

Our Finite World

Exploring how oil limits affect the economy

Ten Reasons Why a Severe Drop in Oil Prices is a Problem

Posted on [December 7, 2014](#)

Not long ago, I wrote [Ten Reasons Why High Oil Prices are a Problem](#). If high oil prices can be a problem, how can low oil prices also be a problem? In particular, how can the steep drop in oil prices we have recently been experiencing also be a problem?

Let me explain some of the issues:

Issue 1. If the price of oil is too low, it will simply be left in the ground.

The world badly needs oil for many purposes: to power its cars, to plant its fields, to operate its oil-powered irrigation pumps, and to act as a raw material for making many kinds of products, including medicines and fabrics.

If the price of oil is too low, it will be left in the ground. With low oil prices, production may drop off rapidly. High price encourages more production and more substitutes; low price leads to a whole series of secondary effects (debt defaults resulting from deflation, job loss, collapse of oil exporters, loss of letters of credit needed for exports, bank failures) that indirectly lead to a much quicker decline in oil production.

The view is sometimes expressed that once 50% of oil is extracted, the amount of oil we can extract will gradually begin to decline, for geological reasons. This view is only true if high prices prevail, as we hit limits. If our problem is low oil prices because of debt problems or other issues, then the decline is likely to be far more rapid. With low oil prices, even what we consider to be proved oil reserves today may be left in the ground.

Issue 2. The drop in oil prices is already having an impact on shale extraction and offshore drilling.

While many claims have been made that US shale drilling can be profitable at low prices, actions speak louder than words. (The problem may be a cash flow problem rather than profitability, but either problem cuts off drilling.) [Reuters indicates](#) that new oil and gas well permits tumbled by 40% in November.

Offshore drilling is also being affected. Transocean, the owner of the biggest fleet of deep water drilling rigs, recently [took a \\$2.76 billion charge, among a “drilling rig glut.”](#)

3. Shale operations have a huge impact on US employment.

[Zero Hedge](#) posted the following chart of employment growth, in states with and without current drilling from shale formations:

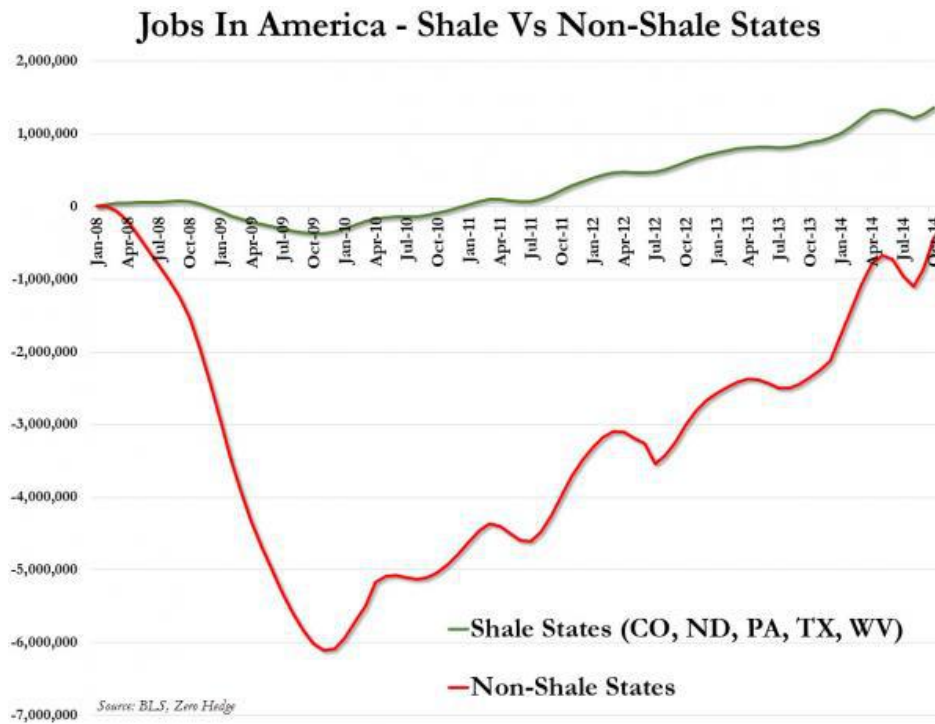


Figure 1. Jobs in States with and without Shale Formations, from [Zero Hedge](#).

