

COUNTRY WATCH

FORECASTS



Macro Economics • Energy • Metals • Agriculture



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Forward

Countrywatch has sold quality information products for over 10 years, which help our clients keep track of *current* political and economic trends in each of the established countries in the world. For the past five years we have been developing a *forward looking* economic product, which projects the economic situation in each of the established countries of the world in a consistent and integrated fashion in four key sectors:

Macroeconomic

The CountryWatch Macroeconomic Forecast projects the major macroeconomic variables of each of the established countries in the world over a 20 year period. In addition this Forecast provides five years of history. These variables include GDP and its principal components: consumption, investment spending, government spending, exports and imports. In addition, the CountryWatch Macroeconomic Forecast makes projections on inflation, interest rates, inflation rates, foreign exchange rates, fiscal policy including tax rates, and the primary components of the balance of payments as well as foreign exchange reserves. The real GDP and inflationary trends are used in an integrated fashion in each of the other forecast segments to provide a forecast that is integrated across all segment lines (i.e. the GDP that drives the demand for energy products is the same one that drives demand for metals and agriculture).

Energy

The energy sector is one of the most volatile segments of the global economy. The CountryWatch Energy Forecast team develops demand and supply estimates over a 20 year period using five years of historical data for the three major fossil fuel markets: petroleum, natural gas and coal. In addition we project production of electricity from nuclear, hydroelectric and renewable resources. The fossil fuel prices are determined by balancing global demand and global supply over a 20 forward look. Energy is one of the major producers of anthropogenic CO2 emissions and the model also projects forward estimates of CO2 based on the projections of fossil fuel consumption.

Metals

The metals sector is a critical component of the global industrial and financial sectors. The CountryWatch Metals Forecast team develops demand and supply estimates over a 20 year period using five years of historical data for the major industrial metal markets: copper, aluminum, lead, tin, nickel, and zinc. In addition, this forecast projects production of two of the major precious metals: gold and silver. The metal prices for industrial metals are determined by balancing global demand and global supply over a 20 forward period.

Agriculture

The agricultural sector is a critical component of the global economy. The CountryWatch Agricultural Forecast team develops demand and supply estimates over a 20 year period using five years of

sugar and wheat. The prices for agricultural products are determined by balancing global demand and global supply over a 20 period.

Note:

The CountryWatch Forecast provides a vast amount of data heretofore unavailable in single location. Indeed, the CountryWatch Forecast offers a comprehensive country-by-country view of the global economy. This product will be updated annually in the 4th Quarter of each year.

We believe that no other information product on the market offers as much information in a single location with as much value for money as the CountryWatch Forecast.

Please contact our sales staff toll free at 1-800-879-3885 or by email to vsanditen@countrywatch.com to get details on how this vast resource can be added to your online information database at an exceptionally reasonable price.

Robert C. Kelly

Chairman / Founder
CountryWatch, Inc.

World Macroeconomic Overview January 2011

Global Growth Trends: The World Economy Recovers---Slow Job Recovery in the US --- Europe Stabilizes the Euro --- Asia Rising

The Global Economic Trends and Outlook

After heating up to an 8% real growth rate in 2007 the global economy plunged to a recessionary decline of -4.9% in 2009 as the world financial markets moved to the brink of collapse in 2008 as a result of the US financial meltdown. Massive injections of fiscal stimulus around the world turned things around in 2010 as strong growth in Asia coupled with the fiscal stimulus programs of many governments pulled the global economy back to a 1.8% positive real GDP growth rate in 2010 and early signs indicate the 2011 growth rate should improve even more to 2.9%. Table 1 shows the CountryWatch estimates of global growth trends.

Table 1

Global Macroeconomic Trends

	2007	2008	2009	2010	2011	2012
World GDP, Trade, & Inflation	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Estimate</u>	<u>Forecast</u>	<u>Forecast</u>
Real GDP in US\$2005 Trillions	51.2	53.7	51.0	52.0	53.5	55.1
Nominal GDP in US\$ Trillions	55.1	60.4	57.7	60.3	63.5	67.6
Exports NIPA in US\$ Trillions	16.8	19.4	15.6	17.8	18.8	20.0
Imports NIPA in US\$ Trillions	16.5	19.1	15.3	16.7	17.6	19.4
Trade Balance in US\$ Trillions	0.2	0.3	0.3	1.1	1.2	0.7
Trade Balance % Nominal GDP	0.5%	0.5%	0.5%	1.8%	1.9%	1.0%
Nominal GDP Growth Rate %	12.2%	9.7%	-4.4%	4.4%	5.4%	6.4%
US Inflation %	2.9%	2.2%	0.9%	0.9%	1.3%	2.5%
\$ Devaluation %	1.3%	2.6%	-0.5%	1.7%	1.1%	0.9%
World RGDP Growth %	8.0%	4.8%	-4.9%	1.8%	2.9%	3.0%

The US Recovery---Slow Job Growth

The combination of the large US stimulus program in addition to foreign sector growth helped the U.S. economy to emerge from the recession in the second half of 2009 and 2010. Even with the massive stimulus, however, the recovery has been slow by historical standards, and the outlook remains uncertain. In particular, private demand has been sluggish, while unemployment rate has remained high. Moreover, the recent market volatility from the sovereign debt crisis in Europe has tightened financial conditions somewhat, and risks are tilted to the downside with particular risks from a dip in the housing market and spillovers if external financial conditions worsen. Given the still weak demand, high unemployment, and lingering financial strains, macroeconomic support remains appropriate for 2010. But setting public debt on a sustainable path is a key macroeconomic policy challenge ahead. With the sharp deterioration of the fiscal position,

substantial fiscal consolidation efforts will be required over the medium term through both revenue and expenditure measures. In the financial front, although progress has been made in the financial regulation reform, strong implementation will be crucial for the long-term financial system health. Still, the United States has a key role in promoting multilateral economic management, and in helping secure medium-term global growth and stability through its efforts in fiscal consolidation and strengthening the financial sector.

Europe---Stabilizing the Euro

In May 2010, the European Union (EU) agreed on a euro stability package valued at 500 billion euros, aimed at preventing the Greek debt crisis from deleteriously affecting other countries in the region. Countries within the EU's euro zone would be provided access to loans worth 440 billion euros and emergency funding of 60 billion euros from the EU. As well, the International Monetary Fund (IMF) would earmark an additional 250 billion euros. The European Commission would raise the funds in capital markets, using guarantees from the governments of member states, for the purpose of lending it to countries in economic crisis.

In addition, it was announced that the European Central Bank (ECB) was prepared to participate in exceptional market intervention measures, such as the purchase of euro zone government bonds, for the purpose of shoring up the value and viability of the euro currency.

These moves were aimed at defending the euro, which has seen its value drop precipitously as a result of the Greek debt crisis has gone on, and as anxieties have increased that a similarly disastrous fate could spread to other EU member states, such as Portugal, Spain, Italy and even Ireland. These mostly southern European economies were plagued not only by high deficits but also inherent structural economic weakness.

But even these overtures, as drastic as they might appear, would do little to address Europe's soaring public debt, according to some economic analysts. Indeed, among this core of economists, the argument resided that this rescue package could actually exacerbate the situation. Of concern has been the collective impact of low economic growth, high unemployment, and governments unwilling to take requisite austerity measures to not only decrease spending but also increase productivity. Rather than relying on heavy government spending to spur growth, governments in euro zone countries have opted to decrease their debt levels -- or at least to make the promise of moving in that direction. However, another core of economic analysts has argued that too much debt reduction -- without government stimulus -- could itself stymie economic growth. To this latter end, Daniel Gros of the Center for European Policy Studies warned that "the patient is dead before he can get up and walk."

Meanwhile, the economic crisis in Europe was spreading to the domestic political sphere in Germany. With the German cabinet of Chancellor Merkel poised to approve that country's part in the euro rescue deal, German voters issued a punishing blow to Merkel's conservatives in the state elections in North Rhine-Westphalia. The voters' reaction appeared to register discontent over the German federal government's decision. Germans, according to polling data, were already

incensed over funding of the bailout plan for Greece. That separate package was also approved by the government and parliament.

Spain takes action --- In a move aimed at addressing its troubling debt, the Spanish government on May 20, 2010, approved an austerity plan. The move was also aimed at soothing fears that Spain would devolve into the same type of debt crisis that had gripped Greece, with deleterious consequences for the value of the euro and the stability of the entire euro zone. The plan aimed to reduce a deficit of 11 percent of GDP to six percent by 2011, and would include a five percent reduction to public sector salaries. The proposal, which was unveiled by Prime Minister Jose Luis Rodriguez Zapatero, was expected to be condemned by the Spanish people, who were already dealing with economic challenges in their daily lives and an unemployment rate of 20 percent. On the other hand, the plan was likely to be applauded by the European Union, which was anxiously awaiting action by structurally weak European economies.

Italy takes action--- Italy moved on May 25, 2010 to address its debt challenges by launching its own austerity program on the heels of Spain doing the same. Like Spain, Italy wanted to hold the confidence of international investors and prevent sliding into a Greek-style debt crisis. To these ends, the Italian government of Prime Minister Silvio Berlusconi approved austerity measures worth 24 billion euros for the years 2011-2012. The plan also included measures to reduce public sector pay, institute a freeze on new recruitment, and reduce both public sector pensions and local government spending. Moreover, the government would take action against tax avoidance -- a serious problem in Italy as well as Greece. These measures together were measured in value at the equivalent of 1.6 percent of GDP. Ultimately, Italy's government was hoping to reduce its deficit down to below three percent of GDP by 2012. In response, Italian unions took to the streets in protests. Indeed, Italian civilians, particularly those from the public sector, were expected to rail against these moves.

Asia Rising --- China and India Continue to Grow

China's economy was adversely affected by the global economic crisis through sharply falling exports and private investment. Underpinned by the government's expansionary fiscal and monetary policies, economic growth rebounded strongly after the second quarter of 2009. The recovery was driven mainly by domestic demand, especially public investment that benefited from the stimulus policies, while consumption, both private and government, also played a role in the recovery. Exports also bottomed out and started to recover in the second half of 2009. The rebound continued in 2010 on the back of the government's continued fiscal stimulus and the overall global recovery. However, the global recession and the expected modest recovery in industrial countries have reduced the potential for exports to be a major driver of growth for China. Sustaining high growth in the long term will require policies to enhance domestic demand by increasing private consumption, with efforts in increasing household incomes by improving social safety nets, health care and education. Greater exchange rate flexibility would also play a role in rebalancing the economy by increasing the Chinese household income and providing the incentives necessary to reorient investment toward industries that serve the Chinese consumer. As a welcomed development in this direction, in mid-June 2010, the Chinese Central Bank announced that China will increase its exchange rate flexibility.

