations over the business cycle are not purely exogenous psychological phenomena that economic theory must take as given. Rather, they are a rational response” to incorrect signals—for Salerno, to inflated views of wealth (2012:37). Although his account of expectations sheds some light on the behavior of entrepreneurs and consumers, it is primarily descriptive rather than analytical.

ABCT has taken individual's responses to changes in the nominal interest rate too much for granted. In section two, I argue that people's responses to market changes depend upon their interpretive frameworks, their perception of the costs and benefits of knowledge, and the heterogeneity of goals, backgrounds, and objects of people's expectations (Wagner 1999). Endogenous expectations provide an important supplement to ABCT by addressing why “foolishness” and the “marginal entrepreneur” exist and why they increase during artificial credit expansion (Evans & Baxendale 2008, Engelhardt 2012). Section three uses the boom before the 2008 financial crisis to illustrate the theory of endogenous expectations. Section four concludes with remarks about the role of expectations in Austrian business cycle theory.

2. Endogenous Expectations: An Austrian View

Garrison (2001) has set the stage for adding a theory of expectations to ABCT (capital-based macroeconomics) by suggesting that the marginalization of expectations in ABCT is partially a response to the hyper-focus on expectations present in other macroeconomic theories. For a capital-based macroeconomics, mainstream “static expectations are wholly inadequate; adaptive expectations are only marginally less so” (2001:9). Garrison argues that current mainstream theories of expectations “cannot simply be grafted onto the Austrian theory” (2001:18) because their underlying conceptions of markets and human psychology are flawed.

An Austrian theory of expectations needs to rest upon Hayek’s (1945) distinction between local knowledge and theoretical knowledge. Garrison describes these two types of knowledge as “market savvy and theoretical understanding [of the economy]” (Garrison 2001:27). Entrepreneurs make tradeoffs between these two types of knowledge based upon their perceived costs and benefits of doing so.

Besides the tradeoff between market savvy and theoretical understanding, another crucial element of an Austrian theory of expectations is that people form expectations within the market process. Garrison explains how:

If we think in terms of market solutions to economic problems, we must accord expectations a crucial role. But that role is overplayed if it is assumed that expectations come ready-made on the basis of information that is actually revealed only as the market process unfolds; it is underplayed if it is assumed that expectations are and forever remain at odds with economic realities despite the unfolding of the market process. Either assumption would detract from the equally crucial role played by the market process itself, which alone can continuously inform expectations. (2001:29)

In mainstream theories of expectations people react to information exogenously—meaning that they either incorporate new information instantly and without bias (rational expectations), they incorporate new information only after being fooled X number of times (adaptive expectations), or they do not incorporate new information and are fooled all the time (static expectations). Of course none of these is quite right. Therefore, we cannot “categorize the Austrians’ treatment of expectations as static, adaptive, or rational, as these terms have come to be used” (Garrison

2001:26). People search for and incorporate new information depending on the costs and benefits of doing so—which are determined endogenously in the market process, not exogenously. How people formed expectations during stagflation was very different from how they formed expectations during the Great Moderation.

Ludwig Lachmann (1978) argued that people form expectations by using their interpretive framework. Not all prices or price changes are equally relevant to the entrepreneur because some represent natural market volatility while others represent general shifts in the economy (Lucas 1972, 1975). Lachmann claimed that people often form expectations about a price range rather than a single price. Prices do not speak for themselves—in fact, two different people can form opposite expectations about the same price change:

Evidently expectations are not economic results in the sense in which prices and output quantities are. No economic process *determines* them. A 10 percent rise in the price of apples may just as well give rise to an expectation of a further rise as to that of a future fall. It all depends on the circumstances accompanying the rise, and different people may give these circumstances a different interpretation. (Lachmann 1978:20 emphasis original)

Because people have frameworks for interpreting price changes, saying that “price X went up therefore people will do Y” is too simple. People are not robots; they do not *automatically* respond the same way to every change in price at a given point in time. Yet the description many Austrians give of ABCT implicitly treats people that way. A useful theory of expectations, on the other hand, needs to explain how people understand market data and what factors affect their interpretation. It should, of course, also include considerations of how quickly the discipline of profit and loss work in a particular market; and what various market actors would expect about profit and loss.

What gives my theory a distinctive Austrian bent, and differentiates it from mainstream theories, is that it treats expectations as endogenous. Instead of making an exogenous assumption that people have rational expectations or adopt expectations based solely upon past experience, economists should understand that how expectations form depends upon the

costs and benefits to the individuals. Increasing one's knowledge is costly but it also provides benefits. In some circumstances people's expectations will fit the rational expectations model. But they will not fit it in other circumstances. Because the future is inherently uncertain and knowledge is costly, people will generally use rules of thumb, heuristics, and proxies, rather than mathematically precise theories, to form expectations about the future.

