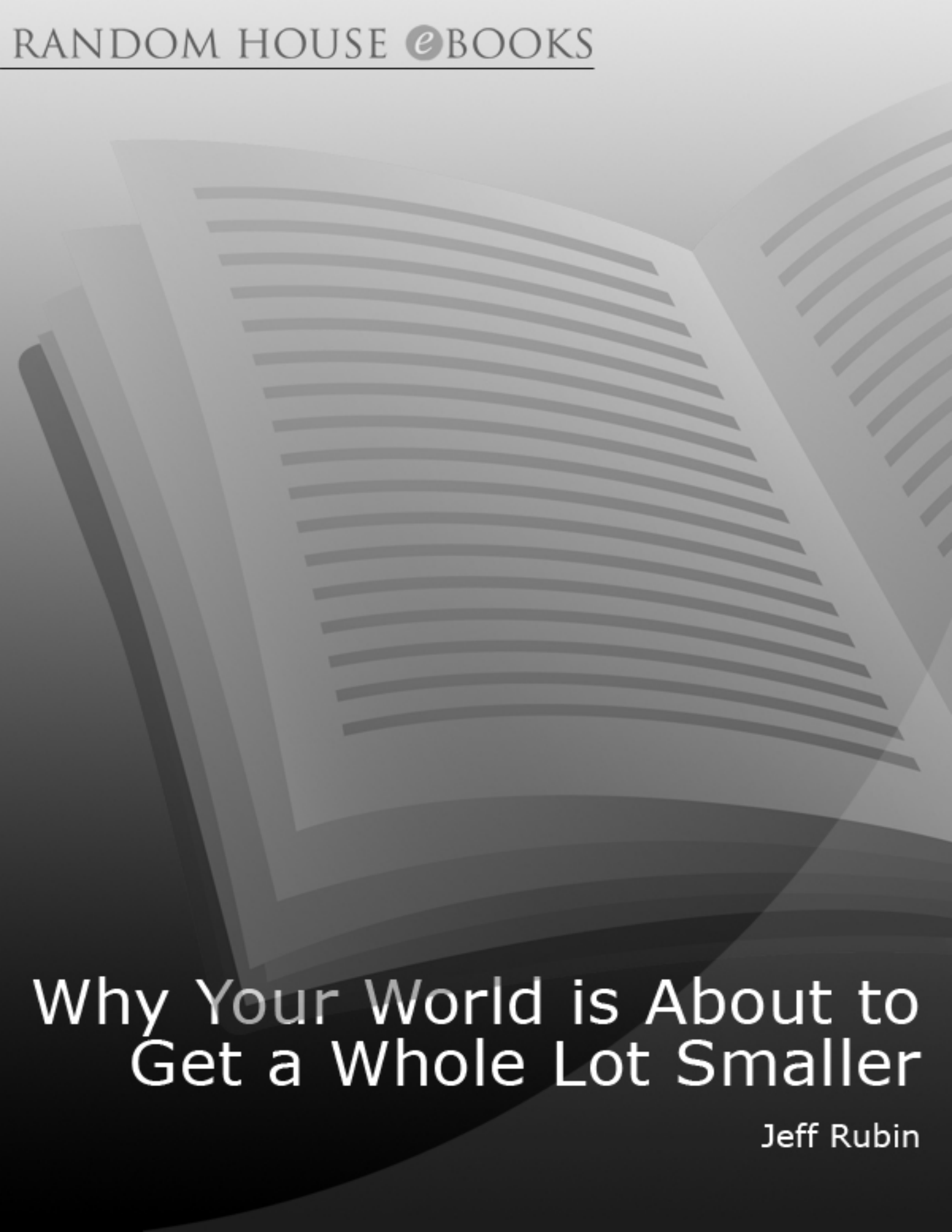


RANDOM HOUSE  BOOKS



Why Your World is About to Get a Whole Lot Smaller

Jeff Rubin

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About the Book

Soaring oil prices caused four out of the last five recessions. They caused the current recession. And they will cause the next one.

Expensive oil costs us more than just money. It costs jobs, homes and in the long run it is going to radically alter the way we live. For if cheap oil is the fuel that keeps the machinery of globalisation in motion, then expensive oil has the same effect as pouring diesel into an unleaded tank. Everything stalls; the engine fails. Oil prices will rise again in the coming years, as this utterly convincing insight into our collective future argues. And as oil prices fluctuate wildly, our society will change dramatically, and for good. From the homes we live in and the cars we drive to the food we eat and the places we work, our daily lives and global economy are going to be transformed. But while this new, smaller world will take some getting used to, it will also open our eyes to a more localised and ultimately more liveable way of life.