In recent years, sound macroeconomic policies and steady structural reforms have resulted in India's impressive economic performance and its success in reducing poverty. While economic growth has slowed as a result of the global crisis, India's economy is one of the first in the world to recover supported by sound policies and the government's decisive actions, including prompt fiscal and monetary easing. Capital inflows are rising, and financial markets have regained most of their lost ground. Moreover, India was not at the center of the global crisis, and growth is well balanced and mainly reliant on domestic drivers. All these factors have a role in rapid recovery and bringing growth close to pre-crisis levels. To sustain rapid growth over the longer term, policy priorities should be fiscal consolidation and financial sector reforms to facilitate infrastructure investment.

A summary of real GDP growth rates across the globe is shown in Table 2

Real GDP Growth Rates %	2007	2008	2009	2010	2011	2012
	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Estimate</u>	<u>Forecast</u>	<u>Forecast</u>
Australia	4.8%	2.2%	1.2%	3.0%	3.5%	3.4%
Brazil	6.1%	5.1%	-0.2%	7.5%	4.3%	4.1%
Canada	3.1%	0.6%	-2.6%	3.1%	2.7%	2.7%
China,P.R. Mainland	11.2%	9.9%	10.2%	10.3%	9.2%	9.5%
France	2.3%	0.1%	-2.6%	1.5%	1.5%	1.8%
Germany	2.8%	0.7%	-4.7%	3.3%	2.0%	2.0%
India	9.6%	4.1%	8.9%	9.2%	8.5%	8.0%
Italy	1.4%	-1.3%	-5.1%	1.1%	1.0%	1.4%
Mexico	4.1%	1.3%	-6.4%	5.0%	3.5%	5.0%
Russia	7.4%	7.3%	-7.9%	4.0%	4.3%	4.4%
South Africa	5.5%	3.7%	-2.4%	3.0%	3.5%	3.9%
Spain	4.1%	1.8%	-2.7%	-0.3%	0.7%	1.8%
United Kingdom	2.7%	-0.1%	-4.9%	1.7%	1.9%	2.3%
United States	1.9%	0.0%	-2.6%	2.6%	2.3%	3.0%

Currency Market Outlook: Euro Recovery---Yuan Strengthens

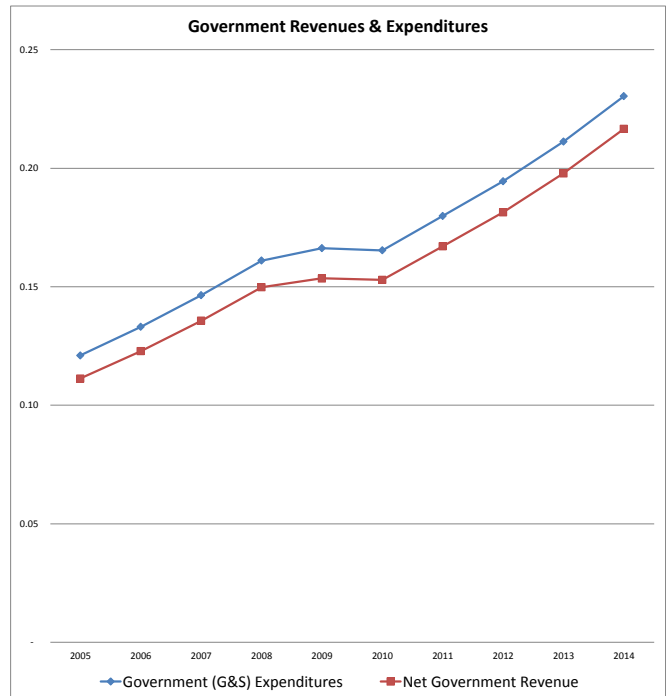
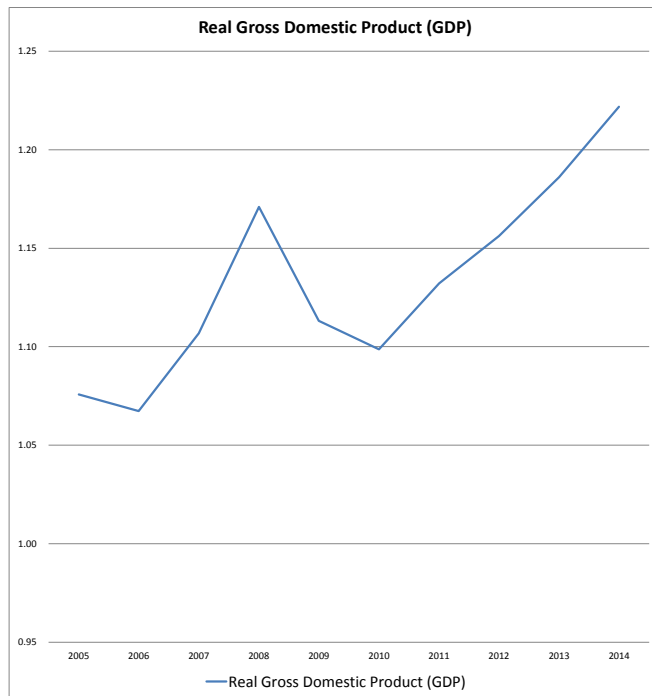
The crisis in Europe resulted in a sharp drop in the euro and a significant appreciation of the dollar in the first half of 2010. As the threat of defaults on euro debt decreased as a result of the stabilization packages and commitments put in place to support the currency the euro has strengthened but has not recovered to anywhere near the position that it had prior to the financial crisis. The euro dropped from highs near 1.50 dollars per Euro into the low 1.20s but has rebounded to the 1.30 level. The Chinese currency, the RMB, has been gradually strengthening as China comes under international pressure to appreciate their currency to slow the growth in Chinese exports and to stimulate export growth in China's trading partners. The current outlook on the currencies is shown in the Table 3 from the CountryWatch 2011 Macroeconomic Forecast:

Exchange Rates	2007	2008	2009	2010	2011	2012
	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Estimate</u>	<u>Forecast</u>	<u>Forecast</u>
Euro \$/€	1.37	1.46	1.39	1.29	1.30	1.30
Yen ¥/\$	117.8	103.4	93.6	85.5	83.0	83.0
Pound \$/£	2.00	1.85	1.56	1.57	1.57	1.57
RMB ¥/\$	7.97	7.61	6.95	6.81	6.67	6.54

Source: CountryWatch Macroeconomic Forecast January 2011

Samoa: Forecast Brief - 2011 Edition
Macroeconomic Forecast Summary

	Units	Reference	2005	2006	2007	2008	2009	Estimate 2010	Forecast 2011	Forecast 2012	Forecast 2013	Forecast 2014
Nominal GDP and Components												
Nominal GDP	LC	IFS 99b.c	1	1	1	1	1	1	2	2	2	2
Nominal GDP Growth Rate	%/100	Calculated	6.47%	5.46%	10.98%	10.98%	4.35%	-1.43%	9.29%	8.63%	9.13%	9.59%
Private Consumption Spending	LC	IFS 96f.c	1	1	1	1	1	1	1	1	1	2
Government (G&S) Expenditures	LC	IFS 91f.c	0.12	0.13	0.15	0.16	0.17	1.65E-01	1.80E-01	1.94E-01	2.11E-01	2.30E-01
Gross Private Investment	LC	IFS 93e.c	0.20	0.21	0.21	0.21	0.29	2.56E-01	2.78E-01	3.01E-01	3.27E-01	3.57E-01
Exports of Goods and Services	LC	IFS 90c.c	0.19	0.20	0.21	0.23	0.25	2.44E-01	2.68E-01	2.92E-01	3.20E-01	3.53E-01
Imports of Goods and Services	LC	IFS 98c.c	0.27	0.33	0.37	0.41	0.41	4.07E-01	4.16E-01	4.44E-01	4.77E-01	5.14E-01
Real GDP and GDP Per Capita												
Real Gross Domestic Product (GDP)	LC	Yt in Yr 2000 Prices	1.08	1.07	1.11	1.17	1.11	1.10	1.13	1.16	1.19	1.22
Real GDP Growth Rate	%/100	Calculated	2.46%	-0.80%	3.71%	5.79%	-4.93%	-1.30%	3.05%	2.12%	2.58%	3.02%
Population	Millions	IFS 99z	0.18	0.18	0.18	0.18	0.18	0.18	0.17	0.17	0.17	0.17
Population Growth Rate	%/100	Calculated	-0.24%	-0.21%	-0.26%	-0.26%	-0.24%	-0.24%	-0.24%	-0.24%	-0.24%	-0.24%
Nominal GDP Per Capita	LC/L	Calculated	6,068	6,413	7,136	7,939	8,305	8,206	8,990	9,790	10,709	11,765
Nominal GDP Per Capita Growth Rate	%/100	Calculated	6.72%	5.69%	11.26%	11.26%	4.61%	-1.19%	9.55%	8.89%	9.39%	9.86%
Government Spending and Taxation												
Government (G&S) Expenditures	LC	IFS 91f.c	0.12	0.13	0.15	0.16	0.17	1.65E-01	1.80E-01	1.94E-01	2.11E-01	2.30E-01
Government Expenditure Growth Rate	%/100	Calculated	10.00%	10.00%	10.00%	10.00%	3.25%	-0.54%	8.77%	8.12%	8.61%	9.07%
Net (of transfers) National Tax Rate	%/100	IFS ccsd	10.34%	10.83%	10.77%	10.72%	10.53%	10.64%	7.64%	10.63%	10.62%	10.62%
Net Government Revenue	LC	Calculated	0.11	0.12	0.14	0.15	0.15	0.15	0.17	0.18	0.20	2.17E-01
Fiscal Deficit (+) Surplus (-)	LC	IFS ccsd	0.01	0.01	0.01	0.01	0.01	1.25E-02	1.28E-02	1.31E-02	1.34E-02	1.38E-02
Fiscal Deficit/Surplus-Percentage of GDP	%/100	Calculated	0.91%	0.91%	0.85%	0.80%	0.88%	0.87%	0.81%	0.77%	0.72%	0.67%
Money, Prices and Interest Rates												
Money Supply (M2)	LC	IFS 35i	0	1	1	1	1	1	1	1.E+00	1.E+00	1.E+00
Money Supply Growth Rate (M2)	%/100	Calculated	15.65%	13.75%	10.98%	5.80%	9.12%	18.06%	8.06%	8.06%	8.06%	8.06%
Inflation Rate (from GDP Price Deflator)	%/100	Calculated	3.91%	6.31%	7.01%	4.91%	9.76%	-0.14%	6.06%	6.38%	6.38%	6.38%
Interest Rate	%/100	IFS 60b	5.10%	4.60%	4.60%	4.60%	4.80%	4.74%	4.74%	4.74%	4.74%	4.74%
Unemployment Rate	%/100	IFS 67r	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Trade and the Exchange Rate												
Exchange Rate	LC/\$	Definition	2.71	2.78	2.62	2.64	2.73	2.70E+00	2.83E+00	2.94E+00	3.05E+00	3.17E+00
Foreign Balance-Goods & Services NIPA	\$US Millions	IFS 78afd	(0.08)	(0.14)	(0.16)	(0.18)	(0.16)	-1.63E-01	-1.48E-01	-1.52E-01	-1.56E-01	-1.61E-01
The Balance of Payments												
Current Account	\$US Billions	IFS 78afd	(0.03)	(0.06)	(0.06)	(0.07)	(0.00)	(0.05)	(0.08)	(0.06)	(0.04)	(0.02)
Capital & Financial Account	\$US Billions	IFS 78bcd + 78bjd	0.03	0.05	0.04	0.08	0.04	0.00	0.08	0.06	0.05	0.03
Overall Balance of Payments	\$US Billions	Calculated	(0.00)	(0.01)	0.01	(0.01)	0.08	(0.05)	(0.00)	0.00	0.00	0.00
Official Reserves	\$US Billions	IFS 11d	0.09	0.08	0.10	0.09	0.17	0.12	0.12	0.12	0.12	0.13
Current Account (percent GDP)	%/100	Calculated	-7.56%	-15.00%	-11.45%	-13.48%	-0.16%	-9.26%	-15.07%	-9.68%	-7.24%	-3.61%



