



Economics & Strategy

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The Efficiency Paradox

by Jeff Rubin

Much is being banked on the notion that improvements in energy efficiency will be the answer to both oil depletion and greenhouse gas emissions. But is it a realistic economic premise that technological change can reduce energy usage, and by implication, its carbon trail?

The OPEC oil shocks spawned huge improvements in energy efficiency, particularly insofar as oil was concerned. But three decades later, we find that the net effect of all of those efficiency initiatives has been to increase the world's appetite for crude. While oil per unit of GDP has fallen impressively in large energy-consuming economies like the United States, total oil consumption, and indeed, total energy consumption, continue to grow by leaps and bounds. The increase in energy usage has dwarfed the gains in economic efficiency. Hence, instead of capping energy demand, what we observe is that improvements in energy efficiency lead to ever and ever-greater levels of energy usage.

Following the OPEC oil shocks, a few renegade economists argued that improvements in energy efficiency would perversely lead to increases in energy demand. The Khazzoom-Brookes postulate, as it has come to be known, is based on the standard substitution and income effects that result from any change in the price of a good. The standard theory of the consumer argues that a reduction in energy costs (due to improvements in energy efficiency) can lead to an increase, not a decline, in energy demand. Moreover, to the extent that overall economic growth would benefit from cheaper energy prices, there is an additional

macroeconomic stimulus to energy demand, all contributing to a very powerful rebound effect. The postulate suggests that energy intensity targets, commonplace in most countries' energy strategies, are effectively incapable of limiting future growth in either energy-demand growth or carbon emissions.

To date, there has only been one sure-fire way of reducing energy consumption—shrink the economy. But even small reductions in the level of global GDP would lever huge increases in human hardship. But at the same time, reducing energy consumption per unit of GDP has not been a viable policy option. From gasoline demand to the energy requirements of the average American home, the legacy of energy-efficiency improvements is ever-greater energy consumption (see pages 4-7).

In the past, the efficiency paradox has been used as an argument against efforts to promote greater energy efficiency and conservation. That is not our intention here. On the contrary, for a world facing the twin challenges of oil depletion and global climate change, there has never been a more urgent need for both. But in order for total efficiency to actually curb total energy usage, as opposed to energy intensity, consumers must be kept from reaping the benefits of those initiatives in ever-greater energy consumption. Otherwise, energy usage will be the beneficiary of our best efforts towards greater energy efficiency.

The road to hell is paved with good intentions.

<http://research.cibcwm.com/res/Eco/EcoResearch.html>

MARKET CALL

- The Canadian dollar has given up ground, but with oil prices remaining firm, and the US dollar unpopular, this would appear to be merely a correction from overdone levels. We're retaining our forecast for a parity to the US\$1.05 range for the coming year, still very strong by historical standards.
- While equity markets have only seen a typical correction, both Canadian and US bond markets are behaving as if a recession is underway, pricing in aggressive rate cuts. Odds of a token rate cut by the Bank to calm the C\$ and nervous credit markets are growing, but for now, we'll stick with our stand-pat outlook, expecting Dodge to merely change the "bias" towards a dovish tilt in December. The Fed clearly would prefer to wait until Q1 to ease again, but could be forced into a Q4 move if credit market conditions deteriorate further in the coming weeks.
- Bond markets are in for a sharp correction if a recession is avoided and central bank action is therefore limited. While that outcome may not be entirely clear for the next month or two, by next summer, we expect a sharp retreat in both Treasuries and Canadas.

INTEREST & FOREIGN EXCHANGE RATES

END OF PERIOD:	2007		2008		
	26-Nov	Mar	Jun	Sep	Dec
CDA Call loan (mid-point of range)	4.50	4.50	4.50	4.50	4.50
98-Day Treasury Bills	3.93	4.30	4.40	4.40	4.45
Chartered Bank Prime	6.25	6.25	6.25	6.25	6.25
2-Year Gov't Bond (4.25% 12/09)	3.50	3.95	4.30	4.45	4.50
10-Year Gov't Bond (4% 06/17)	3.92	4.00	4.40	4.50	4.80
30-Year Gov't Bond (5% 06/37)	4.13	4.20	4.40	4.65	4.90
U.S. Federal Funds Target	4.50	4.25	4.25	4.25	4.50
91-Day Treasury Bills	3.10	3.45	4.05	4.20	4.40
2-Year Gov't Note (3.625% 10/09)	2.88	3.65	4.00	4.55	4.60
10-Year Gov't Note (4.25% 11/17)	3.83	4.20	4.55	4.70	4.95
30-Year Gov't Bond (5% 05/37)	4.27	4.50	4.80	4.95	5.00
Canada - US T-Bill Spread	0.83	0.85	0.35	0.20	0.05
Canada - US 10-Year Bond Spread	0.09	-0.20	-0.15	-0.20	-0.15
Canada Yield Curve (30-Year — 2-Year)	0.63	0.25	0.10	0.20	0.40
US Yield Curve (30-Year — 2-Year)	1.39	0.85	0.80	0.40	0.40
EXCHANGE RATES					
— (US¢/C\$)	100.9	105.8	103.0	105.0	105.0
— (C\$/US\$)	0.991	0.945	0.971	0.952	0.952
— (Yen/US\$)	107	110	113	112	110
— (US\$/euro)	1.49	1.45	1.42	1.40	1.40
— (US\$/pound)	2.07	2.00	1.89	1.94	1.94
— (US¢/A\$)	86.9	92.0	90.0	87.0	87.0

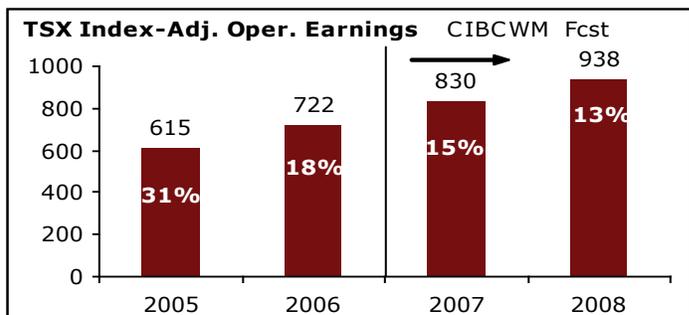
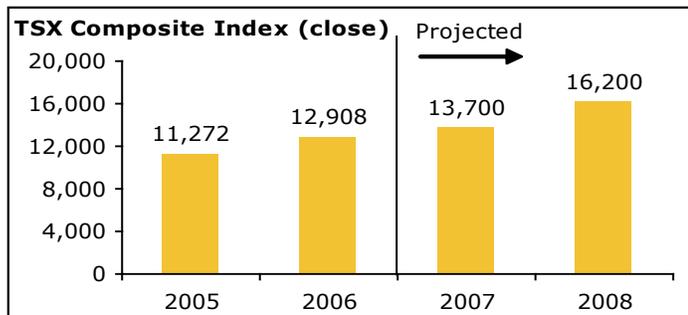
STRATEGY AND EARNINGS OUTLOOK

