Benjamin T Solomon

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Sent: Tuesday, December 21, 2010 7:02 AM
To: benjamin.t.solomon@quantumrisk.com
Subject: Your email New Normal? Whats That? has been sent

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New Normal? Whats That? **#15 December 2010**

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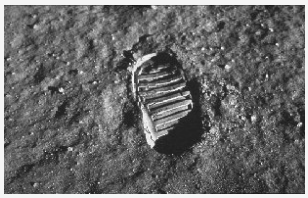

Our Goal:
To accelerate human achievement in the space, propulsion and energy

Dear Benjamin Solomon,

We wish all our readers a very Merry Christmas, Happy Holidays & a very Happy New Year.

Many economist (PIMCO, JPMorgan Chase) are now reporting that the economy will grow by at least 3% in 4Q 2011.

In this month's newsletter we take a look at historical quarterly GDP growth to determine whether this is realistic and what we could learn from all this.

We will use politically neutral time series analysis and transitions matrices to infer what the economy is capable of achieving all by

PIMCO Chief Executive Officer Mohammed El-Erian

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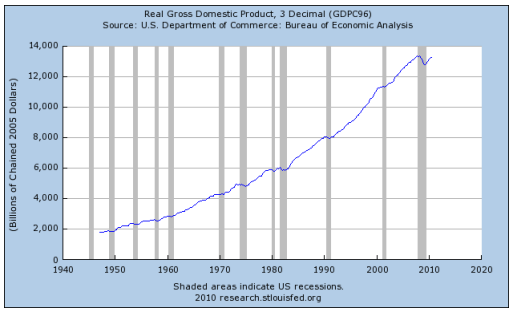
itself, and that would form the base line of further inferences.

This analysis would suggest that there is no 'new normal'.

Reporting GDP Growth



Real Gross Domestic Product, 3 Decimal (GDPC96)

Craig Brown in Seeking Alpha cautioned how one calculates & interprets GDP growth. For example, in the US annualized quarterly GDP is multiplied by 4 (4xQ GDP). This makes the annualized GDP much more volatile. While in UK it is the last 12-months.

The US Annualized GDP (4xQ) is more volatile than the 12-month Annual GDP. For example, starting with a 2Q 2009 GDP at 12,860.8, and 4 quarters of GDP growth of 1.23%, 0.92%, 0.43% & 0.63%, the Annualized GDP growth is 2.5% (=4x0.63%) while the Annual GDP growth across 4 quarters is 1.98%. Similarly, starting with a 4Q 2007 GDP of 13339.2, and quarterly growths of 0.15%, -1.01%, -1.74% & -1.24%, the Annualized GDP growth is -4.96% while the Annual GDP growth is -3.80%.

I prefer to use actual measurements, therefore my statistics will be Quarterly real GDP growth as reported by the Fed's GDPC96, and Annual real GDP based on the last 4 quarters of GDPC96.

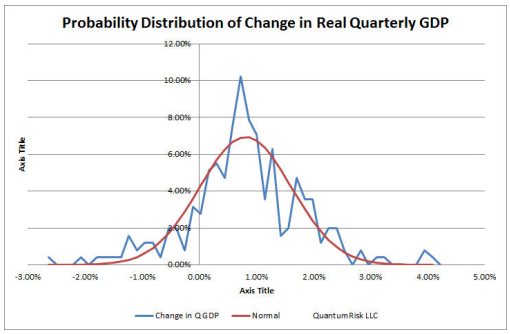
Borrowing some ideas from manufacturing process control, it is usually unadvisable to use a volatile metric to manage a process as it leads to the problem of over control. That is, more intervention than necessary leads to an unstable process that becomes even more difficult to control. The contemporary equivalent in economics is, are we in control i.e. expanding the economy or are over controlling, i.e. we printing money. This is not a question we can answer anytime soon. Only time will tell.

Random Walk GDP Growth

Lets look first at GDP as a time series whose change in Quarterly GDP is a random normal process. See Figure.

Analyzing GDPC96 shows that the GDP growth can be modeled by the Normal distribution N(0.88%, 0.80%).

Using this information to generate a Monte Carlo random walk to forecast GDP over the next 6 Quarters starting from 2Q 2010, provides a range of 4Q 2011 Annual GDP of between -1.24% and 9.41%, with a mean Annual GDP of 3.48% and standard deviation of 1.62%.



Probability Distribution of Quarterly GDP change (QuantumRisk LLC)

This is a surprise as a forecast Annual GDP of 3.48% suggest the possibility that both the PIMCO and the JPMorgan Chase model outcomes are not different from the random walk model.