World Energy Overview January 2011

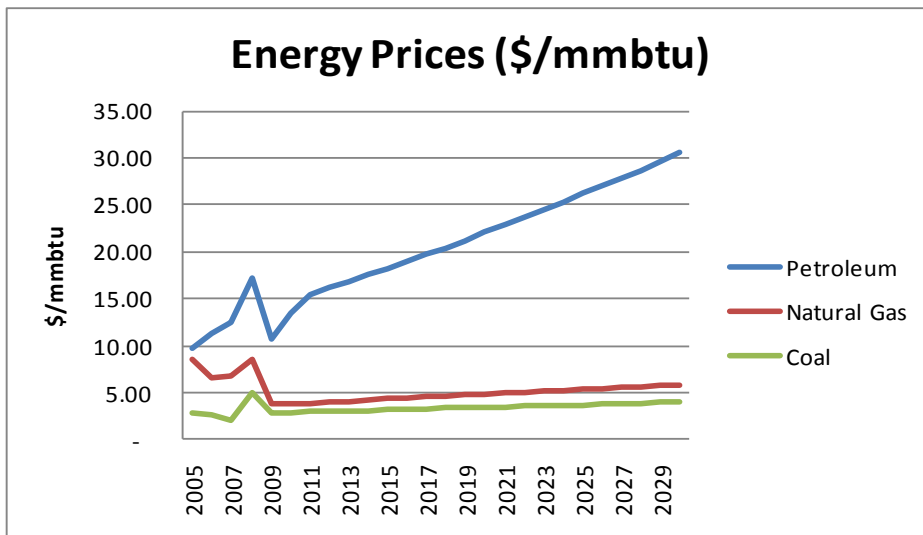
Energy markets stabilized in 2010 with oil prices trading in a range of \$70/bbl-\$90/bbl towards the end of the year. The CountryWatch Macroeconomic Forecast projects the world economy will recover in 2011-2012 with continued strong economic growth in China and India. Increasingly more difficult geological conditions and turbulent political environments in the Middle East--- as witnessed by the upheaval in Egypt, Tunisia and Yemen ---as well as tight market conditions will continue to drive oil prices higher.

Global Energy Demand and Energy Prices

The 2011 CountryWatch Energy Forecast projects a continuation of strong energy demand upon global recovery in 2011-2012 resulting in substantial oil price increases for petroleum throughout the next two decades. The relative global abundance of natural gas reserves now augmented by the finding of significant shale natural gas deposits in the US and the global abundance of coal supplies will keep these prices from appreciating significantly relative to oil.

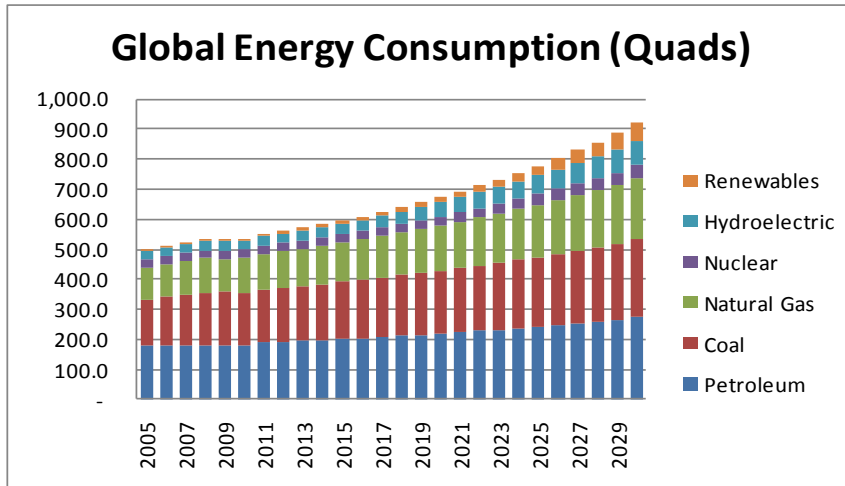
Figure 1 gives the CountryWatch projections for nominal petroleum, natural gas and coal prices on a \$/mmbtu basis from 2005 to 2030.

Figure 1



Source: CountryWatch 2011 Energy Forecast

The overall consumption of global energy by primary fuel source is shown in Figure 2.



The global growth rates by fuel from 2005 to 2030 are shown in Table 1 below:

Table 1

**Global Energy Consumption Growth Rates
2005-2030**

Petroleum	1.8%
Coal	2.1%
Natural Gas	2.7%
Nuclear	1.6%
Hydroelectric	4.3%
Renewables	11.8%

Source: CountryWatch Energy Forecast 2011

While renewable energy continues as the fastest growing energy resource as countries around the world mandate and incentivize renewable energy growth in response to concerns about the impact of CO₂ on global climate change. The growth in oil, natural gas and coal demand forecast is the result of resurgence in global economic growth particularly in China and India. The growth in hydroelectric and nuclear capacity reflects the current political trend of increasing at both of these resources into the energy mix to combat global climate change.

The market share of each of the major energy resource groups is shown in Figure 2 below.

**Market Share of Global Energy Resources
2005-2030**

	<u>2005 (%)</u>	<u>2030 (%)</u>	<u>Share Increase (%)</u>
Petroleum	35.6%	29.7%	-6.0%
Coal	31.2%	28.2%	-3.0%
Natural Gas	21.1%	22.2%	1.1%
Nuclear	5.6%	4.5%	-1.1%
Hydroelectric	5.7%	8.8%	3.1%
Renewables	0.8%	6.6%	5.8%
Total	100.0%	100.0%	

Source: CountryWatch Energy Forecast 2011

The market share of petroleum is expected to decline as the high price of crude oil and the trend towards electric vehicles in the transportation sector reduce the consumption of petroleum in the overall market mix. The coal market will also lose market share due mainly to the concerns over global climate change. The abundance of coal in China and India however and their use of coal as a domestic in power generation, steel production, and the production of transport fuels via gasification will mitigate the impact on coal consumption of concerns about global climate change. The market share lost by petroleum and coal is picked up by growth in the market share of natural gas, renewable energy and hydroelectric energy. The growth in nuclear energy will continue to be plagued by high costs and concerns over storage of nuclear wastes and nuclear proliferation.

Petroleum Demand

Table 3 below shows the ten largest global consumers of petroleum over the forecast period ranked by consumption in the year 2030.

World's Largest Petroleum Consumers (tbpd)*

<u>Rank</u>	<u>Country</u>	<u>2005 Actual</u>	<u>2010 Estimate</u>	<u>2015 Forecast</u>	<u>2020 Forecast</u>	<u>2025 Forecast</u>	<u>2030 Forecast</u>
1	China	6,695	8,925	12,089	15,430	19,692	25,133
2	United States	20,802	19,412	19,266	19,355	19,637	20,118
3	India	2,512	3,377	4,574	5,838	7,451	9,509
4	Japan	5,460	4,825	4,560	4,560	4,560	4,560
5	Brazil	2,206	2,738	2,902	3,103	3,351	3,654
6	Russia	2,785	2,528	2,809	2,990	3,213	3,487
7	Saudi Arabia	1,964	2,238	2,535	2,763	3,043	3,383
8	Mexico	2,117	2,155	2,436	2,648	2,907	3,222
9	Korea	2,191	2,260	2,526	2,707	2,930	3,202
10	Indonesia	1,279	1,194	1,422	1,718	2,095	2,580
	World	83,569	86,000	94,533	103,242	114,572	129,115

*Ranked in year 2030

Source: CountryWatch Energy Forecast 2011

The scramble for petroleum resources will continue to have a major effect on world energy markets. The rate of economic growth in China will continue to require that China looks outward for its petroleum resources as well as developing a robust synthetic fuels market domestically. As the CountryWatch projections indicate, China's demand for petroleum will grow to exceed that of the United States by the year 2025. This will mandate that China continue to base its foreign economic policy on developing trading relationships and reserve acquisitions for petroleum resources that can help China meet domestic petroleum demand and hedge oil price volatility.

Global Energy Supply: Technical Change and the New Market Order

The CountryWatch Energy Forecast includes a detailed review of the supply side of the energy market, including a review of the historical trends in production for each country. US Department of Energy data were used to calculate historical trends in energy production for countries with significant fossil fuel resources. These trends were then used along with estimates of the price elasticity of supply for these resources and estimates of technical change to develop a supply estimate. The suppliers of petroleum (including liquefied petroleum gases, bio-fuels, and synthetic fuels) from the top ten producing nations projected for 2030 is shown in Table 4.

World's Largest Petroleum Suppliers (tbpd)*

<u>Rank</u>	<u>Country</u>	<u>2005</u> <i>Actual</i>	<u>2010</u> <i>Estimate</i>	<u>2015</u> <i>Forecast</i>	<u>2020</u> <i>Forecast</i>	<u>2025</u> <i>Forecast</i>	<u>2030</u> <i>Forecast</i>
1	United States	8,322	9,708	11,689	13,618	15,711	17,951
2	Russia	9,511	10,397	11,730	12,804	13,842	14,820
3	Brazil	2,038	2,829	4,053	5,618	7,711	10,483
4	Iraq	1,889	2,638	3,802	5,302	7,322	10,015
5	China	3,792	4,191	4,782	5,279	5,771	6,248
6	Azerbaijan	440	1,132	1,777	2,700	4,061	6,051
7	Saudi Arabia	11,096	9,792	8,918	7,858	6,857	5,927
8	Canada	3,092	3,465	4,009	4,487	4,974	5,460
9	Angola	1,261	2,098	2,727	3,430	4,273	5,272
10	Iran	4,239	4,308	4,520	4,588	4,611	4,591
	World	82,721	86,000	94,533	103,242	114,572	129,115

*Ranked in year 2030

Source: CountryWatch Energy Forecast 2011

The United States emerges as the world's leading supplier of petroleum liquids in 2030 with substantial increases conventional production and new sources of petroleum liquids. Conventional increases come from increased drilling in offshore lower-48 and Alaska lease areas as well as enhanced oil recovery from depleted US reservoirs using liquid CO2 from US synthetic fuel plants. New sources of petroleum liquids include major increases in natural gas liquids from increased US natural gas production, substantial increases in bio-fuels including conventional and cellulosic ethanol production as well as bio-diesel and synthetic fuels from solid fuels including coal and petroleum coke.