- The TSX remains above August's lows. The past month's sell-off indicates, however, that it may take somewhat longer than we had earlier expected for the downpull from mortgage and credit woes to subside. Pointing to more bad news from housing and home-wealth-levered consumers, the peak in US mortgage resets is still a quarter or so off. Overall, however, the TSX remains much more a play on a still-fairly-solid global economy than a weakening US one. While nearer-term valuations risks have risen some, our unchanged 16,200 target for the end of 2008 reflects our continuing belief that Canadian stocks will outperform bonds and cash in the next year.
- While maintaining our overall exposure to financial stocks, we shifted a percentage-point of weighting from banks to non-bank financials. That segment is less vulnerable to further writedowns related to the still-imploding US mortgage market, and is also less exposed to the spillover from negative bank stock sentiment south of the border.
- With gold already trading above the US\$800/oz level and likely to hit US\$900 by the end of 2008 on intensified dollar weakness, we added a half-percentage-point to our existing overweight of the gold mining group. Offsetting that, we pared a matching amount from the industrial sector. That segment faces headwinds not only from the higher dollar but also a softer US economy through the heavily weighted rail subgroup.

ASSET MIX (%)	Benchmark	Strategy Recommendation
Stocks	56	68
Bonds	38	29
Cash	6	3
GICS SECTOR EQUITIES (%)		
Consumer Discretionary	5.0	3.5
Consumer Staples	2.6	1.6
Energy	26.9	30.9
Financials	29.8	30.3
-Banks	16.7	15.7
-Insur., REITs, oth.	13.1	14.6
Healthcare	0.6	0.6
Industrials	5.3	3.3
Info Tech	4.9	2.9
Materials	18.0	21.0
-Gold	6.6	8.1
-Other Metals	7.8	9.3
Telecom	5.5	4.5
Utilities	1.5	1.5

TSX - Earnings Outlook & Forward PE						
	Operating Earnings (% ch)				4-qtr Fwd PE	
	2005	2006	2007	2008	Latest	Last 10 yrs.
Energy	54.5	3.7	20.7	16.8	14.3	13.0
Materials	21.3	93.3	19.4	9.4	18.4	27.5
Industrials	23.6	6.6	13.4	13.7	13.8	15.6
Consumer Discretionary	4.5	8.2	7.0	8.7	18.2	18.6
Consumer Staples	1.3	-1.9	1.5	2.9	15.1	17.0
Health Care	-0.7	12.6	-31.3	-9.8	16.9	49.7
Financials	12.8	18.3	13.4	9.4	11.9	10.9
Info Tech	260.9	-52.1	25.2	26.2	41.0	32.3
Telecom Svcs	2.1	34.7	12.7	14.8	14.7	34.7
Utilities	10.4	15.2	-10.0	3.5	17.3	13.9
TSX Composite	31.2	17.6	15.0	13.0	14.8	17.9

Note: Bold indicates recommended overweight.



Does Energy Efficiency Save Energy?

Jeff Rubin and Benjamin Tal

In a disturbing assault on intuition and conventional wisdom, the Khazzoom-Brookes postulate argues that improvements in energy efficiency can work to increase, rather than decrease, energy consumption. While seemingly perverse, its logic follows the classic theory of demand. As improvements in energy efficiency lower the effective cost of energy relative to what otherwise would have prevailed, the resulting substitution and income effects that flow from any price change result in more of the good being consumed.

Energy conservation in the form of energy-efficiency regulations has been widely viewed as a highly desirable route to limiting US dependence on foreign oil supplies and in reducing CO₂ emissions in the American economy. So much so that it has now become conventional wisdom. Efficiency gains play a prominent, if not preeminent, role in most government plans to manage energy consumption including the latest US Energy Act. But if the assertions of the Khazzoom-Brookes postulate hold, the effects of such programs may be the opposite of their intentions.

While the so-called “rebound effect” on demand was penned by energy economist Daniel Khazzoom following the OPEC oil shocks, the concept dates back much earlier to the British economist Jevons, who noted the paradox that improvements in the efficiency with which a natural resource is used, is often associated with an increase in the consumption of that resource. Jevons observed that after the huge efficiency gains following the advent of James Watt’s steam engine, coal consumption, after dropping initially, rose by tenfold between 1830 and 1860.

The same story replayed with efficiencies gains in steel production in that era. The Bessemer process for producing steel was one of the greatest fuel-saving innovations in the history of metallurgy, but its ultimate effect was to increase, not reduce, the demand for fuel due to the subsequent surge in steel production. Thus, while each ton of Bessemer steel or horsepower of Watt’s steam engine might require less fuel than before, skyrocketing increases in the demand for steel and power overwhelmed the efficiency gains, leading to significantly greater fuel consumption.

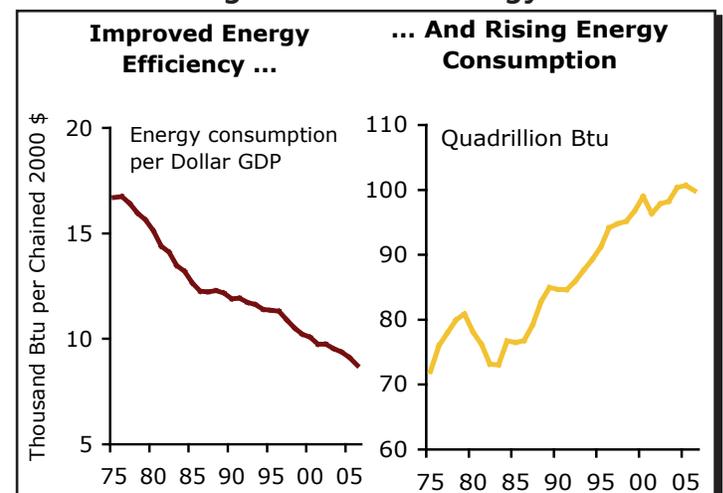
Khazzoom’s rebound effect is not likely to prove to be any more popular today than it was when it first raised criticism of environmental initiatives after the two oil shocks. Nevertheless, with depletion of conventional oil supply becoming more and more evident, and growing concern over greenhouse gas emissions, its implications have never seemed more important. Particularly now that once again the call for conservation through greater energy efficiency is widely viewed as the solution to both America’s oil dependency on potentially hostile suppliers and the pressing need to limit carbon emissions in the atmosphere. The Khazzoom-Brookes postulate suggests that the answer to both challenges may lie elsewhere.