Clearly, the shale states are doing much better, job-wise. According to the article, since December 2007, shale states have added 1.36 million jobs, while non-shale states have lost 424,000 jobs. The growth in jobs includes all types of employment, including jobs only indirectly related to oil and gas production, such as jobs involved with the construction of a new supermarket to serve the growing population.

It might be noted that even the “Non-Shale” states have benefited to some extent from shale drilling. Some support jobs related to shale extraction, such as extraction of sand used in fracking, college courses to educate new engineers, and manufacturing of parts for drilling equipment, are in states other than those with shale formations. Also, all states benefit from the lower oil imports required.

Issue 4. Low oil prices tend to cause debt defaults that have wide ranging consequences. If defaults become widespread, they could affect bank deposits and international trade.

With low oil prices, it becomes much more difficult for shale drillers to pay back the loans they have taken out. Cash flow is much lower, and interest rates on new loans are likely much higher. The huge amount of debt that shale drillers have taken on suddenly becomes at-risk. Energy debt currently accounts for [16% of the US junk bond market](#), so the amount at risk is substantial.

Dropping oil prices affect international debt as well. The value of Venezuelan [bonds recently fell to 51 cents on](#)

[the dollar](#), because of the high default risk with low oil prices. [Russia's Rosneft is also reported to be having difficulty](#) with its loans.

There are many ways banks might be adversely affected by defaults, including

- Directly by defaults on loans held by a bank
- Indirectly, by defaults on securities the bank owns that relate to loans elsewhere
- By derivative defaults made more likely by sharp changes in interest rates or in currency levels
- By liquidity problems, relating to the need to quickly sell or buy securities related to ETFs

After the many bank bailouts in 2008, there has been discussion of changing the system so that there is no longer a need to bail out “too big to fail” banks. [One proposal that has been discussed](#) is to force bank depositors and pension funds to cover part of the losses, using Cyprus-style bail-ins. [According to some reports](#), such an approach has been approved by the G20 at a meeting the weekend of November 16, 2014. If this is true, our bank accounts and pension plans could already be at risk.¹

Another bank-related issue if debt defaults become widespread, is the possibility that junk bonds and Letters of Credit² will become outrageously expensive for companies that have poor credit ratings. Supply chains often include some businesses with poor credit ratings. Thus, even businesses with good credit ratings may find their supply chains broken by companies that can no longer afford high-priced credit. This was one of the issues in the [2008 credit crisis](#).

Issue 5. Low oil prices can lead to collapses of oil exporters, and loss of virtually all of the oil they export.

The collapse of the Former Soviet Union in 1991 [seems to be related to a drop in oil prices](#).

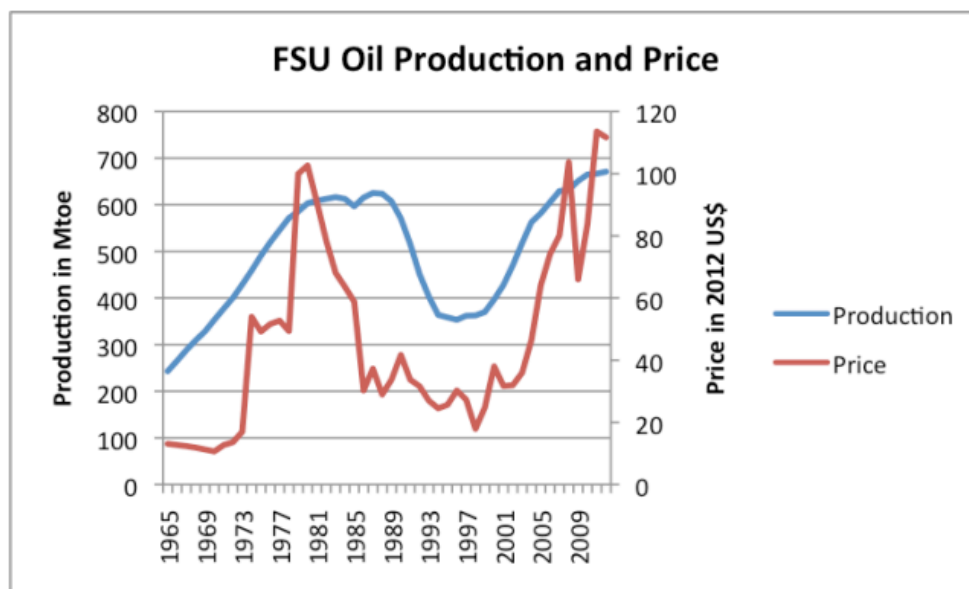


Figure 2. Oil production and price of the Former Soviet Union, based on BP Statistical Review of World Energy 2013.

