# TOP of MIND

# GROWTH AND GEOPOLITICAL RISK


The market has once again been gripped by recession fears at the same time that geopolitical and policy risk is flaring up. Some of these risks—like the US-China trade war—are feeding recessionary fears, while others—like the attack on Saudi oil facilities that led to the largest ever daily disruption in oil supplies—have gone almost unnoticed. And this despite the fact that oil shocks were one of the most-common causes of recession historically. Whether this complacency is warranted, and the vulnerability of the economy and markets to this and other geopolitical shocks, is Top of Mind. We discuss why oil outages are easier to deal with today and are thus a less likely recession trigger than in the past. But the Council on Foreign Relations' President, Richard Haass, and Columbia Professor Richard Nephew explain why instability looks set to rise in the Middle East and beyond. We address how elevated uncertainty is already feeding into the economy and markets and conclude that markets are better positioned for a geopolitically driven growth shock than an inflation shock.

"There is no shortage of things to worry about. I would simply say... that as the US continues to pull back, its alliances grow weaker, and international institutions fail to keep up with new challenges, instability is likely to go up in the world. So the future is likely to be far more turbulent than the recent past.

\- Richard Haass

The likelihood that President Trump wakes up and says it's time to go to war with Iran is probably zero. His lack of desire for another war in the Middle East is one of the few positions he's maintained consistently from the get go... That's not terribly comforting because I think the highest risk of conflict comes from a mistake.

\- Richard Nephew"

## WHAT'S INSIDE



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# Macro news and views

## We provide a brief snapshot on the most important economies for the global markets

### US

**Latest GS proprietary datapoints/major changes in views**

- We now think the US will announce a short delay on the October 15 tariff increase on Chinese goods.

**Datapoints/trends we're focused on**

- The sharp decline in the US ISM surveys, likely driven by trade war concerns.
- A rebound in US housing activity on the sizable drop in mortgage rates.
- The decline in the unemployment rate to a new cycle low of 3.5%; we still think the Fed is likely to cut by 25bps at the October FOMC.

### Japan

**Latest GS proprietary datapoints/major changes in views**

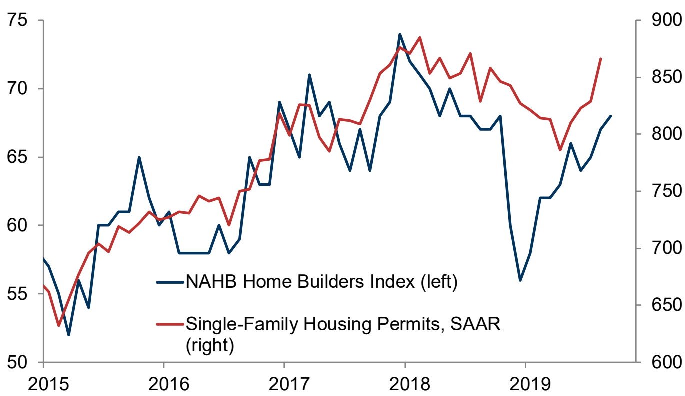
- No major changes in views

**Datapoints/trends we're focused on**

- A further decline in the Business Conditions Indices in August, prompting the government to downgrade its economic assessment to "worsening," meaning a "high probability" of recession; we estimate a 37% probability that the economy fell into recession in August.
- Our expectation that the BOJ will extend its forward guidance for ultra-low interest rates at its October meeting into the end of 2020 or later.

#### US housing activity has rebounded YTD

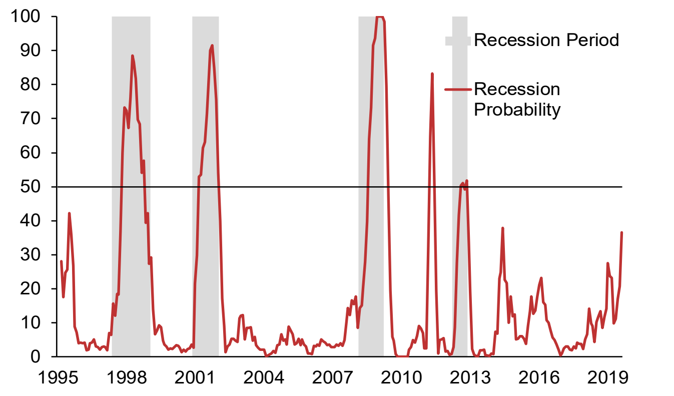
US housing activity, index (lhs), thousands of permits (rhs)




*Source: Goldman Sachs Global Investment Research.*

#### Recession risk in Japan rose to 37% in August

Recession probability, %




*Source: Cabinet Office, Goldman Sachs Global Investment Research.*

### Europe

**Latest GS proprietary datapoints/major changes in views**

- Following the ECB's announcement of a rate cut and open-ended asset purchases in September, we expect a further 10bp cut in 2020Q1 and now see QE running into 2021H2.
- Following the announcement of a climate package in September, we expect a German fiscal easing of 0.4% in 2020 and 0.2% in 2021, well below available fiscal space.

**Datapoints/trends we're focused on**

- The unexpected fall in the Euro area composite PMI in September, and the decline in the German composite PMI into contractionary territory.

### Emerging Markets (EM)

**Latest GS proprietary datapoints/major changes in views**

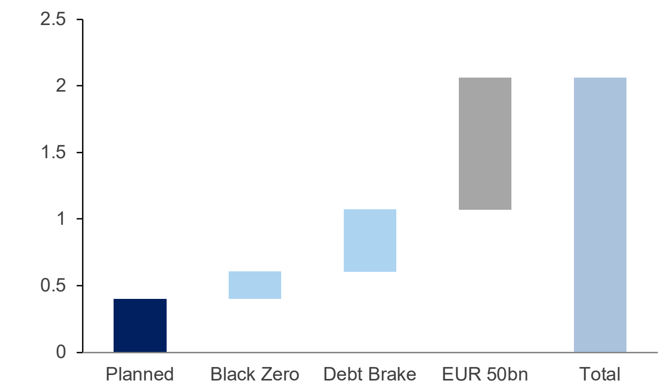
- We've lowered our 2019 Chinese GDP forecast by 0.1pp to 6.1%.

**Datapoints/trends we're focused on**

- An announced cut in corporate income tax rates in India to 22% (from 30% previously) and to 15% for newly incorporated manufacturing firms.
- A greater-than-expected rise in the September official and Caixin manufacturing PMIs in China.
- Only a small boost to EM economies from Chinese easing; we expect total social financing (TSF) of Rmb2.1tn in September, slightly above consensus but modest compared to past easing.

#### German fiscal rules allow for easier policy

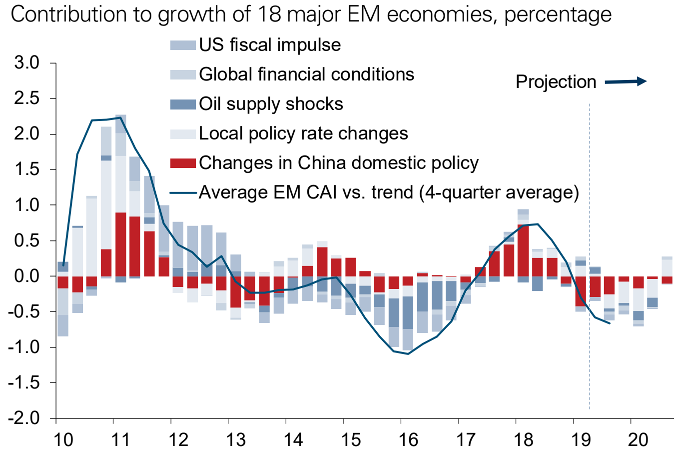
German fiscal space in 2020, % of GDP




*Source: German Ministry of Finance, Goldman Sachs Global Investment Research.*

#### Chinese policy shifts have driven EM growth cycles

Contribution to growth of 18 major EM economies, percentage




*Source: CEIC, Haver Analytics, Goldman Sachs Global Investment Research.*

# Growth and geopolitical risk

The market has once again been gripped by recession fears at the same time that geopolitical and policy risk is flaring up. In some ways, these concerns are feeding on one another. For example, the ongoing US-China trade war—which has escalated into nothing less than a high-stakes confrontation between two global powers—has fueled recession worries as manufacturing sentiment continues to deteriorate. And markets, of course, have proven quite sensitive to trade war-related news.