Americans Efficiently Consume Ever-Increasing Levels of Energy

The problem is that energy efficiency is not the final objective—reducing total energy consumption must be the final objective to both the challenges of conventional oil depletion and to greenhouse gas emissions. Despite the huge gains in energy efficiency, that is simply not happening. Instead, energy consumption is growing by ever increasing amounts. While energy use per unit of US GDP has fallen by almost 50% since 1975, total energy usage in the US economy has risen by more than 40% (Chart 1).

Chart 1

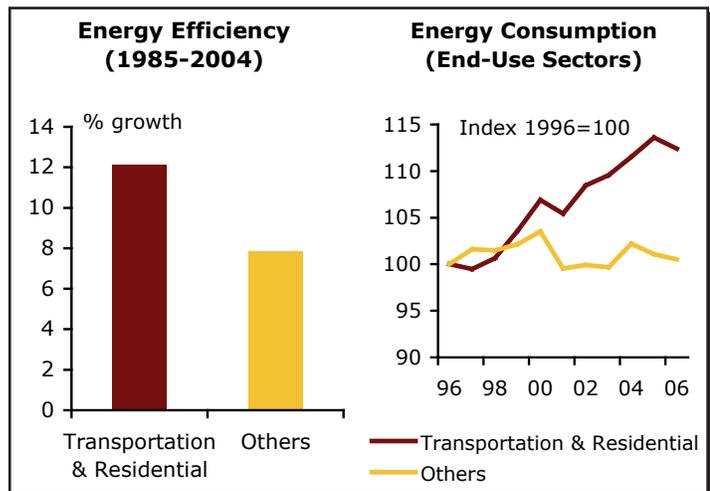
Americans Efficiently Consume Ever-Increasing Amounts of Energy



Source: EIA

Chart 2

Energy Consumption Rising Fastest Where Efficiency Improved the Most



Source: EIA, US Dept of Energy, CIBCWM

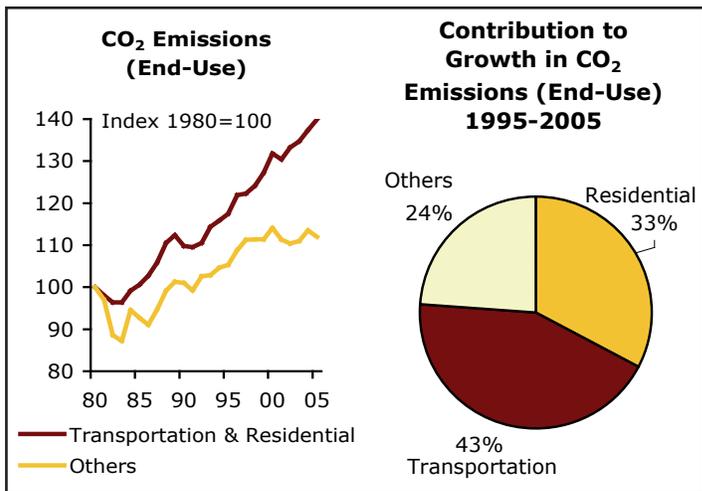
Most government efforts to promote greater energy efficiency have been targeted at the transportation and residential sectors, which together account for half of total end-use energy consumption in the American economy. And they have largely been successful at promoting large improvements in energy efficiency—50% faster than the pace in the rest of the economy (Chart 2, left). But paradoxically, energy usage in the transportation and residential sectors has also risen faster than in the rest of the economy (Chart 2, right). In short, energy usage has risen fastest where energy efficiency gains have been the greatest.

What holds for energy usage also holds for carbon emissions. CO₂ emissions from the transportation and residential sectors have risen by 40%, twice the pace of emissions growth in the rest of the US economy. In fact, emissions from these two sectors contributed no less than three-quarters of the total end-use emissions growth in the US economy over the last decade (Chart 3).

The transportation sector is perhaps the best example of the efficiency paradox. And it is one of the most important sectors in terms of energy usage, accounting for almost 30% of end-use energy consumption, and for 70% of oil consumption in the form of gasoline, diesel and jet fuel. The sector has seen steady and substantial improvements in energy efficiency since the OPEC oil shocks. Since 1980 the fuel rate, the average mileage per gallon for a given type of vehicle, has improved by no less than 30%. One might expect this improvement to lower average fuel consumption per vehicle, but as

Chart 3

Transport & Residential: Major Emitters



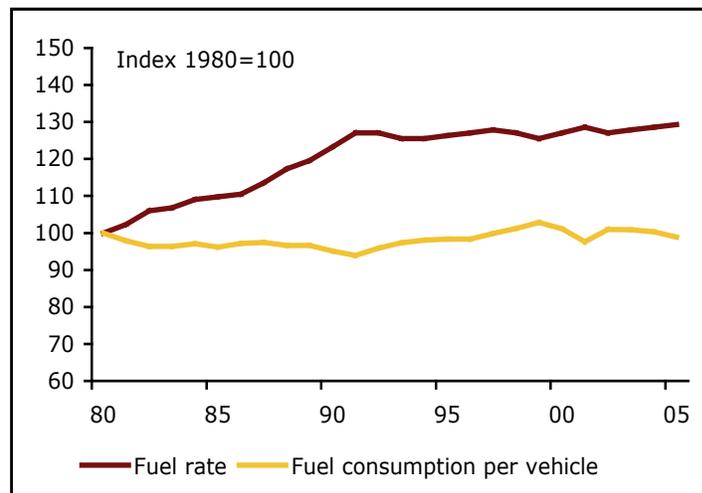
Source: EIA, CIBCWM

is evident in Chart 4, fuel consumption per vehicle in the US has remained remarkably constant despite the impressive improvement in fuel economy over the last 25 years. Why?