About the Author

Jeff Rubin was the Chief Economist at CIBC World Markets for almost twenty years. He was one of the first economists to accurately predict soaring oil prices back in 2000 and is now one of the world's most sought-after energy experts. He lives in Toronto.

**WHY
YOUR WORLD
IS ABOUT TO
GET A WHOLE
LOT SMALLER**

JEFF RUBIN



TO DEBORAH, JACK AND MARGOT

[INTRODUCTION]

REDEFINING RECOVERY

BEING AN ECONOMIST CAN RUIN YOUR APPETITE.

It is probably not the only job that has that effect. I've never worked as a taxidermist, but I can see that it might turn me off fish. My job, though, gets me worried about fish in a whole different way.

I like salmon—who doesn't? Salmon consumption has risen about 23 percent each year for the last decade or so. There are a number of good reasons to eat more fish: we all want food high in omega-3s, we want to eat less saturated fat, we want healthy protein for our low-carb diets. But here's the key reason for the amount of salmon on your dinner table: cheap oil has been subsidizing the cost of fish. Just like Wal-Mart and Tesco and big-box retailers around the world have been able to cut prices on almost everything by taking advantage of cheap shipping and cheap Asian labor, salmon went from being delicious local seafood to being another global commodity. Cheap oil gives us access to a pretty big world.

In the global economy, no one thinks about distance in miles—they think in dollars. If oil is cheap, it really doesn't matter how far a factory is from a showroom or a farmer's field from a supermarket. It's the cost of other things, like labor or tax, that determines what happens where. An Atlantic salmon caught off the coast of Norway¹ is destined

to be moved around the world just like a ball bearing or a microprocessor.

First the fish is taken to port in Norway, where it is frozen and transferred to another vessel, which will take it to a larger port, probably Hamburg or Rotterdam, where it will be transferred to *another* ship and schlepped to China—most likely Qingdao, on the Shandong Peninsula, China's fish-processing capital. There the whole salmon will be thawed and processed on a sprawling, neon-lit factory floor where squads of young women with nimble fingers skin, debone and fillet the fish. It will then be refrozen, packaged, stowed on another container ship and sent to a supermarket in Europe or North America. Two months after it was caught, the salmon will be thawed, displayed on crushed ice under gleaming halogen lamps and sold as "fresh."

Still, if I'm sitting in a nice restaurant and I'm enjoying a good conversation over a glass of wine, that is not what I am thinking about. And anyway, the shipping news doesn't normally appear next to a menu item. But if that conversation turns to energy and oil prices (and I confess it does fairly regularly), then when I glance at that fish I know I am looking at the past.

In the near future there is going to be less salmon on our tables—and probably fewer restaurants to eat in, too. Because the cheap-oil subsidy that makes Norwegian salmon affordable is about to disappear.

And as it does, your world is about to get smaller—much, much smaller.

To get that salmon from the ocean to your plate takes a ridiculous amount of energy. Think of the fuel for the fishing boats, container ships and just-in-time delivery trucks; the energy to freeze and process the fish, to sell it in a supermarket (retail stores use almost as much energy per square foot as factories do, just on heating, cooling and lighting). We invest a lot more energy to get that salmon

than we get out of it when we eat it, which in itself makes the fish a bad energy deal. Economics calls it a “diminishing rate of return.”

But it gets worse. A lot worse. All of that energy costs money, and energy gets more expensive just about every day. Not quite *every* day, of course—the recession that seemed to catch everyone by surprise in 2008 brought oil prices down in spectacular fashion. But even the deepest recessions last barely over a year. Those prices will be on their way back up soon enough. And however you want to measure the energy in that fish—calories, miles, joules, barrels of oil—it is inevitable that the price of fish is going to go up as well.

The seafood on your plate depends on cheap energy. And what is true of salmon is true of just about everything else. All you have to do to find an example is look around. Every morning when I head out to go to work, I see thousands of examples: the commuters making their way downtown from far-flung suburbs. The city I live in happens to be intersected by one of the busiest highways in North America²—half a million cars make their way through its most heavily trafficked interchanges every day. Are those commuters going to be living or working where they are today when oil prices inevitably soar again? And if they are, will they still be driving cars? Either our living arrangements or our transportation options are going to have to change. In other words, our whole way of life depends on the price at the pumps, and that price depends on an uninterrupted supply of oil.