Russia is forecast to be the world’s second largest producer in 2030 ramping up production to almost 15 million barrels per day. Brazil, with large off-shore reserves in the south Atlantic is expected to become a major producer and is projected by 2030 to be the world’s third largest producer of crude petroleum liquids.

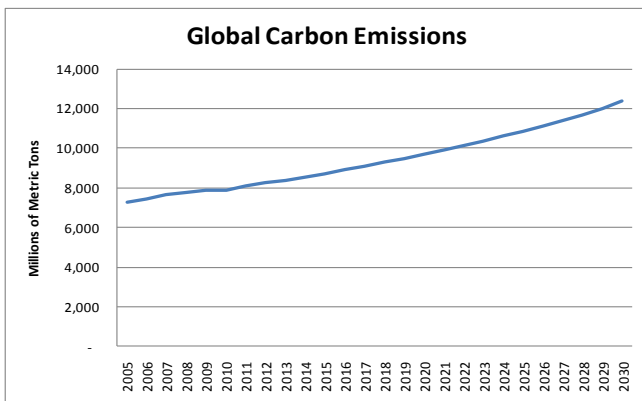
The dominance of Saudi Arabia as the world’s largest oil producer slowly ends as the super-giant fields in the Kingdom move into decline and maintaining production becomes increasingly more expensive.

A final comment on energy supplies relates to the increasingly more difficult political environment faced by the multi-national oil companies and the widespread belief that conventional oil supplies are becoming increasingly more difficult to find. These two factors have will have a significant effect in incenting the development of future petroleum supplies using unconventional technologies such as enhanced oil recovery, bio-fuels, and synthetic oil production using solid fuels such as coal and petroleum coke. This is shown in the US forecast and will lead to a new world order in the oil markets as technological advances in these areas as opposed to conventional oil reserves will dictate the future of the market for liquid fuels.

Carbon Production and Global Warming Issues

The significant increases in fossil fuel production will continue to increase emissions of carbon into the atmosphere. The Kyoto Treaty expires in 2012 and the global community is currently struggling with the issue of climate change. The goal of the Kyoto Treaty was to keep emissions of carbon at or below levels of 1990, or about 6,000 million metric tons. Figure 3 gives the trajectory of emissions from 2005 through the forecast period to 2030.

Figure 3



Source: CountryWatch Energy Forecast 2011

As the data indicates, the initial goal is nowhere in sight. One approach to limiting carbon emissions is to place a price on carbon. Such a price would reflect an optimal balancing of costs and benefits of carbon emissions. International climate negotiators are working to do this by conceptualizing a framework that addresses the carbon issue in an efficient manner. This approach however needs to include all global participants or it will not succeed in reducing the threat of escalating carbon

emissions.

Another approach to the carbon emissions problem is through technical advances in carbon capture and sequestration technology of carbon emissions from coal including the use of both enhanced oil recovery sequestration as well as deep saline injection.

Coal consumption is a major source of global carbon emissions along with petroleum and natural gas. Coal is widely used because of its low cost compared to oil and natural gas. Table 5 shows the top ten consumers of coal worldwide.

World's Largest Coal Consumers (mm ST)*

<u>Rank</u>	<u>Country</u>	<u>2005</u> <u>Actual</u>	<u>2010</u> <u>Estimate</u>	<u>2015</u> <u>Forecast</u>	<u>2020</u> <u>Forecast</u>	<u>2025</u> <u>Forecast</u>	<u>2030</u> <u>Forecast</u>
1	China	2,404	3,354	3,833	4,336	4,906	5,686
2	India	505	662	777	879	995	1,153
3	United States	1,126	942	951	962	975	987
4	Russia	233	210	223	239	257	276
5	South Africa	193	187	201	218	237	256
6	Germany	271	235	225	222	219	216
7	Poland	150	132	142	154	167	181
8	Japan	196	179	171	171	171	171
9	Australia	148	140	145	151	158	164
10	Kazakhstan	70	83	95	112	132	154
	World	6,455	7,241	7,964	8,750	9,646	10,813

*Ranked in year 2030

Source: CountryWatch Energy Forecast 2011

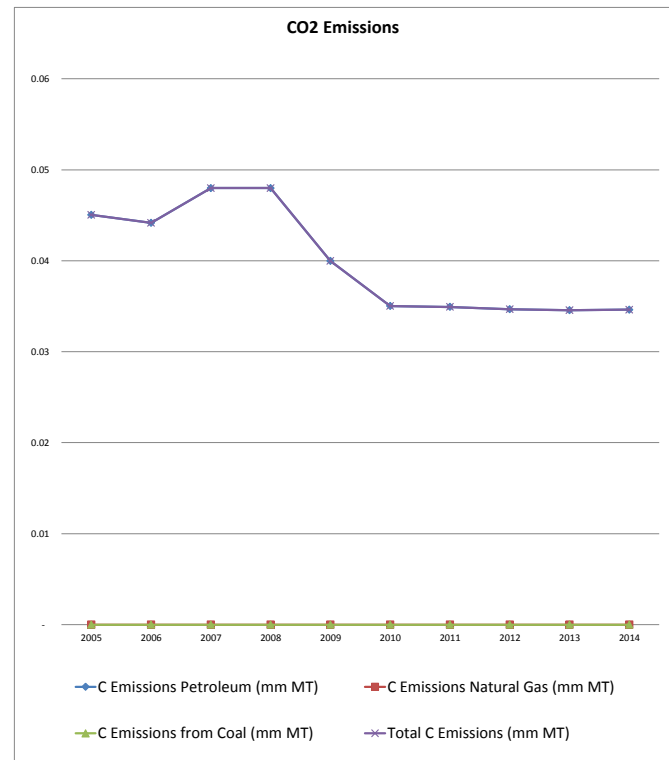
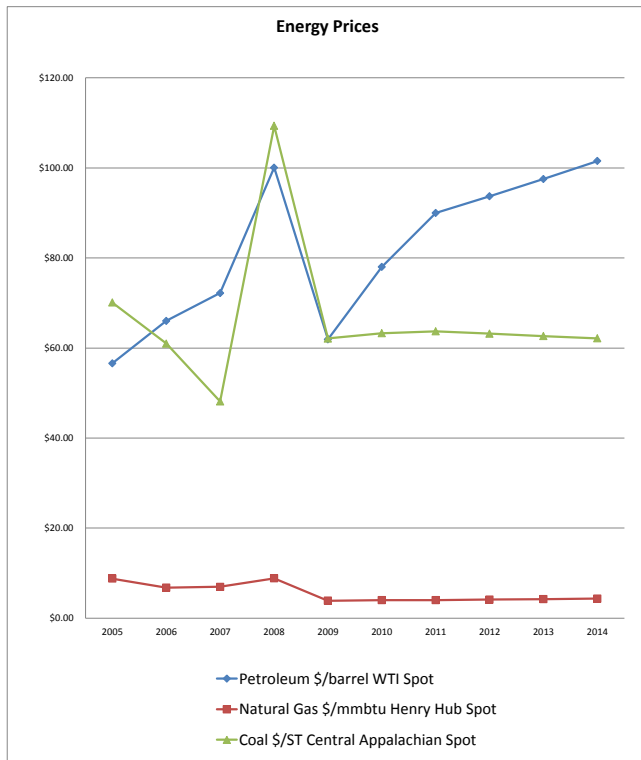
China is clearly the dominant consumer of coal worldwide with the India and the US a distant second and third. While there has been in recent years an increasing political awareness of the problems of global warming, most of the incremental production of carbon associated with coal consumption will originate from the newly emerging Asian tigers---China and India. One implication is that a carbon market without the participation of China, India and the US would not be effective. How to accomplish this and accommodate growth in China and India continues to be the essential dilemma of climate change policy negotiations.

Samoa: Forecast Brief - 2011 Edition
Energy Forecast Summary

Units	Reference	2005	2006	2007	2008	2009	Estimate 2010	Forecast 2011	Forecast 2012	Forecast 2013	Forecast 2014
Petroleum											
Petroleum Consumption (mm bpd)	DOE	1.13	1.10	1.13	1.20	1.00	0.88	0.87	0.87	0.86	0.87
Petroleum Production (mm bpd)	DOE	-	-	-	-	-	-	-	-	-	-
Petroleum Net Exports (mm bpd)	DOE	(1.13)	(1.10)	(1.13)	(1.20)	(1.00)	(0.88)	(0.87)	(0.87)	(0.86)	(0.87)
Natural Gas											
Natural Gas Consumption (bcf/yr)	DOE	-	-	-	-	-	-	-	-	-	-
Natural Gas Production (bcf/yr)	DOE	-	-	-	-	-	-	-	-	-	-
Natural Gas Net Exports (bcf/yr)	DOE	-	-	-	-	-	-	-	-	-	-
Coal											
Coal Consumption (mm ST/yr)	DOE	-	-	-	-	-	-	-	-	-	-
Coal Production (mm ST/yr)	DOE	-	-	-	-	-	-	-	-	-	-
Coal Net Exports (mm ST/yr)	DOE	-	-	-	-	-	-	-	-	-	-
Nuclear											
Nuclear Production (billions of kwh)	DOE	-	-	-	-	-	-	-	-	-	-
Hydroelectric											
Hydroelectric Production (billions of kwh)	DOE	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Renewables											
Renewable Production (billions of kwh)	DOE	-	-	-	-	-	-	-	-	-	-
Carbon Emissions (mm MT)											
C Emissions Petroleum (mm MT)	DOE	0.05	0.04	0.05	0.05	0.04	0.04	0.03	0.03	0.03	0.03
C Emissions Natural Gas (mm MT)	DOE	-	-	-	-	-	-	-	-	-	-
C Emissions from Coal (mm MT)	DOE	-	-	-	-	-	-	-	-	-	-
Total C Emissions (mm MT)	DOE	0.05	0.04	0.05	0.05	0.04	0.04	0.03	0.03	0.03	0.03

Energy Forecast Price Summary

Units	Reference	2005	2006	2007	2008	2009	2010	Forecast 2011	Forecast 2012	Forecast 2013	Forecast 2014
Petroleum											
Petroleum \$/barrel WTI Spot	IMF	\$56.59	\$66.02	\$72.20	\$100.06	\$61.92	\$78.00	\$90.00	\$93.69	\$97.53	\$101.53
Natural Gas											
Natural Gas \$/mmbtu Henry Hub Spot	IMF	\$8.79	\$6.76	\$6.95	\$8.85	\$3.89	\$4.00	\$4.00	\$4.11	\$4.23	\$4.35
Coal											
Coal \$/ST Central Appalachian Spot	IMF	\$70.12	\$60.97	\$48.13	\$109.36	\$62.11	\$63.28	\$63.72	\$63.19	\$62.67	\$62.15



World Metals Overview January 2011

The world industrial metal markets mirrored the economic recovery that followed the Great Recession in 2009. The major industrial metals saw upticks in prices that resulted from the global economic recovery and in particular, strong growth in China and India.

