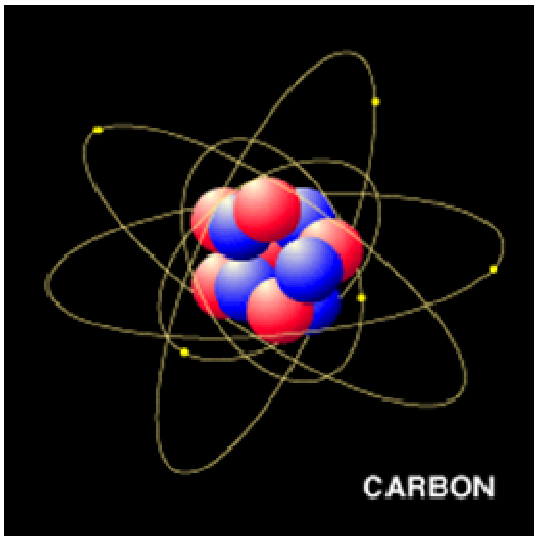
Angeles
INVESTMENT ADVISORS

Commentary
First Quarter 2011

Decay



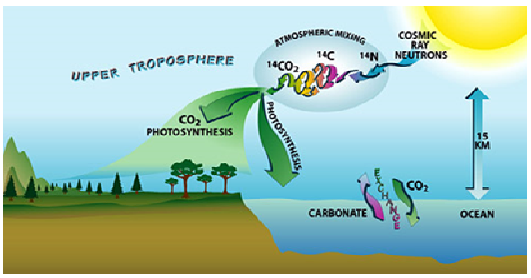
Carbon. It's the fourth most abundant element in the universe, second in our bodies only to oxygen, and the only element present in every known form of life in the universe.[1] No carbon, no life.

Carbon is not only abundant, it is extraordinarily flexible. Its structure is allotropic, that is, its atoms can take different forms, which is why carbon can be (and is) the basis of the hardest natural substance (diamonds) and of one of the softest (graphite). It also bonds easily with other atoms, and is, by far, the most common element among the millions of chemical compounds.[2]

The carbon atom contains six protons[3] and three different isotopes, carbon-12, carbon-13 and carbon-14.[4] These three isotopes exist in stable relation to each other: carbon -12 makes up 98.89% of all carbon atoms, carbon-13 is found in 1.11%, and carbon-14 is very rare, found in one in a trillion.

Carbon-14, as rare as it is, is constantly being formed. The cosmic rays that bombard the nitrogen in our upper atmosphere produce carbon-14, which combines with oxygen to form carbon dioxide. It thus enters plants through photosynthesis, animals as they consume plants, and oceans in the form of dissolved carbonate. The proportion of the three carbon isotopes is identical everywhere: it's the same in the atmosphere as it is in water or plants or in ourselves.

There is one other property of the carbon-14 isotope that makes it of interest to us. Unlike its sister isotopes, carbon-14 is unstable, that is, radioactive. As it emits radiation,



[1] Hydrogen, helium and oxygen are the top three, as you'll recall from high school chemistry.

[2] A chemical compound is, simply, a chemical substance consisting of two or more different chemical elements. Water, consisting of hydrogen and oxygen, or carbon dioxide, consisting of carbon and oxygen, are obvious ones, but there are, literally, millions of combinations.

[3] Hence, carbon's atomic number is six, which is where you will find it on the periodic table.

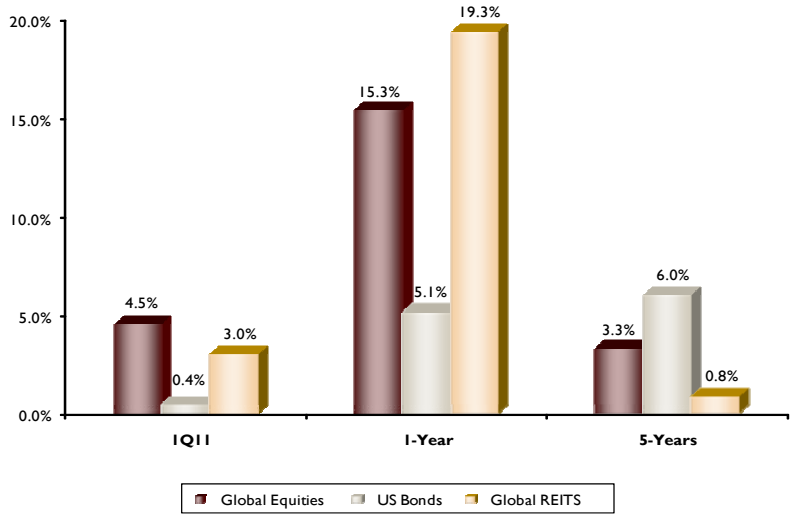
[4] Isotopes are variants of atoms that contain the atom's number of protons with different numbers of neutrons. Carbon-12 has 6 neutrons (plus the 6 protons of the carbon atom), carbon-13 has 7 neutrons, and carbon-14 would have 8 neutrons.

