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Though it is not yet clear just how the long expansion might end, there are three likely possibilities. First, it might run out of steam as demand fizzles. Second, the Asian depression might overwhelm earnings prospects, stock market values and hence household confidence. Finally, Federal Reserve Chairman Alan Greenspan might, in time-honored fashion, murder the expansion before it gets a chance to die of old age. But each of these possibilities is remote. The U.S. economy likely will not see a recession for years to come. We don't want one, we don't need one, and, as we have the tools to keep the current expansion going, we won't have one. This expansion will run forever.

[Rudi Dornbusch](#)

"Growth Forever" (The Wall Street Journal, 30 July 1998)

The stability of the economy is greater than it has ever been in our history. We really are in remarkable shape. It's amazing that people ... write stories about how bad the economy is ... The U.S. is at the peak of its performance ... there's never been a time when we've had a state of prosperity ... a level or spread, [like] we've had in the past ten or fifteen years. And I think that Alan Greenspan's monetary policy is primarily responsible for it.

Milton Friedman

[Interview with Charlie Rose](#) (2005)

I think the [financial] system is much safer and much sounder [than it was a decade ago]. We are doing a lot more to try to look for financial stability risks that may not be immediately apparent but to look in corners of the financial system that are not subject to regulation, outside those areas in order to try to detect threats to financial stability that may be emerging. ... Would I say there will never, ever be another financial crisis? You know probably that would be going too far but I do think we're much safer and I hope that it will not be in our lifetimes and I don't believe it will be.

Janet Yellen

[Banks "Very Much Stronger;" Another Financial Crisis not Likely "in Our Lifetime"](#)

(CNBC, 27 June 2017)

Experts Can't Predict – Yet Investors Must Plan

It's unwise to allow experts' predictions to determine one's investment decisions. Authorities generally don't provide reliable guides to the future: indeed, the more confident is the expert, the less accurate, on average, will be his prediction – and therefore the poorer will be any resultant decision.¹ Yet investment reflects particular (albeit perhaps tacit) assumptions about the future; so does choosing a career, resolving to marry, starting a family, buying a house, retiring, etc. More than mere guesses or wishful thinking must justify such actions.

What, then, to do? Investment is a process that generates decisions; accordingly, as part of this procedure investors must understand that

1. the predictions of experts – including the world's foremost economists' assessments about the business cycle, rates of interest, etc., are typically less reliable than random guesses or tosses of a coin;
2. *how* we think about the future in general (rather than *what* we think about specific aspects of it) can provide justifiable means to navigate through its fog of risk and uncertainty.

A Short History of Predictions of the Price of Oil

The logic is valid and the evidence is unambiguous: no matter what we consider expertise and regardless of their area of speciality, experts can't dependably predict the future. Indeed, their record is typically so abysmal that, when it comes to the future, it's tempting to regard "experts" as "anti-authorities." Clearly, it's essential to assess their predictions very sceptically; historical perspective and a wry sense of humour are also vital. U.S. President Jimmy Carter's Address to the Nation on 18 April 1977 – known as his "[moral equivalent of war](#)" speech – provides an excellent example (see also James Reston, [Moral Equivalent of War](#), *The New York Times*, 20 April 1977). "Tonight," Carter told his countrymen,

¹ See, for example, William Sherden, *The Fortune Sellers: The Big Business of Buying and Selling Predictions* (John Wiley & Sons, 1999); Chris Leithner, *The Intelligent Australian Investor: Timeless Principles and Fresh Applications* (John Wiley & Sons, 2005), Chap. 7; and Dan Gardner, *Future Babble: Why Expert Predictions Are Next to Worthless, and You Can Do Better* (McClelland & Stewart, 2010).

I want to have an unpleasant talk ... about a problem unprecedented in history. With the exception of preventing war, this is the greatest challenge our country will face during our lifetimes. The energy crisis has not yet overwhelmed us, but it will if we do not act quickly.

Carter was hardly the first politician who resorted to hyperbole. Apart from war-time, however, he was among the first (and, I boldly predict, won't be the last!) to use passages like "this is the greatest challenge our country will face during our lifetimes." He was perhaps the only American president who began a speech by telling his audience that it would be "unpleasant." And it was: that night he asserted that the U.S. – indeed, civilisation itself – was in peril. The next several years, he declared, would be hard. They would demand sacrifice and struggle – because, he alleged, "the oil and gas we rely on for 75% of our energy are running out." Moreover, "unless profound changes are made to lower oil consumption, [my expert advisers and I] now believe that in the early 1980s the world will be demanding more oil than it can produce." Because demand would undoubtedly continue to outstrip supply, the price would soar. Indeed, Carter – backed by a consensus of experts – was certain that it would "never" fall.

That was the benign scenario. Actually, he reckoned, things would probably be worse: if the world's consumption of oil continued to rise "by 5% a year, as it has in the past, we could use up all the proven reserves of oil in the entire world by the end of the next decade." The president warned that "nothing short of nuclear war" could damage the U.S. more grievously. Cheap oil had fuelled its – indeed, the Western world's – great boom of the 1950s and 1960s; and the resulting era of mass prosperity made Americans the envy of much of the world. Inexpensive petroleum enabled the development of vast tracts of suburban housing, the national motorway system – and ordinary people's ability to buy an affordable car and drive wherever their desire took them. Low-cost oil was the very lifeblood of the American way of life.

The OPEC oil embargo of 1973 – which inflicted petrol shortages and triggered a deep recession – underscored its vital importance. Yet most Americans believed that the end of the embargo meant that abundant supplies and good times would soon return. Carter sought to dispel this fond wish:

I know that some of you may doubt that we face real energy shortages. The 1973 [queues] are gone, and our homes are warm again. But our energy problem is worse tonight than it was in 1973 or a few weeks ago in the dead of winter ... and it will get worse every day until we act.

Carter used “energy alarmism” as a rhetorical prod with which to badger Americans until they amended their behaviour to suit his ideals. Consumption, he insisted, must henceforth cease to be the foundation of the U.S. economy and the American way of life. No longer could growth – that is, the improvement of living standards – be the objective; instead, conservation must take priority. Abstinence would entail a huge effort, he warned; indeed, it was “the moral equivalent of war.” This “war” would, of course, necessitate sacrifices – and average people would have to bear the brunt of them. But there was no choice: “the alternative may be national catastrophe.”