As the global economy recovered in 2010 metals prices bounced back to 2008 levels. Assuming that the world does not double dip into a second recession in the latter half of 2010 and/or 2011, metals prices should experience modest growth from mid-2010 levels --- as indicated in this forecast.

The forecast of economic growth in select key major economies of the world and the global economy based on the *Countrywatch Macroeconomic Forecast 2011* is shown in Table 1 below:

Table 1

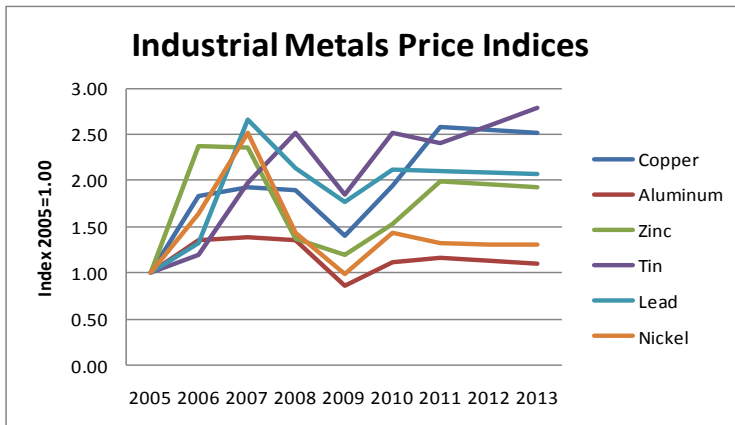
Real GDP Growth Rates %	2007	2008	2009	2010	2011	2012
	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Estimate</u>	<u>Forecast</u>	<u>Forecast</u>
Australia	4.8%	2.2%	1.2%	3.0%	3.5%	3.4%
Brazil	6.1%	5.1%	-0.2%	7.5%	4.3%	4.1%
Canada	3.1%	0.6%	-2.6%	3.1%	2.7%	2.7%
China,P.R. Mainland	11.2%	9.9%	10.2%	10.3%	9.2%	9.5%
France	2.3%	0.1%	-2.6%	1.5%	1.5%	1.8%
Germany	2.8%	0.7%	-4.7%	3.3%	2.0%	2.0%
India	9.6%	4.1%	8.9%	9.2%	8.5%	8.0%
Italy	1.4%	-1.3%	-5.1%	1.1%	1.0%	1.4%
Mexico	4.1%	1.3%	-6.4%	5.0%	3.5%	5.0%
Russia	7.4%	7.3%	-7.9%	4.0%	4.3%	4.4%
South Africa	5.5%	3.7%	-2.4%	3.0%	3.5%	3.9%
Spain	4.1%	1.8%	-2.7%	-0.3%	0.7%	1.8%
United Kingdom	2.7%	-0.1%	-4.9%	1.7%	1.9%	2.3%
United States	1.9%	0.0%	-2.6%	2.6%	2.3%	3.0%

The uptick in real economic growth in 2010 put some upward pressure on metals prices as shown in Table 2 below:

Metals Prices	2005	2006	2007	2008	2009	2010	2011	2012	2013
	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Estimate</u>	<u>Forecast</u>	<u>Forecast</u>	<u>Forecast</u>
Copper \$/MT	\$ 3,683.64	\$ 6,730.60	\$ 7,126.35	\$ 6,963.48	\$ 5,165.30	\$ 7,173.00	\$ 9,500.00	\$ 9,392.38	\$ 9,285.98
Aluminum \$/MT	\$ 1,897.65	\$ 2,566.79	\$ 2,639.27	\$ 2,571.37	\$ 1,637.61	\$ 2,117.00	\$ 2,200.00	\$ 2,150.52	\$ 2,102.15
Zinc \$/MT	\$ 1,381.55	\$ 3,272.62	\$ 3,250.30	\$ 1,884.83	\$ 1,658.39	\$ 2,108.00	\$ 2,750.00	\$ 2,706.16	\$ 2,663.03
Tin \$/MT	\$ 7,370.38	\$ 8,762.66	\$14,535.54	\$18,498.62	\$13,602.69	\$18,518.00	\$17,707.03	\$19,093.84	\$20,589.27
Lead \$/MT	\$ 975.65	\$ 1,287.49	\$ 2,594.96	\$ 2,084.76	\$ 1,719.44	\$ 2,068.00	\$ 2,044.60	\$ 2,030.66	\$ 2,016.82
Nickel \$/MT	\$ 14,732.72	\$24,286.81	\$37,181.01	\$21,027.22	\$14,672.40	\$21,221.00	\$19,500.00	\$19,356.36	\$19,213.77
Gold \$/oz	\$ 444.99	\$ 604.34	\$ 696.43	\$ 872.56	\$ 977.79	\$ 1,186.00	\$ 1,300.00	\$ 1,339.00	\$ 1,379.17
Silver \$/oz	\$ 6.69	\$ 7.34	\$ 11.20	\$ 15.00	\$ 15.00	\$ 20.00	\$ 28.00	\$ 24.00	\$ 24.72

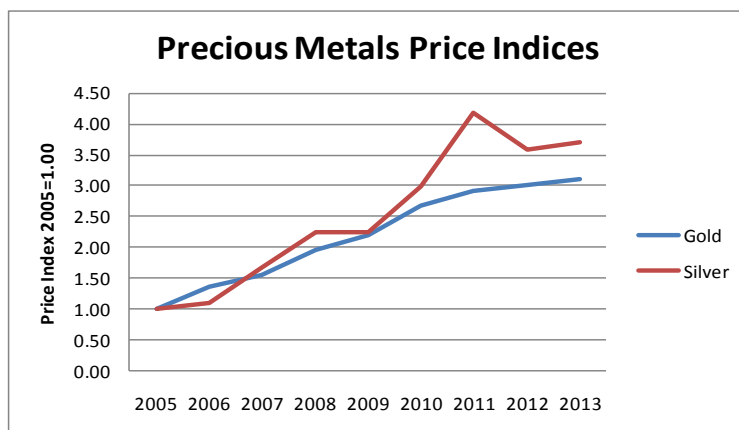
Source: CountryWatch Metals Forecast 2011

Indices for the industrial metals (with 2005=1.00) reflecting these price movements are charted in Figure 1 below:



The precious metals, gold and silver, did not experience the significant declines in price that affected the industrial metals in 2007-2009. Investors fleeing financial assets moved into significant amounts of funds into gold, silver and US treasury bills keeping the price of gold and silver relatively stable as the US credit markets imploded. If the recovery continues and inflation concerns persist the precious metals should remain firm. The CountryWatch Metals Forecast 2011 projects gold and silver exceeding the 2007-2009 price levels but their growth is projected to level off as the recovery proceeds without significant inflationary pressures.

Indices for the precious metals (with 2005=1.00) are charted in Figure 2 below:



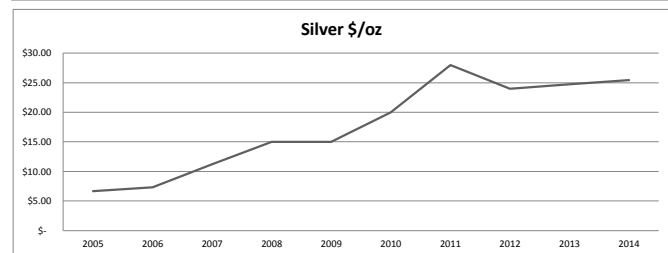
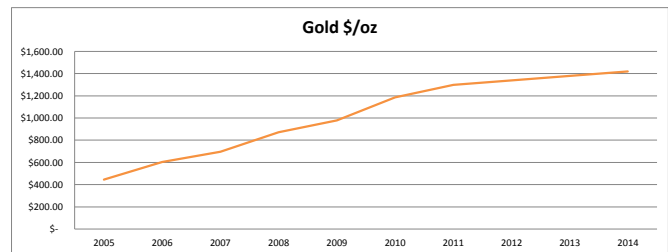
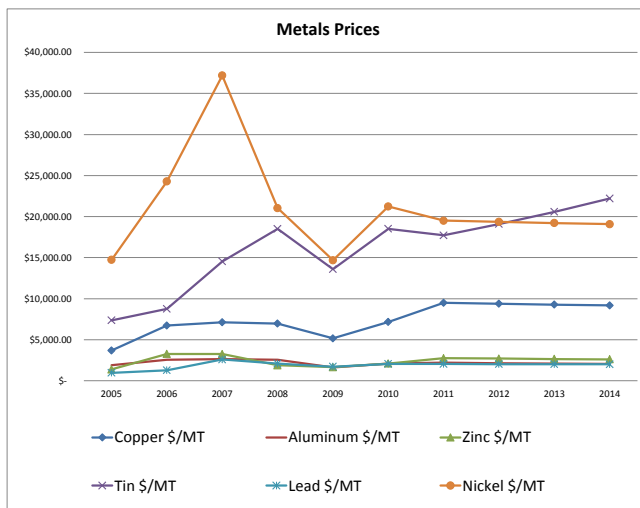
**CountryWatch
February 2011**

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Metals Forecast Summary

Units	Reference	2005	2006	2007	2008	2009	Estimate 2010	Forecast 2011	Forecast 2012	Forecast 2013	Forecast 2014
Copper Market											
Copper Consumption	Thousand MT	-	-	-	-	-	-	-	-	-	-
Copper Production	Thousand MT	-	-	-	-	-	-	-	-	-	-
Copper Net Exports	Thousand MT	-	-	-	-	-	-	-	-	-	-
Aluminum Market											
Aluminum Consumption	Thousand MT	-	-	-	-	-	-	-	-	-	-
Aluminum Production	Thousand MT	-	-	-	-	-	-	-	-	-	-
Aluminum Net Exports	Thousand MT	-	-	-	-	-	-	-	-	-	-
Zinc Market											
Zinc Consumption	Thousand MT	-	-	-	-	-	-	-	-	-	-
Zinc Production	Thousand MT	-	-	-	-	-	-	-	-	-	-
Zinc Net Exports	Thousand MT	-	-	-	-	-	-	-	-	-	-
Lead Market											
Lead Consumption	Thousand MT	-	-	-	-	-	-	-	-	-	-
Lead Production	Thousand MT	-	-	-	-	-	-	-	-	-	-
Lead Net Exports	Thousand MT	-	-	-	-	-	-	-	-	-	-
Tin Market											
Tin Consumption	Thousand MT	-	-	-	-	-	-	-	-	-	-
Tin Production	Thousand MT	-	-	-	-	-	-	-	-	-	-
Tin Net Exports	Thousand MT	-	-	-	-	-	-	-	-	-	-
Nickel Market											
Nickel Consumption	Thousand MT	-	-	-	-	-	-	-	-	-	-
Nickel Production	Thousand MT	-	-	-	-	-	-	-	-	-	-
Nickel Net Exports	Thousand MT	-	-	-	-	-	-	-	-	-	-
Gold											
Gold Production	Oz	-	-	-	-	-	-	-	-	-	-
Silver											
Silver Production	Oz	-	-	-	-	-	-	-	-	-	-

