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The "Beyond the Rate" podcast series is provided as a service to those who wish to educate themselves on mortgages and the mortgage industry. This information represents my opinions and understanding of mortgage-related topics, and it mirrors the advice I give to clients everyday. Generalizations are made to simplify complex issues. All generalizations have exceptions. The intent is to provide insights, not absolute coverage. This information is provided free of charge. No liability is assumed.

Beyond the Rate – Chapter 13

Is anyone telling the TRUTH in the mortgage business??

Hello and welcome to Beyond the Rate, a series of podcasts that are designed to educate the listener on the world of finance and in particular, the mortgage business. This is Chapter 13 and we'll be looking at oil and the availability of energy both now and in the future. We're approaching a major milestone in that department and the implications will be felt in every corner of our world.

My name is Patrick and I'm a Mortgage Banker here in the San Francisco Bay Area. I'm your host and I really encourage you to subscribe to this series for an informative and detailed account of how the mortgage industry operates and how to navigate through all the confusing programs and deceptive marketing techniques being used by some of today's Mortgage Brokers.

Please note that the text versions of these podcasts are now available (in PDF format) for free download at my website at www.beyondtherate.com along with a bunch of other related materials and resources. You can also sign up for my monthly email newsletter at that website.

Most people, when they think about oil, think about their winter heating bills or the price of gasoline. If only it were that simple. The fact is that oil plays an integral role in almost everything we do. Oil is used to move products around our country and around the world. Oil allows large machines to build roads, bridges, tunnels and structures. Oil is a primary ingredient in asphalt used to pave our roads and freeways. Plastics are byproducts of oil. Fertilizers that dramatically increase the output of farm land are byproducts of oil. And the machines that cultivate those farm lands operate on oil themselves. Oil is by far the most important commodity in our world.

Now, let's think about this for a minute. We're talking about a liquid that can be pumped from the ground and, after some fairly minor refining, can be put into a car so we can drive around with 200 or 300 horsepower. I mean, this is unbelievable stuff. Think about it. 200 or 300 horsepower! What does that actually mean? It means that oil gives us the equivalent of 200 or 300 horses to use as we see fit. At the turn of a key, we can get all 200 horses to ferry us and our supplies around to our chosen destination. Up hills, down hills, around corners – whatever we choose. AND, we don't have to feed any of these horses or clean up after them.

I know this sounds silly but it's exactly accurate. A hundred years ago, it would've taken a fairly wealthy man to be able to afford a horse, much less 200 of them. Today, we almost all own 200 horses or more. With our cars alone, oil has provided incredible wealth for recent generations. It's also allowed sophisticated machines to automate entire assembly lines, bringing down prices of almost all consumer goods. Fact is; we all live like royalty today when you compare it to a hundred years back. And it's this power and wealth that has dramatically magnified the progress, development and population growth of the past 100 years. Unfortunately, it will have a similarly dramatic impact when it finally runs out.

Let's look at a couple examples. Back in the 60s, the "green revolution" was achieving massive increases in crop outputs of certain staple crops like rice and wheat. The revolution began back in 1945 with a joint venture between the Mexican government and the Rockefeller Foundation but it really started picking up steam in the 60s. The idea was to use new technologies to improve the agricultural output of farm land and the project had tremendous success with crop yields increasing by almost 600%. 600%! That means a single plot of land could produce 6 times MORE food by using these new technologies.

So, what actually took place? Well, a lot of the progress revolved around new hybrid crops and farming techniques. But the backbone of the green revolution was oil. The industrialization of farming required new machines all running on oil. But more importantly, a whole new generation of nitrogen and ammonia-based fertilizers were being developed, and they're all byproducts of oil. It's these fertilizers that had the most dramatic affect.

You have to understand that plants need nitrogen to grow. Nitrogen is found naturally in manure and other decaying organic material. In a sense, it's a natural recycling process. Plants die and decay and then get used by newer plants as fuel. The same is true for manure. And since oil is the end result of millions of years of organic decay, it provides this nitrogen in an incredibly concentrated form.