Oil prices dropped dramatically in the 1980s after the issues that gave rise to the earlier spike were mitigated. The Soviet Union was dependent on oil for its export revenue. With low oil prices, its ability to invest in new production was impaired, and its export revenue dried up. The Soviet Union collapsed for a number of reasons, some of them financial, in late 1991, after several years of low oil prices had had a chance to affect its economy.

Many oil-exporting countries are at risk of collapse if oil prices stay very low very long. Venezuela is a clear risk, with its big debt problem. Nigeria's economy is [reported to be "tanking."](#) Russia even has a possibility of collapse, although probably not in the near future.

Even apart from collapse, there is the possibility of increased unrest in the Middle East, as oil-exporting nations find it necessary to cut back on their food and oil subsidies. There is also more possibility of warfare among groups, including new groups such as ISIL. When everyone is prosperous, there is little reason to fight, but when oil-related funds dry up, fighting among neighbors increases, as does unrest among those with lower subsidies.

Issue 6. The benefits to consumers of a drop in oil prices are likely to be much smaller than the adverse impact on consumers of an oil price rise.

When oil prices rose, businesses were quick to add fuel surcharges. They are less quick to offer fuel rebates when oil prices go down. They will try to keep the benefit of the oil price drop for themselves for as long as possible.

Airlines seem to be [more interested in adding flights than reducing ticket prices](#) in response to lower oil prices, perhaps because additional planes are already available. Their intent is to increase profits, through an increase in ticket sales, not to give consumers the benefit of lower prices.

In some cases, governments will take advantage of the lower oil prices to increase their revenue. China recently [raised its oil products consumption tax](#), so that the government gets part of the benefit of lower prices. Malaysia is using the low oil prices as a time [to reduce oil subsidies](#).

Most businesses recognize that the oil price drop is at most a temporary situation, since the cost of extraction continues to rise (because we are getting oil from more difficult-to-extract locations). Because the price drop this is only temporary, few business people are saying to themselves, "Wow, oil is cheap again! I am going to invest a huge amount of money in a new road building company [or other business that depends on cheap oil]." Instead, they are cautious, making changes that require little capital investment and that can easily be reversed. While there may be some jobs added, those added will tend to be ones that can easily be dropped if oil prices rise again.

Issue 7. Hoped for crude and LNG sales abroad are likely to disappear, with low oil prices.

There has been a great deal of publicity about the desire of US oil and gas producers to sell both crude oil and LNG abroad, so as to be able to take advantage of higher oil and gas prices outside the US. With a big drop in oil prices, these hopes are likely to be dashed. Already, we are seeing the story, [Asia stops buying US crude oil](#). According to this story, “There’s so much oversupply that Middle East crudes are now trading at discounts and it is not economical to bring over crudes from the US anymore.”

LNG prices tend to drop if oil prices drop. (Some LNG prices are linked to oil prices, but even those that are not directly linked are likely to be affected by the lower demand for energy products.) At these lower prices, the financial incentive to export LNG becomes much less. Even fluctuating LNG prices become a problem for those considering investment in infrastructure such as ships to transport LNG.

Issue 8. Hoped-for increases in renewables will become more difficult, if oil prices are low.

Many people believe that renewables can eventually take over the role of fossil fuels. ([I am not of view that this is possible](#).) For those with this view, low oil prices are a problem, because they discourage the hoped-for transition to renewables.

Despite all of the statements made about renewables, they don’t really substitute for oil. Biofuels come closest, but they are simply oil-extenders. We add ethanol made from corn to gasoline to extend its quantity. But it still takes oil to operate the farm equipment to grow the corn, and oil to transport the corn to the ethanol plant. If oil isn’t around, the biofuel production system comes to a screeching halt.