Metals Forecast Price Summary

Units	Reference	2005	2006	2007	2008	2009	2010	Forecast 2011	Forecast 2012	Forecast 2013	Forecast 2014
Copper											
Copper LME Spot \$/MT	\$/MT	\$ 3,683.64	\$ 6,730.60	\$ 7,126.35	\$ 6,963.48	\$ 5,165.30	\$ 7,173.00	\$ 9,500.00	\$ 9,392.38	\$ 9,285.98	\$ 9,180.78
Aluminum											
Aluminum LME Spot \$/MT	\$/MT	\$ 1,897.65	\$ 2,566.79	\$ 2,639.27	\$ 2,571.37	\$ 1,637.61	\$ 2,117.00	\$ 2,200.00	\$ 2,150.52	\$ 2,102.15	\$ 2,054.87
Zinc											
Zinc \$/MT	\$/MT	\$ 1,381.55	\$ 3,272.62	\$ 3,250.30	\$ 1,884.83	\$ 1,658.39	\$ 2,108.00	\$ 2,750.00	\$ 2,706.16	\$ 2,663.03	\$ 2,620.58
Tin											
Tin \$/MT	\$/MT	\$ 7,370.38	\$ 8,762.66	\$ 14,535.54	\$ 18,498.62	\$ 13,602.69	\$ 18,518.00	\$ 17,707.03	\$ 19,093.84	\$ 20,589.27	\$ 22,201.82
Lead											
Lead \$/MT	\$/MT	\$ 975.65	\$ 1,287.49	\$ 2,594.96	\$ 2,084.76	\$ 1,719.44	\$ 2,068.00	\$ 2,044.60	\$ 2,030.66	\$ 2,016.82	\$ 2,003.07
Nickel											
Nickel \$/MT	\$/MT	\$ 14,732.72	\$ 24,286.81	\$ 37,181.01	\$ 21,027.22	\$ 14,672.40	\$ 21,221.00	\$ 19,500.00	\$ 19,356.36	\$ 19,213.77	\$ 19,072.24
Gold											
Gold \$/oz	\$/oz	\$ 444.99	\$ 604.34	\$ 696.43	\$ 872.56	\$ 977.79	\$ 1,186.00	\$ 1,300.00	\$ 1,339.00	\$ 1,379.17	\$ 1,420.55
Silver											
Silver \$/oz	\$/oz	\$ 6.69	\$ 7.34	\$ 11.20	\$ 15.00	\$ 15.00	\$ 20.00	\$ 28.00	\$ 24.00	\$ 24.72	\$ 25.46



World Agriculture Overview January 2011

Trends in Agricultural Markets

The world food staple markets mirrored the recovery that was experienced by the rest of the world economy in 2010. The current outlook for the world economy as projected by the CountryWatch Macroeconomic Forecast 2011 is shown in Table 1 below:

	2007	2008	2009	2010	2011	2012
World GDP, Trade, & Inflation	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Estimate</u>	<u>Forecast</u>	<u>Forecast</u>
Real GDP in US\$2005 Trillions	51.2	53.7	51.0	52.0	53.5	55.1
Nominal GDP in US\$ Trillions	55.1	60.4	57.7	60.3	63.5	67.6
Exports NIPA in US\$ Trillions	16.8	19.4	15.6	17.8	18.8	20.0
Imports NIPA in US\$ Trillions	16.5	19.1	15.3	16.7	17.6	19.4
Trade Balance in US\$ Trillions	0.2	0.3	0.3	1.1	1.2	0.7
Trade Balance % Nominal GDP	0.5%	0.5%	0.5%	1.8%	1.9%	1.0%
Nominal GDP Growth Rate %	12.2%	9.7%	-4.4%	4.4%	5.4%	6.4%
US Inflation %	2.9%	2.2%	0.9%	0.9%	1.3%	2.5%
\$ Devaluation %	1.3%	2.6%	-0.5%	1.7%	1.1%	0.9%
World RGDP Growth %	8.0%	4.8%	-4.9%	1.8%	2.9%	3.0%

Global Macroeconomic Trends

Source: CountryWatch Macroeconomic Forecast 2011

The real GDP growth rate in the major global economies is shown in Table 2 below:

	2007	2008	2009	2010	2011	2012
Real GDP Growth Rates %	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Estimate</u>	<u>Forecast</u>	<u>Forecast</u>
Australia	4.8%	2.2%	1.2%	3.0%	3.5%	3.4%
Brazil	6.1%	5.1%	-0.2%	7.5%	4.3%	4.1%
Canada	3.1%	0.6%	-2.6%	3.1%	2.7%	2.7%
China,P.R. Mainland	11.2%	9.9%	10.2%	10.3%	9.2%	9.5%
France	2.3%	0.1%	-2.6%	1.5%	1.5%	1.8%
Germany	2.8%	0.7%	-4.7%	3.3%	2.0%	2.0%
India	9.6%	4.1%	8.9%	9.2%	8.5%	8.0%
Italy	1.4%	-1.3%	-5.1%	1.1%	1.0%	1.4%
Mexico	4.1%	1.3%	-6.4%	5.0%	3.5%	5.0%
Russia	7.4%	7.3%	-7.9%	4.0%	4.3%	4.4%
South Africa	5.5%	3.7%	-2.4%	3.0%	3.5%	3.9%
Spain	4.1%	1.8%	-2.7%	-0.3%	0.7%	1.8%
United Kingdom	2.7%	-0.1%	-4.9%	1.7%	1.9%	2.3%
United States	1.9%	0.0%	-2.6%	2.6%	2.3%	3.0%

Source: CountryWatch Macroeconomic Forecast 2011

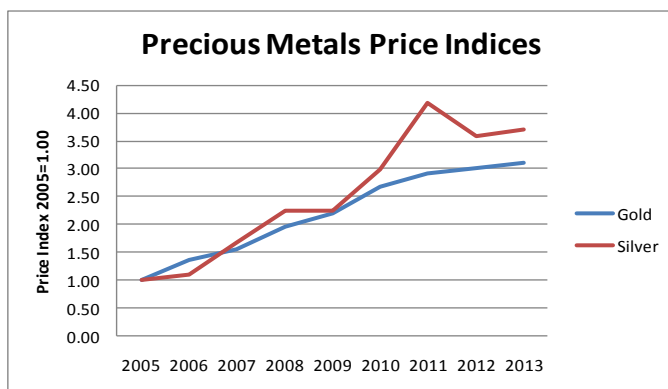
The increase in growth, particularly in the developing countries---China, India and Brazil, has increased the demand for agricultural products and prices for the major agricultural commodities covered in the CountryWatch Agricultural Forecast as shown in Table 3 below.

Agricultural Prices	2007	2008	2009	2010	2011	2012
	<i>Actual</i>	<i>Actual</i>	<i>Actual</i>	<i>Estimate</i>	<i>Forecast</i>	<i>Forecast</i>
Corn \$/MT	\$ 163.26	\$ 223.25	\$ 165.54	\$ 185.89	\$ 258.92	\$ 266.79
Soybeans \$/MT	\$ 317.32	\$ 453.31	\$ 378.55	\$ 384.95	\$ 474.83	\$ 492.54
Rice \$/MT	\$ 332.39	\$ 700.20	\$ 589.38	\$ 520.56	\$ 553.07	\$ 578.54
Coffee c/lb	\$ 123.30	\$ 138.11	\$ 141.60	\$ 194.37	\$ 151.17	\$ 155.99
Cocoa \$/MT	\$ 1,958.11	\$ 2,572.80	\$ 2,895.03	\$ 3,130.60	\$ 2,782.75	\$ 2,881.86
Sugar c/lb	\$ 20.76	\$ 21.32	\$ 24.34	\$ 31.42	\$ 25.14	\$ 32.89
Wheat \$/MT	\$ 255.21	\$ 325.94	\$ 223.43	\$ 223.74	\$ 240.95	\$ 249.50

Source: CountryWatch Agricultural Forecast 2011

Corn, soybeans, rice and wheat --- are used as feedstocks in the production of bio-fuels---ethanol and bio-diesel. Energy prices increased robustly in 2010 and this will continue to have a positive effect on these commodities as oil prices continue to climb.

The trends in food prices are illustrated in Figure 1 below which shows price indices for agricultural commodities based on the value for 2005=1.00.



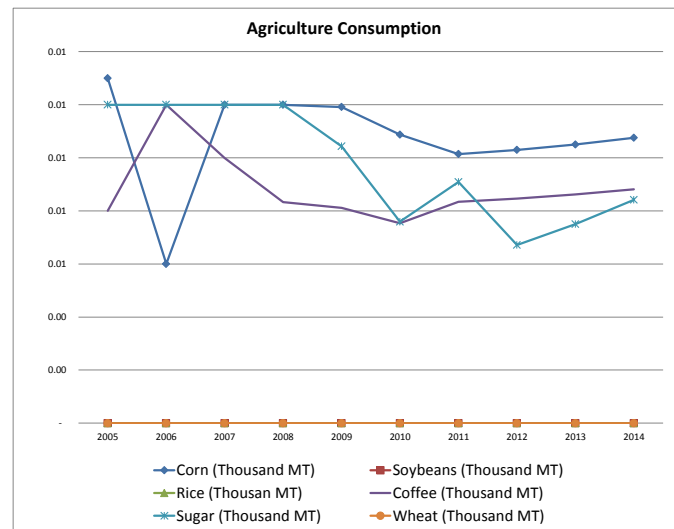
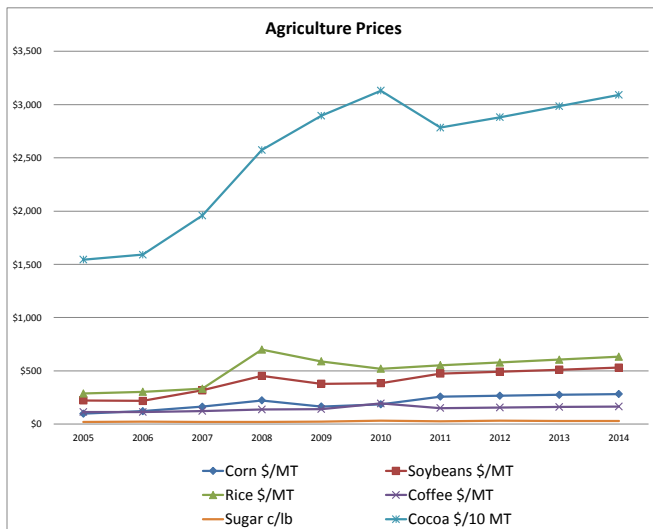
Source: CountryWatch Agricultural Forecast 2010