In retrospect, Carter’s speech was significant in two respects. First, by cribbing the phrase “moral equivalent of war” (from a 1906 essay by the American philosopher and psychologist, William James), Carter’s minders handed his Republican opponent at the election of 1980 – the sunny optimist, Ronald Reagan – one of the most devastating acronyms (MEOW) in American political history. Second, Carter’s deeply pessimistic forecast proved wildly inaccurate. For a couple of years, though, it didn’t seem egregiously wrong. Quite the contrary, to most experts it seemed unarguably correct. In 1978, in the wake of OPEC’s embargo, the price of oil remained more than twice its average of the 1960s. Then, in 1979, the Iranian Revolution² slowed the flow of crude from the Persian Gulf – and its

² Which experts, by the way, predicted even six months in advance that an austere and obscure Islamic cleric exiled in France would overthrow the mighty – and heavily backed by the U.S. – Shah of Iran? None at the U.S. Central Intelligence Agency did. Five months before the Shah fell, the CIA’s senior analyst of Iran, who spoke Farsi fluently and had tracked Iranian affairs closely for 30 years, wrote that the country “was not in a revolutionary or even ‘pre-revolutionary’ situation” (quoted in Jack Davis, “Why Bad Things Happen to Good Analysts,” in Roger George and James Bruce, eds., *Analyzing Intelligence: National Security Practitioners’ Perspectives* (Georgetown University Press, 2014, Chap. 8). Most experts shared that opinion. In his examination of the causes of the Iranian revolution, Charles Kurzman concluded that it was just as confusing and uncertain for participants as it was for observers. Just as one cannot know the shape a cloud will take until it takes it, events in Iran could only be known after – and not before – they happened (see Kurzman, *The*

price skyrocketed another 70%. Long queues at petrol stations reappeared and the foundations of American civilisation again seemed fragile. A low-budget Australian movie, *Mad Max*, extrapolated this trend into the future. It depicts a dystopian world whose supply of oil has virtually disappeared and where civilisation has thereby collapsed.

But the disruption triggered by events in Iran didn't last. Specifically, actors responded to price signals: beginning in 1980, the surge of oil's price triggered a wave of exploration, a burst of discovery and a gush of new supply. In response, what Carter said would never happen *did* occur: prices drifted lower. Then, from September 1985 to March 1986, it collapsed 70%. Oil hadn't been that cheap since before the 1973 embargo. And it remained inexpensive: in CPI-adjusted terms, 20 years would pass before it was again as costly as it was when Carter warned that its supply would soon run dry and its price skyrocket (see Figure 1 on p. 23).

Carter's dour prediction of the late-1970s was thus, by the mid-1980s, laughably inaccurate. Today we don't recall the 1980s as years of austerity and crisis. Quite the contrary: they're usually remembered (fondly or otherwise) for hedonism and growth. In the sense that the buck stops on the president's desk, Carter's enormous miscue was his own damn fault. But he didn't originate the idea that the supply of oil was dwindling, an energy crisis beckoned and therefore that higher prices were inescapable. He restated what his advisers had told him; his advisers, in turn, merely relayed to him the consensus of oil experts; and these experts weren't just confident or passionate: they were apocalyptic. "All available evidence," warned Ulf Lantzke, the head of the International Energy Agency in 1978, "points to a serious risk of a serious energy crisis in the middle of late 1980s." "Putting it simply," he told *The New Republic* (25 February 1978), "there is a very great likelihood of a major worldwide depression."³

Specialists were hardly unaware that new sources of supply – in Alaska, Canada, the North Sea and elsewhere – would commence production in the early 1980s.

Unthinkable Revolution in Iran, Harvard University Press, 2005 and Robert Jarvis, *Why Intelligence Fails: Lessons from the Iranian Revolution and the Iraq War*, Princeton University Press, 2010).

³ Werner Meyer ("Snake Oil Salesmen," *Policy Review*, Summer 1986) provides a comprehensive description of the anxieties of – and choice quotations of energy experts from – this era.

But their pessimism was such that these discoveries would merely postpone the day of reckoning. Some thought that the squeeze would start in the early-1980s; others thought it would occur late in that decade; but almost none doubted that the storm would erupt before long. "Though variations were to be found among the forecasts," wrote Daniel Yergin in *The Prize: the Epic Quest for Oil, Money and Power* (The Free Press, repr. ed., 2008), a history of the oil industry,

There was considerable unanimity on the central themes, whether the source was the major oil companies, the CIA, Western governments, international agencies, ... international experts or OPEC (p. 653).

It's important to emphasise the apocalyptic tone of authorities' predictions, as well as the self-righteous flavour of their responses to allegedly impending Armageddon. During these years, experts about energy in general and oil in particular (and the bureaucrats, journalists, politicians and others who shared their zeal) didn't just claim that, factually, they knew *more* than the man in the street: they contended that, morally, they knew *better* than he did what was good for him – and they insisted that he'd get it whether he wanted it or not. During the Carter presidency, "insiders" – that is, those whose views mattered – emphatically agreed (in the words of Tom Wicker, a columnist in *The New York Times*) that there wasn't merely an energy crisis: "it was real, growing and a grave threat to modern civilisation" ([Carter's Oil Problem](#), 4 March 1977). Jimmy Carter didn't just tell Americans what anointed experts had told him; he told benighted Americans (i.e., those whose views didn't count) how elites demanded they must henceforth live their lives.

Bless them, the American public refused to toe the line. Poll after poll showed that a majority thought that oil prices were like hemlines – that is, they rose and fell from season to season. This stoic rather than self-righteous attitude irked ordinary people's supposed betters. "There should be no such thing as optimism about energy for the foreseeable future," *The New York Times*, the house organ of those who presume to know best, sternly lectured the reprobate masses in 1980 – just as prices approached their peak. "What is certain," it instructed the untutored, "is that the price will go up and up, at home as well as abroad." Insiders consoled one another: many Americans simply but inexplicably failed to understand (or accept) "the facts." In 1977, A *New York Times*/CBS poll found that more

than one-half of tertiary-educated Americans believed that an oil shortage existed – and that barely one-quarter of those with a high school certificate or less agreed. The problem, the anointed whined, was that benighted Americans

were surprisingly ignorant of some basic energy facts. Despite all the publicity over the past four years about rising oil imports, which currently account for almost half the country's total energy needs ... one-third of those polled thought the U.S. produced all the oil it requires. ... Only 48% knew the U.S. must import oil ... The survey strongly suggests ... that the public's willingness to shift priorities for the sake of energy [conservation] depends not so much on what they can afford to do, as on how convinced they are of the need to do so (Anthony Parisi, "Poll Finds Doubt on Energy Crisis," *The New York Times*, 1 September 1977).

President Carter, too, was frustrated that the unwashed wouldn't obey him. Indeed, they largely ignored him. On 23 May 1979 he whinged:

The American people have absolutely refused to accept a simple fact. We have an energy crisis. We have shortages of oil. The shortages are going to get worse in the future. We're going to have less oil to burn, and we're going to have to pay more for it.

By the mid-1980s, the dour Carter had been ejected from the White House, the sunny Ronald Reagan occupied it – and the world was awash in cheap oil. It's tough being a bright expert: not only are your predictions almost always wrong; even worse, with respect to the really big questions the supposedly dim masses are more likely to be right! *Affordable oil – the polar opposite of what the expert consensus of the 1970s had stridently prophesied – characterised the years from mid-1980s to the late-1990s.* In response, producers slashed their costs and thereby restored their profitability. But forecasters learnt nothing from – and certainly didn't apologise for – this appalling blunder; nor did the general public consign to the dustbin the notion that experts could reliably predict oil's price. Instead, failed forecasts were quietly discarded – and equally-confident ones took their place. When, year after year, prices remained low, a new consensus emerged: conservation and

increased production would quickly offset any increase of price. The era of cheap oil, in other words, would continue into the “foreseeable” future.

