Energy, Debt and Financial Collapse

Age of Limits - Gail Tverberg – May 26, 2013
Energy literally makes the world go around

Source: Jewishworldreview.com
Energy use allows us to transform raw materials into finished products.

- Extracting raw materials requires energy
- Transport requires energy
- Even services require energy
Increased energy use is associated with increasing prosperity
Energy use escalated when China joined the World Trade Organization in Dec. 2001

Source: Based on 2012 BP Statistical Review of World Energy.
Oil consumption is declining in bank bailout countries

Source: Based on EIA International Energy Statistics.
In total, world energy consumption has been rising rapidly.
Even on a per capita basis, energy use is growing
When energy use grew, population soared!
Growth provides many benefits

- Rising home prices
- Rising stock prices
- Rising employment
- Rising taxes;
- Government stability
What is needed for a growth-based system?

1. More and more materials, taken from natural world
2. System of transforming these materials into goods and services people want / need
3. Way for people to pay for the goods and services
Many uses of fossil fuels need to be financed
Debt system to finance fossil fuel system has several major deficiencies

- **Problem 1.** Tends to transfer money from the poor to the rich
  - Amount gets larger as the system grows
  - This presents ethical dilemma
    - Should the rich be allowed to prey on the poor
    - Interest paid reduces the ability of poor to buy goods

- **Problem 2.** Debt system requires interest payments.
  - Works OK with growing supply of cheap energy
  - Tends to fall apart when oil becomes expense
Recall why rising oil prices are a problem

- Wages don’t rise, as oil price rises
  - Less money for discretionary expenditure
    - Cars
    - New homes
    - Charitable giving
  - Layoffs in the above sectors
- More debt defaults
  - Bank bailouts needed

- Governments especially at risk
  - Lower taxes; higher expenditures
Government gets caught in the middle

Wage Earners → THE TAX HAVEN → Industry

UNEMPLOYMENT

Credits: Texaspolicy.com, Thetaxhaven.com.au, Usahitman.com, politic365.com, autoevolution.com
Financing Strategy

- Borrow a significant share of the original cost
  - To set up oil / gas production facilities
  - To build factories to produce cement and to build new cars
  - To cover government cost of new roads, schools, etc.

- Energy from fossil fuels should make it possible to
  - Raise salaries of common workers, so they can repay debt with interest
  - Raise profits of factories, so businesses can repay debt with interest
  - Raise taxes collected by governments, so government can repay debt with interest
This strategy works if oil prices are low (<$30), but not if they are high.
Energy Use per Capita Declines when Fossil Fuel Cost as % Wages Rises

Fossil Fuel costs/ Wages

Per Capita Energy (Million Btus)

- FF/Wages
- Per Capita Energy

Rising oil costs slow economic growth, and gradually shift it to a declining economy

- Growing economy


- Declining economy

  2010  2020  2030  2040
Borrowing works very badly in a declining economy
Problem 3. Increasing debt is addictive

- Adds to spendable income
- Once it is started, a government feels it must keep it going
If a wage earner increases his debt, it raises his “spendable income”
Stagnating wages vs. rising personal consumption explained by increasing debt

![Graph showing Wages ex Gov/GDP and Pers. Consumption/GDP](image-url)
Government would like debt to get back to the wage-earner, but this is not happening.
Government does everything it can do to “fix” the situation

- Lowers interest rates
  - Houses, cars more affordable
  - Government cost of debt lower
  - Business investment cost lower
  - All these things should add jobs

- Continued deficit spending
  - More government debt

- “Quantitative Easing”
  - Printing money – Federal reserve takes debt for itself
Debt problems likely to reach a crisis in near future

- Economic growth is “tailing off”
  - Hits highest energy cost areas first: Greece, Spain, etc.
  - These are high users of imported oil
  - Not competitive in the world economy

- Debt doesn’t work well when growth slowing/negative
  - Anything that can’t continue, at some point, won’t
We know past collapses were financial in nature.

Shape of Typical "Secular Cycle"

- Growth (100+ Years)
- Stagflation (50-60 Years)
- Crisis (20-50 Years)
- Intercycle

Years from Beginning of Cycle

Based on Secular Cycles by Peter Turchin and Sergey Nefedov.
Symptoms now are similar to prior to financial collapses

- Greater wage dispersion
  - Common workers had trouble paying for “basics”
- Greater use of debt
  - Borrow to get around limits
  - Can’t continue indefinitely
- Government had problems collecting enough taxes
  - Led to uprisings, government collapse
  - Inability to pay government workers
- Spiking food / energy costs
Federal US Government debt has soared
Many problem areas

- Total Federal debt level about 100% GDP
  - High by historical standard
  - 90% GDP is one cut-off

- Quantitative easing
  - Keeps interest rates artificially low
    - Hurts banks
    - Hurts pension funds
    - Encourages speculation in stock market
    - Encourage speculation on home buying
    - Encourages speculation in land buying
  - Can’t stop QE without a rise in interest rates
At some point something “gives”

- Could be countries dropping out of Eurozone
- Or rise in interest rates
- Or collapse in speculative housing/stock bubble
- Or recession in China
- Or too many student loans
Issues

1. If people can’t repay debt – System tends to collapse
2. Government gets fewer taxes; tries to prop up system, but it too tends to collapse
3. Too much money transferred to bankers; finance system
4. Too much money transferred to oil exporting countries
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