it converts back to its original form, nitrogen-14, as it was before the blast of cosmic rays that created carbon-14 in the first place.

By the mid-20th century, all of these facts were known. But it took a special insight to put them together to produce the most far-reaching scientific discovery of our time. We'll meet the man who formulated and proved this visionary hypothesis, and see how it ties to our (non-scientific) world.

1

CAPITAL MARKET PERFORMANCE



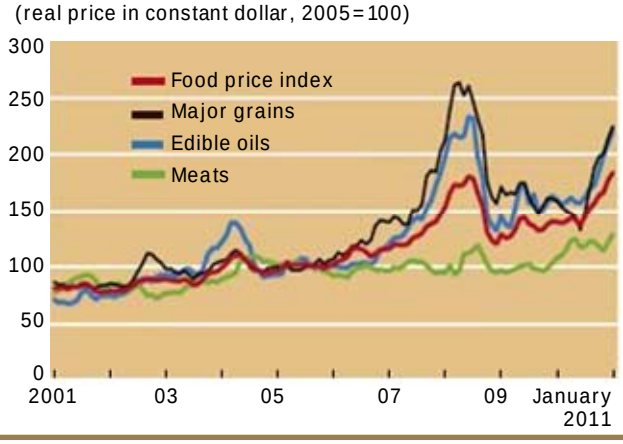
"Out of the gates of the new year equity markets surged..."

Out of the gates of the new year equity markets surged, as accommodative monetary policies greased the track for all risk-assets. Best of all were markets in Eastern Europe, led by Bulgaria and Romania, each up more than 30%. Insolvency has been postponed for the intensive-care economies of southern Europe, and Greece, Italy and Spain all posted double-digit gains in the quarter. Revolution may be good news from a political perspective (we'll see), but investors in Egypt bailed, and the Cairo market lost one-quarter of its value. The excellent Egyptian cotton may be in short supply, though, and cotton soared nearly 40% in the quarter.

Cotton is not the only commodity growing dearer. Oil has doubled in price over the past two years, and copper has more than tripled. Food prices are also soaring, but food is not just another commodity. Most people (most, but not all) can go a few weeks without buying new clothes, and oil consumption can be reduced to mitigate higher prices, but it is very difficult to forego food for even a short time. The significant spike in food prices, particularly in the basic grains and oils (see Chart 2), immediately impacts the poor especially hard. It may not have been the proximate cause of the political revolutions in the Arab world this year, but it's hard not to see the surge in grain prices as an important catalyst (as was the poor harvest in France in 1788, or the six-fold grain price