**CountryWatch
February 2011**

Samoa: Forecast Brief - 2010 Edition
Agriculture Forecast Summary

	Units	Reference	2005	2006	2007	2008	2009	Estimate 2010	Forecast 2011	Forecast 2012	Forecast 2013	Forecast 2014
Corn												
Corn Consumption	Thousand MT	FAO Stat	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Corn Production	Thousand MT	FAO Stat	-	-	-	-	-	-	-	-	-	-
Corn Net Exports	Thousand MT	FAO Stat	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Soybeans												
Soybeans Consumption	Thousand MT	FAO Stat	-	-	-	-	-	-	-	-	-	-
Soybeans Production	Thousand MT	FAO Stat	-	-	-	-	-	-	-	-	-	-
Soybeans Net Exports	Thousand MT	FAO Stat	-	-	-	-	-	-	-	-	-	-
Rice												
Rice Consumption	Thousand MT	FAO Stat	-	-	-	-	-	-	-	-	-	-
Rice Production	Thousand MT	FAO Stat	-	-	-	-	-	-	-	-	-	-
Rice Net Exports	Thousand MT	FAO Stat	-	-	-	-	-	-	-	-	-	-
Coffee												
Coffee Consumption	Thousand MT	FAO Stat	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Coffee Production	Thousand MT	FAO Stat	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Coffee Net Exports	Thousand MT	FAO Stat	-	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Cocoa												
Cocoa Consumption	Thousand MT	FAO Stat	0.50	0.50	0.53	0.56	0.48	0.44	0.49	0.49	0.50	0.51
Cocoa Production	Thousand MT	FAO Stat	0.50	0.50	0.53	0.53	0.51	0.50	0.52	0.52	0.53	0.54
Cocoa Net Exports	Thousand MT	FAO Stat	-	-	-	(0.03)	0.03	0.06	0.03	0.03	0.03	0.03
Sugar												
Sugar Consumption	Thousand MT	FAO Stat	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Sugar Production	Thousand MT	FAO Stat	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01
Sugar Net Exports	Thousand MT	FAO Stat	-	-	-	-	0.00	0.00	0.00	0.01	0.01	0.00
Wheat												
Wheat Consumption	Thousand MT	FAO Stat	-	-	-	-	-	-	-	-	-	-
Wheat Production	Thousand MT	FAO Stat	-	-	-	-	-	-	-	-	-	-
Wheat Net Exports	Thousand MT	FAO Stat	-	-	-	-	-	-	-	-	-	-

	Units	Reference	2005	2006	2007	2008	2009	2010	Forecast 2011	Forecast 2012	Forecast 2013	Forecast 2014
Corn												
Corn \$/MT	\$/MT	IMF	\$98	\$122	\$163	\$223	\$166	\$186	\$259	\$267	\$275	\$283
Soybeans												
Soybeans \$/MT	\$/MT	IMF	\$223	\$217	\$317	\$453	\$379	\$385	\$475	\$493	\$511	\$530
Rice												
Rice \$/MT	\$/MT	IMF	\$288	\$304	\$332	\$700	\$589	\$521	\$553	\$579	\$605	\$633
Coffee												
Coffee \$/MT	\$/MT	IMF	\$114	\$114	\$123	\$138	\$142	\$194	\$151	\$156	\$161	\$166
Cocoa												
Cocoa \$/10 MT	\$/10 MT	IMF	\$1,545	\$1,591	\$1,958	\$2,573	\$2,895	\$3,131	\$2,783	\$2,882	\$2,984	\$3,091
Sugar												
Sugar c/lb	c/lb	IMF	\$21	\$22	\$21	\$21	\$24	\$31	\$25	\$33	\$31	\$29
Wheat												
Wheat \$/MT	\$/MT	IMF	\$152	\$192	\$255	\$326	\$223	\$224	\$241	\$249	\$258	\$268



Forecast Model Documentation

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CountryWatch Model Documentation

Macroeconomic

Overview

This note provides a description of the CountryWatch Macroeconomic model January 2011 edition. The CountryWatch Macroeconomic Model is a Microsoft Excel spreadsheet model with worksheets for each country (196 worksheets) and a worksheet which rolls up individual country worksheets to develop global aggregates. The model includes the key elements described in the following paragraphs.

The individual country worksheets display historical data for each country for the most recent five years and projections that extend over a 20 year time horizon. For the 2011 forecast, historical data is shown for 2005 through 2009 (Base Data), an estimate is made based on recent trends for 2010 and projections are shown for 2010 through 2030.

Base Data for each country is developed from the IMF International Financial Statistics ("IFS") publication when available and from other sources including the Central Intelligence Agency, World Factbook and CountryWatch estimates when the IMF IFS data is not available.

The IMF World Economic Outlook (WEO) base assumptions from the IMF WEO October 2010 database were used when available to develop initial assumptions for real GDP growth, the GDP deflator, nominal GDP growth, the current account as a percent of GDP, and the budget deficit as a percent of GDP. The IMF WEO data was employed along with a simplified trend analysis to determine major macroeconomic variables by applying trends or averages in the base data along with changes to the trends or averages ("trend deviations") in some cases based on CountryWatch staff estimates to develop forward projections.

The trends analysis leads to a set of projections that are generally consistent with historical trends but also allows for deviations to the historical trends when deemed appropriate to take into account either planned or disruptive changes to economic structure.

The model has a feature which enables the forecast to generate expenditure switching or expenditure reducing trends to domestic expenditure to achieve targeted levels of external balance --- i.e. the trade gap. The long run trends in each country are projected based upon the assumption that political and economic forces in each country over the long run tend to lead to pressures to balance the external deficit.

The model has another feature which enables the forecast to generate changes in fiscal policy to achieve targeted levels of the fiscal deficit. The long run trends in each country are projected based upon the assumption that political and economic forces in each country over the long run tend to lead to pressures to balance the fiscal deficit.

The following sections provide the model equations and analytical methodology for the forecast.

GDP Growth Model

Aggregate nominal GDP is given by:

$$Y_t = C_t + I_t + G_t + X_t - IM_t$$

where Y_t is GDP, C_t is consumption spending, I_t is investment spending, G_t is government expenditure, X_t is export demand, and IM_t is import demand and the subscript "t" denotes the year "t".

The growth rate in GDP is estimated from IMF WEO estimate when available for the years 2010 through 2015. If IMF data was unavailable the growth rate is estimated based a 5 year historical trend in GDP growth rates from the Base Data. These trends reflect historical rates of savings, capital formation, productivity and growth in the labor supply in each economy. In certain cases the trends will be adjusted (plus or minus) by a trend deviation in the historical growth rate if deemed appropriate by the CountryWatch staff based on the individual circumstances for each country. For example a war or natural disaster may affect historical trends and interim adjustments may be required before the country resumes historical growth trends. Thus GDP in year $t+1$ is given by:

$$Y_{t+1} = (1+n-dt) * Y_t$$

where n is the IMF WEO or historical trend growth rate of nominal GDP and dt is a trend deviation for year t .

The components of GDP are calculated by the 5 year historical average from the Base Data of the ratio of the component to GDP. The components of GDP in any year t are therefore given by:

$$C_t = c * Y_t$$

$$G_t = g * Y_t$$

$$I_t = i * Y_t$$

$$X_t = x * Y_t$$

$$IM_t = im * Y_t$$

where c , g , i , x , and im are the historical ratios of GDP components to GDP from the Base Data and where by equation (1):

$$c + g + i + x - im = 1$$

The ratio of domestic expenditure ($C_t + G_t + I_t$) to GDP can be adjusted to reflect a set of expenditure reducing or expenditure switching policies designed to affect the trade gap; $X_t - IM_t$. Expenditure reducing policies are ones that attempt to correct an external imbalance in the trade gap by decreasing aggregate expenditure relative to GDP through measures such as fiscal or monetary policy. Expenditure switching policies are those that attempt to correct an external imbalance in the trade gap by policies such as exchange rate changes or tariffs that attempt to reduce expenditures on foreign goods relative to domestic goods. In the case where it is determined to be appropriate to implement an expenditure reducing or expenditure switching change to the trends, then a target trend in the growth rate of the trade gap, $ngap$, is estimated that will close the trade gap to a desired level by a desired year. The components of GDP are then adjusted to effectuate that change through the following relationships:

$$(9a) c' = c * (1 + \text{ngap})$$

$$(9b) g' = g * (1 + \text{ngap})$$

$$(9c) I' = I * (1 + \text{ngap})$$

$$(9d) x' = x * (1 - \text{ngap})$$

and from equation (8) therefore:

$$(9e) \text{im}' = c' + g' + I' + x' - 1$$

These relationships will provide an internally consistent set of projections that continue to forecast growth at historical rates with appropriate trend deviations in GDP growth and additionally can project the results on GDP components of expenditure switching or reducing policies taken to correct trade imbalances.

Real GDP Model

The real GDP model uses the same trend analysis to project real income growth using the following methodology. The inflation rate in the GDP deflator is given from the IMF WEO assumptions if available or from the 5 year average in the Base Data. These assumptions were modified by trend deviation if judged appropriate by the CountryWatch staff. Thus:

$$(10) \text{PI}_t = \text{PI} - \text{pid}_t$$

where PI_t is the inflation rate in year t , PI is the IMF WEO data or the 5 year historical trend based on the Base Data and pid_t is a trend deviation in PI for year t . Given the inflation rate, the price index for year t is given by:

$$(11) \text{Pt} = \text{Pt-1} * (1 + \text{PI}_t)$$

Real income in year t is then given by:

$$(12) \text{YR}_t = \text{Yt} / \text{Pt}$$

The rate of real income growth is then given by:

$$(13) \text{nr} = (\text{YR}_t - \text{YR}_{t-1}) / \text{YR}_{t-1}$$

Government Finance Model

The government finance model uses trend analysis to project national taxes net of transfers and the long run ratio of the budget deficit to GDP. Taxes net of transfers are projected using the five year average ratio of taxes net of transfers to GDP:

$$(14) \text{Tt} = \text{tx} * \text{GDPT}$$

where Tt is taxes net of transfers in year t and tx is the 5 year historical trend of taxes net of transfers based on the Base Data. The model has an algorithm to make the trend in tx such that it will hit a target value at the end of the forecast period.

Money, Interest Rates and Unemployment

The monetary sector model uses trend analysis to project growth rates in the money supply, interest rates and the unemployment rate. Trend deviations are used in each area to project anomalies from the near term trends.