But one of the arguably largest geopolitical shocks in recent memory—namely, an unprecedented attack on Saudi oil infrastructure that resulted in the biggest daily disruption in oil supplies in history—has gone almost unnoticed by markets. And this is despite the fact that oil shocks historically were one of the most common causes of recession, and the already substantial disorder in the Middle East today looks only set to worsen. Indeed, tensions have intensified in many parts of the region at the same time that the US seems to be walking away from commitments that have helped shore up regional stability. Whether the market's complacency is warranted, and the vulnerability of the economy and markets to this and other geopolitical shocks, is Top of Mind.

We first ask Damien Courvalin, GS Head of Energy Research, why the spike in oil prices following the recent attack was so fleeting—with Brent crude oil prices soaring by nearly 20% in the attack's immediate wake before retracing all and more of this gain in recent weeks. His answer: in sharp contrast to past recessionary oil shocks, the nature of the recent attack, which damaged an above-ground facility rather than oil fields, suggested a relatively quick timeline for recovery, which Saudi guidance confirmed. This, combined with ample oil inventory to make up for any shortfall and increased supply flexibility from shale oil producers—who can substantially ramp up production within a matter of months—leave the market well-positioned to cope with even this magnitude of outage, especially in the context of weaker global growth and, in turn, oil demand.

But even if that weren't the case, Daan Struyven, GS Senior US Economist, argues that lower energy-intensity of GDP across the major economies—among other factors—suggests oil supply shocks are a less likely trigger of recession than in the past. In fact, he estimates that the drag on Developed Market growth from a 10% rise in oil prices owing to a supply shock has fallen sharply to less than 0.1pp today from about 0.5pp prior to the Great Recession (see pg. 15 for other rules of thumb on growth and inflation impacts of oil price changes.)

That said, Courvalin cautions that a main takeaway from recent events is that Saudi oil assets—still some of the largest single oil-producing and processing assets in the world—are more vulnerable to disruption than ever expected. And the likely catalyst for the recent attack, which the US government alleges was perpetrated by Iran, remains intact: namely, Iran's insistence that if it can't export oil owing to stringent US sanctions imposed on the country following the US's unilateral withdrawal from the 2015 nuclear agreement, neither should its neighbors (see pg. 10. for a timeline of US-Iranian tensions). So even if an oil-induced recession is less likely than in the past, the risk of further disruptions has increased.

Richard Nephew, Columbia professor and the US State Department's lead sanctions expert for the Iran nuclear negotiations, provides further insight on Iran's intentions and potential next moves. He argues that the Iranians are likely to take further action if they don't see sanctions relief. And he believes that the US's weak response to the recent provocations has potentially emboldened them to do so, sending a message to Iran as well as US regional allies that the US has little intention of defending its interests in the region. This message was no doubt reinforced by President Trump's recent decision to pull back US forces in Syria.

Richard Haass, President of the Council on Foreign Relations, then provides a broader perspective on why the Middle East remains an important region within the geopolitical landscape despite reduced dependence on Middle Eastern oil. He emphasizes that global economic health is still tied to access to energy, and the Middle East is still the largest global supplier. But beyond energy, he identifies many ways in which Middle Eastern turmoil can spread including terrorism, nuclear proliferation, refugee flows and so forth. So he worries about the current thrust of American policy to reduce the US's footprint in the region, which he argues began with the Obama Administration and will likely continue no matter who wins the US presidential election next year. In short, he thinks the market is underestimating the potential for instability in the Middle East and warns that as the US continues to pull back and international institutions fail to keep up with new challenges, instability in the Middle East and in the world more broadly is likely to rise.

So, beyond the historical concerns of oil shortages leading to recession that are much less relevant today, could this rise in geopolitical and policy uncertainty in itself have knock on effects for the economy and markets? Indeed, Ian Tomb and Kamakshya Trivedi from our FX and EM markets team find that even in the context of an oil shock, market perceptions of increased geopolitical risk around the shock matter for the reactions of risky assets, like currencies.

More broadly, Jeff Currie, GS Head of Commodities Research, argues that rising uncertainty since early 2018 has already impacted the economy and markets as even low funding costs have failed to stimulate investment given reluctance to invest in long-term capex amid so much uncertainty. And the flipside of this has been a precautionary savings glut that has pressured real and nominal yields lower and risky assets higher. Given that this uncertainty is likely here to stay, he sees two potential outcomes ahead: capex weakness spreads to the services economy—so growth falls—or investors get paid more to invest amid elevated uncertainty—so commodity inflation rises.

Currie sees these outcomes largely playing out over the medium-to-longer term. But Christian Mueller-Glissmann, GS Senior Multi-Asset Strategist, notes that while the current weakness in growth leaves the market more vulnerable to geopolitical shocks, the market is already pricing somewhat of a growth shock. So an inflation shock is the bigger risk to watch.

P.S. Don't forget to check out the podcast version of this and other recent GS Top of Mind reports—on Apple and Spotify.

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# Interview with Richard Haass

Richard Haass is president of the Council on Foreign Relations and a veteran diplomat who served as director of policy planning for the Department of State (2001-2003), senior director for Near East and South Asian affairs on the National Security Council (1989-1993), and chair of the multiparty negotiations in Northern Ireland that led to the 2014 Stormont House Agreement. Below, he argues that the decline of American influence in the Middle East will only lead to further instability in the region, with important spillover effects for the rest of the world.

*The views stated herein are those of the interviewee and do not necessarily reflect those of Goldman Sachs.*

**Allison Nathan: How important is the Middle East (ME) in the geopolitical landscape today, especially given reduced dependence on ME oil?**

**Richard Haass:** The Middle East still matters for many reasons including, but not limited to, energy resources. The US is less directly dependent than it was upon the region's oil. But there's a difference between energy self-sufficiency and energy independence, and the US has achieved self-sufficiency but not independence given the mix of types of oil that US refineries require. More importantly, US economic health is tied to the economic health of the world, and the economic health of the world is tied to access to energy. So, the US is still affected by the stability of ME energy supplies.

Beyond energy, the Middle East matters because it's the locale of many of the world's terrorists. It's a potential theater for nuclear proliferation. It's a place of special interest to the United States because of its historic relationship with Israel. The Middle East is also a place where the major powers—the US, Russia, and China—all come into contact with each other. And, obviously, a number of middle powers such as Turkey, Saudi Arabia, Iran, Israel, and Egypt are in close proximity. There are also humanitarian interests in the region, including refugee flows, which also affect the politics and economics of Europe. So, we've learned that what happens in the Middle East isn't simply of local importance. It has been the least stable and least successful part of the world now for decades. It's not at all clear that will change anytime soon. And when things go badly there, the consequences tend to spread.

> "We've learned that what happens in the Middle East isn't simply of local importance. It has been the least stable and least successful part of the world now for decades... And when things go badly there, the consequences tend to spread."

**Allison Nathan: Do you see President Trump's approach to the ME as a meaningful shift from the past?**

**Richard Haass:** US involvement in the region over the past couple of decades might be characterized as a period of overreach around the 2003 invasion of Iraq, and then a period of underreach during the Obama Administration. The current Administration has in many ways reinforced the trend of the Obama Administration: a reluctance to be involved in the region, especially militarily. The decision to pull back US forces in Syria and to end the security partnership with the Kurds there will add to this trend. The Trump Administration has also shown a hesitancy to practice diplomacy there, whether it is to deal with Iran, the Israeli-Palestinian issue or in Yemen.

**Allison Nathan: Are other strategic powers stepping in as the US steps back, and what implications might that have?**

**Richard Haass:** Only to a limited extent. Russia is certainly playing a role in Syria, but not in the interest of order; it is in the interest of shoring up the regime of Bashar al-Assad. And China is not really engaged strategically in the Middle East, which I don't see changing much; despite China's economic interests around oil and trade, they are much more focused on issues closer to home such as Hong Kong, Taiwan, and the South China Sea. So we're seeing a pattern in which the US is doing less to promote regional stability, but other major powers aren't doing much more. Rather, the region is spinning further out of control.

**Allison Nathan: What do you make of President Trump's approach to Iran? Do you agree with the decision so far not to respond militarily to the recent provocations?**

**Richard Haass:** I have many concerns about the Trump Administration's policy towards Iran, starting with the US unilaterally pulling out of the 2015 nuclear agreement. More broadly, the US is essentially practicing economic warfare against Iran, but has never articulated its goals in doing so. The goal initially seemed to be regime change, but that's not going to happen. Is it then policy change, and, if so, what kind of change? Does the US want to see a new and improved nuclear agreement? Does it want to see Iran pull in its horns around the region? If either is the case, why doesn't the US clearly articulate this? And the one tool the US has used against Iran is sanctions; it has not used any military force—not in Syria where Iran has tremendous impact, not when Iran shot down a US drone, and not when Iran appears to have been involved in attacks on Saudi oil facilities.