2

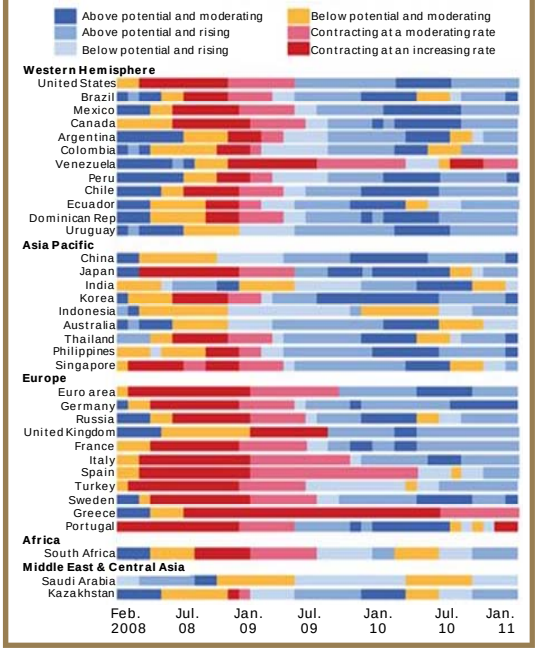
FOOD PRICES, 2001-2011



Source: IMF, Commodity Price System database

3

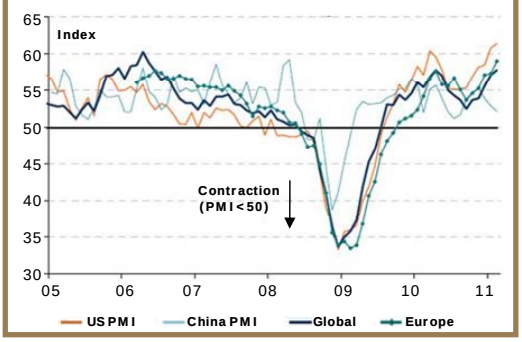
Economic Heat Map



Source: IMF

4

Global Manufacturing PMIs



Source: Bloomberg, BofA ML Global Research

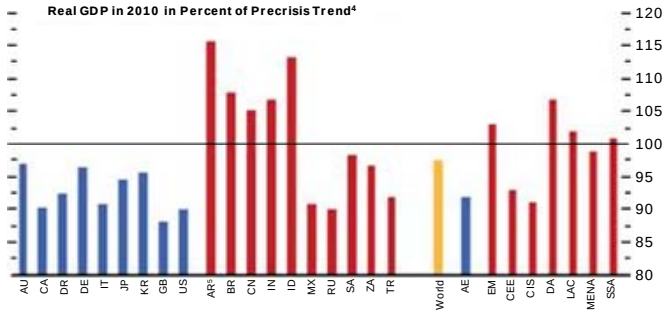
increase in Russia in early 1917).

By most measures, the world economy is improving, not only in the aggregate, but in nearly every country (Portugal is an exception—see Chart 3). Manufacturing is particularly strong, expanding across all regions (see Chart 4).

These data show clearly the rebound in economic growth over the past two years, but we have not yet recovered to the growth trend we were on before the disruption by the financial crisis. Most emerging countries have surpassed the previous trend, but none in the developed world is there yet (see Chart 5).

5

GDP Recovery as Percentage of Prior Trend



[4] Precrisis trend obtained by extrapolating 1996-2006 real GDP growth. AR: Argentina; AE: advanced economies; AU: Australia; BR: Brazil; CA: Canada; CEE: central and eastern Europe; CIS: Commonwealth of Independent States; CN: China; DA: developing Asia; DE Germany; EM: emerging economies; FR: France; GB: United Kingdom; ID: Indonesia; IN: India; IT: Italy; JP: Japan; KR: Korea; LAC: Latin America and the Caribbean; MENA: Middle East and North Africa; MX: Mexico; RU: Russian; SA: Saudi Arabia; SSA: Sub-Saharan Africa; TR: Turkey; US: United States; ZA: South Africa.

Employment, always a lagging indicator in an economic recovery, appears to be improving. The US unemployment rate has fallen from a high of 10.6% in January last year, to 8.8% by the end of the first quarter. The private sector created an average of 188,000 net new jobs in the first three months of the year, the best showing in nearly four years.

But a peek inside the headlines reveals still-troublesome news. The average duration of unemployment is at a record high 39 weeks (see Chart 6). If we add those involuntarily working part-time plus those

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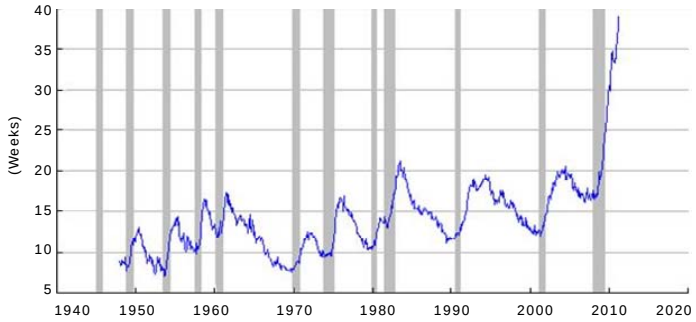
AVERAGE (MEAN) DURATION OF UNEMPLOYMENT (UEMPMEAN)