Think about that as you drive to work. Have a look at all those car dealerships, the gas stations and garages, the drive-thrus and big-box stores surrounded by huge parking lots. Try to imagine your life—picking up dry cleaning, taking your kids to hockey, going to Home Depot on the weekend, heading to the cottage in the summer—without a

car. If you are like most people in North America or Australia, or even a less car-dependent country like the UK, you probably can't do it. And if you can't, you now have a small sense of what depends on the price of what comes out of the pump.

I say a small sense, because not only does your car burn energy, it is made from energy. Just building your car requires as much energy as it burns in several years. Add to that the fact that the plastics and paints and interior elements are made from petrochemicals derived from oil, and the picture becomes clearer. The house you live in is probably powered by electricity generated, at least in part, from hydrocarbons, and is almost certainly heated with natural gas or oil. The clothes you wear to work were probably made in some distant land and shipped here using relatively cheap oil, just as the coffee beans that went to make your latte were grown in a far-off country where the sun shines brighter and the labor is much cheaper, and then were shipped here.

So you see, it's not just your salmon. Despite the steady barrage of climate-change news and a growing sense that our affluent lifestyle may have unpleasant consequences for the environment, few of us stop to consider how just about every facet of our lives is built around our energy consumption. Nearly everything we do is inextricably bound to our use of energy.

And by "energy" I mean oil. Yes, we use natural gas and some coal to generate electricity; but the world's car and trucks and ships and planes run on oil. That means that the global economy runs on oil, because the global economy is about moving things around the world. And the reason the global economy has put all its eggs in one basket is that there is no other basket. As of right now, everything—from the salmon on your plate to the entire model of a global economy—depends on keeping the oil flowing.

Now, what happens when the price of salmon goes up? You buy less of it. And when the price of gasoline goes up, you drive less. When the price of clothes or computers or anything else goes up, everybody buys less.

And when everybody spends less, you have a recession.

It's not all that complicated. High energy prices cause recessions. A recession is not the end of the world, of course, though if you are one of the many people who has lost a job or seen your investments melt away, it can seem that way. Still, history keeps showing that the economy recovers, usually after a few quarters, and life goes on. Markets pick up, factories ramp up production, and eventually you're back to eating all the salmon you want.

But the history of the modern global economy is not all that long, and it is worth asking whether the patterns we have seen in past decades are ones we can expect to go on repeating into the future. We have seen high oil prices trigger recessions before, and in each case the medicine to cure a sick economy has been ready at hand: cheap new supply.

It's simple—as long as you have a ready supply of that oil.

But if you don't, the whole idea of recovery from a recession has to be redefined—because it's not going to look like it used to.

Right now, you need oil to make money and you need money to buy oil. If oil is too expensive, it becomes harder and harder to make money, whether you do that by driving a cab or by selling pineapples. And if there is no money to buy oil, the price of oil goes down. When it goes down, all of a sudden it's easier to make money again. But as long as you need oil to make money (and as [chapter 7](#) will show, you do), the price of oil is going right back up once the money starts flowing again.

Sure, oil prices collapsed from record highs toward the end of 2008, but not before bringing down the global

economy. It may be a record decline, but that says a lot more about where oil prices are coming from than it does about the price oil fell to. After all, oil prices have averaged over \$40 per barrel since the recession was announced in the US in 2008. It wasn't that long ago that prices like that would have been considered pretty expensive.

But even more importantly, there is no way that oil prices are going to stay at these levels. As soon as the economy picks up, so will oil prices. That's because the fundamental causes behind triple-digit oil prices in 2008 won't have changed at all during the recession. In fact, they will likely have worsened.

As we will see in part 1 of this book, the reason the price of a barrel of oil hit record highs was that there is a deeply rooted imbalance between supply and demand. This doesn't mean speculators don't help push prices higher as well. Of course they do. But you have to ask why speculators got attracted to oil prices in the first place.

The answer is that they saw demand for oil rising relentlessly and they saw supply plateauing. It looked like a one-way bet, and in speculation, every day you're right, you've made money. Well, if you thought the price of oil could never fluctuate downward, you were wrong. Huge oil price increases have always caused recessions, so why wouldn't the recent record rise have the same effect? If you didn't see that, you probably lost some impressive sums of money. But if you figured there was a lot of demand chasing a relatively fixed amount of supply, you were right. And you still are.

What that means is that the moment the economy stops sputtering and comes back to life, oil prices will resume their upward trajectory. And all the sooner, since much of the new high-cost supply we were counting on in the near future has been canceled because of the decline in oil prices during the recession. The price of crude will keep going up until it triggers another downturn. As long as it

takes a particular amount of oil to make a fixed amount of money or GDP, we are going to see our economies choked by rising prices almost as soon as they get back on their feet after each recession.