Because of the rebound effect. American drivers consumed all of the gains in fuel efficiency by driving more and by driving larger vehicles. Whereas in 1970 the average American car was driven 9,500 miles a year, today it is driven over 12,000 miles a year (Chart 5). In part, this reflects the growth of suburbia, itself a function of increasing fuel efficiency in transport.

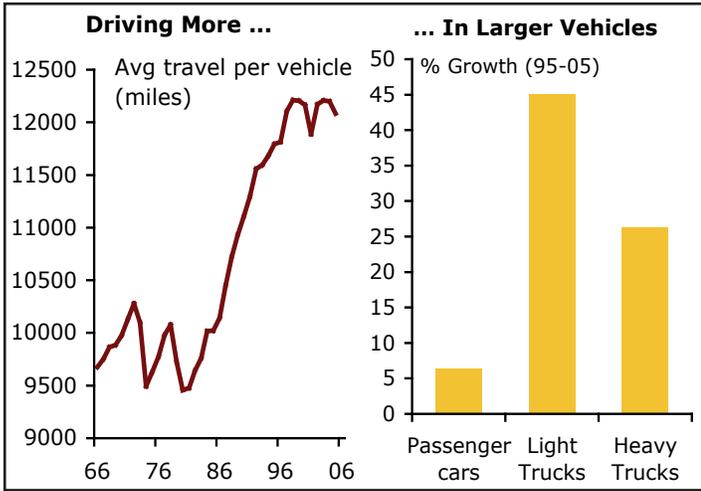
Chart 4

Improved Fuel Rate for a Given Vehicle Type Failed to Lower Fuel Consumption per Vehicle



Source: EIA, CIBCWM

Chart 5
The Rebound Effect: Motor Vehicle Usage



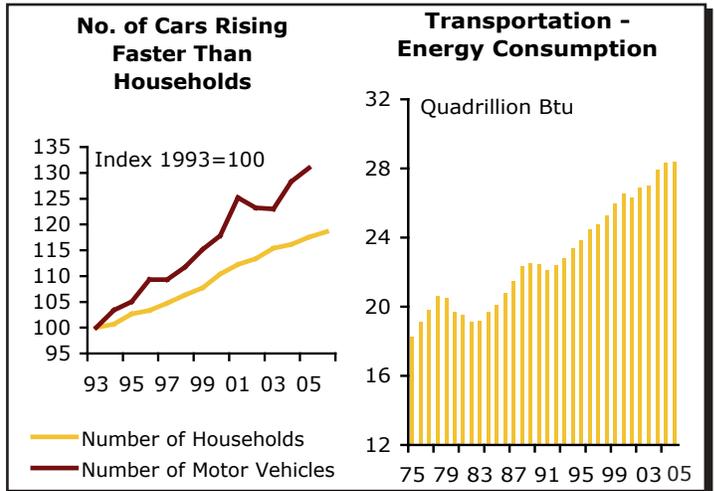
Source: Federal Highway Administration, CIBCWM

Not only have Americans consumed fuel efficiency gains by driving more, but they have also consumed those gains by driving ever-larger vehicles. While initially the pursuit of fuel economy in North America led to the replacement of gas-guzzling eight cylinder full-size cars with four cylinder sub-compacts, over time steady improvements in fuel economy encouraged Americans to drive larger and larger vehicles. The number of light trucks, which includes SUVs, vans and pick-ups, has risen by 45% between 1995-2005, seven times faster than passenger cars. In fact, light trucks accounted for more than 80% of the growth in the number of vehicles on the road since 1985, becoming without question, the vehicle of choice for your standard American family. On average, light trucks have 25% worse fuel economy than the standard car.

But the story does not end there. Improvements in fuel economy have allowed more people to drive cars. Today there are 130 million more vehicles on the road in America than there were in 1970. And over the past decade, the number of cars on American roads grew at twice the pace of household formation. Improved fuel efficiency that has brought down the operating cost of running a vehicle has encouraged more and more American households to own more than one vehicle (Chart 6).

Essentially the same rebound effect evident for motor vehicles is found elsewhere in the transportation sector. Take aviation fuel for example. While fuel consumption per mile flown has improved by more than 40% since 1975, overall fuel consumption of aviation has risen by 150% over this time frame, due to the explosive

Chart 6
Energy Consumption Rises With the Size of Vehicle Fleet

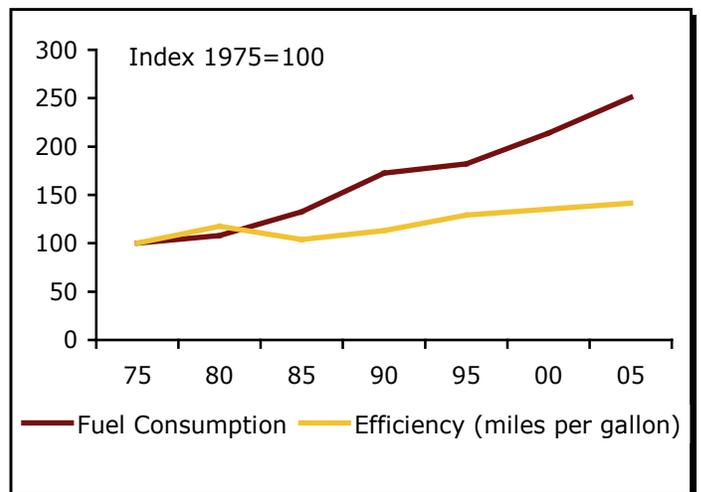


Source: EIA, Census Bureau, Federal Highway Administration, CIBCWM

growth in the volume of air travel. Gains in usage have outstripped gains in efficiency by a ratio of four to one (Chart 7).

The same rebound effect was also noted several decades ago with the widening of aircraft. Initially wider aircraft were expected to reduce flight frequency since each flight would be able to accommodate more passengers. What wasn't foreseen was that wider aircraft lowered costs per passenger and thus prices, which in turn, induced an increase in air travel. Instead of reducing the number of flights, the rebound effect from wider aircraft ended up increasing the number of flights.

Chart 7
Fuel Efficiency Lags Consumption in Aviation



Source: US Department of Transportation, CIBCWM

Again, what holds for energy usage holds for carbon emissions. That's even more so for emissions from airlines, since their carbon trail is so disproportionately large compared to other forms of transport.