The abysmal failure of the confidently pessimistic consensus of the late 1970s provides a magnificent demonstration of the fallibility – to put it mildly – of experts’ predictions. If it weren’t so serious, it’d be hilarious. But we mustn’t consider this episode in isolation: although it’s a doozy, this fiasco is but one item on a very long list. In February 1970, for example, President Richard Nixon’s “Task Force on Oil Imports” predicted that the U.S. would remain self-sufficient in oil (as it had been since the 1850s) for at least another decade and that the worldwide price would remain low. The ink on the report’s pages was barely dry when America’s imports of oil began to climb (Yergin, p. 571). Three years later, prices zoomed upwards, and four years after that Jimmy Carter warned Americans that its supply was dwindling and that without drastic and urgent action *Mad Max* would be a documentary rather than a fantasy.

Surely Carter and his advisers should have prophesied less confidently, urgently and self-righteously? According to James Akins, whose wise words many of Carter’s advisers had surely read,

Oil experts, economists and government officials who have attempted in recent years to predict the future ... prices of oil have had only marginally better success than those who foretell the advent of earthquakes or the second coming of the Messiah (“The Oil Crisis: This Time the Wolf Is Here,” *Foreign Affairs*, vol. 51, no. 3 (April 1973), pp. 462-490).

This conclusion applies just as well today as it did 40 years ago. Indeed, by deleting the phrase “in recent years” it could serve as a fitting epitaph on the tombstone of almost every oil expert since petroleum became a major industrial commodity in the mid-19th century. And by deleting the reference to oil it could and should warn any assertive expert who attempts to predict anything.

The era of cheap oil – in CPI-adjusted terms, it was as cheap in 1997 as in the quarter-century to 1973 – lasted until 2004. The following year, as nominal prices climbed from less than \$30 per barrel to almost \$70, Steve Forbes, publisher of *Forbes* magazine, asserted that they’d formed a “bubble” that would soon pop:

“I’ll make a bold prediction. In 12 months, you’re going to see oil down to \$35 to \$40 [per] barrel” ([Forbes Predicts Oil Will Drop to \\$35 within a Year](#), *The Daily Telegraph*, 31 August 2005). The price impudently ignored Forbes and continued to rise. During the first half of 2008 it breached the previously-unimaginable level of \$140. A new consensus then emerged: the price would rise still higher. In [Oil’s End](#) (5 March 2008), Timothy Egan, the environment correspondent of *The New York Times*, proclaimed the received wisdom:

The Age of Oil is at an end. Maybe not this year. Maybe not for five years. But signs of the coming collapse are evident. ... [Most notably, a few days ago] oil reached its all-time, inflation-adjusted high on the global market: \$104 a barrel.

The price would exceed \$200 by 2010, predicted Arjun Murti of Goldman Sachs ([An Oracle of Oil Predicts \\$200-a-Barrel Crude](#), *The New York Times*, 21 May 2008). Jeff Rubin, the chief economist at CIBC World Markets (who was, according to one of its blurbs, “a top-ranked economist and a leading analyst on energy issues”) agreed – and proposed \$225. “Don’t think of today’s prices as a spike ... or temporary aberration,” he told *The Toronto Star* (11 January 2008). “Think of them as the beginning of a new era.” The price ... is going to go higher. It might go way higher.”⁴ In July 2008, as the price approached \$150 per barrel (the dearest on record; see Figure 1), Matthew Simmons (author of *Twilight in the Desert: the Coming Saudi Oil Shock and the World Economy*, John Wiley & Sons, 2005) assured CNBC: “It’s not going to collapse.” In September, financial markets commenced the meltdown that precipitated a dramatic slowdown of the universal economy – and a collapse of oil’s price. By December, it plumbed \$33 per barrel. The British newspaper, *The Independent*, was undeterred. Uncannily – and probably unknowingly – echoing Jimmy Carter’s speech almost 30 years before, it declared:

⁴ According to *The Toronto Star* ([How High Priced Oil Is Changing Our Lives](#), 13 May 2012), in the future “only rich people will be able to afford cars. Everyone else will be taking public transport. Commuters will move into Toronto leaving the suburbs to revert to their former status as farmland. ... Such is the controversial/bleak/contrarian view in Jeff Rubin’s latest book *The End of Growth* (Random House Canada, 2012). ... Rubin’s thesis is that ... when conventional low-cost sources of oil dry up, the world will be left with oil from places like the Alberta tar sands that are much more expensive to produce [and hence its price will skyrocket].”

The world is heading for a catastrophic energy crunch that could cripple a global economic recovery because most of the major oil fields in the world have passed their peak production, a leading energy economist has warned. Higher oil prices brought on by a rapid increase in demand and stagnation or even decline in supply could blow any recovery off course, said ... the chief economist at the respected International Energy Agency ... In an interview with *The Independent*, [he] said that the public and many governments appeared to be oblivious to the fact that the oil on which modern civilisation depends is running out far faster than previously predicted and that global production is likely to peak in about 10 years ... On top of this, there is a problem of chronic under-investment by oil-producing countries, a feature that is set to result in an “oil crunch” within the next five years ...

In a stark warning to Britain and other Western powers, [he] said that the market power of the very few oil-producing countries that hold substantial reserves of oil – mostly in the Middle East – will increase rapidly as the oil crisis begins to grip after 2010. ... In its first-ever assessment of the world’s major oil fields, the IEA concluded that the global energy system was at a crossroads and that consumption of oil was “patently unsustainable,” with expected demand far outstripping supply. ... Even if demand remains steady, the world would have to find the equivalent of four Saudi Arabias to maintain production, and six Saudi Arabias to keep up with the expected increase in demand between now and 2030 ([Warning: Oil Supplies Are Running Out Fast](#), *The Independent*, 2 August 2009).

Today’s Consensus

What says today’s consensus of experts? “Oil Industry Comes to Terms with Cheap Crude Oil” (*Dow Jones Newswire*, 20 June 2017) expressed it thus:

Three years after the price of crude began its rapid descent, the oil industry and investors are finally resigned to the idea of lower prices for longer, potentially ending a period of crisis for the sector. The price of Brent crude, the international benchmark, is down 59% since it hit a

closing high of \$US115 a barrel three years ago ... But now, petrostates, investors and major oil companies are adapting to a world in which they see a range of \$US50 to \$US60 a barrel as the new equilibrium. The industry has had little choice but to accept the new reality after OPEC and other big producers failed to lift oil prices by capping their production, most recently at a meeting in late May.

Producers have cut costs, focused on more-profitable assets and no longer throw money at costly projects in places like the Arctic. Their ability to profit at lower oil prices has helped steady investors' nerves, and they are starting to fund new projects again, though a debate is still raging over the prospect of a supply crunch down the line. "Lower for longer has become the new mantra in the industry," said Daniel Yergin, vice chairman of IHS Markit and a long-time oil-market watcher. "People are regearing themselves to a new price level and \$US50 to \$US60 seems acceptable to most."

... This is all a big change from just three years ago. In 2013, Saudi Arabia's oil minister declared \$US100 a barrel a "reasonable price" for consumers and producers. Now, many people in the oil industry don't even want to see that price again, some analysts say. That is because high oil prices triggered a big investment boom that fuelled a global supply glut and crashed the market. "For oil, \$US50 to \$US60 is a sweet spot both for consumers and for producers." Over the past year, analysts have steadily downgraded their expectations for oil prices. In *The Wall Street Journal's* May survey, analysts predicted Brent would average \$US59 a barrel next year, down from \$US68 in the survey a year earlier. For 2019, the analysts now see Brent at \$US60 a barrel, down from a prediction of \$US76 last May.