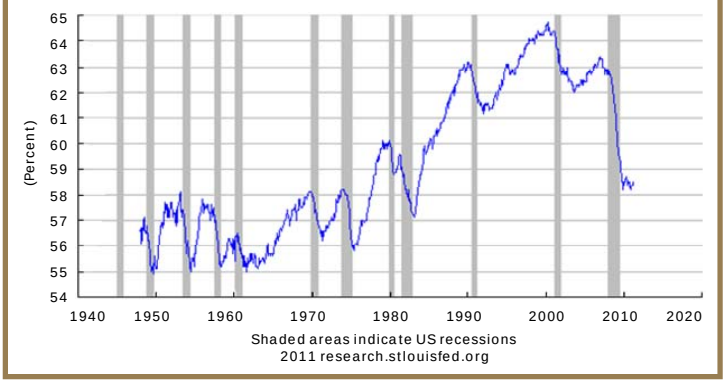


Source: U.S. Department of Labor: Bureau of Labor Statistics

"Part of the reason job creation has been slow is the relative lack of new businesses started"

7

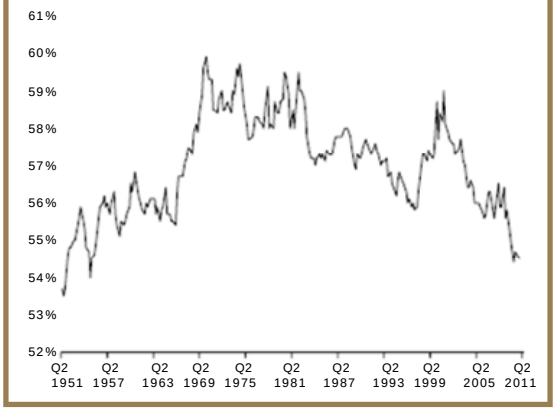
CIVILIAN EMPLOYMENT-POPULATION RATIO (EMRATIO)



Source: U.S. Department of Labor: Bureau of Labor Statistics

8

US WAGE SHARE OF GDP



Source: Thomson Reuters, Credit Suisse research

who have given up looking for work, this broader unemployment rate would be 7 points higher, at 16%. Indeed, the drop in the unemployment rate is due less to new jobs being filled and more to the large numbers dropping out of the workforce entirely. The percentage of the population employed is at lows not seen in decades (see Chart 7). Even for those employed, wage growth has been very sluggish, lagging GDP growth. Wages as a percentage of GDP are the lowest in over 50 years (see Chart 8).

Part of the reason job creation has been slow is the relative lack of new businesses started. It is commonly assumed that small businesses (<50 people) account for most of the job growth, but a closer look at the data show that it is new businesses (which are also typically small) that account for a disproportionate amount of job creation. A reasonable assumption is that new businesses, which represent just 3% of total employment, account for around 20% of all new jobs on average (and more coming out of recessions), and we're just not seeing new businesses started at a sufficient rate. The tough credit environment may be a big reason, as banks have been reluctant to lend, revolving credit is shrinking, and the drop in home prices has eliminated the option of equity withdrawal. Whatever the explanation, the weak pace of new business formation is an important aspect of the slow rate of job creation.

Much of the employment data can be explained by the business cycle, and as the economy expands, more jobs will be created. But there is no doubt that there are structural complexities as well. The large number of long-term unemployed risk losing skills that will make it that much more diffi-

cult to gain future employment. There may also be a bigger, long-term feature at play: demographic decline. Real economic growth over time is determined by two factors: population and productivity growth. Population growth is slowing, most notably in the labor pool.

From 1960 to 1985, the labor force increased at an annual rate of 2.1%, accelerating to 2.7% in the 1970s, as women began entering work in significant numbers. The baby-boom of the 1950s and higher immigration also contributed to this growth. These factors have reversed, and the labor pool is now stagnant, growing by just 0.6% p.a. from 2000-2009. In the 25 years to 1985, annual real GDP growth was more than 4% half the time, whereas in the subsequent 25 years, the economy saw 4% growth only a quarter of the time, and exceeded 5% in only 2 of 103 rolling four-quarter periods.