Gains in Usage Trump Those in Efficiency in Residential Sector As Well

The same patterns between improved efficiency and growing usage found in the transportation sector are amply in evidence in the residential sector, which accounts for roughly 20% of all end-use energy consumption in the American economy. Improvements in thermal insulation and in the energy efficiency of major appliances including furnaces and air conditioners, have all contributed to major gains in energy efficiency over the last three decades. Virtually every major household appliance in the US must now meet some minimum energy efficiency standard.

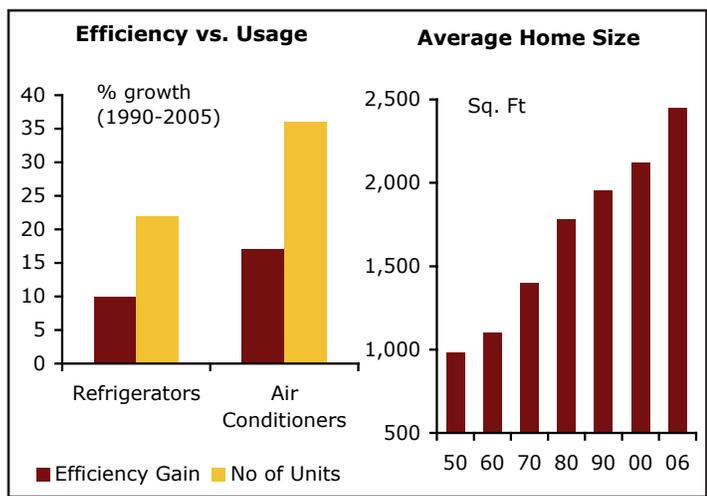
But are these efficiency gains large enough to offset increased usage? Take refrigerators for example. Over the last 15 years the energy efficiency of refrigerators has improved by just under 10%, but the number of refrigerators is up 20%, due largely to the increased frequency of a second refrigerator in the home. (Note the tendency toward two-car households is the same factor driving up the energy usage in the transportation sector.) The net result is that usage has risen twice as fast as efficiency.

Even more significant for total residential energy usage is how efficiency versus usage stacks up in air conditioning and heating systems. The energy efficiency of air conditioning system has risen by 17% since 1990 but the number of air conditioning units has risen by 36% (Chart 8, left). The key reason why usage has grown so much faster than efficiency is the never-ending trend toward larger and larger American homes and hence larger and larger heating and cooling requirements. Since 1950, the average American home has grown from 1000 square feet to almost 2500 square feet (Chart 8, right). And the trend to ever larger houses continues. Today, almost one third of all new homes in the US are over 2500 square feet.

Add to that the ever-increasing number of power consuming appliances like computers found in today's standard American home and the trend toward rising, not falling, energy usage per household is very clear (Chart 9).

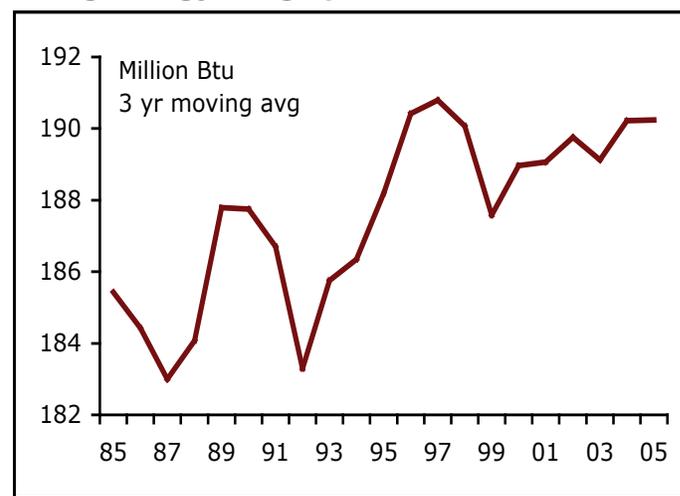
Across a wide spectrum of activity throughout the American economy, there seems ample evidence to debunk the notion that energy-saving technology reduces energy consumption. Instead, energy consumption has grown steadily as efficiency improvements have steadily lowered the cost of consuming energy.

Chart 8
Energy Usage Outpaces Efficiency in Residential Sector



Source: EIA, National Association of Homebuilders, CIBCWM

Chart 9
Rising Energy Usage per Household



Source: EIA, Census Bureau, CIBCWM

US Inflation: Not Dead Yet

Avery Shenfeld

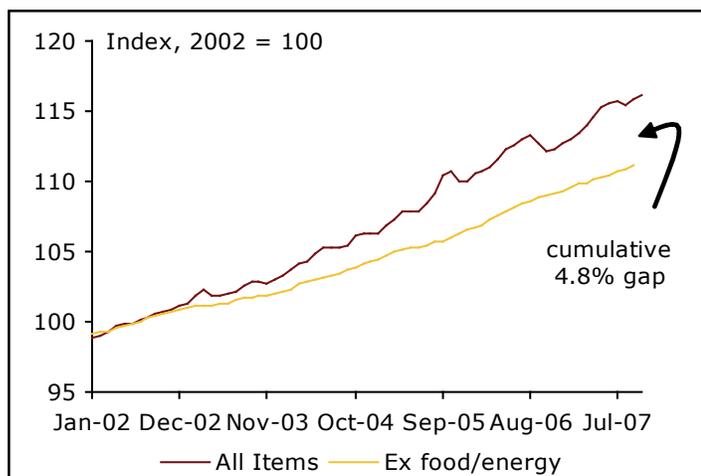
With risks to growth seen as paramount, US financial markets are shrugging off the recent upturn in CPI inflation. Sure, its October jump to 3.5% was all about a dip in gasoline prices in the prior year's base for comparison (i.e. October 2006), rather than a sharp monthly upturn. And, of course, the 12-month pace was all about food and energy, with core inflation much tamer.

But when times get better, as they will further into 2008, the Fed will no longer be willing to overlook a persistently higher trend in total CPI on the excuse that food and energy don't count. While a rate cut or two lies ahead, don't be too surprised to see the FOMC defy market hopes for more aggressive easing, and turn to a re-tightening as soon as late 2008 if the economy shows signs of health. After all, we all eat, and even the greenest among us still consume some energy.