So, I would have said from the beginning that the US needs a very different policy that articulates some goals with Iran and then achieves a match between its means and those ends. At the moment, the US has never articulated realistic ends and there's a large mismatch in its means in terms of overusing economic instruments and underusing both diplomacy and military instruments.

**Allison Nathan: Where do you see the tensions going from here? Is a diplomatic solution possible at this point?**

**Richard Haass:** Iran's goal is to break out of the economic sanctions that are putting tremendous pressure on its economy. So my guess is the Iranians will wait and see whether recent events lead to the easing of sanctions, and, if not, will possibly engage in further provocations to attempt to achieve this end. In the meantime, they are likely to continue to move further away from their nuclear commitments.

In terms of the prospects for diplomacy, I'm wary of using the word "solution." The history of diplomacy and arms control is that you don't "solve" problems or transform relationships. But you can reduce the friction or bridge the differences in certain areas. In the case of Iran, the agenda that separates Iran from the rest of the region and from the US is broad, involving nuclear issues, missile delivery systems, the country's support for and use of militias, proxies and terrorists around the region, as well as domestic developments within Iran itself. So it's difficult to deal with all of that in its entirety. But could one imagine dealing with some of it? Sure, it would still be difficult but possible. And everybody has some incentive to move in that direction. The Iranians want to get out from under sanctions, and the US and regional actors don't want additional attacks on oil installations, let alone a war and all that would mean for the global economy. But, again, the ability to get to a limited agreement is easier said than done. My sense is that we've come close recently, especially at the recent UN meetings in New York, but obviously haven't gotten there yet. There is as well the possibility of something of a détente or at least a peaceful coexistence between Iran and Saudi Arabia as both have reasons to prevent an escalation of economic and military confrontation.

**Allison Nathan: Would the outlook be much different should the US end up with a Democratic president next year?**

**Richard Haass:** There isn't uniformity across the current pool of Democratic candidates, but most of them seem inclined to return to the Iran nuclear agreement or at least seek nuclear negotiations. The problem with just returning to the previous agreement is that much of it is set to expire by 2025 or 2030. So the 2015 nuclear agreement does not provide a long-term structure for managing the Iranian nuclear program. And while many of the Democratic candidates are more likely to pursue a diplomatic approach with Iran, most are not inclined to keep US forces heavily involved in the region; many of the candidates have talked about reducing or withdrawing American forces from Syria, Iraq, and/or Afghanistan. And many are more critical of Saudi Arabia over the Khashoggi murder, their actions in Yemen and human rights issues. So most Democrats will likely reinforce the perception that the United States is losing interest in the Middle East, or is no longer willing to pay the price to have influence there. The general thrust of American foreign policy is likely to continue to favor a reduced footprint in that part of the world.

**Allison Nathan: What are the implications of all of this for regional players like Saudi Arabia?**

**Richard Haass:** I think the Saudis and other regional players are less confident than they were about the strength of their relationship with America and the extent to which they can count on US support, especially given the lack of a US military response to recent provocations in the region. We are beginning to see a somewhat more distant US-Saudi relationship, which will likely motivate the Saudis to diversify their portfolio of partners. For example, we've already seen some elements of Saudi-Russian coordination on oil policy, and one could imagine increased Saudi-Chinese economic cooperation.

We are witnessing the start of a slightly different era. To call it a post-American Middle East is a bit dramatic—the US is still involved. But US presence and degree of influence is considerably less than it was. So I do see elements of a post-American Middle East emerging. And, as I said before, the gap is not so much being filled by other major powers, but by locals such as the regional actors themselves, including governments as well as militias, Hezbollah, terrorists and so forth, which are gaining more autonomy and influence in various ways. The Middle East has yet to find a new footing. It's just clear that the old, American-based foundation is fading.

**Allison Nathan: Is it fair to say that the oil implications of ME tensions are perhaps easier to deal with than in the past, but the geopolitical tensions more difficult given the erosion of international institutions and of the international order?**

**Richard Haass:** Yes, for the most part. There are just so many problems in the Middle East. On top of the Iranian tensions and the confrontation between Turkey and Kurdish forces in Syria, we haven't even mentioned the worsening situation in Libya, elusive long-term stability in Egypt, the recent instability in Iraq, or an Israeli-Palestinian relationship that is more problematic than ever. There's virtually no part of the region that has the prerequisites of stability. There is no reason to conclude that the Middle East is on a positive trajectory. The real question is the one you asked: To what extent does the US and the international community more broadly try to buck those trends, and are they even capable of doing so? Or do we simply try to insulate ourselves as best we can from the likely adverse consequences? That will be the big debate for the future.

**Allison Nathan: Are markets underappreciating these risks?**

**Richard Haass:** Markets are underestimating the potential for instability. You'd certainly have to be a real optimist to believe that the Middle East isn't going to remain extremely turbulent for the foreseeable future with all the consequences I've already mentioned—terrorism, refugee flows, energy supply concerns, nuclear proliferation, and so forth. But markets tend to under-weigh geopolitical risk largely because these risks are uncertain by definition and are hard to quantify and plug into models.

**Allison Nathan: More broadly, what risks should investors be most worried about right now?**

**Richard Haass:** I've got a long list, not all of which are geopolitical in nature, such as the growing risk from high debt levels and climate change. But, in terms of geopolitical risk beyond the Middle East, you could have internal instability in China and Russia, worsening conditions in Venezuela, a crisis with China over Taiwan or the South China Sea, a war between India and Pakistan, or expanded crises in Europe with Russia. There is no shortage of things to worry about. I would simply say, again, that as the US continues to pull back, its alliances grow weaker, and international institutions fail to keep up with new challenges, instability is likely to go up in the world. So the future is likely to be far more turbulent than the recent past.

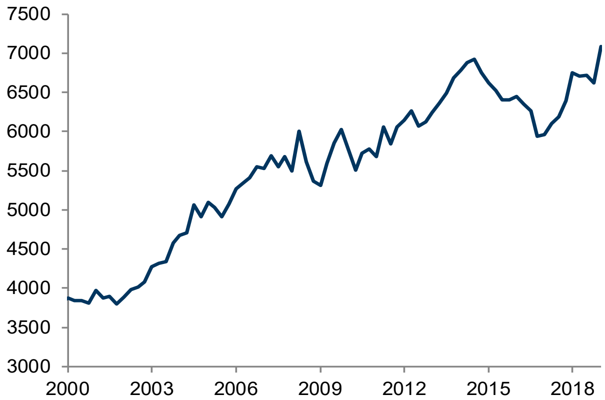
# A precautionary savings glut

## Jeff Currie argues that a rise in uncertainty has caused a slowdown in capex investment and a precautionary savings glut, which may lead to slower growth or higher commodity inflation

It is tempting to dismiss two major events that recently occurred in the same week—the drone attack on Saudi Arabia and the dislocation of US repo rates—as seemingly unrelated. These two events, however, are loosely connected via the demand for cash. The attack on Saudi Arabia represents an escalation in already heightened geopolitical and policy uncertainty, which has now risen to all-time highs given the significant cumulative impact of several sources of uncertainty today—the US-China trade war, Iranian tensions and sanctions, Brexit, the ongoing Hong Kong situation, US impeachment proceedings, and developments along the Turkey/Syria border, etc. This uncertainty, in turn, has steadily increased the demand for cash, which ran into Fed-imposed supply constraints, dislocating repo rates. For most of this decade, savings rates in the developed markets and corporate cash balances have steadily risen, but they have surged since early last year with the onset of the trade war.

**DM savings have been growing steadily in recent years**

Developed market gross savings, $bn




*Source: IMF, Haver Analytics, Goldman Sachs Global Investment Research.*

### Not a virtuous cycle

The savings glut that prevailed in the 2000s was an unintended consequence of a virtuous cycle of strong economic growth, rising real asset prices and declining costs of funding. In contrast, the current savings glut is far less virtuous, driven by an intended rise in precautionary savings, stagnant real asset prices and a decline in investment due to rising policy uncertainty. While funding costs are declining, they are failing to stimulate investment and durable demand given reluctance to make longer-term commitments amid the current uncertainty.