For the past 25 years, we've had budget deficits and surpluses, a strong and a weak currency, but both the average and the maximum growth rates of the economy have clearly slowed from the prior decades. Something important is going on, and demographics may explain much.

Demographics is not the only d-word challenging us: deficits, debt, defaults all come to mind. The Congressional Budget Office estimates a structural deficit[5] of around 6% of GDP. This is a very large number. Before 2009, the US never had a structural deficit greater than 2% of GDP. 6% of GDP is nearly $1 trillion, and this is the revenue/spending gap that needs to be closed just to stabilize the debt/GDP ratio. Reducing the debt ratio requires an even greater adjustment. This challenge is

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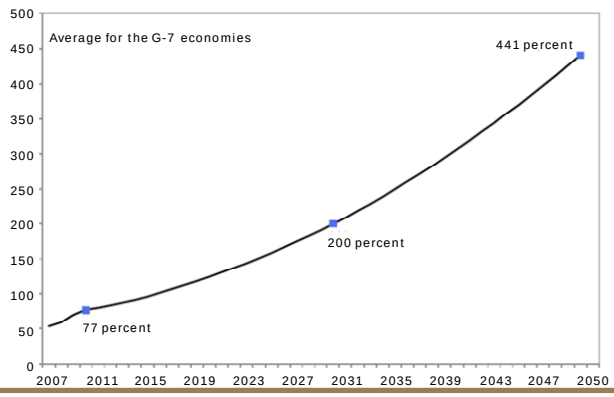
GENERAL GOVERNMENT NET DEBT SCENARIO
UNDER 2010 POLICIES
(IN PERCENT OF GDP)



Source: IMF *World Economic Outlook, July 2010* Update, and IMF staff calculations and estimates.
Note: Weighted average by PPP-GDP. The debt scenario assumes that the cyclically adjusted primary balance, corrected for fiscal stimulus measures, remains constant at the 2010 level (in percent of GDP). Nominal GDP is assumed to grow by 3 percent per year. The interest rate-growth differential (r-g) is assumed to equal zero until 2014 and 1 percent point afterwards. Moreover, the scenario accounts for the estimated increase in ageing related spending.

faced not only by the US, but by virtually all developed countries, and the longer it is unresolved, the more intractable the problem gets. Debt/GDP among advanced economies is expected to exceed 100% in the next few years, and due to the mathematical magic and certainty of compounding, will grow exponentially (see Chart 9).

Of course, this projection is silly. Long before we get to a 441% debt/GDP ratio, there will either be massive adjustments made to budgets or widespread defaults (these are not mutually exclusive). Greece is a case in point. In return for loans from the IMF and ECB, Greece agreed to a severe austerity plan to reduce its deficits. This has caused its economy to contract more than 6%. Does this austerity plan make it easier or more difficult to service its debts? Harder, obviously, and investors agree, as the price of Greek debt has plummeted (see Chart 10, page 6). Loans from the IMF and ECB can be effective in addressing a liquidity problem, but Greece does not have a liquidity problem, it has a solvency problem. The same applies to Portugal and Ireland and possibly, soon, to others. Indeed, Portugal received a

"Something important is going on, and demographics may explain much"

[5] A structural deficit is defined as the gap between revenues and expenditures net of interest payments, adjusted for impact of the business cycle.

10

GREEK GOVERNMENT BOND PRICES

Source: J.P. Morgan Global Bond indices.

similar deal this month: €78 billion in loans in exchange for fiscal austerity that will contract the economy, thus reducing its capacity for servicing its debt. The logic is flawed. Countries that are insolvent because of excessive debt cannot service their debt now, and shrinking their economies by imposing austerity reduces the likelihood that they ever will. Default (or "debt restructuring" among polite company) seems inevitable.

Europe's monetary dilemma is that very different economic conditions exist between the core and the periphery of the union. The German economy, the largest in Europe, is booming, and the central bank should be tightening policy by looking at German data. But that's the last thing the southern European countries need as they struggle to stay afloat (the official Spanish unemployment rate, for example, is over 20%). So the ECB is likely to split the difference and tighten modestly, satisfying neither Germany nor the southern periphery, which may be as effective as it is accurate to say that the average annual temperature in Chicago is 60°F. But crafting an optimal monetary policy may be the least of Europe's challenges, which are more fiscal, regulatory and structural than necessarily monetary in nature.