Bernanke and his team finally seem to be recognizing that the "core" inflation measure is not the whole story. The Fed will now publish forecasts not only for the core measure, but also for all-in inflation (in this case, the PCE price index). In doing so, it's moving more in line with Europe's ECB, which focuses more on total CPI rather than core. In other countries where core CPI plays a significant policy role (Australia, Canada) foods other than fresh produce are included in the core measure.

Chart 1

US Core CPI Understates Trend



The Fed's prior focus on core inflation made sense in a world in which gasoline or food prices went up and then came back down. The concept dates from a paper by the economist Robert Gordon in 1975, written just after a spectacular climb and subsequent cooling in both food and energy inflation measures.

But what if today's higher fuel costs simply give way to even higher prices in the future, or if global forces push food prices on a permanently faster trend? Since 2002, on a cumulative basis, headline CPI has outpaced core by 4.8% (Chart 1), and more of the same is in store for 2008. While some cooling is likely after Q4, bond investors will again be staring at a US CPI rate of roughly 4% next fall, making inflation-linked TIPS an interesting play.

Oil Inflation Served Four Ways

Global energy markets are fuelling US inflation in at least four ways. First, and most directly, rapid growth in oil demand from developing Asia, and from oil exporters that typically subsidize their domestic consumers, has crude prices on the rise. Global supply is still advancing, but all of the marginal barrels are coming from high cost unconventional sources—oil sands and deep water.

Moreover, creating room for emerging-market consumers and industry to elbow their way into the market requires ever-rising prices to induce the necessary conservation in the developed world, so that overall demand is held to the sluggish trend growth in supply. We may "only" be looking at US\$100/bbl oil in 2008, but a rebound from the unusually low crack spreads that prevailed in recent months will see gasoline prices handily top and sustain US\$3.50/gallon (Chart 2).

Natural gas has lagged well behind crude prices, but there is a longer term relationship linked to fuel substitution in some uses (Chart 3). Moreover, natural gas usage will be increased by ethanol production. If this winter is anything close to normal, US Henry Hub nat-gas should average US\$9/Mbtu next year. Add it all up, and the energy component of the CPI is projected to be running in double digits for much of the coming year.

Chart 2

Further Pressures on Gasoline Prices

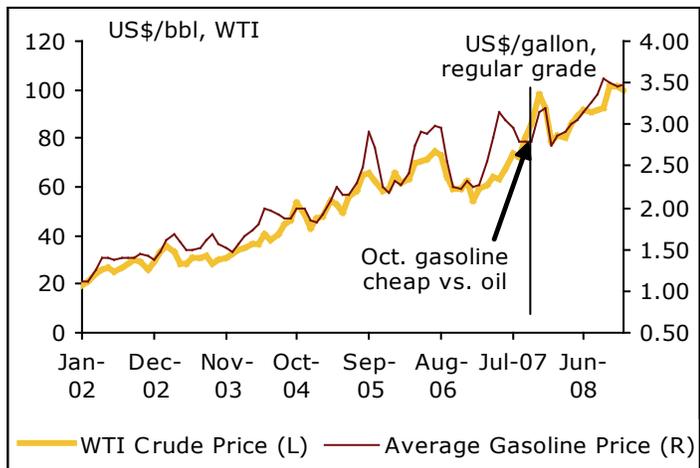
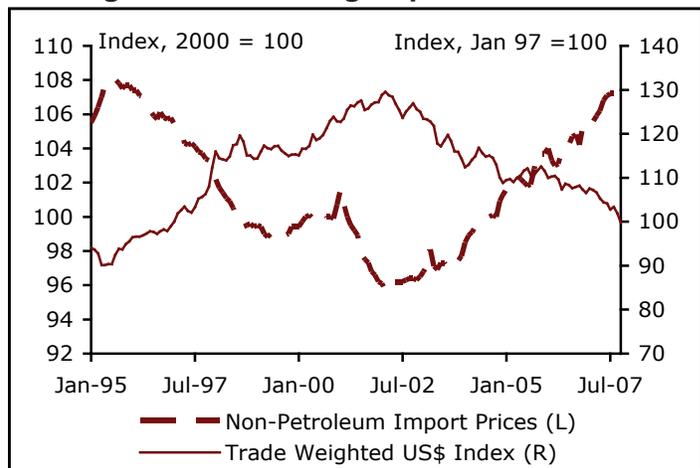


Chart 4

Sinking Dollar Boosting Import Prices



Second, energy price hikes are playing an increasing role in America's current account and trade imbalance. While the weak dollar, and better demand growth overseas, are shrinking the non-petroleum trade gap, a growing oil import bill is standing in the way of more dramatic overall progress. The resulting downward pressure on the US dollar is serving to raise prices for other US imports (Chart 4), with more to come after the yen's latest move, and as China lets its currency appreciate at a faster pace. The lagged impacts of dollar depreciation will already tack on about 0.5%-points to next year's CPI, according to the Fed model's elasticities.

Third, energy costs show up in a number of core prices—airline tickets, goods moved by truck, and petrochemical products like plastics. Thus far, the damage to core prices has been contained as the necessary wage inflation hasn't

been there, meaning that higher prices on some items simply depress household spending power, and thus price pressures, elsewhere. But that could prove to be a more meaningful threat when the economy picks up beyond the current slowdown.

Finally, one policy response to high oil prices, and associated fears of import dependency, has had much to do with the recent inflation climb in food prices. The combination of subsidies for ethanol, and tariff barriers on imported ethanol, has seen a rising share of US agricultural land shifted to corn grown for ethanol production (see *CIBC World Markets, StrategEcon* dated October 2007).