Before these fertilizers were developed, farmers used to rotate their crops and distribute manure as fertilizer on their fields. But these new petroleum based fertilizers made all that unnecessary.

We've all heard that fertilizers are often used in homemade bombs like the improvised explosive devices killing our soldiers in Afghanistan and Iraq. The reason is that fertilizers are solid byproducts of oil with massive concentrations of nitrogen. Aligned properly, that can provide an explosive and dangerous cocktail. The point is that fertilizers are byproducts of oil so they'll run out at the same time oil does. Or, stated differently, fertilizers will become more expensive in roughly the same proportion as crude oil. That means those crops will rise in price as well.

The massive increases in food production during the 50s and 60s is credited for saving millions of lives around the world, particularly in underdeveloped countries like Pakistan, India, Mexico, Sri Lanka and the Philippines. And as a result, the

population was able to grow much faster than it could have otherwise. Indeed, the entire world population has grown as a result of the green revolution among other things. But what happens when the fertilizers become prohibitively expensive and scarce? Well, the population will require MORE food than the fields can produce and food shortages will result. Famines.

Let's look at another example. We all see the products lining our store shelves that are manufactured in China. We hear about the massive trade deficit on the evening news. Well, all that is made possible because it's still relatively inexpensive to transport all that stuff around the world. Huge tankers carrying thousands of containers cross our oceans daily bringing cheap imported products to our shores. And all these tankers run on oil. So as the price of oil goes up, it will become less profitable to import cheap products to our stores.

Globalization is only possible because of oil. There will come a day when shipping products manufactured in China all the way to the port of Los Angeles will seem absurd, particularly if you proposed doing so with oil. When? Who knows? Perhaps 50 years. Perhaps 100. 200. But that day will come eventually.

The same is true with today's cheap air travel. The thought of flying from one city to another on what might eventually be called a controllable rocket with wings full of oil-based jet fuel, just for a weekend, will seem incredibly wasteful and gluttonous. Don't believe me? That's okay. Am I crazy? Perhaps. But time will tell as it always does and I've got my bets down we'll start seeing opinions like that within the next 50 years.

Some people believe we'll easily find an alternative source of energy when oil runs out. They believe human ingenuity will inevitably save the day. I agree that human ingenuity will find ways of dealing with the problem. But let's not forget that we're talking about a liquid we can pump out of the ground, refine, store at room temperature, put into a car and drive around. Nothing will ever provide the ready availability of energy offered by oil. Nothing.

There's a measurement out there called the EROEI or the energy returned on energy invested, and it measures exactly what it says. How much energy do you get back for every unit of energy invested in production? For example, when oil was first discovered, its EROEI was over 100. So for every unit of energy you invested in pumping oil, you would get over 100 units of energy back. According to Howard Odum who wrote *Environmental Accounting, Energy and Decision Making* (1996), Middle East oil has an EROEI of about 8.4 and Alaskan oil is just over 11. Meanwhile, hydroelectricity is 10, nuclear is 4.5 and geothermal is 13.

The point of bringing this up is that hydrogen has an EROEI of less than 1. In other words, it takes MORE energy to isolate hydrogen than it eventually delivers when used. So hydrogen is not a SOURCE of energy at all. It's only a CARRIER of energy, and you lose some energy in the process. So hydrogen will never replace oil because it can't. It doesn't provide energy.

Hydrogen is only playing an important role because it can be transported (although you have to store it at extremely low temperatures, taking even more energy) and it also allows combustion without any greenhouse gasses. When burned, hydrogen only releases heat and water. But anyone who believes hydrogen will swoop in and save the day doesn't know that much about the topic. It will play a role, yes. We may even be running our cars on it one day but it won't represent any sort of miracle cure, that's for sure.