Issue 9. A major drop in oil prices tends to lead to deflation, and because of this, difficulty in repaying debts.

If oil prices rise, so do food prices, and the price of making most goods. Thus rising oil prices contribute to inflation. The reverse of this is true as well. Falling oil prices tend to lead to a lower price for growing food and a lower price for making most goods. The net result can be deflation. Not all countries are affected equally; some experience this result to a greater extent than others.

Those countries experiencing deflation are likely to eventually have problems with debt defaults, because it will become more difficult for workers to repay loans, if wages are drifting downward. These same countries are likely to experience an outflow of investment funds because investors realize that funds invested these countries will not earn an adequate return. This outflow of funds will tend to push their currencies down, relative to other currencies. This is at least part of what has been happening in recent months.

The value of the dollar has been rising rapidly, relative to many other currencies. Debt repayment is likely to especially be a problem for those countries where substantial debt is denominated in US dollars, but whose local currency has recently fallen in value relative to the US dollar.



Figure 3. US Dollar Index from [Intercontinental Exchange](#)

The big increase in the US dollar index came since June 2014 (Figure 3), which coincides with the drop in oil prices. Those countries with low currency prices, including Japan, Europe, Brazil, Argentina, and South Africa, find it expensive to import goods of all kinds, including those made with oil products. This is part of what reduces demand for oil products.

China's yuan is relatively closely tied to the dollar. The collapse of other currencies relative to the US dollar makes Chinese exports more expensive, and is part of the reason why the Chinese economy has been doing less well recently. There are no doubt other reasons why China's growth is lower recently, and thus its growth in debt. China is now [trying to lower the level of its currency](#).

Issue 10. The drop in oil prices seems to reflect a basic underlying problem: the world is reaching the limits of its debt expansion.

There is a natural limit to the amount of debt that a government, or business, or individual can borrow. At some point, interest payments become so high, that it becomes difficult to cover other needed expenses. The obvious way around this problem is to lower interest rates to practically zero, through Quantitative Easing (QE) and other techniques.

(Increasing debt is a big part of pumps up “demand” for oil, and because of this, oil prices. If this is confusing, think of buying a car. It is much easier to buy a car with a loan than without one. So adding debt allows goods to be more affordable. Reducing debt levels has the opposite effect.)

QE doesn't work as a long-term technique, because it tends to create bubbles in asset prices, such as stock market prices and prices of farmland. It also tends to encourage investment in enterprises that have

questionable chance of success. Arguably, investment in shale oil and gas operations are in this category.

As it turns out, it looks very much as if the presence or absence of QE may have an impact on oil prices as well (Figure 4), providing the “uplift” needed to keep oil prices high enough to cover production costs.

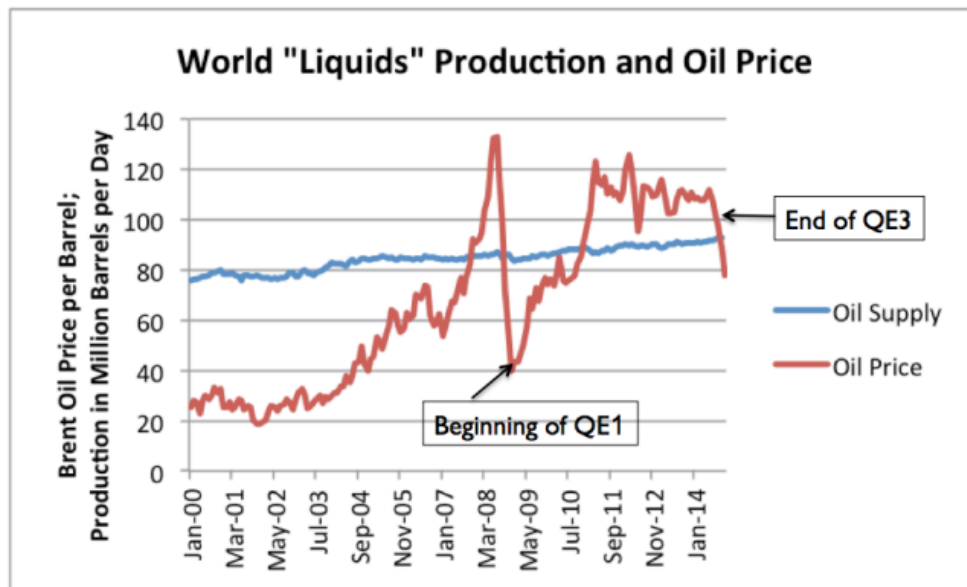


Figure 4. World “liquids production” (that is oil and oil substitutes) based on EIA data, plus OPEC estimates and judgment of author for August to October 2014. Oil price is monthly average Brent oil spot price, based on EIA data.