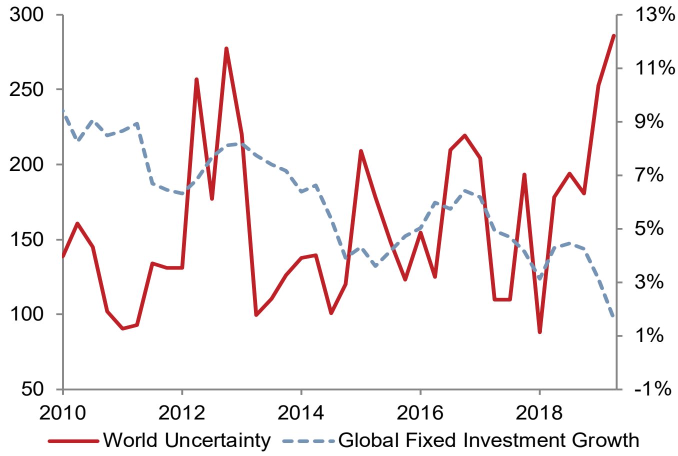
### Investors fear long-cycle capex

Indeed, the areas of the economy most severely impacted by the rise in uncertainty are ones that require taking a view on the state of the world beyond one to two years, including the purchase of durable goods like cars and long-cycle, capex-intensive investment, primarily in the manufacturing sector. In contrast, short-cycle investment that does not require taking a longer-term view on activity has been mostly unscathed, with capital chasing these types of investments concentrated in the services sector. Case in point: the surge in investment in software and technology. In general, short-cycle investment is centered in the US and developed markets where investment hurdle rates incorporating geopolitical risks are far lower.

Given that long-cycle investment is far larger than short-cycle investment, total investment is beginning to fall even in places like the US, joining the economies of Germany and Korea that are far more dependent upon traditional long-cycle, capital-intensive manufactured goods. Further, as long-cycle investment is more tied to the manufacturing-centric old economy, which is centered in the emerging markets, this decline in investment has disproportionately impacted emerging market growth. And, in a complete reverse of the savings glut of the 2000s, capital is now flowing from the developed markets to the emerging markets ex-China, which are now net borrowers.

**Higher uncertainty has weighed on global investment**

World uncertainty index, index (lhs); global fixed investment growth, % (rhs)




*Source: Haver Analytics, Goldman Sachs Global Investment Research.*

### Inflation may be the solution

A resolution of the uncertainty that would help create a rebound in investment is very unlikely given the wide range of policy-driven uncertainty. Instead, the focus needs to be on what return will stimulate investment despite the heightened geopolitical and policy uncertainty; the savings glut has created ample capital for such investments, but only at the right price. To create that higher return to match the higher hurdle rate, either top line revenues need to rise or costs need to decline.

This leaves two options. Either the weakness in manufacturing capex expands to the services economy and consumption falls to a level consistent with the currently constrained investment, which ultimately pushes costs lower, or prices rise to compensate investors for investing amid high uncertainty. In the end, it may be that this uncertainty creates real supply constraints, which give the market commodity inflation as compensation for taking such far-reaching policy risk.

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# Geopolitical risk riskier amid weak growth

## Christian Mueller-Glissmann argues that lower growth increases market vulnerability to geopolitical shocks, but the market is more primed for a shock to growth than to inflation

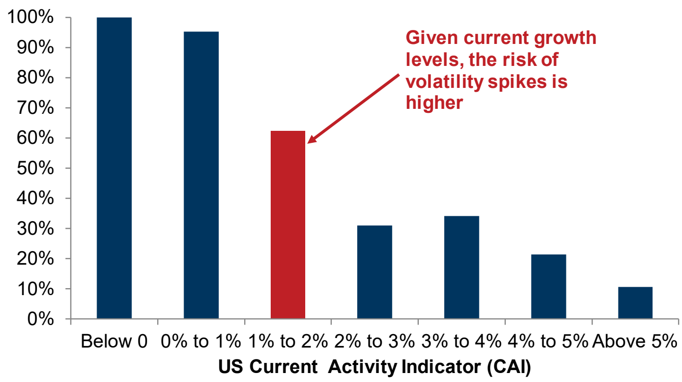
Policy and geopolitical uncertainty seem to be on the rise. On top of the recent increase in Middle East tensions, the prospect of a hard Brexit, the ongoing Hong Kong situation, North Korean nuclear threat, unexpected shifts in the US-China trade war, and growing US political uncertainty are just some of the major risks looming over markets today. And that list doesn't include the "unknown unknowns"—like a terror attack—that can seemingly come out of nowhere. So how should investors think about these geopolitical risks?

It is very difficult to position around these tail risks, which can drive rapid and sharp drawdowns in assets—particularly given the electronification of markets, growth in systematic investing, and lower average liquidity—but have a low chance of materializing. Hedging tail risk is expensive, which mostly rules out risk management strategies that protect portfolios systematically. Tactical hedges are similarly difficult as both the impact and timing of geopolitical events are hard to anticipate. And geopolitical or political shocks such as election surprises and terror attacks are often local shocks, which primarily affect specific assets. As a result, investors with well-diversified portfolios might be tempted to ignore geopolitical risk. This is especially the case in the current environment when investors are more preoccupied with weak growth and recession risk.

But the reality is that geopolitical shocks can have material knock-on effects for global growth, inflation, and risk sentiment, especially as economies and markets have become more global and assets more correlated. And the weaker the growth backdrop, the greater the vulnerability to these shocks. Equity volatility, for example, is more likely to spike during periods of weaker global growth.

### Weaker growth, more volatility

Probability of VIX spiking from above 20 when it's below 15



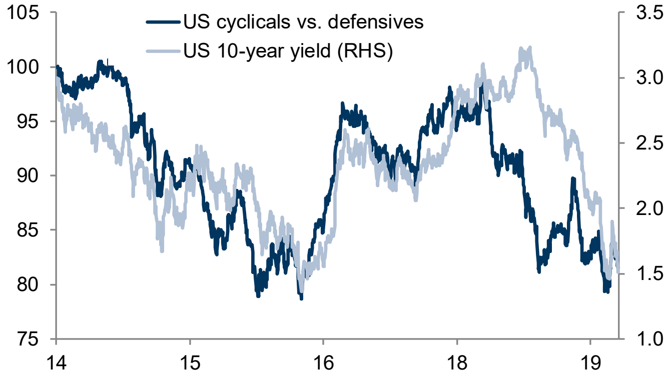

*Source: Goldman Sachs Global Investment Research.*

### The market is already pricing a growth shock…

Since the beginning of 2018, investors have lowered global growth expectations in in response to weaker data, which has left the GS US Current Activity Indicator at 1.2%. This has led to a major rotation across assets—from equities to bonds, from higher risk credits to lower risk ones, from cyclical and value stocks to defensives and growth ones, and towards safe havens such as gold, the Yen, and cash. The driver of most assets year-to-date in fact has been expectations for easier monetary policy and lower bond yields associated with a weaker growth outlook—both US 10-year real yields and breakeven inflation have declined sharply and are now close to their 1990s lows. With investors already positioned defensively, the hurdle for a "growth" shock that further weighs on risk appetite is relatively high. That said, a geopolitical shock that meaningfully increases recession risk would still likely result in a material "risk off" move across assets.

### Markets already pricing weak growth

US cyclicals vs. defensives equity basket (lhs), US 10-yr yield (rhs)




*Source: Bloomberg, Goldman Sachs Global Investment Research.*

### …but not an inflation shock

Inflation expectations (and pricing of the Fed policy rate path) have declined alongside growth expectations throughout the year. After multiple years of low inflation, the proportion of negative-yielding debt globally has reached an all-time high. As a result, term premia in the bond market, which include a risk premium for inflation risk, are very low. And, in the US in particular, 10-year breakeven inflation is only 1.47%, well below the Fed's target and even current realized levels.

One could argue that these low rate and inflation expectations seem reasonable given the relatively weak growth outlook. And some geopolitical risks such as oil supply disruptions, which have historically proven to be inflationary, are less likely to be so today given the growth in US shale oil production. But our economists already expect US inflation to increase into 2020, in part owing to policy developments such as the US-China trade war. And should another even more disruptive oil outage occur that pushes oil prices sharply higher, or other geopolitical events happen with inflationary consequences—like a broadening trade war—this could accelerate and magnify inflation repricing.

Long story short, the market is likely underpricing inflation risk in general and is not positioned for an inflation/rates shock. For a broad inflation hedge, we like buying shorter-maturity US breakeven inflation given how shallow an inflation path the market is currently pricing—although growth worries may keep them depressed in the near term absent a genuine shock.

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# Interview with Richard Nephew

Richard Nephew is a Senior Research Scholar at the Center on Global Energy Policy at Columbia University. Previously, he was the Principal Deputy Coordinator for Sanctions Policy at the US State Department, where he served as the lead sanctions expert for the Iran nuclear negotiations, and as Director for Iran on the National Security Staff. He argues that the lack of a stronger US response to the attack in Saudi Arabia sends the wrong message to Iran and to US regional allies.