The resulting increases in feed grain prices have pushed up meat, dairy and egg prices, contributing to an

Chart 3

Nat Gas to Climb (L), Double-Digit Energy CPI (R) Paying to Eat: US Food Prices Climb

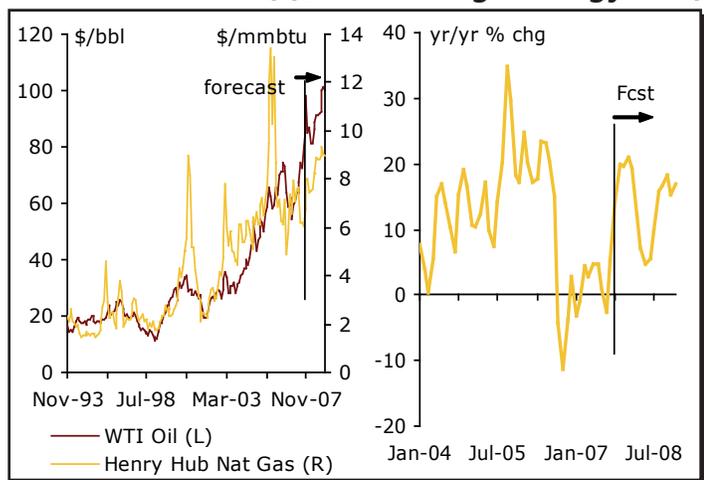


Chart 5

Food Inflation (year-end)

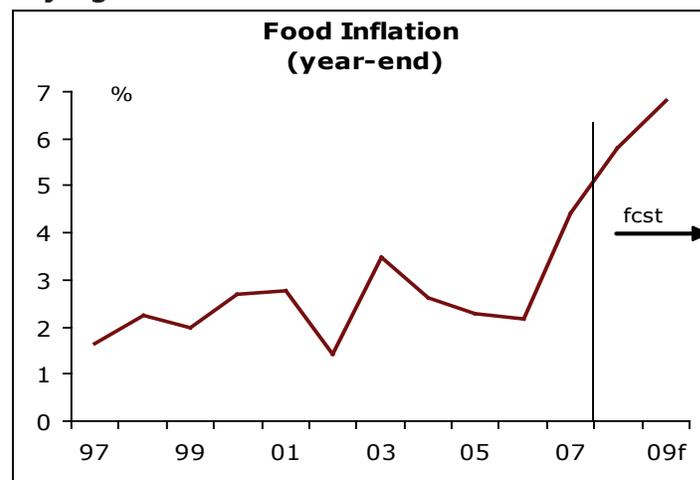
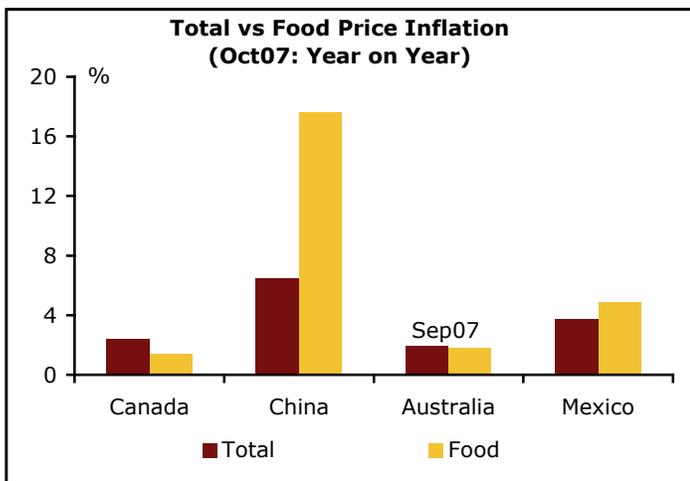


Chart 6

Currency Gains Shelter Cdn, Aussie Food Prices

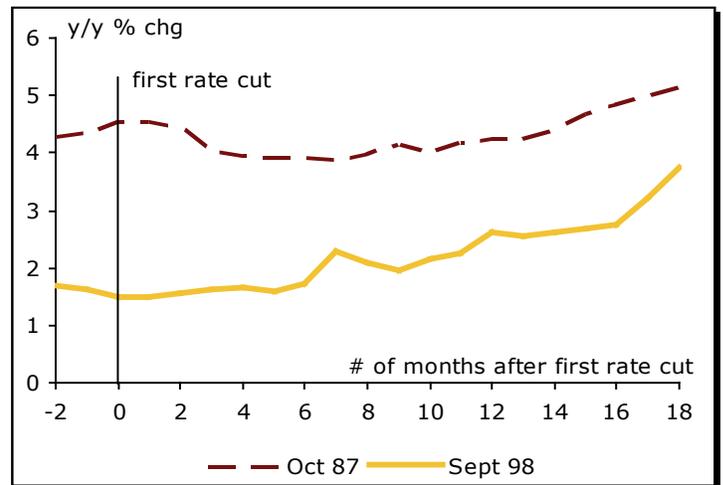
escalation in food inflation to 4.4% in October, and the further diversion of land for ethanol-based corn looks to boost food prices at an accelerating pace next year (Chart 5). Rising incomes in rapidly developing economies in Asia and Latin America are also increasing pressure on global meat and grain prices. Droughts in some growing areas are also not helping, and at least some view such arid conditions as a lasting feature tied to global warming. Countries like Canada and Australia have been temporarily insulated from food inflation by sharply appreciating currencies. But food costs have become the issue for inflation in countries with lagging currencies, such as China and Mexico (Chart 6).

Cyclical Forces only a Temporary Respite

These secular inflation threats from food and energy are for now, being set aside by the Fed, with the FOMC majority still focused on the threats to growth from housing and credit conditions. The bond market agrees, and has taken Treasury yields sharply lower in anticipation of Fed rate cuts. As long as core CPI is the focus, inflation numbers in the next few months, which will be ugly only in the food and energy components, won't be problematic for bonds. Core prices should see at least some cyclical dampening emanating from the US slowdown.

Recessions typically leave a lower inflation path in their wake. But if, as we expect, this proves to be no worse than a mid-cycle slowdown, the economy won't open up enough slack to materially change the trajectory for inflation when better growth resumes in the second half of 2008. Indeed, in both 1987 and 1998, the last two times the Fed eased mid-cycle to counter a financial

Chart 7

Inflation Experience After Mid-Cycle Fed Ease

market shock, inflation accelerated in the subsequent six quarters (Chart 7). By fall of 2008, an economy that entered a slowdown with a headline inflation rate above 3% could be facing a headline rate taking aim at 4%.

A Hot TIP for Fixed Income

As a result, the Fed may be rushing to re-tighten before year-end 2008, as it did not long after the 1987 and 1998 rate cuts. Not only will Treasuries feel the heat of rising short rates, but there will be doubts about the efficacy of the renewed tightening in terms of its ability to quell more ingrained inflation pressures. Today's bond market rally will give way to a back-up in 10-year Treasuries towards 5%.