The theory of endogenous expectations begins with the simple premise that man is naturally ignorant. In order to accomplish his ends with his limited resources, he needs to weigh the costs and benefits of reducing his ignorance. His perspective on the potential benefits of knowledge will affect how much he invests in developing it. Even with imperfect understanding of what knowledge he should care about (radical uncertainty), his view of market volatility will make him consider his general ignorance as more or less costly. I use the word “knowledge” rather than “information” intentionally. Data and information are simply the raw materials of judgment because individuals can construct different conclusions when facing the same data (Mueller 2013: 337). They seek knowledge that allows them to pursue their goals successfully.

When the overall economy is relatively stable, entrepreneurs spend most of their time developing “market savvy”—learning about the particulars that affect their specific enterprises (Garrison 2001). But if they recognize that the overall economy is unstable in ways that may affect them, like changing tax rates, regulations, monetary policy, inflation, technology, etc., they will shift resources away from developing market savvy towards improving their general theoretical knowledge. But if they do not recognize the macro trends and continue developing market savvy, their rate of error will increase because they are not compensating for the distortions of these macro trends on their particular markets (Lucas 1975).

Methodologically, most of the “theory” of endogenous expectations I develop below qualifies as economic history rather than praxeology (Mises 1949). Its core claims about ignorance, uncertainty, and the costs and benefits of knowledge are universal. So is people's

tendency to use proxies. But the actual specific proxies I outline below: recent historical trends, general market signals, and the opinions of others, are contingent. They fit the recent history of business cycles in the U. S., but they are not essential for ABCT.

2.1 The Costs and Benefits of Acquiring Knowledge

Entrepreneurs need to weigh their perceived cost of being ignorant with the various costs of reducing their ignorance. First, there is the cost of determining what market phenomena they should form expectations about. This is basically a search cost for what knowledge will give them the best chance of achieving their ends. A second knowledge cost is collecting and analyzing information. People try to maximize their returns by gathering and analyzing information until their marginal cost equals their marginal benefit. Third, the opportunity cost of forming accurate expectations rises during a boom; even if the physical costs of acquiring knowledge remain the same. A fourth cost to forming accurate expectations during artificial booms is the psychological cost of contradicting others and receiving disconfirming evidence of your views.

How people perceive the benefits of increasing their knowledge does not always change in the same way that their perceptions of costs do. Costs are relatively immediate and tangible, but potential benefits are often less well-defined. People need reasons to update their view of the benefits of knowledge. Two mechanisms come to mind, though there are undoubtedly more. First, people use their recent losses or mistakes to update how beneficial it is to have accurate expectations. Second, other people may persuade them that the benefits of knowledge are greater or lesser than they believe them to be.

Another challenge is determining the right historical time horizon to study. Should they look at data from the past six months or the past sixty years? And once they pick a time frame, how much importance should they place on each piece of data? Obviously different individuals

in different industries will have different answers to these questions. But whatever their answers are, there is always uncertainty about what data are relevant and how to weigh them.

Incorporating more historical data into your forecast increases costs because you have to discover and analyze it, or pay someone else to do so. Even then there is no guarantee that looking at more historical data will be helpful. It could make you more uncertain about what to do, have no intelligible pattern, or be downright misleading if there have been important structural changes in the market. Because uncertainty exists regarding both the potential usefulness of information and what information should be sought, people will tend to use low cost methods to obtain information. They will economize.

Asset prices and profits rise rapidly during the upswing of a business cycle. As a result, sitting on the sidelines means giving up more profit opportunities—raising the opportunity cost of engaging in research and analysis. People become too busy making money to ask hard questions; as can be seen in any account of “manias” or bubbles whether 4, 40, or 400 years ago (Shiller 2006, Akerlof & Shiller 2010, Kindleberger & Aliber 2011, Friedman & Kraus 2011). As a boom progresses, people tend to update their expectations in a more optimistic direction.

Shiller (2006) notes that the average of surveyed opinions about future economic growth also increases during a bubble because pessimists begin dropping out of the survey data. This may happen for a number of reasons. It is possible that some pessimists change their minds in the face of repeated record earnings or reports of economic growth. Or perhaps they become too disheartened to bother voicing their opinion. They may also succumb to peer pressure and decide to keep quiet or falsify their beliefs in order to not be a black sheep in their professional and social circles (Kuran 1995).