Further, the range of outcomes, -1.24% to 9.41%, shows that there is no such thing as 'new normal'. The concept of 'new normal' is derived from the concept of 'regime change', that the economy has substantially changed to a new level i.e. economic regime has changed, and therefore, the econometric models either need to be reworked or replaced. It is less about what the economy

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A Rational Approach to Business Design, Strategy & Re-Engineering by Design (2002)

is doing and more about how existing models are able or not, to track the economy.

Transition Matrix GDP Growth

GDP Transitions

	-2.25%	-1.80%	-1.35%	-0.90%	-0.45%	0.00%	0.45%	0.90%	1.35%	1.80%	2.25%	2.70%	3.15%	3.60%	4.05%
-2.25%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
-1.80%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
-1.35%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
-0.90%	0.00%	25.00%	0.00%	0.00%	0.00%	25.00%	0.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	0.00%
-0.45%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.00%	9.09%	0.00%	0.00%	0.00%	0.00%	9.09%	36.36%	9.09%	18.18%	0.00%	9.09%	0.00%	0.00%	0.00%	0.00%
0.45%	0.00%	6.25%	0.00%	12.50%	6.25%	0.00%	0.00%	6.25%	56.25%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%
0.90%	0.00%	0.00%	0.00%	0.00%	3.13%	6.25%	15.63%	9.38%	21.88%	9.38%	15.63%	6.25%	12.50%	0.00%	0.00%
1.35%	0.00%	0.00%	0.00%	1.79%	0.00%	1.79%	5.36%	19.64%	25.00%	28.57%	14.29%	1.79%	1.79%	0.00%	0.00%
1.80%	0.00%	0.00%	0.00%	0.00%	0.00%	2.22%	0.00%	17.78%	24.44%	20.00%	13.33%	11.11%	4.44%	2.22%	2.22%
2.25%	0.00%	0.00%	0.00%	0.00%	0.00%	3.03%	6.06%	9.09%	30.30%	12.12%	18.18%	6.06%	6.06%	6.06%	0.00%
2.70%	0.00%	0.00%	0.00%	0.00%	0.00%	11.11%	0.00%	5.56%	16.67%	22.22%	16.67%	11.11%	5.56%	11.11%	0.00%
3.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.67%	6.67%	6.67%	13.33%	6.67%	26.67%	20.00%	13.33%	0.00%
3.60%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	30.00%	10.00%	10.00%	20.00%	10.00%	0.00%
4.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%

Quarterly GDP Transition Matrix (QuantumRisk LLC)

The GDP Transition Matrix (above) was constructed from the GDPC96 time series. Starting at a 0.45% GDP growth (closest to 2Q 2010 of 0.43%), the transition matrix shows that the Quarterly GDP growth after 6 Quarters is most likely to be between 1.35% to 1.80% (5.4% to 7.20% *Annualized*). See Table below (not the complete table of results).

GDP Growth	0.00%	0.45%	0.90%	1.35%	1.80%	2.25%	2.70%	3.15%	3.60%
Probability of Growth	3.90%	6.07%	12.15%	21.68%	16.76%	12.05%	6.25%	5.51%	3.33%

This is another surprise. The transition matrix shows that expected Quarterly GDP growth in 4Q 2011 is 1.43%. This is 60% greater than PIMCO's forecast. The possibility of a Quarterly GDP growth of at least 0.9% (3.6% *Annualized*) is greater than 78%. That this method of estimating GDP growth is even more optimistic that PIMCO's or JPMorgan Chase's forecasts. Note, however that there is the 22% probability that this will not be realized.

Summary

What does all this mean? The forecasting techniques used in this analyses are politically neutral as they are based strictly on historical data. This would imply:

Recovery accelerating

1. Per Bullard's comments, that it is now much more likely that QE2 will be substantially reduced in 2011.

2. What is cause for concern is the possibility that modern econometric models are little different from random walk.

3. Most importantly, if my 4Q 2011 forecast turns out to be correct (we will know in 1Q 2012) it would suggest that the economy recovers at its own rate irrespective of what our elected officials attempt to do or don't do.

4. Similarly, if the so called 'massive' intervention was of a sufficient amount, it should have produce a GDP growth that should be significantly greater than that of a random walk. This does not appear to be the case suggesting that the 'massive' intervention was not massive enough.

5. Arguably one could ask, should the government have intervened to save GM, AIG and the banking industry? Should not this intervention be the domain of the shareholders? And let market forces takeover. Yes, one could point to the potential phenomenal human costs had the

A Rational Approach to Unsystematic Risk, Re-Thinking Modern Finance(2002)

government not intervened; but even with intervention we have an extended unemployment of about 10%. Therefore, weakening the case for human costs of unemployment.

Merry Christmas.

About QuantumRisk LLC

We are ex-employees of GMAC / Capmark / Goff Capital Partners (meet our team) and welcome all business queries (970-306-7656), comments & feedback.

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Sincerely,
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