But it doesn't have to happen this way. One way to reduce the amount of oil we need to keep the economy running is to make your world smaller. And that is exactly what is going to happen.

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I've got some good news and some bad news. Which do you want first?

That's what I should have asked the crowded dining room of oil executives in Calgary's Petroleum Club. As the chief economist at CIBC World Markets, a North American investment bank, I had come to talk about a subject very close to my audience's hearts: the future price of oil. I had something to say that should have improved their mood. But all they heard was the bad news.

The room was full of big personalities—anyone in the oil business had a plate full of the best Alberta prime rib money could buy. They were all there, from the big multinationals like Exxon, which owned much of the Canadian oil patch through its subsidiary Imperial Oil, to the small independents and aggressive entrepreneurs trying to make a living outfoxing the world's biggest oil companies. The one thing they all had in common that night was that one way or another they were all counting on producing more oil in the future, and they figured they were the guys who knew how it was going to happen.

Well, I figured they were wrong. I had just read an obscure but alarming study of the world's oil reserves called *The Coming Oil Crisis*, by Dr. Colin Campbell, a Cambridge-educated retired senior geologist who had spent the better part of his life exploring the world for new

reserves. The title of the book pretty much gives away the ending.

What Campbell was suggesting was so contrary to the conventional wisdom about oil supply, and so staggering in its implications for the world economy, that I had decided to go see him. After a lifetime of oil exploration around the world, he had settled in a tiny Irish hamlet called Ballydehob, not far from Cork. I was in fact following in the footsteps of my wife, Deborah Lamb, who had recently led a Canadian Broadcasting Corporation film crew to do a documentary on oil depletion. There, in a tiny village along the Irish coastline, the world's most famous geologist explained to me what I was about to explain to Calgary's oil executives.

Campbell's argument was, and still is, that global oil production follows pretty much the same pattern as any individual oil well. Production at each reservoir accelerates until roughly half of the oil has been exhausted. Then it inexorably falls due to declining well pressure. A graph of oil production looks like a bell: a short, relatively horizontal line that steepens as it rises then flattens to a short peak before tracing a mirror image of its rise as it goes down the other side. The resulting curve—called the Hubbert curve³, after the American geophysicist M. King Hubbert, who seems to have been the first person to figure out that there is only so much oil in the ground—gives us a pretty good visual impression of what we can expect from a finite resource: a peak, followed by a decline.

In 2002, Campbell first helped convene a loosely connected organization called the Association for the Study of Peak Oil to take an objective look at world oil supply. Pooling the experience of lifetimes in the field, the group of largely retired senior geologists who had explored the world for Shell, BP, Total, and all the other big majors built a massive database that tracked the depletion of every

major producing oil field in the world. And when they added it all up, the composite picture that emerged about the growth of world oil supply was very different from the one their former employers were conveying. The rate of discovery was falling steadily and the rate of field depletion was rising just as inexorably. Run that model for very long, and pretty soon world production starts declining as well.

In other words, global production would soon be on the backside of the Hubbert curve. Campbell wasn't saying that the world was going to literally run out of oil. It never will, at least not in a time frame that matters to anyone reading this book. But daily world production, which had grown linearly until then, would soon peak, plateau and then begin its irreversible decline.

That struck me as a pretty important piece of news.

As an economist, I had been trained not to worry about resource limits—the question is not whether there is enough of something to go around, it's how much it will cost to get it *out* of the ground. And as someone whose job it is to forecast the economy, I knew how important oil—cheap oil—is to our economy's future health. In a word, *very* important. In fact, indispensable.

It was not long before I found that what economic theory was telling me was going to happen to prices was quite different from what Colin Campbell's analysis of depletion had to say. And if I was going to have to choose, I was going with the facts rather than the theory. The more I looked into the problem of oil depletion and scarcity, the more I found that looking at the problem as an economist usually told only half the story.

This book tells the other half.

—

But back at the Petroleum Club in Calgary in 2000, the Hubbert curve was going to be a tough sell.

You certainly were not going to hear about depletion from the oil companies. Their stock valuations depend in good part upon estimates of their reserve holdings. That makes “depletion” a dirty word in most oil-company boardrooms. OPEC producer states are even less inclined to talk about how quickly their countries’ oil reserves are depleting. First, their production quotas are in part dependent on their reserve estimates. More importantly, since few will be capable of producing at their quotas anyway, candid depletion disclosure can expose a country to geopolitical as well as potential financial risk. That means that the only people who know exactly how much oil is in the ground are the last people who will ever tell you.