2.2 Methods of Economizing on Knowledge Costs

People economize on the costs and benefits of gaining knowledge by using various proxies. Three of the most important proxies for knowledge are: recent history, general market signals, and peer opinion. People often reduce their knowledge costs by focusing on easily accessible recent historical trends. Although far from perfect, for most industries the more recent the data, the more likely it is to be relevant to current decisions. This reliance on recent trends, however, contributes to inaccurate expectations during an artificial bubble. The longer the bubble lasts, the more bias looking at recent trends introduces. Lack of experience and various psychological biases like overconfidence and availability (relying on easily remembered experiences) reinforce the tendency to rely on the recent past when forming expectations about the future.

Entrepreneurs, investors, and consumers also economize on the cost of knowledge by using general market signals. Rather than engaging in expensive research, people form their expectations about an uncertain future by looking at readily available indicators of overall economic performance. If most economic indicators, such as stock prices, housing prices, unemployment level, GDP growth, profitability, etc. suggest continuing economic growth, people will update their expectations to discount the likelihood and possible severity of an economic downturn in the near future. During times of artificial economic growth most, or maybe all, of these indicators will be misleading.

A third method of economizing on knowledge costs includes relying on the opinions of experts, colleagues, and family. People rely on their peers not only because their peers are likely to share their tastes and risk preferences, but also because collective wisdom, much like prices, often incorporates far more information than a single individual could discover (Hayek 1945, Sowell 2007 [1987], Surowiecki 2005). Individuals often substitute the opinions of experts for their own knowledge because it is cheap and because experts are supposed to be well-informed in their areas of expertise. Unfortunately, relying on the opinions of others becomes

less reliable inside an artificial credit bubble because people tend to echo and reinforce overly optimistic expectations.

2.3 Implications

When governments expand the supply of loanable funds, either by lowering the targeted interest rate or by accommodating increasing demand for loanable funds, they distort the market signal regarding people's time preferences, the supply of savings, and the demand for investment; all of which impact the viability of extending the structure of production. There are a few exceptions, which will be addressed in the next section, but on the whole ABCT models entrepreneurs as either believing that the interest rate accurately represents the savings and time preferences of consumers or as not thinking about what the interest rate means and simply making choices based upon the cost of borrowing. But in the latter case what *do* entrepreneurs think about the future? What informs their expectations?

An implication of endogenous expectations is that people's interpretations of prices, their expectations of the future, and how they form those expectations, can all affect the *severity* of business cycles. Given certain conditions, people could have muted responses to artificially low interest rates—moderating the traditional boom and bust cycle. Entrepreneurs may take the artificial manipulation into account, because the cost of gaining useful theoretical knowledge is lower than normal or its perceived benefit is higher. This lower cost could be due to learning from experience, heightened public awareness, or the obviousness of policy changes. But people's limited responses could stem from another source altogether, such as uncertainty or fear, depending on the recent past or other general market factors.

But endogenous expectations can also amplify business cycles instead of moderating them. Expectations can lead people to act in ways that amplify the boom and bust cycle. This can occur once asset bubbles begin to form or once the economy begins to grow at a faster

rate. In these cases the cost of gaining accurate information rises and the rules of thumb or proxies that people use to economize on knowledge costs become increasingly skewed. During times of artificial growth, the relative and absolute costs of gaining accurate knowledge rise. The relative cost rises because the profitability of investment opportunities foregone in order to engage in research and analysis has increased. People have to forego more when spending the same amount of resources to gain knowledge. The absolute cost of gaining knowledge rises because people have to do more research and analysis to find evidence contradicting the current trend. Many people find it less costly to think that this time is different (Reinhart & Rogoff 2009).

Even as the costs of gaining accurate knowledge rise, the proxies that people use to economize on knowledge costs can become increasingly skewed. A major cause of asset bubbles is self-reinforcing, yet unrealistic, expectations of continued price growth. Shiller (2006) has written about this phenomenon at length and called it irrational exuberance. Yet irrational describes the end result of the bubble, not necessarily the behavior and expectations of people involved in the market process. The duration of the bubble itself affects these unrealistic expectations of future price growth. Smith et al. (1988, 2001) have shown both that asset bubbles can form “naturally” in an experimental setting and that the amount of liquidity available in a system has significant impact on the size of an asset bubble.

Normally the incentives and signals of prices, profit, and loss constrain behavior in free markets. Decisions about investment, production, and consumption tend to harmonize with each other through the feedback of the market process (Kirzner 1966:31). The phenomena of prices, profit, and loss prevent malinvestment and speculation from growing large. But artificial credit expansion interferes with the operation of these signals allowing inharmonious or unsustainable behavior by entrepreneurs and consumers to continue longer than it otherwise would, thereby creating greater economic distortions. Although reality eventually reveals the underlying

inconsistencies, *the distortions can become self-reinforcing for a time if the costs of gaining accurate knowledge rise faster than its perceived benefits do*. How people think about risk and approach investment and production decisions may change in important ways as a result of government intervention (Cowen 1998, Young forthcoming).