As the developed world struggles with deficits, debt and defaults, it is tempting to compare the problems of the emerging economies with that of the Beverly Hills millionaire (or maybe it's the Greenwich hedge fund billionaire) deciding which car to drive today, the Bentley or the Rolls. But behind the trillions of dollars of cash reserves, the threat of inflation is growing more ominous.

The financial crisis of 2008 will be studied for years to come, much as work on the Great Depression of the 1930s is still produced, but certainly one of the proximate causes of this recent crisis was growing imbalances in savings and investment in the developed and emerging worlds.

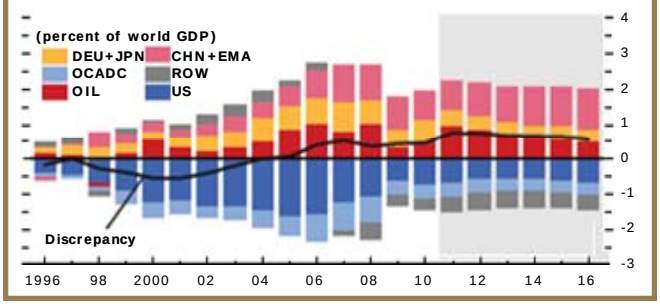
Fixed (and undervalued) exchange rates helped propel the growth of export-led economies. These export earnings were returned to consuming nations, primarily by purchasing their debt, in order to maintain the currency peg and stem the flow of cash back into the domestic economies where it threatened to spur inflation. Buying the debt of consuming countries had the ancillary benefit of encouraging borrowing to fund additional consumption, especially of the exports from emerging economies. This did not end well (indeed, it hasn't really ended yet) as over-levered consumers pushed up asset (especially, home) prices and eventually choked on excessive debt. The pattern of trade imbalances and excess reserves was interrupted by the financial crash, but those imbalances are growing once again (see Chart 11, page 7).

These emerging economies, China in particular, face the impossible task of trying to control simultaneously their exchange rates, their interest rates and capital flows. It cannot be done. As inflation rises (see Chart 12, page 7), monetary policies should be tightening, but raising interest rates leads to currency appreciation, which reduces exports and lowers the economy's growth rate. There are still hundreds of millions of Chinese, Indians, Indonesians and Brazilians (and others) living in abject poverty and maintaining high growth is as much an economic priority as it is a political and social one.

Rising inflation eventually shifts this task from difficult to impossible. Capital controls will be imposed, but they don't work in a large economy. There will be a marginal appreciation of the currency and a modest monetary tightening, but these measures may fall short. Importing the monetary policy of the United States increasingly makes little sense. Policymakers, especially in China, will soon be forced to confront this challenge of rising inflation. The longer these issues are un- (or insufficiently) addressed, be it inflation in the emerging economies or fiscal deficits in the developed world, the harder and more painful they will be to resolve.

11

GLOBAL IMBALANCES[1]

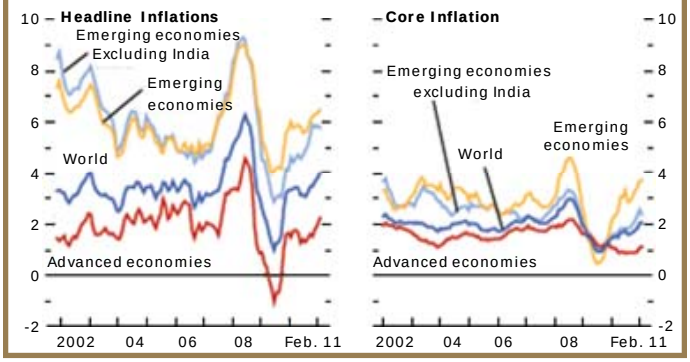


[1] Global imbalances are projected to widen again over the medium term because domestic demand growth in economies with large surpluses is not expected to be higher than before the crisis. Demand growth in deficit economies is not expected to be much lower, as significant fiscal adjustment has yet to be specified. Reserve accumulation in economies with excessive current account surpluses has dwarfed private capital inflows, motivated primarily by concerns about competitiveness. Exchange rates of emerging economies with deficits have appreciated disproportionately. The IMF staff's assessment of the valuation of real exchange rates has remained broadly unchanged relative to October 2010, with the US dollar strong and Asian currencies (other than the yen) undervalued relative to medium-term fundamentals.