Today's consensus confidently predicts that prices will be "lower for longer." Few contemplate materially higher prices – and some claim to foresee significantly lower prices. Given experts' woeful track record of prediction, that's a bullish sign for contrarians.

Yesterday It Was "Peak Supply;" Today It's "Peak Demand"

New technologies that improve fuel efficiency are mitigating the consumption of petrol and diesel for transport; and a consensus is growing that passenger vehicles' consumption of fuel will also fall as environmental regulations stiffen, the number of electric vehicles increases, etc. Western countries' economic growth and consumption of energy long moved in lockstep; today, however, that linkage seems to be weakening and may even be decoupling. Hence "peak demand"—the conjecture that, after 150 years of virtually continuous growth, the demand for petroleum will at some point reach its maximum and then fall.

Although many big oil companies can envisage a day when the world will need less crude oil, timing the occurrence of peak demand is, according to *The Wall Street Journal* ("Get Ready for Peak Oil Demand," 26 May 2017),

one of the hottest flashpoints for controversy within the industry. It's tough to predict because changes to oil demand will hinge on future disruptive technologies, such as batteries in electric cars that will allow drivers to travel for hundreds of miles on a single charge. Hitting such a plateau would mark the first time that demand has declined ... since ... the late 1850s. Yet, for many companies and investors, the question isn't *whether* this immense turning point will happen – it's *when*. Getting that timing right will separate the winners from the losers, and it has become a major preoccupation for energy economists and a flashpoint for controversy within the industry [*italics in the original*].

In response to today's predictions of peak demand, two sets of points are relevant. First, these forecasts diverge by decades. America's two biggest oil producers, ExxonMobil and Chevron, say that peak demand isn't in sight; ditto Saudi Aramco. In contrast, some big European producers predict that it could emerge as soon as 2025. As a result, they're diversifying away from crude oil. Royal Dutch Shell and Norway's Statoil, for example, are placing big bets on gas and renewables; similarly, Total of France is seeking to become a distributor as well as a generator of electricity. And on 6 July, as part of Emmanuel Macron's pledge to "make the planet great again," France announced that it will outlaw the sale of all diesel and petrol vehicles by 2040. It will also ban any "new project to use petrol, gas or coal," as well as shale oil, by that date. The move, its environment

minister gushed, was a “veritable revolution,” adding that reaching the target would be “tough.” On 26 July, Britain said, in effect, “me, too!”

“Nobody knows” when – or even if – demand will peak, BP’s chief economist admitted to *The Wall Street Journal*. BP’s base case is the mid-2040s – with the critical caveat that it could come somewhat sooner or much later. “There are huge bands of uncertainty,” he emphasises. The ambiguity stems from a host of variables including the pace of technological changes that will render renewables and electric vehicles more cost-competitive; the degree of toughness of new regulations aimed at curbing CO₂ emissions; and the rate of economic growth in developing countries (which currently provides the lion’s share of the rising demand for oil). These factors “are making it much harder to predict long-term demand than in the past.”

The second set of points is critical: today’s enthusiasts of peak *demand* are the (probably unwitting) heirs of a century of failed predictions about peak *supply*. “Within the next two to five years,” the director of the U.S. Bureau of Mines warned in testimony to Congress, “the oil fields in this country will reach their maximum production, and from that time on we will face an ever-increasing decline.” That was in 1919. He was wrong, of course: production in the U.S. didn’t crest for another half-century. (And even then it was a temporary peak: production reached a new record maximum in 2009; since then, it rose in each year to 2014, dipped slightly and reached another all-time maximum in 2016.) But the director reflected the prevailing view among experts at that time. “The position of the United States in regard to oil can best be characterised as precarious,” cautioned an official of the U.S. Geological Survey in 1920. The same year, another official at USGS warned that “within perhaps three years, our domestic production will begin to fall with increasing rapidity, due to the exhausting of our reserves.” When another official wrote to President Woodrow Wilson in 1919 in order to advise him that securing foreign oil supplies was the toughest problem that the U.S. faced, Wilson glumly replied that he could see “no method by which we could assure ourselves of the necessary supply at home or abroad.”⁵

⁵ See Stephen Krasner, *Defending the National Interest: Raw Materials Investments and U.S. Foreign Policy* (Princeton University Press, 1978), pp. 106-110 and Robert Sherrill, [The Case Against the Oil Companies](#), *The New York Times*, 14 October 1979.

Another supply scare erupted after the Second World War. “Sufficient oil cannot be found in the U.S.,” declared the chief of the State Department’s Petroleum Division in 1947. Two years later, the Secretary of the Interior added that the “end of the U.S.’s oil supply is almost in sight.” It nonetheless continued to flow. No matter: in 1967, Royal Dutch Shell concluded that the world’s output would peak in 28 years. This gloomy forecast begat the snappy slogan “95 at 95 in 95” – that is, peak production of 95 million barrels per day at \$95 per barrel in 1995.

In 1956, M. King Hubbert, a geophysicist who spent the first part of his career at Shell and the latter part with the USGS, confidently predicted that the production of petroleum in the U.S. would peak at some point between the late-1960s and early-1970s – after which it would decline rapidly and irreversibly. Most experts initially scoffed. By the late-1970s, however, production had seemingly peaked – and “peak oil” belatedly acquired a significant number of adherents (including Jimmy Carter and his advisors). If production in the U.S. can peak and decline, so too, presumably, it can on a worldwide basis. Hubbert initially predicted that, globally, maximum output would occur in 1995 and thereafter decline rapidly; by 2010, he added, it would decrease a terrifying 17% vis-à-vis its level in 1995. “The end of the Age of Oil is in sight,” he confidently proclaimed in 1974.⁶ Hubbard was the most prominent but hardly the only analyst whose confident prediction of “peak oil” wildly missed the mark. A very long list of other experts thoroughly botched the same call. Perhaps most notable was an international group of eminent academics, analysts and other experts assembled by the Massachusetts Institute of Technology in 1977. It concluded that, although the peak might occur in the early 1980s, the world’s production of oil would peak by 1990 “at the latest.”⁷

It’s vital to understand that key assumptions underpinned Hubbert’s and his acolytes’ prediction. They assumed that the growth of demand wouldn’t change greatly – and thus overestimated it in the developed world and grossly underestimated it in the developing world (particularly China and India). They also pre-

⁶ See Noel Grove, “Oil, the Dwindling Treasure,” *National Geographic*, vol. 145, no. 6 (June 1974), pp. 792-825.

⁷ *Energy: Global Prospects 1985-2000*, Report of the Workshop on Alternative Energy Strategies (McGraw-Hill, 1977).

dicted, in effect, that no big changes of technology or its application would occur – and thus missed the “shale gale.” It’s boosted America’s production of oil to such an extent that it’s now greater than it was in 1971 – and has thus comprehensively falsified Hubbard’s thesis (at least for the time being).