Market institutions can also affect how people form expectations. Koppl (2002) has developed a theory of “Big Players” which describes how large entities that can significantly impact particular markets at their discretion, as well as being relatively immune from market discipline, can change institutions, and therefore behavior, in those markets. He concludes that the entrance of “Big Players” into a market causes more herding as everyone shifts some of their focus from the disparate information they normally rely on to analyzing the current, and possible future, behavior of the “Big Player” (Koppl 2002). Imagine analogous shifts in people's focus based upon recent history, general market signals, and peer opinion.

2.4 Recent Austrian literature addressing rational expectations

Richard Wagner (1999) claims that the primary problem with Austrian business cycle theory “is that the Austrian theory assumes that entrepreneurs are foolish in that they do not *act rationally in forming expectations*” (Wagner 1999:69, emphasis mine). He also says that, “A presumption of rationality in expectation is surely a requisite for any kind of Austrian theorizing” (Wagner 1999:71). I agree; which is why a theory of endogenous expectations is useful. Several scholars have begun addressing the role of expectations in ABCT, but there is more work to be done. Three important responses to the critique of rational expectations include positing: a prisoner's dilemma (Carilli & Dempster 2001), heterogeneous entrepreneurs (Evans & Baxendale 2008), and “foolish” entrepreneurs (Engelhardt 2012).

Carilli & Dempster (2001) argue that entrepreneurs and bankers face a prisoner's dilemma during times of artificial credit expansion. They suggest that most entrepreneurs may

be aware that artificial credit expansion is happening, but that they choose to expand investment anyway. Savvy entrepreneurs may know that the market is overvalued and that the bubble will eventually pop, yet they invest anyway expecting to exit the market right before the bubble pops. Each entrepreneur's dominant strategy is to invest.

Evans and Baxendale (2008) argue that Austrians can deal with rational expectations by assuming that entrepreneurs are heterogeneous. ABCT does not require everyone in society being fooled because “clusters of errors’ are not made by everyone, just those on the margin” (Evans & Baxendale 2008: 81, 92). Loose monetary policy encourages marginal entrepreneurs to become more reckless. The entrepreneurs who are more reckless during artificial credit expansion are precisely those who could not afford capital at the old market rate. Ironically, they argue, credit expansion creates problems of adverse selection, not necessarily moral hazard (Evans & Baxendale 2008: 81). Entrepreneurial heterogeneity implies that the “marginal trader” drives the business cycle .

Although I agree that entrepreneurs are heterogeneous, that alone does not answer the rational expectations critique sufficiently. Why, exactly, do extra funds go to these “marginal” entrepreneurs rather than to existing ones? What are the “marginal” entrepreneurs doing in between booms? If they are “foolish” or “bad” entrepreneurs, how can they stay in the market? Garrison (2001) hints at an answer regarding different types of knowledge becoming more or less important over time. But that requires a more explicit foray into expectations than their paper goes into. Furthermore, why would banks lend to these “marginal” entrepreneurs who are more reckless on the whole? Do bankers stop thinking about risk or think about it differently? If so, *why*? We would expect banks, when pressured to lend, to try to increase their lending to existing trustworthy customers rather than new and untried entrepreneurs.

Engelhardt (2012) expands on Evans & Baxendale (2008) using data from the housing market to show rampant “foolishness” among entrepreneurs. He claims the following:

Those purchasing homes overestimated the value of the house and underestimated the future cost of ownership. All of this happened because interest rates were artificially—and temporarily—low. So fools became entrepreneurs, and made investments in housing that were doomed to perform poorly. (Engelhardt 2012: 185)

But why were homeowners foolish? Why did they underestimate the cost of homeownership?

Why did they overestimate the value of the house? Engelhardt rejects rational expectations as a critique that needs to be dealt with. He says that the savvy, or “wise”, investors simply exit the market and leave it to the “fools”.

But reality does not quite match his story. If you look at the losses in the recent downturn, among banks, investors, homeowners, entrepreneurs of every stripe, etc., the “foolish” set of people grows massive. It is the majority. Those “wise” entrepreneurs who saw the crisis coming could have done far more than simply “exit” the market. They could have made substantial profits if they had known the extent of the crash that was coming. They could have increased their monetary holdings in expectation of buying severely distressed assets and capital during the crisis. But most did not do that. Those who did were only a drop in the bucket, a few people who happened to guess right this time but very well could have been wrong in any of a dozen other possible cycles. “Wise” entrepreneurs may have felt uneasy. They may have wondered how long house prices could continue to rise, but almost no one knew exactly what would happen. Ignorance and optimism, which are only dubbed “foolishness” in hindsight, are far more important explanations of human behavior than simply claiming that some entrepreneurs are “wise” and everyone else are “fools” (Friedman & Kraus 2011).