So I figured I would tell them. Oil had just reached a ten-year high of over \$30 per barrel, after averaging around \$20 per barrel over the last decade. Just about all of the oil and gas analysts out there, to say nothing of a similar percentage of economists, were predicting that OPEC would soon boost production and bring prices back down to their so-called target range. That is, most of the world, and certainly the folks I was speaking to that night, believed that we were in the midst of a temporary spike in oil prices that would soon be reversed.

I was ready to short that trade. I knew that the cartel had long ceased to be a price setter. They just didn’t have enough production capacity to control prices any longer. They were a price taker, just like everyone else these days. If Campbell’s supply projections were even remotely close to the mark, I knew that oil wouldn’t be anywhere near the \$20 per barrel range for very much longer. And when oil prices started to rise, they would have a long way to go up. I began modeling what oil prices would be like under increasingly restrictive supply conditions and came up with a forecast of \$50 per barrel within five years.

So I took the stage to make the case that what we had just recently seen in oil markets was a harbinger of the

future trend in world oil prices. Those high prices (remember when \$30 oil seemed alarmingly expensive?) were not some cyclical blip or coincidence of special factors but the beginning of what would prove to be a spectacular rise in oil prices driven by a fundamental imbalance between ever-growing demand and ever-tightening supply conditions.

It is not just production that follows the bell-shaped curve toward the day when there is not enough oil to go around. Discovery of new oil fields peaked in 1966 and has been falling ever since. And while we still every once in a while read headlines about major new discoveries like the Tupi oil field off the coast of Brazil, announced to great fanfare in late 2007, what the oil companies don't hold glamorous press conferences to announce is that every year the world oil industry loses almost 4 million barrels per day⁴ in production through depletion. That is, as we drain the oil wells scattered around the globe, they produce less each year—a lot less. This means that the industry has to find roughly 20 million barrels per day of new production over the next five years simply to replace what will be lost. Right now, we are pumping about three times more than we're finding. That's a surefire recipe for even higher oil prices down the road.

And we almost never read press releases from oil companies or national governments explaining that what is coming out of the ground is not the cheap, free-flowing stuff that gushes out of the desert in Saudi Arabia, but the sticky tarlike bitumen that is mined from sands most of the year in subfreezing temperatures in northern Canada.

Not surprisingly, my supply forecast based on accelerating depletion of some of the world's workhorse oil fields and my forecast doubling of the price of a barrel of oil by mid-decade went over just like Hubbert's 1956 address to the American Petroleum Institute, where he first

made the case that oil production in the United States would peak in the early 1970s and decline thereafter. He was laughed off stage, and his employer, Shell Oil, immediately disassociated itself from his forecast. Hubbert made himself an outcast by predicting the collapse of US oil production⁵, and I was doing a pretty good job of wearing out my welcome too. My oil price forecast and its underlying supply projections were greeted with widespread amusement if not outright derision.

But as it turned out, Hubbert was right. American production peaked at just shy of 10 million barrels per day in 1971. It has fallen steadily since then. Today it is barely half that amount, at 5.1 million barrels. Tomorrow it will be even less.

And I was right too.

—

One thing I've learned from years of being on the opposite side of the peak oil debate from just about everyone else is that it is pretty much impossible to convince anyone of something they just don't want to believe. Campbell's forecast of a production peak was of course dismissed by the industry just as Hubbert's initial projections of a production peak were ignored decades earlier. Anyone who was willing to warn of pending supply shortages at a time of cheap and seemingly plentiful oil supply was ridiculed by the oil industry and consequently ignored by most of the media.

Still, I thought that might change when the facts started proving me right.

Five years after my first speech to the Petroleum Club, I returned to the same venue to give a forecast update on the outlook for oil prices. I was at this point feeling pretty confident of a more receptive audience, now that my earlier forecast was being borne out: the price of West Texas

Intermediate, the benchmark North American oil (named after the sweet, light crude by which all oil refined in North America is judged), had already straddled my \$50-per-barrel target. Maybe these folks weren't buying into the Hubbert curve, but a packed room told me a lot of people wanted to know what I was going to say next about world oil prices.

This time I was there to talk about demand, not supply. So far, the peakists had talked only about the threat to future oil prices from supply depletion. But depletion wasn't the only factor threatening future world oil supply. Explosive demand for massively subsidized oil in major oil-producing countries had become a new threat, particularly in the very places many of us are expecting to supply our future energy needs—the OPEC countries.

Feeling much more confident than five years earlier, and armed with new data on soaring domestic oil consumption in OPEC and other major oil-producing countries, I walked up to the podium and made the case that most of the world's major exporting countries were cannibalizing their own export capacity.