Source: IMF

12

GLOBAL AGGREGATES



Inflation is rising everywhere. However, core inflation and wages remain subdued in advanced economies, held back by high unemployment. In many emerging and developing economies, inflation pressures are broadening and accommodate macroeconomic policies and increasingly binding capacity constraints.

Source: IMF

Willard Libby grew up among the apple orchards near Sebastopol, California, where his family owned a farm. He graduated from UC-Berkeley with a chemistry degree in 1931, and earned his doctorate there just two years later and joined the faculty. With the outbreak of war in 1941, he was assigned to the Manhattan Project, working with Harold Urey, who won the Nobel Prize in Chemistry in 1934, to separate isotopes of uranium-238 for use in the atomic bomb. After the war, Libby moved to the University of Chicago and began thinking about carbon; carbon-14 in particular.

"Rising inflation eventually shifts this task from difficult to impossible"

Libby theorized that as plants "breathe in" carbon dioxide, they must also take in a trace amount of radioactive carbon-14. With each "breath," plants replenish the amount of carbon-14 they lose due to radiation, thus keeping the proportion of carbon-14 to carbon-12 and -13 constant. Libby's insight was that when the organism dies, "breathing" stops and carbon is not replaced. Carbon-12 and -13 will remain, but carbon-14 will decay. Thus, it should be possible to know the time of death based on the proportion of carbon-14 remaining.

Libby published his theory in 1947, and just two years later, was successfully able to measure the rate of decay of carbon-14, and calculated its

half-life as 5,568 years.[6] This is a very happy coincidence because this length permits measuring life forms over the past 70,000 years or so (before the trace of carbon-14 disappears).

The theory, and apparatus he built to prove it, was tested on wood samples from the graves of various Egyptian pharaohs that Egyptologists knew were between 2,000 and 5,000 years old. His measurements matched the known times these pharaohs lived exactly and provided support to researchers tracing lineage back 2,000 years before the first royal dynasty. He did the same with samples of 2,000 year-old Sequoia trees whose age was known by counting the rings, and again, Libby specified the ages precisely. Through his work, he was able to show that glacial retreat happened simultaneously in northern Europe and North America 11,000 years ago, and the first traces of humans in these areas occurred 10,000 years ago. He was able to date remnants of charcoal from human campfires in southern France from 15,000 year ago, and in Iraq from 25,000 years ago.

"...seldom has a single discovery… had such an impact on the thinking in so many fields of human endeavor"

In 1959, Libby moved to UCLA, where he taught till retirement in 1976. In 1960, the Royal Swedish Academy of Sciences awarded the Nobel Prize in Chemistry to Willard Libby for "a means of widening and deepening our knowledge in different scientific fields….(a) method (that) has obtained widespread use and has become indispensible in archaeology, geology, geophysics and other sciences." The Academy went on to note that "seldom has a single discovery in chemistry had such an impact on the thinking in so many fields of human endeavor."

There are two isotopes with interesting names: Americium-241, with a half-life of 432 years, and Californium-251, with a half-life twice as long, 898 years. For all the challenges we face, America remains, by far, the largest, richest, most powerful nation by any measure, the very core of the global economy. But like the carbon-14 isotope, all power is unstable, and will decay. Whether America's half-life is 432 years, or 898 years[7], or something else, cannot be known. Unlike carbon-14, it is dependent entirely on the choices we make.

[6] The half-life of an atom is the time when half of the original number is expected to occur.

[7] Americium is a synthetic element created by Glenn Seaborg of UC-Berkeley (and the 1951 Nobel winner in chemistry) by blasting uranium (or plutonium) with alpha particles. Californium was also created at Berkeley by blasting curium with alpha particles.

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MICHAEL A. ROSEN
PRINCIPAL & CHIEF INVESTMENT OFFICER
MAY 2011

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