Endogenous expectations supplement some of the shortcomings in these three articles. They explain why entrepreneurial error increases, why bankers are willing to lend to less credit-worthy borrowers, and why successful (not just “marginal”) entrepreneurs thought that they could profit from increasing their investment during the boom. The approach taken by Friedman & Kraus (2011) regarding the importance of simple ignorance and uncertainty about the future

seems far more promising that dividing entrepreneurs into “wise” and “foolish” camps. It also fits with the theory of endogenous expectations.

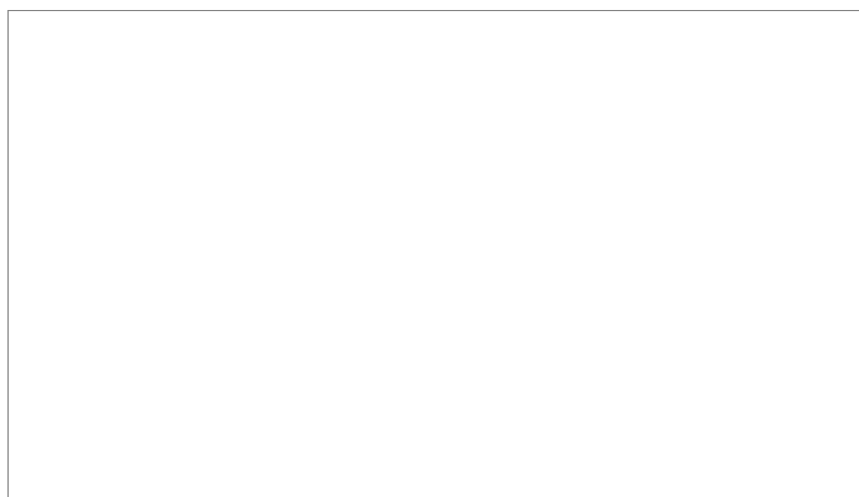
3. Applications of endogenous expectations

A realistic theory of endogenous expectations within the market process can shine light on several of the phenomena preceding the 2008 financial crisis and the surprising ineffectiveness of quantitative easing over the past five years. We can consider consumer behavior during the housing bubble and investor behavior after quantitative easing in light of knowledge costs, interpretive frameworks, and knowledge proxies. Contrary to Engelhardt (2012), homebuyers and other entrepreneurs behaved quite reasonably given their perceived costs and benefits of gaining knowledge and forming accurate expectations. And while I agree with Evans and Baxendale (2008) that “marginal entrepreneurs” were empowered by credit expansion in the early 2000s, I also want to understand why bankers were willing to lend to them and, more importantly, why many otherwise intelligent entrepreneurs (not the “marginal” ones) suffered significant losses and failed to anticipate the magnitude, nature, and duration of the downturn. Endogenous expectations, which depend on people's rational assessment of the costs and benefits of knowledge, give us insight into these questions.

From about 1997 through 2007 there was strong demand for houses which led to rapid growth in house prices (Figure 1). Although low interest rates certainly played a role they are only part of the story. The housing market was strong before Greenspan lowered rates in 2001. Furthermore, interest rates on thirty-year fixed-rate mortgages and thirty-year adjustable-rate mortgages levelled off in early 2003, years before the bubble popped (Friedman & Kraus 2011). Housing demand remained high in large part due to people's optimistic expectations and conventional wisdom (Shiller 2006). Rising housing prices created a self-reinforcing cycle by increasing people's nominal wealth and optimistic expectations, which further increased housing

prices, which reinforced optimistic expectations. The rising prices also fueled greater speculation. Considering the position of the home buyer illustrates how several key knowledge costs rose over this period and how the proxies that people used to form their expectations became increasingly skewed—while at the same time there was no appreciable increase in the perceived benefit of having accurate expectations.

Figure 1: 10 City Case-Shiller Index



We can think about the endogenous expectations of consumers in the housing market through the lenses of information costs, opportunity cost, and proxies. In the 1990s the housing boom was promoted by direct and indirect government subsidies such as home mortgage tax credits, the implicit government-backing of mortgage giants Fannie Mae and Freddie Mac (White 2008, Horwitz & Boettke 2009, Young 2010), and greater regulatory enforcement of the Community Reinvestment Act. Although the artificially low cost of borrowing was important, other drivers of demand were at least as important. As early as 2000-2002, people had to do more research to find information contradicting the recent trend of rapidly appreciating housing prices. The costs of putting housing prices in their broader historical context was relatively high and would continue to increase until the housing bubble burst.