The sharp drop in price in 2008 [was credit-related](#), and was only solved when the [US initiated its program of QE started in late November 2008](#). Oil prices began to rise in December 2008. The US has had three periods of QE, with the last of these, QE3, finally tapering down and ending in October 2014. Since QE seems to have been part of the solution that stopped the drop in oil prices in 2008, we should not be surprised if discontinuing QE is contributing to the drop in oil prices now.

Part of the problem seems to be differential effect that happens when other countries are continuing to use QE, but the US not. The US dollar tends to rise, relative to other currencies. This situation contributes to the situation shown in Figure 3.

QE allows more borrowing from the future than would be possible if market interest rates really had to be paid. This allows financiers to temporarily disguise a growing problem of un-affordability of oil and other commodities.

The problem we have is that, because we live in a finite world, we reach a point where it becomes *more expensive* to produce commodities of many kinds: oil (deeper wells, fracking), coal (farther from markets, so more transport costs), metals (poorer ore quality), fresh water (desalination needed), and food (more irrigation needed). Wages don’t rise correspondingly, because more and more labor is needed to provide less and less actual benefit, in terms of the commodities produced and goods made from those commodities. Thus, workers

find themselves becoming poorer and poorer, in terms of what they can afford to purchase.

QE allows financiers to disguise growing mismatch between *what it costs to produce commodities*, and *what customers can really afford*. Thus, QE allows commodity prices to rise to levels that are unaffordable by customers, unless customers' lack of income is disguised by a continued growth in debt.

Once commodity prices (including oil prices) fall to levels that are affordable based on the incomes of customers, they fall to levels that cut out a large share of production of these commodities. As commodity production drops to levels that can be produced at affordable prices, so does the world's ability to make goods and services. Unfortunately, the goods whose production is likely to be cut back if commodity production is cut back are those of every kind, including houses, cars, food, and electrical transmission equipment.

Conclusion

There are really two different problems that a person can be concerned about:

1. **Peak oil:** the possibility that oil prices will rise, and because of this production will fall in a rounded curve. Substitutes that are possible because of high prices will perhaps take over.
2. **Debt related collapse:** oil limits will play out in a very different way than most have imagined, through lower oil prices as limits to growth in debt are reached, and thus a collapse in oil "demand" (really *affordability*). The collapse in production, when it comes, will be sharper and will affect the entire economy, not just oil.

In my view, a rapid drop in oil prices is likely a symptom that we are approaching a **debt-related collapse**—in other words, the second of these two problems. Underlying this debt-related collapse is the fact that we seem to be reaching the limits of a finite world. There is a growing mismatch between what workers in oil importing countries can afford, and the rising real costs of extraction, including associated governmental costs. This has been covered up to date by rising debt, but at some point, it will not be possible to keep increasing the debt sufficiently.

The timing of collapse may not be immediate. Low oil prices take a while to work their way through the system. It is also possible that the world's financiers will put off a major collapse for a while longer, through more QE, or more programs related to QE. For example, actually getting money into the hands of customers would seem to be temporarily helpful.

At some point the debt situation will eventually reach a breaking point. One way this could happen is through an increase in interest rates. If this happens, world economic growth is likely to slow greatly. Oil and commodity prices will fall further. Debt defaults will skyrocket. Not only will oil production drop, but production of many other commodities will drop, including natural gas and coal. In such a scenario, the downslope of all energy use is likely to be quite steep, perhaps similar to what is shown in the following chart.