*The views stated herein are those of the interviewee and do not necessarily reflect those of Goldman Sachs.*

**Allison Nathan: Was Iran behind the recent attacks in Saudi Arabia?**

**Richard Nephew:** Iran was almost certainly behind the attacks. The focus on direct attribution and where the attack was launched from skirts around the obvious point: Iran bears responsibility either because it actually carried out the attack, or because it supplied the equipment and weapons to those who did.

**Allison Nathan: What was Iran's motivation for this action?**

**Richard Nephew:** Iran is clearly retaliating against the US's campaign of "maximum pressure." This campaign effectively began in May 2018 when the US withdrew from the Joint Comprehensive Plan of Action (JCPOA)—the deal struck in July 2015 that lifted nuclear-related sanctions on Iran in exchange for the country's commitment to roll back its nuclear program. And it intensified with the re-imposition of sanctions on Iran late last year, followed by several additional rounds of sanctions, the ending of waivers allowing countries to import Iranian oil in May, and other actions designed to isolate Iran economically and politically.

With the international community largely ignoring Iran's predicament—and its policy of restraint getting it nowhere—Iran made a strategic decision earlier this year that the time had come to take action of its own; if the rest of the world was going to ignore Iranian interests, Iran would make life difficult for the rest of the world. So the recent attack was just the latest in a series that have included attacks on oil tankers transiting the Strait of Hormuz, the seizure of foreign tankers, and the shooting down of a US military drone—all aimed at harming the US and its allies. A key goal of most of these attacks has also been to raise oil prices. This benefits the Iranians not only because they can sell their diminishing oil exports at a higher price, but also because President Trump has made it very clear that he—and, more to the point, his base—wants lower oil prices; I'm certain that Iran's intention is in part to impose costs directly on the President.

**Allison Nathan: What is Iran's end goal here?**

**Richard Nephew:** Their goal is for the US to re-join the JCPOA and lift the sanctions on Iran so that it can reintegrate into the global economy and ensure its future prosperity. The Iranians view this as nothing less than an existential crisis, with the US and its regional allies seeking to damage and potentially topple their regime. Iran's aim is to stop that from happening by showing the US, the Saudis, the Emiratis, etc. that they can inflict costs of their own. And they hope this will give them leverage to get the President—or a different US administration following the 2020 election—back to the negotiating table on Iran's terms. Even if it doesn't, they're hoping it will at least limit the willingness of the Saudis and the Emiratis—among others—to back US policy.

**Allison Nathan: So did the recent attack make progress toward their goal?**

**Richard Nephew:** It's too early to tell, but I believe the Iranians see real benefits from their actions. They carried out this attack in a way that's at least superficially deniable. They pushed oil prices higher, albeit only temporarily, but they might rise again depending on the pace of Saudi restoration efforts. There is certainly some skepticism about Saudi's current estimate on its recovery, which I think is somewhat warranted given the unique nature of some of the equipment that was damaged; you can't just buy replacement parts at Home Depot. And, best of all worlds, they didn't get attacked in return. The US issued some threats, but for now has only imposed some pretty weak sanctions as it assesses the situation. So, from an Iranian perspective, this has been all benefit and very little cost.

**Allison Nathan: Can more sanctions move the needle at all?**

**Richard Nephew:** US sanctions imposed on Iran over the past eighteen months are inflicting significant damage on the Iranian economy, which is now clearly in a deep recession. The sanctions are effectively the same as the ones that compelled Iran to come to the negotiating table in 2014, but taken a step further by, for example, demanding that Iranian oil exports go to zero. The list of what more can be done is relatively short. One option would be to implement a global secondary sanctions embargo, which would prohibit any country from trading or doing business with Iran except in humanitarian areas. Any country that violated the embargo would be banned from doing business in the US. That action would target consumer electronics goods and other, more marginal, areas of the Iranian economy. But it's unlikely to add materially more pressure on the Iranian system given the sanctions already in place.

**Allison Nathan: Was the lack of a stronger response from the US to the recent attacks a mistake?**

**Richard Nephew:** The lack of a stronger response was a complete disaster given the current US policy approach to Iran. In an ideal world, I believe the US should seek negotiations with Iran and get back to a diplomatic approach to addressing concerns in the region. But that's not where US policy is today; the likelihood of the US re-entering a constructive diplomatic process is low. And if you're going to engage in the type of escalation that the Trump Administration has over the past eighteen months, then you have to react more forcefully to an event like an attack on Saudi oil facilities that are responsible for millions of barrels of oil a day and are vital to the energy security of the planet. This is especially the case given that the US has been the long-standing guarantor of security and stability in the region. In my view, a limited retaliatory strike on the sites that were involved in either supplying the drones and/or cruise missiles or the launch sites themselves would have been appropriate. This more forceful response would have contributed to re-establishing deterrence and avoiding going down a much more dangerous path in the future.

Instead, doing essentially nothing has sent the Iranians exactly the wrong message—that the Trump Administration is weak and has no intention of defending US interests, which could invite more attacks. US adversaries around the world have received a similar signal. And the Saudis and the Israelis have also received the message that the US will abandon them—so it's up to them to sort out their own problems, which could have a number of consequences that conflict with US interests.

**Allison Nathan: So if the Iranians are feeling emboldened, should we expect more attacks ahead?**

**Richard Nephew:** I do think the Iranians feel better about their ability to pull off a major attack and survive the consequences. But this was undoubtedly already a very bold action, especially in the context of an inherently cautious Iranian system. At this point, I think they will sit back and watch what happens over the next few months to see whether the recent events make a difference in their treatment by the US, the Saudis, the UN, etc. But if they don't see an improvement in their situation, I see no reason why they wouldn't be willing to take more action.

**Allison Nathan: Is there any possibility that diplomacy can resolve the current tensions at this point, especially with the departure of John Bolton as National Security Advisor?**

**Richard Nephew:** I don't think so, at least under this Administration. Diplomacy has been at the bottom of its list of tools to deal with Iran since day one, which I believe amounts to national security malpractice; it has an obligation to use all tools to safeguard US national security—including diplomacy. But the departure of Bolton has only reduced the number of hawks in the White House by one; people like Secretary of State Mike Pompeo and a number of lower-level officials generally share a hawkish perspective. My hope is that the new National Security Advisor, Robert O'Brien, at least encourages a more deliberative process that puts more policy options in front of the President. But again, my expectations are low that there will be an about-face on US policy towards Iran, especially now that Iranian provocations will likely be used by the hawks as justification for a more hostile policy.

**Allison Nathan: How likely is a US/Iran military conflict?**

**Richard Nephew:** The likelihood that President Trump wakes up and says it's time to go to war with Iran is probably zero. His lack of desire for another war in the Middle East is one of the few positions he's maintained consistently from the get go. And, as we've discussed, he hasn't rushed to respond militarily to Iranian provocations. That may not always be the case, especially as the US presidential election approaches and the temptation to create a "rally 'round the flag'" effect grows. But I don't see him changing his stance materially anytime soon. That's not terribly comforting because I think the highest risk of conflict comes from a mistake. You can imagine a hundred different scenarios in which the coincidence of US and Iranian forces in the Persian Gulf creates a military clash, such as an Iranian drone intending to fly close to a US carrier but then accidentally crashing into it, harming US sailors. I think it would be hard to avoid military engagement in that or similar types of scenarios.

**Allison Nathan: If the US did end up at war with Iran, how strong a military adversary would Iran likely be?**

**Richard Nephew:** Iran's military strengths are asymmetric. Their traditional military capabilities—army, air force, navy—are relatively limited. But that's not too reassuring because the most likely conflict scenarios would play to Iran's strengths: a large and increasingly capable ballistic missile force, a willingness to use terrorism and proxy groups to threaten the US and its allies, and one of the largest and most sophisticated cyber threats that the US faces today. And that list doesn't include the emerging nuclear threat—of course, the genesis of the recent hostilities. The good news is that the JCPOA has kept that threat at bay. But, in response to US actions, Iran has begun to walk away from its commitments under the agreement. And the more they feel under attack from the international community, the more incentive they might have to pursue nuclear weapons again.