The perceived short-term opportunity costs of not buying a house, or of not leveraging the equity in one's home, rose. People who chose to rent longer or buy in less expensive areas had to give up large year-over-year equity gains. Even if they were not buying new houses themselves, many people chose to borrow more heavily against the greater equity in their homes. Engaging in extensive research and analysis in markets where prices were rising every month left money on the table. In addition, most of the proxies that people used to decide whether to purchase a house and what type of mortgage to get were skewed in the early 2000s and became increasingly so as the bubble progressed. Recent housing data from the last decade suggested that house prices would continue to rise (Figure 1). Economic indicators like stable GDP and stock market growth, low unemployment, and high general business confidence also suggested that the economy was healthy and would continue its upward trajectory. Personal wealth relative to GDP was at an all time high causing people to feel wealthier, which increased their demand for houses (Salerno 2012).

During the inflating of the housing bubble there was a dramatic rise in the number of people taking out adjustable rate mortgages, interest only mortgages, and other mortgages that were structured so that payments would either rise over time or rise when short-term interest rates did. People shifted to these types of mortgages because they were cheaper initially. Was this foolish of them? Well, they expected low interest rates to continue or planned to refinance or to sell their houses before the mortgage payments started ballooning. Was that foolish of them? Strong peer and expert feedback, including in the media and government, claiming that houses were a great investment, that current trends would not abate much if it all, and that borrowing costs were at record lows, reinforced those decisions to take out adjustable rate mortgages. In hindsight, we can see that people's expectations were inaccurate. But being incorrect is not always the same as being "foolish."

Considering how these factors affect home buyers/borrowers' expectations of the future helps us understand their eagerness to buy houses even as house prices continued to rise. Under normal market conditions, a rise in price leads to a fall in quantity demanded. But that was not the case here; even with mortgage rates remaining constant for almost three years (Friedman & Kraus 2011)! Collecting and analyzing historical data is costly and the reward from doing so is uncertain and relatively minor unless it yields actionable knowledge. Given the high costs of historical research and its uncertain returns, most home buyers economized on information by relying on the recent trend of rapidly rising house prices. They bought expensive houses because they expected that price trend to continue.

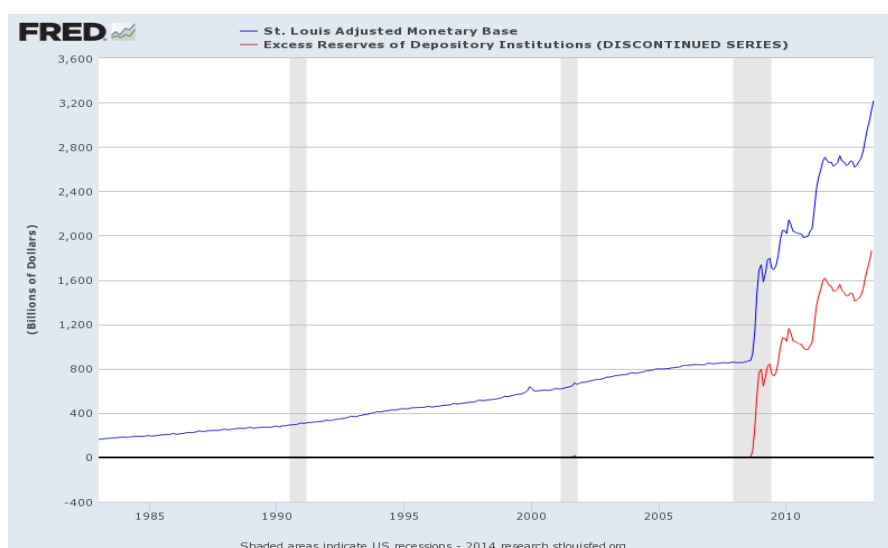
Add to that the proxies of general economic growth, reinforced by the optimistic expectations of colleagues and friends, and the wealth effects of appreciating assets, and the phenomenon of frenetic house buying becomes much less mysterious. The longer the bubble persisted, the more reckless (in hindsight) people became in their borrowing because the trend seemed to be based upon fundamental market changes and strengthened the reinforcing influences of popular opinion and positive economic indicators; which are proxies for knowledge. These factors—not simply *irrational* exuberance (Shiller 2006) or animal spirits (Akerlof & Shiller 2010)—led to unrealistic expectations about future housing prices.