The price implications for world oil markets would be just as significant as those that followed from depletion. Unable to match strong demand growth in the developing world, increasingly restrictive conditions in world crude markets would send the oil price doubling to \$100 per barrel within the next two years. In other words, the world's main oil producers would soon be burning so much of their own oil that there wouldn't be enough left for the rest of the world—like the United States, which burns about a quarter of the world's oil but pumps less than a tenth.

Well, I was wrong about one thing—a receptive audience. Anyone who has read the small print beside the asterisk in any mutual fund advertisement knows that past success is no guarantee of future performance. But I was

still somewhat taken aback at how long people cling to past misperceptions. Despite my newly minted track record, no one in the room believed that oil prices were heading to \$100 any more than they had believed years earlier that oil was going to \$50.

Ironically, many of the very executives who snickered at my outlook turned out to be among the greatest beneficiaries of my forecasts—at least when they are proven right. Of course, oil shot well past \$100, and the advent of triple-digit oil prices transformed the Canadian oil sands from a marginal resource propped up by huge royalty subsidies to one of the most important hydrocarbon deposits anywhere in the world. In the process, Calgary's Petroleum Club has been suddenly thrust from relative obscurity into the limelight of the world energy industry, triggering an enormous boom in Alberta, where for a while the people serving coffee in doughnut shops were making \$40 an hour.

That was the good news I had tried to tell them five years earlier: high oil prices would suddenly make expensive tar-sands oil a hot commodity. But what is good news for Alberta is not necessarily good news for the rest of the world.

—

Every time the price of a barrel of oil dips by a few dollars, someone tells me I'm out to lunch. And when prices went from \$147 to briefly below \$40, not a few people figured I had been proven wrong pretty decisively. That's fine. I've had this debate on CNN, on ABC, in the pages of the *New York Times* and the *Wall Street Journal*. There is *always* someone willing to argue that the tightness in world oil markets is due to a "perfect storm" of special circumstances that will soon pass and that once again all those silly notions of depletion will be proven wrong. When

oil broke through the \$100-a-barrel⁶ ceiling in January 2008, we were asked to believe that a single rogue trader had bid up the price to amuse himself on a day when many other traders were still on vacation. When it kept going up, other reasons were invoked, such as hedge funds piling into the market looking for easy money. One possibility we almost never heard about was the risk that oil supply might not meet demand.

I can't say I am surprised. After all, the conventional wisdom of economics says I should be wrong—supply *should* match demand.

The basic rules in economics are pretty simple, despite all the fancy mathematical packaging that comes with the discipline these days. The two fundamental axioms of the dismal science are that the demand curve slopes down and the supply curve slopes up. That is, the more people want something, the more it should cost. And the more it costs, the more of it there should be. Find the point of intersection between those two curves, and voilà, you have found the market clearing price.

If Porsche Carreras were given away to all ticket holders at NFL games, they would be worth a lot less than they are today. If we started running out of, say, shampoo, the price would go up. Manufacturers would have an incentive to ramp up shampoo production, and the price would come back down. Pretty simple.

The basic laws of demand and supply dictate that higher oil prices should draw additional supply from the ground while at the same time killing off demand. And that is exactly what economists keep predicting. Like Pavlov's dogs, that's what they are trained to do.

After all, they have history on their side, as the oilmen in Calgary were quick to remind me. Twice before, catastrophic spikes in the price of oil were followed pretty quickly by a return to normal prices, just as conventional

economics would predict. In both 1973 and 1979, the world economy was thrown into chaos by fuel shortages and the high prices that accompanied them—only to see the time-tested laws of supply and demand quickly restore order to both oil prices and the economy at large.

And as economists predicted, higher oil prices triggered huge investments in technology that dramatically improved energy efficiency, whether it was smaller cars or natural-gas-fired electricity plants. It is also true that new supply was brought on line and helped force down the price of a barrel of oil. The British North Sea oil fields gushed oil into world markets, as did Prudhoe Bay in Alaska, helping restore global supply and fueling economic booms in the UK and Alaska. Once again the laws of demand and supply seemed to be working, with higher prices bringing forth the new supply that economics textbooks said they always fetch.

But history can be loaded with head fakes. The energy crises of 1973 and 1979 were political in nature, not geological or economic. The world began to run dry because major oil-producing nations simply turned off the taps. Eventually, they turned them back on again.

This time around, the tap is wide open. But even with everyone pumping as much oil as they can, what's flowing through the spigot these days doesn't seem to be enough to meet the world's growing thirst for oil. There is something far more fundamental going on.