**Allison Nathan: What does all of this mean for Saudi Arabia?**

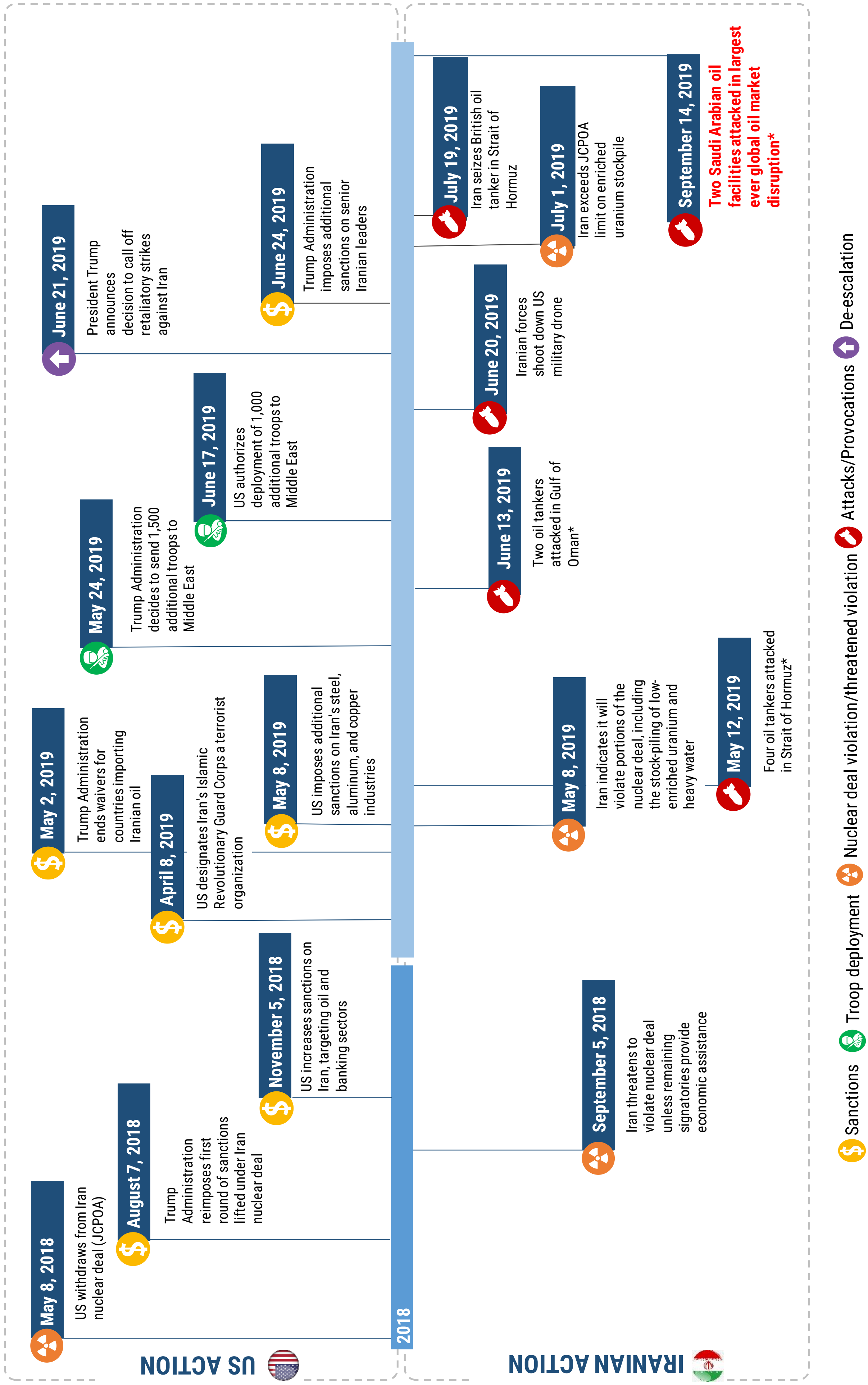
**Richard Nephew:** The recent attack reveals the inability of Saudi Arabia to protect even its most critical assets despite the fact that it's spent an awful lot of money on US military hardware and training. That raises questions about its reliability as an energy supplier, which will have a direct bearing on its economic future and puts in doubt people's willingness to invest in the country. All of this will have domestic political repercussions, as people play the blame game. So these developments are potentially significant for Saudi Arabia, and are likely to damage the stability of the Kingdom to some extent.

**Allison Nathan: How might these events shift longer-term dynamics in the region?**

**Richard Nephew:** These developments have led Saudi Arabia and other US allies in the region to question whether the US is a truly reliable partner. The Saudis and others were very excited about the election of Donald Trump, who they believed would unconditionally back their interests in the region. But, so far, the US has been unable to deliver a more restrictive nuclear agreement with Iran, has failed to respond with force to material Iranian provocations, and has barely been able to ensure a continued supply of arms, which squeaked by with only a very narrow margin in the US Senate this year. And, at least for the Saudis, the potential for a new US president next year that may take a more negative view on Mohammed bin Salman raises doubts around US support even further. So the Saudis are starting to question whether they can count on the US enough to continue to avoid dealing with the Iranians. And they very well may decide that they can't.

Longer term, I think the attack in itself, Saudi's inability to prevent it, and the US's refusal to respond to it quickly and effectively could lead countries in the region to conclude that the US causes problems, but it doesn't fix them. And for that reason, US involvement may be worse than non-involvement, which would likely limit the US's influence in the region, and potentially beyond.

# Timeline of recent US-Iran tensions




*Iranian responsibility alleged by the US

Source: Various news sources, Goldman Sachs Global Investment Research.

# Watch the "oil-risk" mix

## Ian Tomb and Kamakshya Trivedi argue that market perceptions of increased geopolitical risk matter for the reaction of risky assets to a shock

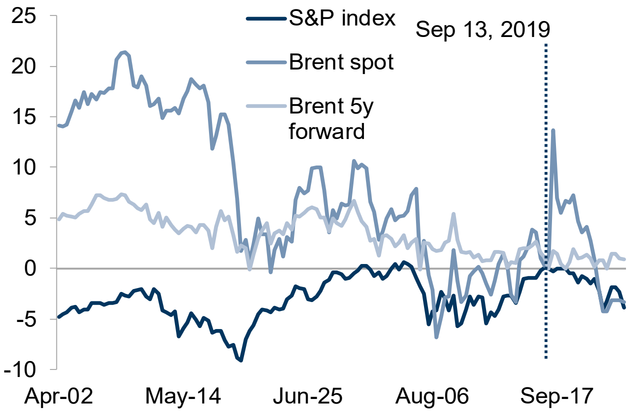
The quick reversion of oil prices following the recent attack on Saudi Arabia's key Abqaiq oil processing facility has been striking. Even more notable has been the muted response from financial markets—even before Saudi gave reassuring guidance about the pace of recovery, which helped ease oil prices. Indeed, financial assets sensitive to risk sentiment like the S&P index held relatively firm after the attack, while classic patterns of oil-driven *differentiation* in asset prices—such as the outperformance of assets of oil exporters (like the Russian Ruble (RUB)) relative to oil importers (like the Indian Rupee (INR)) played out, but only to a limited extent. So, what explains this muted market reaction? And are oil-related asset price shocks now a thing of the past?

### The "new oil order"

One big part of the story is the "new oil order"—fundamental shifts in the global oil market that have anchored long-run oil price expectations. In particular, with agile shale oil producers now able to rapidly ramp-up (and down) oil production, investors appear less concerned about a sharp disruption to oil supply. One way to see this lack of concern about future supply: the spot oil price moved far more than the price of long-run oil forwards during last month's oil price shock, suggesting that despite the sizeable disruption, markets remained relatively sanguine about the oil supply outlook. And with US oil production now an increasingly larger share of global production, oil shocks appear to be having more muted deleterious effects that weigh on demand growth and risk assets like the S&P index.

**Long-dated oil prices are better-anchored against oil shocks in the "new oil order"**

Cumulative % changes, relative to market close on Sep. 13, 2019



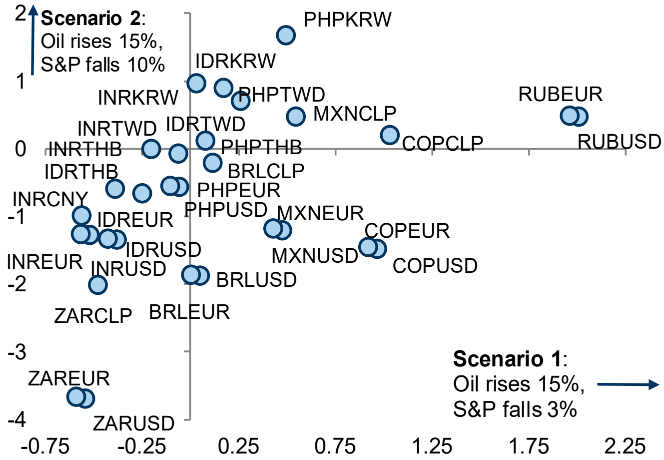

*Source: Goldman Sachs Global Investment Research.*

### Perceived geopolitical risk also matters

The "new oil order," however, is only part of the story. Another reason for the market's muted response is the fact that the September attack has not, at least so far, escalated into a broader conflict that could have pushed risk sentiment—and risk assets—sharply lower.