Today people's expectations and interpretive frameworks seem to be dampening their responses to artificial credit expansion (Mueller 2013). That does not mean no economic distortion is occurring—for example some speculate that a bubble is forming in farmland (Shiller 2010, Gloy et al. 2010)—it only means that we are not seeing expanding output and falling unemployment levels as we do in “normal” business cycles. One reason that people's responses to artificial credit expansion are muted is because they are aware that it is happening. Interest rates are unusually and unnaturally low (Taylor 2009). Almost no one believes that the market has naturally reached interest rates of close to zero. And if that were

not enough, the Federal Reserve has clearly and repeatedly signaled that it is pushing these rates artificially low (Bernanke 2012). Finally, because interest rates are at historic lows and the Fed claims responsibility, general public awareness, particularly in the media, has risen. The costs of gaining enough knowledge to realize that artificial credit expansion is occurring and cannot continue indefinitely, have fallen. Most entrepreneurs know that something is underfoot and so are treading lightly.

A second way in which people's interpretive frameworks may be dampening their response to recent quantitative easing is by their overall outlook on the economy. Besides general optimism or pessimism about future growth and technological development, the amount of uncertainty or unease that people feel may have a significant effect on their economic choices. If entrepreneurs feel uncertain about future demand or public policy, they may not expand their investment much even with large amounts of credit available at low interest rates. This can be seen in the fact that the unprecedented growth in the monetary base has largely been absorbed in excess reserves rather than lent to entrepreneurs (Figure 2). Although distortions are still likely, we can see how expectations and learning affect when business cycles occur and how they play out.

Figure 2: Monetary Base and Excess Reserves



4. Concluding remarks and implications

[F]urther development of the issue of expectations in the context of two kinds of knowledge and the market as an economic process will involve an expansion rather than an implosion of the Austrian research program. (Garrison 2001:29)

Recent advocates of traditional Austrian business cycle theory have little to say about how people form expectations because ABCT itself has no clear theory of expectations.

Developing a theory of endogenous expectations within the market process will help Austrians explain the market dynamics of business cycles better. Expectations do not cause business cycles; they encourage them. They add wood to the fire, they are not the fire itself.

Incorporating endogenous expectations into ABCT also makes it more consistent with Austrian views of ignorance, error, and uncertainty. Rather than relying on widespread “foolishness,” we can analyze individuals' behavior using a simple framework of costs and benefits. Incorporating endogenous expectations into Austrian business cycle theory also undermines purely psychological explanations of the crisis, such as animal spirits or irrational exuberance, which are untethered from traditional economic analysis regarding knowledge, incentives, and market institutions.

Adding such a theory may also make ABCT more attractive to other business cycle theorists who believe that expectations are a core component of business cycles. Exogenous theories about expectations are unrealistic because they fail to account for *changes* in the cost and benefits of knowledge. The costliness of forming accurate expectations provides incentives for people to use proxies like recent industry trends, general economic indicators, and the opinions of others. Understanding these mechanisms helps explain how large mistakes of judgment were made in the recent housing bubble and why learning, self-interest, and markets did not correct those mistakes quickly or provide effective discipline.

I have sketched one possible line of reasoning with respect to endogenous expectation formation. There is ample room for further developing a realistic theory of expectations. ABCT has provided important insights regarding the nature of capital and the structure of production. But it can explain business cycles even better by including insights into how people use interpretive frameworks and choose to update their expectations given the costs and benefits of gaining knowledge—all framed within the broader theory of market processes and spontaneous order.

References

- Akerlof, G. A., & Shiller, R. J. (2010). *Animal Spirits: How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism (New Edition)*. Princeton University Press.
- Allison, J. (2012). *The Financial Crisis and the Free Market Cure: How Destructive Banking Reform is Killing the Economy*. McGraw-Hill.
- Bernanke, B. (2012). "Federal Reserve Press Release". December 12, 2012.
- Carilli, A. M., & Dempster, G. M. (2001). Expectations in Austrian business cycle theory: An application of the prisoner's dilemma. *The Review of Austrian Economics*, 14(4), 319-330.
- Cowen, T. (1998). *Risk and business cycles: New and old Austrian perspectives*. Routledge.
- Engelhardt, L. (2012). Expansionary Monetary Policy and Decreasing Entrepreneurial Quality. *The Quarterly Journal of Austrian Economics*, 15(2), 172-194.
- Evans, A. J., & Baxendale, T. (2008). Austrian business cycle theory in light of rational expectations: The role of heterogeneity, the monetary footprint, and adverse selection in monetary expansion. *The Quarterly Journal of Austrian Economics*, 11(2), 81-93.
- Friedman, J., & Kraus, W. (2011). *Engineering the Financial Crisis: Systemic Risk and the Failure of Regulation*. Univ of Pennsylvania Press.
- Frydman, R., & Phelps, E. S. (Eds.). (2013). *Rethinking Expectations: Way Forward for Macroeconomics*. Princeton University Press.
- Garrison, R. (2001). *Time and money: The macroeconomics of capital structure*. Routledge.
- Gloy, B.A., Boehlje, M.D., Dobbins, C.L., Hurt, C. and Baker, T.G. 2011. Are Economic Fundamentals Driving Farmland Values? *Choices* 26(2).
- Hayek, F. A. (1933). *Monetary Theory and the Trade Cycle*. Harcourt, Brace, & Co., Inc.
- Hayek, F. A. (1935). *Prices and Production*. Routledge & Sons.
- Hayek, F. A. (1945). The use of knowledge in society. *The American Economic Review*, 519-530.
- Horwitz, S., & Boettke, P. (2009). *The house that Uncle Sam built: The untold story of the great recession of 2008*. L. Reed (Ed.). Foundation for Economic Freedom.
- Keynes, J. M. (2006 [1936]). *The general theory of employment, interest and money*. Atlantic Publishers & Distributors.