Systematically Debunking Experts’ Predictions

Generally speaking, to what extent can experts predict the future? It’s easy to cite examples of influential authorities whose predictions failed miserably; but if we take logic and evidence seriously, it’s actually very difficult to answer this question definitively. In 1980, J. Scott Armstrong surveyed experts’ forecasts in a variety of fields. When it comes to predictions, he concluded, “expertise and accuracy are unrelated.”⁸ And in 1984, Philip Tetlock designed and launched what he immodestly described as “the most comprehensive and rigorous assessment of expert judgement in the scientific literature.” He compiled a sample of almost 300 experts about economics, politics, science and technology, and then devised questionnaires which elicited testable predictions. Over the next quarter-century, he and his team collected and analysed more than 80,000 predictions. It was by far the biggest exercise of its kind ever – and its results were startlingly clear.⁹

Most experts would be far more accurate if they’d just toss a coin. In most cases, Tetlock famously said, “a dart-throwing chimpanzee” would produce more accurate predictions. *The blunt truth is that, generally speaking, experts’ predictions are less reliable than random guesses; moreover, they’re no more accurate than non-experts’.* Authorities presumably know plenty about their area of expertise; but no human being can divine the future. A forecast thus tells us much about the forecaster’s state of mind today – but little about tomorrow. It’s amusingly ironic: bureaucrats, executives and intelligent laypeople would never swallow an elixir sold by a huck-

⁸ J. Scott Armstrong, [The Seer-Sucker Theory: the Value of Experts in Forecasting](#), *Technology Review*, vol. 82, issue 7 (June/July 1980), pp 16-24.

⁹ See Philip Tetlock, *Expert Political Judgment: How Good Is It? How Can We Know?* (Princeton University Press, 2006) and Philip Tetlock and Dan Gardner, *Superforecasting: The Art and Science of Prediction* (Broadway, repr. ed., 2016).

ster from the back of a wagon; yet they routinely accept the predictions of experts who claim, in effect, that they can read crystal balls and tarot cards!

Of course, astrologers and psychics can toss a coin as well as any expert; hence it's tempting to infer from Tetlock's research that, if one wants to predict (say) the price of oil, it's just as well to consult fortune cookies, palm readers or the opinionated man in the pub. But that's not Tetlock's conclusion. It's certainly true that we should regard experts' predictions very sceptically; but just as important as the dismal collective result is the variation among individual experts. "There's quite a range," he found. "Some experts are so out of touch with reality, they're borderline delusional. Other experts are only slightly out of touch. And a few are surprisingly nuanced" (Gardner, p. 26) What distinguishes the impressive few ("superforecasters") from the risible many isn't whether they're conservative or socialist, or optimistic or pessimistic; it doesn't matter whether they have PhDs; nor are experts in some fields (apart from physicists predicting eclipses, planets' orbits, etc.) better predictors than others; nor does long experience or access to classified information make any difference. If anything, high IQ and arcane statistical models beget worse predictions: "delusions can fool anyone," says Tetlock, "even the best and the brightest – perhaps *especially* the best and the brightest."

What *does* make a big difference is *how* people (expert or otherwise) think. The worst experts – those whose predictions would improve greatly if they'd simply toss a coin – disdain the world's complexity and the future's uncertainty. They seek to simplify prediction to some model, theory or theme – and they use it exclusively and repeatedly. To a small boy with a hammer, everything looks like a nail; similarly, the worst class of expert – which is by far the largest class of predictors – looks inflexibly through the prism of this single idea, model or theory. The worst predictors are also the most confident. They're certain that their One Big Idea is correct; hence its predictions, too, must be right.¹⁰ Hence the quip

¹⁰ A poll conducted by COMPAS, Inc. in June 2009 showed that business executives are, if anything, even more confident than other experts. Asked what the price of oil would be in five years, only 5% of the sample answered "I don't know." Asked to predict its price in 10 years, less than 10% pleaded ignorance; and when asked about their powers of divination 20 years hence, a mere one-third doubted their ability to predict.

commonly attributed to [Norman Lamont](#) (Baron Lamont of Lerwick): the typical expert is always wrong but never in doubt.

In contrast, experts whose predictions are somewhat better than random guesses think very differently. They acquire information from multiple (and conflicting) sources, seek to synthesise them – and accept that they often can't. They're self-critical rather than self-confident. When Tetlock's researchers showed these experts that they'd erred, they – unlike the poorer predictors – didn't try to avoid, deny or minimise their mistakes: they simply acknowledged them. Most importantly, they accept that world is complex and that the future is contingent upon innumerable actions and events. They're at ease with uncertainty in the fundamental sense that they doubt the ability of anyone – including themselves! – to predict the future. *Hence the paradox: the most accurate experts (perhaps "least inaccurate" is more apt) tend to be the least confident that they're right.* In a famous essay, "The Hedgehog and the Fox" (1953), the British political philosopher, Isaiah Berlin, recalled a fragment of an ancient Greek poem. "The fox knows many little things," the warrior-poet, Archilochus, wrote, "but the hedgehog knows one big thing." In Berlin's honour, Tetlock dubs the relatively accurate and diffident experts "foxes" and the woefully inaccurate and laughably overconfident ones "hedgehogs." Tetlock's results couldn't be clearer: foxes' predictions beat hedgehogs'. Cautious thinking that accepts complexity and uncertainty trounces the confidence that attempts to deny, ignore or greatly underestimate them.

The implication of Tetlock's research is clear: *if a hedgehog makes a prediction, it's almost certainly wrong and you should therefore treat it very sceptically.* The sort of expert who thrives in blogs, books, newspaper articles and columns, television panels, etc., is typically self-assured and dramatic. The mainstream and social media love him (men are typically brasher and stupider than women) because he delivers compelling stories and snappy sound bites – and doesn't burden his audience with caveats, complications, doubts and uncertainties. The sort of expert typically cited in and sought by mainstream and social media is precisely the sort who's most likely to be dead wrong. *Hence one of Tetlock's most startling findings: the more prominent is an expert, the more wildly inaccurate his predictions are likely to be – and, apart from his entertainment value as a buffoon, the less seriously you should regard him.* The next time you encounter an expert self-assuredly predicting – which, I confidently envisage, won't be long from now! – ask yourself: "why am I listening?"

Why am I not laughing?"¹¹ But that's not Tetlock's most significant (for investors) result. Rather, it's this: *projections*¹² that emerge from simple, valid and reliable rules of thumb beat foxes as well as hedgehogs. One such principle is "project the long-term average;" another is "project the long-term rate of change." Perhaps the best is "regress to the mean."¹³

It's depressing to the priesthood but amusing to the laity: *the crystal balls of experts – that is, their arcane statistical models*¹⁴ – generally produce significantly worse predictions than random guesses or tosses of a coin. Since rational people don't take seriously the prognostications of astrologers, palm readers and the like, they should be equally sceptical of experts' predictions. That leaves us with a big problem. As investors, as in our careers, personal lives, etc., we must plan for the future. But if experts can't predict future developments in their chosen fields, then what hope have generalists? Are our plans pointless? *If we plan properly – that is, flexibly, humbly and using time-tested rules of thumb – then certain approaches to decision-making and particular styles of thinking can help us to navigate a path towards the fu-*

¹¹ How do brash hedgehogs react when their predictions deviate wildly from subsequent reality? Tetlock finds that, unlike modest foxes, they don't attempt to discover why they're routinely so egregiously wrong, resolve to become more humble, etc. Quite the contrary: they stridently insist that, although their timing isn't perfect, "time will tell" and ultimately prove they're correct!