Exchange Rates

The exchange rates for the euro, yen and pound against the dollar are projected based on recent trends and judgments on the long term prospects for each currency. Exchange rates for countries in the euro block are then pegged off of the euro. Exchange rates for dollarized countries are held constant against the dollar. The Chinese currency is assumed to be a managed float and given the strength in the Chinese export surplus is assumed to appreciate slowly against the dollar. All other country currencies are assumed to float against the dollar based on purchasing power parity. The specific exchange regime for each country is shown in Table 17.

The Balance of Payments and FX Reserves

To estimate the balance of payments accounts, the trade balance from the GDP projections is used along with projections based upon trends in the Base Data for the other major components of the current and capital accounts. Foreign exchange reserves are assumed to be maintained at a constant percentage of imports based upon historical trends. The current account deficit as a percent of GDP was estimated from the IMF WEO assumptions when available and based on 5 year historical trends otherwise. Changes in the current account balance were made through a balancing entry to bring the assumed current account deficit equal to the assumed current account deficit.

Energy

Overview

The CountryWatch Energy model projects the demand, supply, and global equilibrium price for each of the major fossil fuels and trend projections for hydroelectric, nuclear and renewable energy. In addition the energy model projects carbon emissions that result from the forecast. Carbon trends are projected by estimated coefficients applied to the production of the three major fossil fuels. The fossil fuel projections include projections for petroleum, natural gas and coal.

The base data used to develop the forecasts come from two major sources:

1. The US Department of Energy - Energy Information Administration International Energy Database at <http://www.eia.doe.gov/international/>
2. The BP Statistical Review of World Energy 2010 at <http://www.bp.com/statisticalreview>

Simple global generalized assumptions are used on the economic parameters that affect demand and supply of the fossil fuels including the price elasticities of demand and supply and the income elasticities of demand as well as efficiency trends. These assumptions will be further reviewed in future editions of the model and may be separately estimated for different fuels and different countries.

The Fossil Fuels

The demand for each fossil fuel is calculated as a function of real income in the relevant economy, the global price of the relevant fuel, and a time trend of efficiency. The specific functional form for the demand for each fossil fuel is given by:

$$QDit=Ai*(Yt^ai)*(PFFit^bi)*(1+eftri)$$

where QDit is the demand for fossil fuel i in year t, Ai is a constant for fossil fuel i, Yt is real income for the relevant economy in year t, ai is the income elasticity of demand for fossil fuel i, PFFit is the real price of fossil fuel i in year t, bi is the price elasticity of demand for fossil fuel i, and eftri is an estimate of the trend in efficiency of using fossil fuel in the economy.

The trends projected by this conventional demand function are adjusted in the short run to correct for short run imbalances in the energy markets which may distort long run trends.

The supply of fossil fuels is projected as a function of the historical 5 year trend adjusted by price effects. The specific functional form of the supply function is given by:

$$QSit=QSi(t-1)^ffsai*(PFFit^ci)$$

where QSit is the supply of fossil fuel i in year t, QSi(t-1) is the supply of fossil fuel i in year (t-1), ffsai is the trend in domestic production of fossil fuel i for the five years of the base data, PFFit is the real price of fossil fuel i in year t, and ci is the price elasticity of supply for fossil fuel i.

The trends projected by this conventional supply function are adjusted in the short run to correct for short run imbalances in the energy markets which may distort long run trends.

To generate a set of prices the model sets growth rates in the price of the relevant fossil fuel such that every five years global demand and supply for the fuel is brought into balance. The resulting long run equilibrium real price is adjusted by US inflation rates to generate a nominal price for each fossil fuel.

The Non-Fossil Fuels

The non-fossil fuels growth trends are determined by government policies and the real price of oil. As real oil prices increase there is typically a movement into these fuels because they provide a hedge against the price swings in the fossil fuel markets. The upside growth is limited by the fact that industrial capacity will not accommodate large demand swings for these fuels because of the volatility in the oil market. The specific trend for each sector is given by the 5 year historical trend plus a factor dependent on real oil prices. The trend formulas are shown here to indicate how the specific growth trends are generated:

Nuclear supply growth

Real Oil <=0 Trend plus 0.0000
 Real Oil >0<=10% Trend plus 0.0250
 Real Oil >10% Trend plus 0.0500

Hydroelectric supply growth

Real Oil <=0 Trend plus 0.0000
 Real Oil >0<=10% Trend plus 0.0250
 Real Oil >10% Trend plus 0.0500

Renewables supply growth

Real Oil <=0 Trend plus 0.0000
 Real Oil >0<=10% Trend plus 0.0500
 Real Oil >10% Trend plus 0.1000

Metals

Overview

The CountryWatch Metals Model projects the demand, supply, and global equilibrium price for each of the major industrial metals that are traded in the global commodity market and an estimate for production of the precious metals --- gold and silver. The industrial metals projected include copper, aluminum, tin, lead, nickel, and zinc.

Generalized global assumptions are used for the economic parameters that affect demand and supply of the metals including the price elasticities of demand and supply and the income elasticities of demand as well as efficiency trends. These assumptions will be further reviewed in future editions of the model and may be separately estimated for different metals and different countries.

The base data for the CountryWatch Metals Forecast 2010 is developed from base data provided by the following sources:

1. World Bureau of Metal Statistics 2009, World Bureau of Metal Statistics.
2. International Financial Statistics, International Monetary Fund.

The Industrial Metals

The demand for each industrial metal is calculated as a function of real income in the relevant economy, the global price of the relevant metal, and a time trend of efficiency. The specific functional form for the demand for each industrial metal is given by:

$$QDit=Ai*(Yt^ai)*(PIMit^bi)*(1+eftri)$$

where QDit is the demand for industrial metal i in year t, Ai is a constant for industrial metal i, Yt is real income for the relevant economy in year t, ai is the income elasticity of demand for industrial metal i, PIMit is the real price of industrial metal i in year t, bi is the price elasticity of demand for industrial metal i, and eftri is an estimate of the trend in efficiency of using industrial metal i in the economy. See the CountryWatch Macroeconomic Forecast 2011 for specific macroeconomic parameters used for the projections.

The trends projected by this conventional demand function were adjusted in the short run to correct for short run imbalances in the metals markets which may distort long run trends. The longer run trends are also capped on both the upside and the downside to insure that unrealistic positive or negative growth rates are not introduced into a long run projection.

The supply of industrial metals is projected as a function of the historical 5 year trend adjusted by price effects. The specific functional form of the supply function is given by:

$$(2) QSit=QSi(t-1)^imai*(PIMit^ci)+RIMit$$

where QSi_t is the supply of industrial metal i in year t, QSi_(t-1) is the supply of industrial metal i in year (t-1), imai is the trend in domestic production of industrial metal i for the five years of the base data, PIMi_t is the real price of industrial metal i in year t, and ci is the price elasticity of supply for industrial metal i, and RIMi_t is an estimate of the material recycled for industrial metal i in year t. The trends projected by this conventional supply function are adjusted in the short run to correct for short run imbalances in the energy markets which may distort long run trends.

To generate a set of prices the model sets growth rates in the price of the relevant industrial metal such that every five years global demand and supply for the metal is brought into balance. The resulting long run equilibrium real price is adjusted by US inflation rates to generate a nominal price for each industrial metal. See the World Page of the model for specific detail.

The Precious Metals

The precious metals have a different framework for projections because there is such a large liquid stock of the metals that incremental supply does little to affect the overall supply of the metals coming into the market. In these markets we look mainly at projecting the supply side or current production. Current production is estimated as a function of a price that generally moves up with global inflation. This reflects the view that gold and silver are hedges against inflation and that their price will track inflation on the demand side. The supply side will continue to produce to capture the marginal returns of mining at the set global price. The supply of precious metals is projected as a function of the historical 5 year trend adjusted by price effects. The specific functional form of the supply function is given by:

$$QSi_t = QSi_{(t-1)} * p_{mai} * (PPM_{it}^{ci})$$

where QSi_t is the supply of precious metal i in year t, QSi_(t-1) is the supply of precious metal i in year (t-1), imai is the trend in domestic production of precious metal i for the five years of the base data, PPMi_t is the real price of industrial metal i in year t, and ci is the price elasticity of supply for Precious metal i.

Agriculture

Overview

The CountryWatch Agricultural Model projects the demand, supply, and global equilibrium price for many of the major agricultural commodities that are traded in the global agricultural commodity market. The agricultural commodities projected include corn, soybeans, rice, coffee, cocoa, sugar and wheat. Simple global generalized assumptions are used on the economic parameters that affect demand and supply of the agricultural commodities including the price elasticities of demand and supply and the income elasticities of demand as well as efficiency trends. These assumptions will be further reviewed in future editions of the model and may be separately estimated for different agricultural commodities and different countries.

The data sources used for base historical data for the projections include data from the following sources:

1. Crop production and consumption data is from The United Nations Food and Agricultural Statistical Database FAOSTAT at <http://faostat.fao.org/default.aspx>
2. The crop price data is from the commodity price section of International Financial Statistics published by the International Monetary Fund.

Agricultural Demand

The demand for each agricultural commodity is calculated as a function of real income in the relevant economy, the global price of the relevant commodity, and a time trend of efficiency. The specific functional form for the demand for each agricultural commodity is given by:

$$QD_{it} = A_i * (Y_t^{ai}) * (PAC_{it}^{bi}) * (1 + e_{ftri})$$

where QD_{it} is the demand for agricultural commodity i in year t, A_i is a constant for agricultural commodity i, Y_t is real income for the relevant economy in year t, a_i is the income elasticity of demand for agricultural commodity i, PAC_{it} is the real price of agricultural commodity i in year t, b_i is the price elasticity of demand for agricultural commodity i, and e_{ftri} is an estimate of the trend in efficiency of using agricultural commodity i in the economy. The trends projected by this conventional demand function are adjusted in the short run to correct for short run imbalances in the agricultural markets which may distort long run trends. The longer run trends are also capped on both the upside and the downside to insure that unrealistic positive or negative growth rates are not introduced into a long run projection.

Agricultural Supply

The supply of agricultural commodities is projected as a function of the historical 5 year trend adjusted by price effects. The specific functional form of the supply function is given by:

$$QSi_t = QSi_{(t-1)} * a_{ci} * (PAC_{it}^{ci})$$

where QSi_t is the supply of agricultural commodity i in year t, QSi_(t-1) is the supply of agricultural commodity i in year (t-1), a_{ci} is the trend in domestic production of agricultural commodity i for the five years of the base data, PAC_{it} is the real price of agricultural commodity i in year t, and ci is the price elasticity of supply for agricultural commodity i. The trends projected by this conventional supply function are adjusted in the short run to correct for short run imbalances in the agricultural markets which may distort long run trends.

To generate a set of prices the model sets growth rates in the price of the relevant agricultural commodity such that every five years global demand and supply for the agricultural commodity is brought into balance. The resulting long run equilibrium real price is adjusted by US inflation rates to generate a nominal price for each agricultural commodity.

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