- Kindleberger, C. P., & Aliber, R. Z. (2011). *Manias, panics and crashes: a history of financial crises*. Palgrave Macmillan.
- Kirzner, I. M. (1966). *An essay on capital*. AM Kelley.
- Koppl, R. (2002). *Big players and the economic theory of expectations*. Palgrave Macmillan.
- Krugman, P. R. (2000). *The return of depression economics*. WW Norton & Company.
- Kuran, T. (1995). *Private truths, public lies: The social consequences of preference falsification*. Harvard University Press.
- Lachmann, L. M. (1943). The role of expectations in economics as a social science. *Economica*, 10(37), 12-23.
- Lachmann, L. (1978). *Capital & Its Structure*. Institute for Humane Studies.
- Lucas, R. E. (1972). Expectations and the Neutrality of Money. *Journal of economic theory*, 4(2), 103-124.
- Lucas Jr, R. E. (1975). An equilibrium model of the business cycle. *The Journal of Political Economy*, 1113-1144.
- Minsky, H. P., & Kaufman, H. (2008). *Stabilizing an unstable economy* (Vol. 1). New York: McGraw-Hill.
- Mises, L. V. (1949). *Human Action*. Liberty Fund.
- Mises, L. V. (2009 [1912]). *Theory of Money and Credit*. Ludwig von Mises Institute.
- Mueller, P. D. (2013). The Theory of Interpretive Frameworks: Ceteris Non Paribus. *Quarterly Journal of Austrian Economics*. 16(3), 331-352
- Muth, J. F. (1961). Rational expectations and the theory of price movements. *Econometrica: Journal of the Econometric Society*, 315-335.
- Prychitko, D. L. (2010). Competing explanations of the Minsky moment: The financial instability hypothesis in light of Austrian theory. *The Review of Austrian Economics*, 23(3), 199-221.
- Reinhart, C. M., & Rogoff, K. S. (2009). *This time is different: Eight centuries of financial folly*. Princeton University Press.
- Salerno, J. (2012). A Reformulation of Austrian Business Cycle Theory in Light of the Financial Crisis. *Quarterly Journal of Austrian Economics* 15(1), 3-45.
- Smith, V. L., Suchanek, G. L., & Williams, A. W. (1988). Bubbles, crashes, and endogenous expectations in experimental spot asset markets. *Econometrica: Journal of the Econometric Society*, 1119-1151.

- Smith, V., Caginalp, G., & Porter, D. (2001). Financial bubbles: Excess cash, momentum, and incomplete information. *The Journal of Psychology and Financial Markets*, 2(2), 80-99.
- Shiller, R. J. (2006). *Irrational exuberance*. Crown Business.
- Shiller, R.J. 2011. Spotting Bubbles: Is farmland next? *International Economy*, Spring 2011.
- Sowell, T. (2007 [1987]). *A conflict of visions: Ideological origins of political struggles*. Basic Books.
- Surowiecki, J. (2005). *The wisdom of crowds*. Anchor.
- Taylor, J. B. (2009). *Getting off track: How government actions and interventions caused, prolonged, and worsened the financial crisis* (Vol. 570). Hoover Institution Press.
- Wagner, R. E. (1999). Austrian cycle theory: saving the wheat while discarding the chaff. *The Review of Austrian Economics*, 12(1), 65-80.
- White, L. H. (2008). *How Did We Get into This Financial Mess?*. Cato Institute.
- Woods, T. E. (2009). *Meltdown: a free-market look at why the stock market collapsed, the economy tanked, and government bailouts will make things worse*. Regnery Pub.
- Young, A. T. (2010). A government-sponsored crisis: how Fannie and Freddie caused the recession. *Collegiate Journal of Economics* 1 (1), article 1.
- Young, A. T. (Forthcoming). *Austrian Business Cycle Theory: A Modern Appraisal*.