¹² According to the [Australian Bureau of Statistics](#), a prediction is an inference from a sample of a population. A projection, on the other hand, "indicates what the future changes in a population would be if the assumptions about future trends actually occur. These assumptions are often based on patterns of change which have previously occurred." The ABS adds that "a projection is not ... a prediction or forecast about what is going to happen; it is indicating what would happen if the assumptions which underpin the projection actually occur."

¹³ In *Clinical versus Statistical Prediction* (University of Minnesota Press, 1954), Paul Meehl demonstrated that experts' predictions are not as accurate as "simple algorithms." Most experts ignored Meehl's results; others denounced them. Subsequent research – more than 200 studies, according to Tetlock – confirms that objective rules of thumb trump experts' subjective assessment. For readable overviews of regression to the mean, see Chris Leithner, *The Intelligent Australian Investor*, Chap. 10 and Michael Mauboussin, "The Success Equation: Untangling Skill and Luck in Business, Sports, and Investing," *CFA Institute Journal* (September 2013), pp. 44-51.

¹⁴ Mainstream economics, says Alan Jay Levinovitz, an assistant professor of philosophy and religion at James Madison University in Virginia, is [The New Astrology](#). Economists have wrangled their way to power and prestige by building castles around mathematics. "By fetishizing mathematical models, economists turned economics into a highly paid pseudoscience."

ture. Unlike the herd, we must not become Gnostics: no idea, insight, model, “secret” or special technique can or will ever eliminate risk or uncertainty. Darkness will always cloak the future. Only if we accept and embrace this fundamental and unalterable reality can we prepare ourselves for – and perhaps even profit from – the inevitable surprises that lie ahead.

The Collective Wisdom of Crowds versus the Conventional Wisdom of Experts

Charles Mackay, the author of *Extraordinary Popular Delusions and the Madness of Crowds* (1841), shared the conceit of today’s politicians and bureaucrats (and their court jesters in the mainstream media and universities): he denied that a crowd of people could solve a problem or choose wisely. Crowds never acted reasonably: instead, collective judgements were invariably extreme. “Men, it has been well said, think in herds. ... They go mad in herds, while they only recover their senses slowly, one by one.” People who presume to know what’s best for the rest of us blindly assume that knowledge resides primarily in the heads of a few experts. The mainstream media mindlessly parrot this assumption: given any “problem,” they chase an “expert” who can solve it. The key to good decisions and solving problems, they allege, is to find a brilliant person (or a small group of intelligent and well-instructed people) who possess or can find the correct answer. *Yet with respect to certain classes of decisions and problems and under certain conditions, the opposite is much closer to the truth: large groups of laypeople reach far more intelligent decisions than coterie of experts do; these groups also derive much more sensible solutions than their most intelligent members.* They needn’t depend upon experts to solve problems; indeed, in order to do so they *mustn’t* rely upon experts. Moreover, even if most of such groups’ members aren’t well-informed – or intelligent or even rational – they can still reach collectively wise decisions.

Who Wants to Be a Millionaire? provides an intriguing example. This TV gameshow’s premise is simple: its compere asks a contestant a series of multiple-choice questions, the next one more difficult than the previous one, and if she answers all 15 correctly then she wins \$1 million. If a question stumps a contestant, she can seek one of three possible means of assistance. Firstly, she can request that two of the question’s four possible responses be removed (so that she’d have at least a 50-50 chance at the correct response). Secondly, she can telephone a friend or relative – who, before the show, she had identified as the smartest per-

son she knew – and ask this person to supply an answer. Thirdly, the contestant can poll the studio audience (which casts its votes by computer).

Conventional wisdom suggests that smart individuals will provide the most reliable assistance. Indeed, the experts didn't do badly; they supplied correct answers almost two-thirds of the time. But the audiences did much better: majorities of these crowds supplied correct answers more than 90% of the time. Of course, this example doesn't meet the standards of a scientific experiment. We don't know how smart the experts really were; nor do we know whether the audiences comprised cross-sections of the general population. Further, the experts and audiences answered different questions; hence it's possible that the audiences answered easier questions. Nonetheless, this result is – from a mainstream point of view – disconcerting. It's an example of what James Sirowiecki calls "the wisdom of crowds."¹⁵ He concludes:

chasing the expert is a mistake, and a costly one at that. We should stop hunting and ask the crowd (which, of course, includes the geniuses as well as everyone else) instead. Chances are, it knows (p. xv).

The collective wisdom of crowds often trumps the conventional wisdom of experts. For our purposes, two kinds of problems are most important:

1. *Problems of cognition* have definite answers or solutions. Who'll win this year's Six Nations championship? How many tonnes of iron ore will BHP export next year? Will regulators eventually approve medication X?
2. *Problems of co-ordination* require that members of a group (e.g., buyers and sellers in a market, pedestrians on the street, commuters on the train, etc.), each of whom seeks different objectives, co-ordinate their behaviour such that each attains what he desires.

Groups work amazingly well under certain circumstances – and, when these conditions don't apply, less well and sometimes very badly. Sirowiecki demon-

¹⁵ See James Sirowiecki, *The Wisdom of Crowds: Why the Many Are Smarter Than the Few and How Collective Wisdom Shapes Business, Economies, Societies and Nations* (Doubleday, 2004).

strates that under four conditions groups of non-experts will solve these classes of problems better (that is, faster, more accurately, etc.) than experts:

1. *Variety*: the more different are the views, sources of information, methods, etc., of a group's members, the better are its decisions. Heterogeneity adds information and perspectives that homogenous groups lack. Hence groups that comprise members possessing various amounts of knowledge and intelligence produce better decisions than groups that contain only high-knowledge and high-IQ members.¹⁶
2. *Independence*: groups solve problems best when their members think and act independently. Individuality doesn't mean isolation, but it does imply freedom from undue influence. The more sway we exert upon one another, the more likely it is that we'll believe the same things – and make the same mistakes.¹⁷ Groups that succumb to conformity, consensus and groupthink make poor decisions.
3. *Decentralisation*: the more each member incorporates his unique (i.e., intuitive, local, personal and tacit) knowledge into his deliberations, the better are the group's decisions. There's a world of difference between data (which often measures trivialities or irrelevancies) and knowledge (which usually resists measurement).
4. *Aggregation*: collective wisdom presupposes a mechanism (the computation of a mean, discovery of a market price, etc.) that transforms numerous private judgements, into a single decision.

“If a group satisfies these [four] conditions,” says Sirowiecki (p. 10), “its [collective] judgement is likely to be accurate.” Why?

¹⁶ See, for example, Scott Page and Hu Long, “Problem Solving by Heterogeneous Agents,” *Journal of Economic Theory*, vol. 97, no. 1 (March 2001), pp. 123-163.

¹⁷ Sirowiecki (p. 41) elaborates: “Independence is important to intelligent decision-making for two reasons. First, it keeps the mistakes that people make from becoming correlated. Errors in individual judgement won't wreck the group's collective judgement as long as those errors aren't systematically pointing in the same direction. ... Second, independent individuals are more likely to have new information rather than the same old data everyone is already familiar with. ... Independence doesn't imply rationality or impartiality, though. You can be biased and irrational, but as long as you're independent, you won't make the group any dumber.”