In today's oil market, the laws of supply and demand have been turned on their heads. Contrary to the basic precepts of economic theory, global oil demand grew faster during the run-up in oil prices than it did a decade earlier, when prices were roughly a fifth or less of what they were in early 2008. Far from killing demand, record high oil prices seemed to spur ever-greater consumption of oil.

And instead of new supply gushing out of the ground, supply growth has basically stopped dead in its track in the

face of no less than a fivefold increase in the price of crude. Despite every incentive to pump more, despite calls for OPEC to open the spigots and President Bush's personal pleas to the Saudis, world production has hardly grown at all since 2005.

Suddenly the textbooks seem to be describing some other world than the one we live in.

It is hard to say which possibility is more alarming to economists—that the world has reached its peak oil production plateau, or that the rules of their vocation don't seem to be working any more.

—

It is funny how a recession looks like good news to some people.

When global credit evaporated in the wake of the 2008 subprime mortgage crisis, oil prices tumbled along with the values of the world's stock markets. Seemingly overnight the price of a barrel of oil plunged from an all-time high of \$147 to as low as the high \$30s. Predictably, those who had piled into oil markets scrambled for the exit doors, especially hedge funds and other investors who were forced to sell their oil positions to come up with some money to cover the losses they were sustaining in the rest of their portfolios. And, just as predictably, what many observers concluded from watching prices fall was that there must not have been an energy scarcity problem after all, and that triple-digit prices had been just a speculative blip.

Of course, most of the commentators saying that were people who had never thought oil prices would ever get above \$50 per barrel in the first place. Sure, if you think the market is going to solve the problem of high oil prices and then the price drops, you might be tempted to think that the market has done what you had such faith it would.

But no one said that oil prices will never fall. In fact, increasingly wild and destructive movement in prices is exactly what you would expect in an environment of global scarcity. Oil demand will drop in a recession, and so will the price of oil. So that can't be a surprise to anyone.

But we shouldn't be looking at oil prices as the effect of the recession. *They are the cause.* While the financial crisis from the imploding US subprime mortgage market gets top billing for the 2008 recession, the ascent of oil prices to record triple-digit levels played a far more major role in derailing growth in the North American and European economies.

To claim that the price decline is evidence that record prices were the consequence of massive speculation in oil markets is to ignore the underlying problem: a fundamental mismatch between global supply and demand. But what today's skeptics don't explain is why oil prices aren't \$20 per barrel, as they were only eight years ago, during the last recession. West Texas prices have hovered around \$40 per barrel, and Brent prices, the European benchmark, have traded around \$45 even though this recession is well over three times as severe.

There is a good reason prices won't fall that far. The skeptics may not want to talk about it, but at \$60 to \$90 per barrel, many of the world's largest energy megaprojects, such as the Canadian oil sands, won't go ahead because those prices will no longer provide a sufficient economic return. Finding pocket change is getting pretty expensive these days and it's not going to get any cheaper tomorrow. If you believe that high prices bring new supply out of the ground, you are pretty much committed to the fact that every drop in price means that there is less oil to go around. There may be oil out there under the ground, but no one is going to sign up to lose money pumping it. The laws of economics cut both ways.

In any case, as we will see, it matters less every day how much oil is consumed by the countries of the Organization for Economic Co-operation and Development (OECD), a club of the world's thirty most advanced and wealthiest democracies. We may be easing off on demand in North America and Europe, but elsewhere in the world drivers and policymakers are getting on the accelerator even more enthusiastically than we are getting off. We can cut back as much as we like, yet as long as the Saudis and Venezuelans, the Chinese and Indians keep their feet on the gas, it is not going to matter.

In August 2008, when oil prices peaked, Americans drove 15 billion miles fewer than the previous August, the largest drop since the government started collecting data in 1942. That kind of collapse in demand is part of the reason for the decline in prices. But there are plenty of drivers elsewhere in the world who are more than happy to drive those miles and burn that oil. Even if demand were to stagnate in the rich countries, it is only going to grow elsewhere and eventually catch up to where we were when prices were so high.

But demand is not going to stagnate forever. This recession may be the deepest post-war downturn, but that is just testament to the destructive power of triple-digit oil prices. If \$40 is as cheap as oil gets in the most severe recession, what happens to oil prices when the economy picks up again?

Simple. Once the dust settles from the various crises rocking financial markets, we are looking at the same basic demand-supply imbalance that we were looking at before the recession began. That imbalance took us to nearly \$150 per barrel before the recession set in. In the next cycle, the same imbalance will probably take us to \$200 per barrel before another recession temporarily knocks back prices and demand.