So the million dollar question is: when? When will oil start running out? And the answer to that question is hotly debated these days in political and industrial circles around the world. So far, oil production has increased every single year, but so has demand. With China and India developing their countries and building infrastructure, demand is growing faster than supply which is why we see the price rise. But the more important concern is when the annual production of oil starts to decline.

That milestone is commonly referred to as "peak oil"; the year when oil production reaches its zenith. Peak oil is an incredibly important milestone because it will be followed by an age where annual oil production slowly drops while demand continues to grow. You think we've got high oil prices now?? Think again. Once we pass peak oil, prices will jump up a lot more to re-balance supply and demand. And it's not a matter of price gouging, by the way. It's just a matter of supply and demand. If the demand for oil is greater than the supply, a bidding war will begin until a new equilibrium is reached. Fact is; there's a small bidding war taking place right now and that's why we're seeing gas prices trending higher. And although oil companies will make larger profits along the way, the real money will end up in the hands of those countries that have oil inside their borders.

That means the Middle East will be swimming in money and you can bet that will come with increasing corruption, brutality and militarization. Other countries slated for the windfall include Venezuela, Canada and Russia. In fact, if you include the tar sands in Alberta, Canada has the second largest oil reserves in the world. Keep your eyes on our northern border because the power dynamic will be shifting in their favor in the years to come.

By the way, the United States reached its peak single year oil production back in 1970 and it's been going down ever since. Once peak oil is behind us and prices start soaring, you can bet they'll start drilling up in Alaska. And the country will vote for it, too. Very few people will disagree with that effort once they see the economic impact of sky rocketing oil prices. In fact, you can bet that most environmental causes will significantly loose ground once we pass peak oil.

Experts on the subject can't agree on when it'll take place. And since production statistics are only aggregated after the fact, we won't know until the following year anyway. But most experts believe it will happen either within the next 10 years OR somewhere around 2050. Not surprisingly, the scientific community generally supports the former prediction while the oil company experts support the latter. Either way, it's coming up and it'll put a major damper on the world economy.

The point for this whole discussion is that peak oil represents a major wildcard in all the predictions I've made these past few chapters. You're now familiar with the economic model I use to predict the future of interest rates, stock valuations and housing prices but this peak oil situation is one thing that can throw the entire economy into a tailspin. And the fact that this oil boom largely coincided with the financial boom of the past 25 years has only fueled the capital accumulation we've been talking about. Whether we realize it individually or not, this is an incredibly prosperous time and I continue to believe the future will come with increasing challenges.

In the short term, I would bet on continued high oil prices. China and India are both in a race against time. They're both trying to develop as fast as they possibly can before the prices get too high. Go to Beijing. You'll see more cranes than you've ever seen. More skyscrapers. More freeway construction. Go to New Delhi. They know what's coming. They know peak oil is just around the corner. The population of China is about 1.3 billion and the population of India is about 1.1 billion. By comparison, the population of the United States is about 0.3 billion and the European Union is about 0.4 billion. So you can bet their demand for oil will keep growing as long as they can still get their hands on it and that will keep prices on the rise.

Okay, so if you like what you hear on this podcast, please tell a friend about it. My goal is to become a recognized authority in my field without having to sacrifice my freedom to tell the truth, even if it reflects poorly on my industry. Technology like podcasts can help elevate new and innovative thinkers but we all have to play our part to help spread the word for those who deserve our endorsements. If I am deserving of yours, my thanks.

If you are considering a purchase or a refinance, please call me to discuss the options. I'm a Mortgage Banker. It's what I do for a living. Interest rates change everyday but I'll promise you two things; I'll tell you the truth and I'll do the best I can. My office phone number is 925-465-1223. You can also reach me by email at patrick@beyondtherate.com.

See you next time for Chapter 14. We'll be looking at technology and the role IT will play in the years to come. Increasingly sophisticated platforms are commoditizing entire industries and threatening middle class jobs here in America. But there ARE a few opportunities as well. It's fascinating stuff. Stay tuned.

Bye for now.