At heart, the answer rests on a mathematical truism. If you ask a large enough group of diverse, independent people to make a prediction or estimate a probability, and then average these estimates, the errors each of them makes in coming up with an answer will cancel themselves out. Each person's guess, you might say, has two components: information and error. Subtract the error, and you're left with information.

Given these conditions it's hardly surprising that authorities' predictions are typically so poor. As a group, experts are hardly diverse; moreover, they abhor independence. The academic assembly line that produces [Social Justice Warriors](#) – and experts – seeks to crush rather than encourage diversity of outlook; and those that fail to recite the catechism are denounced and excommunicated. The typical expert is an employee of a large organisation; accordingly, he possesses a strong incentive to renounce independence and embrace conformity, consensus and the safety of the herd. Indeed, the typical expert resembles a lemming. They're criticised as a group. Yet as long as individual members of the herd are indistinguishable from the herd, their actions – no matter how dumb – escape criticism. As John Maynard Keynes put it, it's safer to fail conventionally (i.e., as a member of the herd) than to succeed unconventionally (as an iconoclast). And which Aussie broker ever got the sack for recommending the Big Four banks or Telstra?

Expertise and intelligence aren't irrelevant. By definition, a mixed group will contain some highly knowledgeable and above-average IQ members as well as some dumb and ignorant ones. *But if you assemble a group whose members come from varying walks of life, possess different experiences, skills, etc., it'll tend to produce better decisions and predictions than a couple of experts.* In certain domains, genuine expertise certainly exists – and in these circumstances it's best to let experts make the decisions. Passengers and patients certainly don't want crowds of amateurs to perform open-heart surgery and fly aeroplanes! Yet organisations which recruit solely “the best and the brightest” from the top universities won't be the most adaptable, innovative, profitable, etc. *In many fields, in other words, expertise is greatly over-rated.* As Sirowiecki (p. 32) puts it,

There's no real evidence that one can become expert in something as broad as “decision making” or “policy” or “strategy.” Auto repair, piloting [an airplane], skiing, perhaps even management: these are skills

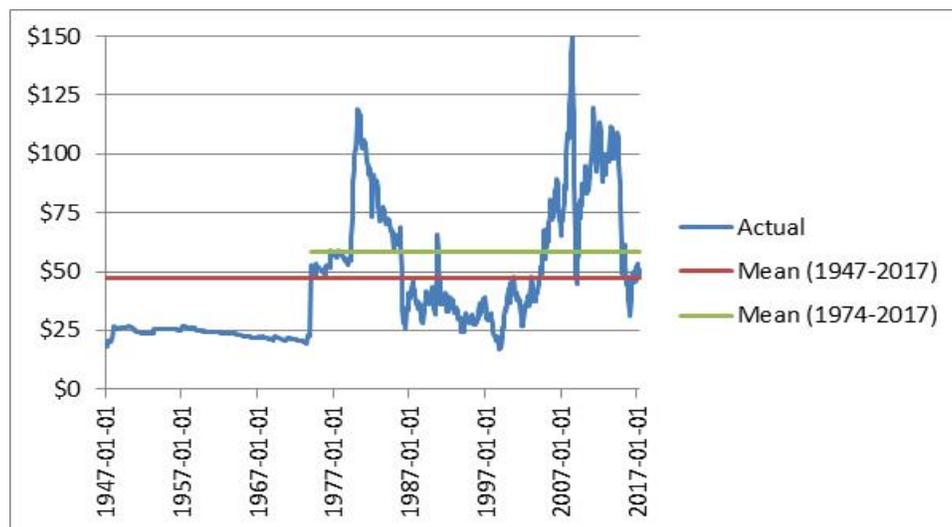
that yield to application, hard work and native talent. But forecasting an uncertain future and deciding the best course of action in the face of that future are much less likely to do so. ... A large group of diverse individuals will come up with better and more robust forecasts and make more intelligent decisions than even the most skilled "decision maker."

What, Then, To Do? Two Examples

Is Today's Price of WTI Dear?

Experts' predictions are incessant but their historical perspective is usually absent. "Given a choice between forecasts and history," says Adam Creighton, "choose history" (see "Look to History to Find a More Accurate Picture of Nation's Growing Problem," *The Australian*, 11 May 2015). Using monthly observations of the Consumer Price Index and price of WTI crude oil compiled by the Federal Reserve Bank of St Louis, this question is easy to answer (Figure 1).¹⁸

Figure 1:
The Price of West Texas Intermediate Crude Oil, Constant (June 2017) \$US,
January 1947-June 2017



¹⁸ It's useful to recall my previous Newsletter regarding oil and its price ([Leithner Letter 188-191, 26 July - 26 October 2015](#)). Bearing in mind its caution, strong caveats, etc., the current (July 2017) price of Brent crude is below (but not significantly below) the projections in Figure 7 (p. 15).

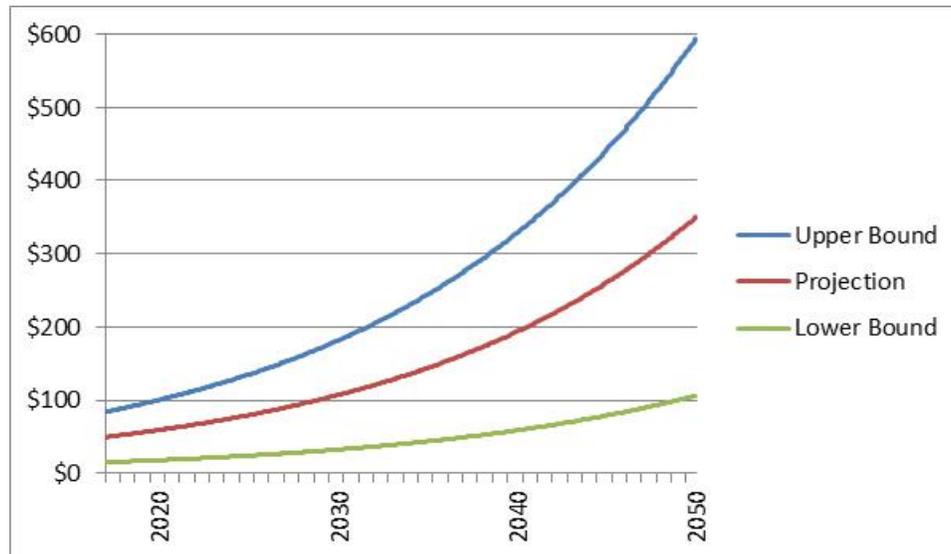
Jimmy Carter's "moral equivalent of war" speech occurred when WTI's price (in 2017 dollars) was \$57 per barrel. Relative to the 70-year average (\$47), that was somewhat dear; compared to the average since 1973 (\$59), however, it was rather cheap. Three years later, the price vaulted to \$120. But what rises to the heavens often crashes to earth: by January 1986, WTI plunged below \$26; and after fluctuating around ca. \$37 over the next several years, by December 1998 it plummeted below \$17. Yet phoenix rises from the ashes: for the next decade the price rose almost without interruption and reached its all-time maximum (\$150) in June 2008. By February of 2009, however, it had crashed to \$45. By March of 2013 it zoomed above \$100 and stayed there for the better part of two years – until it collapsed to almost \$30 in February 2016. Is today's price dear? It's somewhat less than its 70-year historical average – but ca. 25% below its post-1973 mean.