Economic activity goes hand in hand with energy use. If you want to grow the economy, you need to burn more energy—that's precisely why dwindling oil reserves pose such a threat to global economic growth. If instead the economy falters and begins to contract, less energy is used and hence its price will fall. That doesn't mean that triple-digit oil prices were a temporary aberration, but it does give a sense of how hard it is to keep the world economy running on cheap oil and it should make it pretty clear what happens to oil prices when the recession is over.

Other than lulling us into an unjustified sense of optimism about the future direction of oil prices, a global recession will do absolutely nothing about the unavoidable fact that oil production is nearing a plateau while oil consumption around the world is still rising. Recessions don't diminish our dependence on oil; they just cut back a little on our appetite for it. When we start to feel a little better, we will be guzzling it again, and we may well be left wanting more. Because unlike after past oil shocks, there is no post-shock boost in oil supply to look forward to any more.

If we wait for Adam Smith's invisible hand to pull abundant sources of new cheap oil out of the ground, we are going to be waiting for Godot. Governments around the world may be thrusting bailout money into the hands of businesses and taxpayers, but you can count on one thing. There will be no energy bailout.

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Just as I had good news and bad news for the oilmen, part 2 of this book will have good news and bad news for you too.

First the bad news. With supply dwindling and demand rising, you can expect scarcity. And scarcity means high prices. You can expect triple-digit oil prices in the near future. Yes, the price at the pump is going to go up. Count

on it. In the US, that should translate into as much as \$7-per-gallon gasoline, and about \$2 per liter in Canada. Europe is of course already paying those prices, so they should get ready for the equivalent of double-digit gas prices. But it will also hurt in a lot of ways you may not be thinking about.

Life as we've known it is up for grabs in a world of expensive fossil fuels. Expensive oil means a severe curb on the free-spending lifestyle that cheap energy has afforded us for some time now. It means you can say a long and wistful goodbye to the inexpensive products manufactured on the other side of the world. You may not love them, but they have been stretching our dollars for a while now and holding down inflation at the same time. You'll miss them when it starts to become clear that your paycheck just doesn't go as far as it used to.

Your food in particular is going to cost a lot more—in fact, it is already getting more expensive all the time. The stuff you burn in your car is the same thing the farmer in Iowa needs to plant and harvest his corn (to say nothing of the natural gas needed to manufacture his fertilizer). It's the same stuff that powers all the trucks and planes and ships that move everything around, the same stuff that is used as a feedstock for the petrochemical industry that produces our plastics and pharmaceuticals. It's what the navy uses to fuel its ships, and what the local government needs to run its lawnmowers to keep the parks looking groomed. Someone is going to have to pay for all of this, and less oil means less money. Some difficult choices lie ahead.

Now the good news.

Expensive oil may mean the end of life as we know it, but maybe that life wasn't particularly great to start with. Smog-congested cities, global warming, oil slicks and other forms of environmental degradation are all part of the legacy of cheap oil. If you want a hint of what the future

will look like if oil-guzzling members of the OECD get it right, just look at Europe today. There, drivers are already paying the equivalent of \$7 for a gallon of gasoline, and in France and Germany life goes on.

European gasoline prices give a hint of what is down the road for North Americans, and it is not all doom and gloom. Sure, we will be facing higher prices (if you've ever bought a pint of beer in Frankfurt or a latte in London, you know just how much higher European prices can be than what North Americans pay). We will be living in denser communities, driving smaller cars, living more frugally and locally. When we travel, we may soon be boarding an electric-powered train rather than an oil-powered airplane. And with global climate change also bearing down on our energy consumption, we may be soon be paying more attention to the cost not only of buying carbon-based fuel, but of burning it too, just as the Europeans are already doing.

But living in a clean, efficient, densely populated city is not exactly the end of the world. Where would you rather spend your vacation: Paris or Houston?

And while there are certainly going to be losers as the eighteen-wheeler of globalization is thrown into reverse, there are going to be winners too. In a world of triple-digit oil prices, distance suddenly costs money and lots of it. Many of those once high-paying manufacturing jobs that we thought we had lost forever to cheap labor markets overseas may be soon coming back home. With every dollar increase in the price of the bunker fuel that powers the container ships that ply the Pacific, China's wage advantage becomes less and less important and Western workers once again become competitive. Who would have dreamt that triple-digit oil prices would breathe new life into America's rust belt or the British steel industry?

Get ready for a smaller world. Soon, your food is going to come from a field much closer to home, and the things