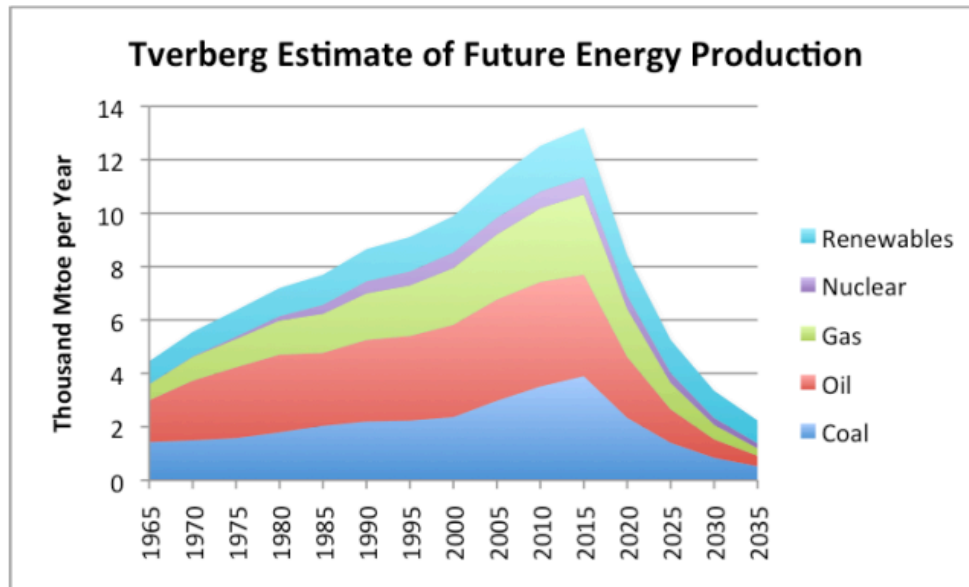


Figure 5. Estimate of future energy production by author. Historical data based on BP adjusted to IEA groupings.

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[WSJ Gets it Wrong on “Why Peak Oil Predictions Haven’t Come True”](#)

[Eight Pieces of Our Oil Price Predicament](#)

Notes:

[1] There is of course insurance by the [FDIC](#) and the [PBGC](#), but the actual funding for these two insurance programs is tiny in relationship to the kind of risk that would occur if there were widespread debt defaults and derivative defaults affecting many banks and many pension plans at once. While depositors and pension holders might try to collect this insurance, there wouldn't be enough money to actually cover these demands. This problem would be similar to the issue that arose in [Iceland in 2008](#). Insurance would seem to be available, but in practice, would not pay out much.

Also, I learned after writing this post that bail-ins were mandated for US banks by the [Dodd Frank Wall Street Reform and Consumer Protection Act of 2010](#). In the language of the summary, bank depositors are “unsecured creditors,” and are thus among those to whom the burden of loss is transferred. The FDIC is not allowed to borrow extra funds, beyond bank funds, to cover this loss.

[2] LOCs are required when goods are shipped internationally, before payment has actually been made. They offer a guarantee that a buyer will be able to “make good” on his promise to pay for goods when they arrive.

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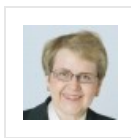
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**About Gail Tverberg**

My name is Gail Tverberg. I am an actuary interested in finite world issues - oil depletion, natural gas depletion, water shortages, and climate change. Oil limits look very different from what most expect, with high prices leading to recession, and low prices leading to inadequate supply.

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137 Responses to *Ten Reasons Why a Severe Drop in Oil Prices is a Problem***Jan Steinman** says:

December 7, 2014 at 10:25 pm

"If defaults become widespread, they could affect bank deposits..."

That's the "800 pound gorilla" sitting in the corner of the room.

Don't forget that, if you have money in the bank, you think you're a creditor, but you've recently been converted to an investor. The US banks have been "Cyprusized."

Before, if a bank went under creditors (depositors, primarily) got paid before investors. But no more. Taxes get paid, employees get paid, the electric company will get paid, the company leasing the bank business equipment gets paid, the landlord of their property gets paid... and then, if anything is left, the depositors and investors will divvy it up.

[Reply](#)

**Gail Tverberg** says:

December 8, 2014 at 10:38 am

I am afraid that is right. It is hard to figure out a way to fix "too large to fail" banks, except by using the Cyprus approach to cut back deposits. Once you start doing that, businesses fail and people lose their jobs. So even small deposits, which perhaps might not be hit by the Cyprus approach, will be affected indirectly because people lose