**Watch the "oil-risk mix"**

Predicted % appreciation of the displayed currency cross




*Source: Goldman Sachs Global Investment Research, Thomson Reuters.*

On this front, it's useful to differentiate between two different types of oil shocks: those that lead to a repricing of long-term geopolitical risk and those that don't. Specifically, in scenarios like last month's when the market doesn't perceive even a large oil disruption (that initially pushed the price of oil up by nearly 20%) to be associated with an increase in geopolitical risk (as reflected in a muted response from the S&P 500 index), we see standard, oil-driven differentiation between the currencies of oil importers and exporters, but at muted "new oil order"-era magnitudes. For example, our analysis suggests that going long the currencies of oil exporters like the Colombian Peso (COP) against the Dollar can yield a modest return, while going long the currencies of oil importers like INR against the Dollar would likely yield a modest loss.

But when an oil shock is accompanied by a perceived rise in geopolitical risk—as reflected, for example, in a sharp sell-off in the S&P 500—the currency response changes. In particular, many currencies tend to sell off versus the Dollar or Euro when risk sentiment worsens, which can either exacerbate the negative effect of an oil price increase (in the case of an oil importing currency like INR), or can offset the positive effect of an oil price increase (in the case of an oil exporting currency like COP). Of oil producing emerging market currencies (including COP, MXN and RUB), only the Ruble's sensitivity to oil prices appears large enough to offset the risk drawdown. One way to insulate currency positions in this scenario is to fund oil-producing currency longs with lower-yielding risk- and oil-sensitive shorts like the Korean Won or Chilean Peso.

But the key takeaway is: should another attack or an escalation in tensions occur, investors should pay attention not only to shifts in the oil price, but also to the overall "oil-risk mix."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# Interview with Damien Courvalin

Damien Courvalin is head of Energy within the GS Commodities Research team. Below, he argues the oil market is much better positioned to deal with supply outages today than in the past.

**Allison Nathan: How big was the recent disruption to Saudi Arabian oil supply in historical context?**

**Damien Courvalin:** It was initially huge. At 5.7mmbd in a 100 mmbd market, it was the largest single disruption on record in level terms, and, in percentage terms, only slightly smaller than the disruption following Iraq's invasion of Kuwait in the 1990s.

**Allison Nathan: If it was the largest disruption ever, why haven't we seen markets responding more strongly?**

**Damien Courvalin:** That's an interesting question, especially since the market responded more strongly to the announcement of Iranian sanctions last year, which threatened to disrupt only about half as much daily oil supply. I see several differences today that have muted the price response. First, the Saudis have provided a relatively quick timeline for recovery, unlike last year when the market was facing the loss of Iranian exports for the foreseeable future; even if the potential Iranian disruption was half as large, its longer and unknown duration had the potential to amount to a massive volume loss over time. And, after all, the recent attack was on an above-ground facility so repairs are far more manageable than if fields had been damaged.

Second, oil demand was stronger last year amid healthier global growth, suggesting that demand destruction would require a large price increase, whereas the weaker economic backdrop today leaves global activity and oil demand much more sensitive to higher oil prices. Third, the market learned some lessons from last year's price spike, namely, that $80/bbl invites relatively sizeable demand destruction and production increases, so prices don't need to be that high for that long to keep the market well supplied these days. In fact, the market ended up oversupplied late last year even as Iranian disruptions kicked in. Finally, buffers provided by oil inventories and OPEC spare capacity are likely enough to cope with the current outage.

**Allison Nathan: Is Saudi's recovery guidance credible?**

**Damien Courvalin:** Indeed, there's a lot of skepticism about Saudi's timeline given the satellite imagery that suggested pretty significant damage. So their guidance ultimately hinges on whether they have sufficient oil inventories that can be drawn down and/or production capacity elsewhere to ramp up to meet their export commitments. Our estimates suggest they do, so we see the guidance so far as plausible and credible. In fact, high-frequency tanker tracking suggests that current exports are now even above their pre-attack level.

**Allison Nathan: You mentioned an inventory buffer; if Saudi's recovery guidance proves too optimistic, can we count on inventories to make up for the shortfall?**

**Damien Courvalin:** The usual metric for gauging oil inventories is commercial—or refinery—stocks in Developed Market (DM) economies, and these are in fact slightly below 5-year average levels. But the newer and likely more immediate inventory buffer resides in Emerging Market (EM) economies, which have built reserves over the last decade to promote stability, either as net producers or consumers of oil. Indeed, countries like Saudi Arabia and China now use inventories on a tactical basis to smooth oil supply and/or prices. For example, China drew down substantial inventories during last year's price spike and has aggressively rebuilt them during the lower-priced environment this year. In the short term, I see these strategic reserves in EM economies providing a key buffer to the current disruption, with Saudi drawing down its inventories to maintain export levels and China—the largest purchaser of Saudi oil—using its inventories to compensate for any shortfalls should Saudi inventories prove insufficient. To put this into context, on the day of the attack, China had enough inventories to compensate for the complete loss of Saudi imports for six weeks before simply returning to last year's inventory level. The second inventory buffer is, of course, Strategic Petroleum Reserves (SPR) held by DM economies specifically to deal with severe oil supply disruptions.

If the disruption ends up lasting much longer than we expect, and/or there is another disruption, the US and other DM economies could release their SPRs. The US SPR alone contains 645 million barrels. And, outside of the US, current inventories can cover 120 days or so of net imports. So we estimate that US and other DM SPRs could cover a 4 mmbd disruption for at least six months. Based on what we observed last year and past SPR releases, we think the likelihood of an SPR release would increase materially should Brent crude oil prices rise sustainably above roughly $75/bbl.

**Allison Nathan: You also mentioned a potential shale supply response. How has the growth of shale oil changed the ability to address supply outages?**

**Damien Courvalin:** The growth of US shale oil over the past five years or so has dramatically transformed the ability of oil production to respond to disruptions. Conventional oil fields require a substantial amount of investment and time to increase production. So, historically, there was no such thing as a supply response to an unexpected oil outage; instead, prices had to spike to kill enough demand to correct the market imbalance. Today, we now have a source of supply in shale oil that is short-cycle in nature, meaning that it can ramp up substantially and quickly—on a three-to-six-month horizon—to help balance the deficit. So demand no longer has to do all of the work when the market is faced with a sustained outage. That said, we shouldn't overstate the ability of shale oil to make up for shortages in the near term. The supply response still takes several months and investors have not been rewarding US shale producers for growth at all costs. So in 2019-2020, the supply response of shale producers to the same price move will likely be smaller than in 2017-18. But this supply flexibility is different than how the oil market has dealt with large imbalances in the last decade.

Putting it all together, today there are three potential adjustments to respond to outages. Inventories, and especially a decent inventory buffer in emerging markets, can be drawn down in the short term. If that's not enough, the SPR can be tapped, which can deal with an outage of several months. And beyond that, higher prices can reduce demand and invite a shale supply response—both of which are potentially significant in scale. To deal with the current outage, the expectation is that only the first adjustment—an EM inventory drawdown—will need to occur. Last year, facing a large, persistent outage, the market went to the last adjustment, and $80 was sufficient to get less demand and more supply. In fact, the price rally overshot, inducing too large a supply response.

**Allison Nathan: So is oil fairly priced today?**

**Damien Courvalin:** Not entirely. When we think about oil prices, we focus on two components—the shape of the oil forward curve and the level of oil prices. The shape of the curve, which represents the price today to deliver oil at different points of time in the future, reflects the current market supply-demand imbalance, and the extent to which the market needs to draw down inventory to meet demand today. When demand exceeds supply, market participants bid up near-term prices relative to longer-term prices to induce the needed inventory drawdown. Right after the attack, near-term prices rose well above long-dated prices, reflecting the perceived scarcity in the market. This move fully reversed once Saudi provided guidance that its full capacity would be back by November—and this makes sense. To the extent that Saudi inventories are being drawn to plug the deficit, these can be replaced as soon as its spare capacity is back with no impact on the rest of the world.

What is more puzzling in the wake of the recent events is the level of prices—or long-term oil prices—which are determined by the cost of the last barrel of oil the market is expected to need. Long-term oil prices are below their level right before the recent attack despite the fact that the risk of future outages has increased substantially. We've learned that Saudi assets are more vulnerable than ever expected. And the catalyst for the attack—namely, Iran's insistence that if they can't export due to US sanctions, neither should their neighbors—is still there. In the face of this higher risk, the market should be pricing in the non-negligible probability of another outage, providing an incentive for marginal shale producers to bring more barrels to market by offering higher longer-term prices. The fact that it's not doesn't feel like the right risk premium to me, and likely reflects ever-rising concerns that oil demand is about to fall sharply on weak global economic growth.