The Projected Price of Brent Crude in 2020-2050

Tetlock's most startling result – and, it seems to me, most significant for investors – is that projections derived from valid and reliable rules of thumb such as "the central tendency and dispersion of the long-term past will, unless there are compelling reasons otherwise, prevail in the future" beat foxes as well as hedgehogs. Figure 2 plots the results of this exercise. Using monthly observations of Brent Blend's price compiled by the Federal Reserve Bank of St Louis, the average change per 12-month period since January 1980 (i.e., January 1980-January 1981, February 1980-February 1981, ... and June 2016-June 2017) is 5.9% and the average standard deviation of these 12-month periods is 34.8%.

If we assume that past is prelude – i.e., the same (many and mostly unmeasurable) influences upon Brent's volatile price in 1980-2017 will apply in the same way in 2017-2050 – then we can project prices and place lower and upper bounds around these projections. Specifically, if our assumption is valid, then the probability is 95% that in 2020 Brent's price will lie between \$18 and \$99 per barrel (our projection's central tendency is \$59), and that in 2050 it will lie between \$106 and \$594 (the central tendency is \$350). If our assumption is true, there's a 5% chance that prices will fall outside these bounds. Clearly, however, garbage in, garbage out: the less valid is this assumption, the less reliable will be these bounds. (The U.S. Energy Information Agency's most recent (2017) *Annual Energy Outlook* projects a price of ca. \$80 per barrel in 2020 and \$240 in 2050.)

**Figure 2:
Using Brent's Average Percentage Change and Dispersion (1980-2017) to
Project Its Price and Dispersion (2017-2050)**



“Lobby Urges Tighter Curbs on LNG Exports” (*The Australian*, 15 June) stated:

... one of the world’s leading oil and gas experts, ... says [Australia’s] oil and gas companies are in for a tough few years, with near-term oil prices standing a serious chance of heading to \$US30-35 a barrel. ... “There’s a 30-40% chance that oil prices will sink to \$US30 or \$US35 a barrel for several years,” he said, ... adding he expected prices to come down to \$US40 in the next month.¹⁹

These prices, as Figure 2 shows, are well within the projected range – most experts, it’s important to note, rarely deign to provide theirs – during the next several years. So are possibilities which this “leading expert” ignores: prices approaching \$100 per barrel. I’m not predicting either \$30 or \$100, but recent history – and the projection’s bounds – comfortably subsumes them. Finally, Figure 2 answers a key question which statements about the future should – but in practice rarely – address: what evidence would convince us that we’re mistaken?

¹⁹ This expert’s prediction was – what a surprise – wrong: during the month to 15 July, the price of Brent crude rose above \$US49.

Conclusion

The panel of specialists is, when it attempts to divine the future, usually a parade of fools. “State a case to a ploughman and a professor,” said Thomas Jefferson in 1787; “the former will decide it as well, and often better than the latter, because he has not been led astray by artificial rules.” Experts’ predictions are typically less accurate than random guesses – and they regularly succumb to hubris. The “energy crisis” of the late-1970s provides an example; so does today’s “climate change” hysteria (or is it [psychosis](#)?). Hence it’s wise to discount experts’ predictions heavily – or, apart from their value as slapstick entertainment, ignore them entirely. If their consequences weren’t so costly, confidently-uttered but wildly-inaccurate predictions would be amusing. Less comically, the passion to prophecy reflects *libido dominandi* – the desire to dominate. Fortunately for the ruled, rulers’ (and wannabe rulers’) failure to forecast belies their clay feet. I don’t pretend that I know the future course of the price of oil. And I don’t know any better than Janet Yellen when the next financial crisis will erupt. But unlike the confident Yellen, I humbly acknowledge that I don’t know. Moreover, I’m not such a damn fool as to proclaim that it won’t occur in my lifetime; and I’m not so arrogant (or is it deluded?) to believe that I can prevent it.²⁰

Some experts (“foxes”), says Philip Tetlock, are somewhat less bad at prediction than others (“hedgehogs”). They can, in some instances over short periods, forecast better than the toss of a coin. At the same time, however – and when it really matters – the ability of these “superforecasters” has very severe limits: as a group, they failed to anticipate the bursting of the Dot Com bubble, eruption of the Global Financial Crisis, collapse of oil prices from December 2014, etc., even a few weeks (never mind months) before they occurred. *Yet foresight – that is, prudent judgement amidst the thick fog uncertainty – is real.* What’s more, it isn’t a mysterious gift bequeathed at birth: it’s the result of particular ways of thinking, of gathering and analysing information, and of forming and updating conclusions.

²⁰ Yellen’s quote on the first page is unusual. As C. Jay Engel notes, she “is less opaque than Alan Greenspan and less combative than Ben Bernanke. But she shares both men’s ability to say very little that is interesting or controversial” (see [Janet Yellen’s Bland 2017 Forecast](#), *Mises Wire*, 24 January 2017). See also Engel, [Yellen To Congress: We’ll do Something Someday](#) (*Fed Watch*, 14 February 2017) and Brendan Brown, [Can Yellen Keep the Boom Going?](#) (*Mises Wire*, 5 March 2017).

Although mainstream economics and finance is claptrap, political punditry is babble and many scientists egregiously overegg their findings, I don't say that genuine expertise is bunkum. Clearly, however, the typical authority's desire to grasp the future will always exceed his reach.

Fortunately, investors don't need to predict accurately in order to decide sensibly. They can't foresee the future; they can, however, acquire foresight (i.e., prudence and wisdom). Our purpose isn't to predict the future: it's to prepare for a wide variety of conceivable futures. "The truth is," a consultant told Dan Gardner (Future Babble, p. 53), "in the oil industry today the most senior executives don't even try to pretend they can predict the price of oil." John Browne (Baron Browne of Madingley), BP's former CEO, agrees. "I can forecast confidently that it will vary. After that, I can gossip with you. But that's all it is because there are too many factors which go into the dynamics of the pricing of oil." Here's my confident prediction: during the next week, month, year, decade and beyond, the prices of stocks, bonds, commodities, etc., as well as market indices, will fluctuate; further, it's certain that at some point they'll surprise and even shock us. Investors should therefore plan accordingly. According to Tetlock and Gardner,

There is no evidence that geopolitical or economic forecasters can predict anything ... beyond the excruciatingly obvious – “there will be conflicts” – and the lucky hits are inevitable whenever lots of forecasters make lots of forecasts. ... If you have to plan for the future ... plan for adaptability and resilience. Then assume reality will give you a kick in the shin and think about dealing with that. “Plans are useless,” said President Dwight D. Eisenhower [formerly a five-star general] about preparing for battle, “but planning is indispensable”²¹ (*Superforecasting*, pp. 243-244).

Chris Leithner

²¹ Ike uttered these wise words in a speech to the National Defense Executive Reserve Conference in Washington, D.C. on 14 November 1957. See *Public Papers of the Presidents of the United States: Dwight D. Eisenhower, 1957* (National Archives and Records Service, Government Printing Office, 1958), p. 818.