That could sideswipe Canadian bonds in the process, even though neither the bond market nor the Bank of Canada will be fretting about inflation on this side of the border. The lagged impacts of the past few years' C\$ appreciation in quelling goods inflation has already opened up a huge gap in CPI inflation rates (Chart 8). Add in a one-point cut in the GST rate, and Canada's all-items CPI will hold below 2½% through 2008.

Stateside, inflation-linked bonds will be an interesting play. Unlike the Fed's focus on core CPI or PCE, the payoff on US TIPS is tied to headline CPI. Right now, on a 10-year TIPS, the implied inflation rate as measured by the spread to nominal Treasuries, is roughly 2½%. TIPS will outperform Treasuries to the extent that inflation exceeds that implicit projection over the life of the bond, or to the extent that the spread widens as inflation expectations change.

Chart 8

Canadian versus US CPI

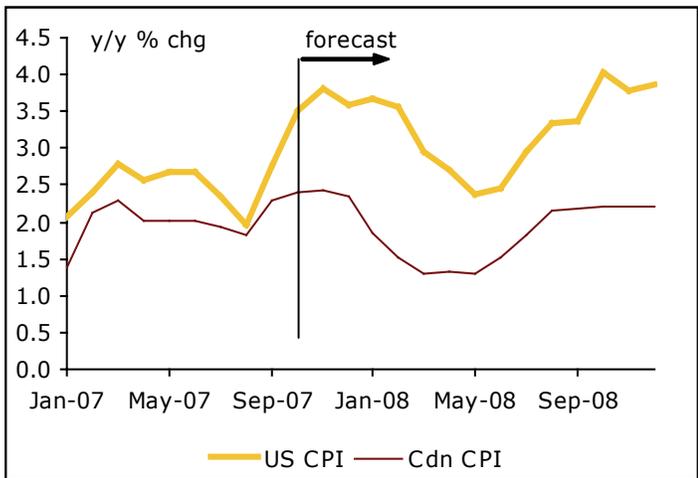
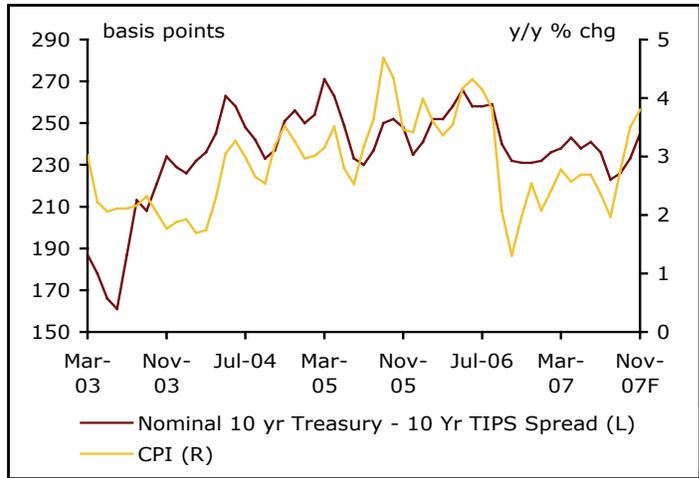


Chart 9

US CPI Drives TIPS Spreads



History shows that while a number of factors likely drive the nominal bond-to-TIPS spread, actual headline inflation plays a role. Note that the implied inflation rate was higher at times in 2005-06, when inflation was also running at a hotter pace (Chart 9). If, as we expect, CPI inflation sees sustained periods above 3½% in the coming year on food and energy prices, TIPS will outperform as inflation expectations rise.

Canadian Real Return Bonds (RRBs) might get some contagion benefit by late 2008, but one likely to be more muted than what the TIPS will experience given the inflation differential expected. Even if it watches only core inflation, by the Canadian definition, the Bank of Canada

will be taking meat, packaged foods and other such products into account. And the implied inflation rate in RRBs has not been as well correlated with on-the-ground headline inflation in Canada. Still, with inflation fears in Canada likely to escalate as the US economy rebounds later in 2008, RRBs should still outperform a threatened nominal Government of Canada bond market.

At some point, if headline and core CPI continue to diverge, both the Fed and the Bank of Canada might have to take an even harder look at the assumption that core is the better tracking measure. But in the interim, bond markets should expect a tolerance for headline price pressures that don't show up in the core.

ECONOMIC UPDATE

CANADA	07Q2A	07Q3F	07Q4F	08Q1F	08Q2F	2006A	2007F	2008F
Real GDP Growth (AR)	3.4	2.2	1.9	2.1	3.0	2.8	2.5	2.6
Real Final Domestic Demand (AR)	4.3	4.2	3.5	3.5	3.4	4.7	3.6	3.6
All Items CPI Inflation (Y/Y)	2.2	2.1	2.4	1.6	1.5	2.0	2.1	1.8
Core CPI Ex Indirect Taxes (Y/Y)	2.4	2.2	1.9	1.6	1.5	1.9	2.2	1.5
Unemployment Rate (%)	6.1	6.0	5.9	5.9	6.0	6.3	6.0	6.0
Merchandise Trade Balance (C\$ Bn)	65.7	42.6	53.8	56.4	57.4	51.3	55.2	58.8
U.S.								
Real GDP Growth (AR)	3.8	3.9	0.8	1.2	2.0	2.9	2.1	2.0
Real Final Sales (AR)	3.6	3.5	1.1	1.2	2.1	2.8	2.4	2.0
All Items CPI Inflation (Y/Y)	2.7	2.4	3.7	3.6	2.7	3.2	2.8	3.4
Core CPI Inflation (Y/Y)	2.3	2.2	2.2	2.2	2.2	2.5	2.3	2.3
Unemployment Rate (%)	4.5	4.6	4.8	4.9	4.9	4.6	4.6	4.9

CANADA

We trimmed our growth expectations for the next two quarters, given signs of a hit to trade from the US deceleration. But our view is not as downbeat as some are going to be after looking at upcoming Q3 results. That quarter could show a large build in inventories, but a lot of that will come from imports, rather than domestic sources. We cut our CPI forecast earlier this month due to the impact of the GST cut, which will not, however, show up in the Bank of Canada's core rate.

UNITED STATES

Q3 will likely be revised up from the earlier-reported figures that are shown in the table, but momentum looks to be lacking for Q4. But we see enough lift from trade and still-positive consumer spending to escape an outright recession, an outcome that would be a surprise for investors who, particularly in the bond market, are behaving as if a recession is underway. We raised our 2008 inflation outlook due to momentum from food and energy (see pages 8-12).

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