Another potential explanation is that investors see the lack of US retaliation as instead increasing the odds of a deal with the US—which would instead be bearish. While that is a possibility, the oil market is more vulnerable than previously thought, has been in deficit since even before the attack, and is facing growing signs of slowing shale activity. So I still see some missing risk premium. That said, the risk premium can't be too large given the fact that in a world of shale oil, a large risk premium would likely induce too much crude oil production, which, as I mentioned earlier, we learned the hard way last year.

**Allison Nathan: Is there any foreseeable disruption that would lead to a larger, more sustained price spike?**

**Damien Courvalin:** People often worry about a closure of the Strait of Hormuz, which is the single largest choke point of oil flows, accounting for 25% of oil volumes moving around the world every day. Of course, such a closure would be meaningful. But given the strong US military presence in the region, I think a prolonged closure would be unlikely. Beyond that, a broader military conflict in the region would likely get us there. For all intents and purposes, Iranian supply is already lost owing to sanctions. But if Iran were to draw Saudi Arabia and other regional producers into a prolonged conflict—damaging key facilities and even fields in the process—that could result in a lasting material disruption to oil supply. The site of the recent attack—Saudi Arabia's Abqaiq processing facility—is in fact the single largest asset in terms of daily volumes of oil supplied. So more severe damage to that facility in itself would be important. But one can imagine a scenario in which multiple processing plants and/or fields are damaged, leading to a very large cumulative disruption. And, again, the distinction between a processing plant and a field is important. Plants like Abqaiq involve above-ground engineering that could take time to repair, but typically on the order of weeks or months. If a field loses pressure or suffers damage to its extraction process owing to an attack, it could take years to bring the field back online—if at all.

The other—maybe even less appreciated risk—to oil supply doesn't reside in the Middle East at all, but instead in our own backyard. And that is US policy risk around shale oil production. Indeed, some Democratic presidential candidates have proposed an outright ban on fracking. Of course, with shale the largest source of global oil production growth since 2010, such a ban would have a significantly negative impact on the US and global economy. So I think a total ban is very unlikely. But these policy recommendations reflect a growing shift in sentiment towards the oil and gas industry that could over time make shale harder to extract from a regulatory perspective or more expensive to extract from a cost of capital perspective. I think those shifts are probably already in motion and could increase and/or accelerate depending on who ends up running the country next year and beyond.

**Allison Nathan: Given that so much production is disrupted right now between Iran, Saudi Arabia and even Venezuela, is the vulnerability actually that we end up with too much production rather than too little within the next year or two?**

**Damien Courvalin:** That was certainly the prevailing concern in the oil market a month ago, before the recent attack. I think a large chunk of Venezuelan oil might be lost for the long haul given the already prolonged outages and damage to the facilities. But it's very possible that Saudi Arabian supply returns in short order and somewhat possible that tensions with Iran are resolved, restoring their supply to the market. I have a large amount of conviction in the former, but the latter is much more uncertain and might take several years to play out. But yes, from a medium-term perspective, a return of disrupted volumes is often overlooked. My main takeaways from the disruptions over the last year are that key sources of supply are more vulnerable than we thought, but that the oil market is also more resilient than was the case historically. So, to me, price risk looks skewed to the upside from here, but it would take a very large new disruption to breach last year's oil price highs.

# Oil shocks now matter less

## Daan Struyven explains why oil supply shocks are less likely triggers of recession today

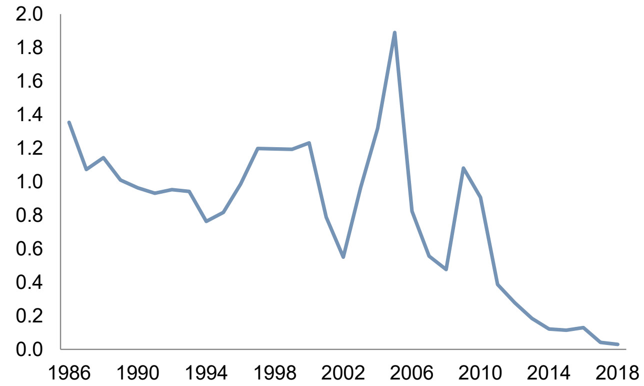
The OPEC embargo in 1973 led to the first in a series of recessions in which oil price spikes sparked inflationary pressures and reduced real incomes. But the US and global economy have become structurally less vulnerable to oil shocks, which now have only moderate effects on inflation, growth and monetary policy.

### Inflation impact

We estimate that the cumulative impact of a 10% rise in oil prices on core inflation has now fallen to less than 0.1pp in the US (and to less than 0.2pp in the Euro Area) from more than 1pp until the 90s. The impact of oil price fluctuations on inflation has fallen for three reasons.

**Oil prices have become less important for core inflation**

Estimated cumulative impact of a 10% rise in oil prices on US core PCE inflation – 20y moving average*, pp

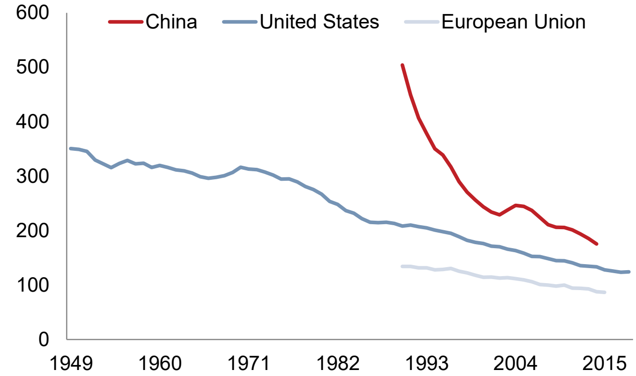



** We regress core PCE inflation on a constant, lagged inflation, the CBO unemployment gap, current and lagged percent changes in WTI oil prices and non-petroleum import price inflation using a 20-year rolling sample.*
*Source: Department of Commerce, Goldman Sachs Global Investment Research.*

First, the energy share in personal consumption has fallen significantly over the decades, from 10% in the early 80s in the US to 4% today. More generally, the energy intensity of GDP has declined significantly across the major economies and especially in China.

**The energy consumption intensity of major economies has declined**

Energy use (kg of oil equivalent) per $1,000 GDP (constant 2011 PPP)

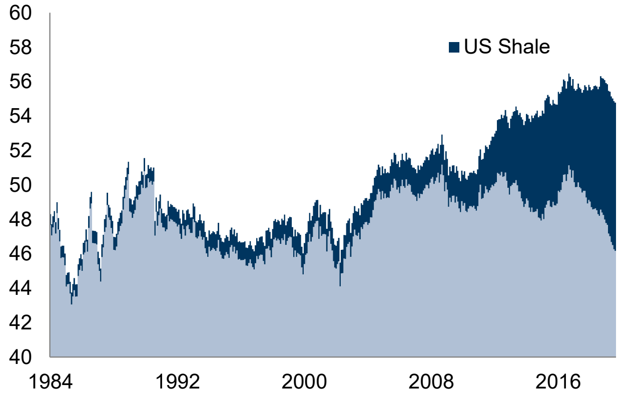



*Source: World Bank, US Energy Information Administration, Goldman Sachs GIR.*

Second, oil price fluctuations tend to be somewhat smaller in magnitude in the New Oil Order because of the more flexible supply response. Indeed, short-cycle oil producers such as US shale, which can adjust their supply within less than a year, have expanded their market share over the past two decades. Third, well-anchored inflation expectations have made the inflation impact of a given move in oil prices relatively short-lived.

**Short-cycle producers have increased the supply response**

Short-cycle global oil production* (% of global oil production)




** Short-cycle includes US shale, Middle Eastern OPEC, Russia, Colombia, Oman, Bahrain and Qatar. Short-cycle corresponds to a supply response within typically less than one year.*
*Source: US Energy Information Administration, Goldman Sachs Global Investment Research.*

### Growth impact

The growth impact of oil price moves has also fallen along with the decline in the inflation impact. We estimate that the drag on developed market growth from a 10% supply-driven oil price increase has fallen sharply to now less than 0.1pp from about 0.5pp prior to the Great Recession. This diminished growth impact not only reflects the lower impact on inflation and therefore on real incomes, but also the lower need for central banks to respond aggressively given better-anchored inflation expectations. In the case of the US, the rise of shale has also made the impact of rising oil prices on the economy much more balanced because the consumption drag is now partially offset by a larger boost to energy capex. We estimate that a persistent $10/bbl increase in oil prices now lowers the US GDP contribution from consumption by 0.15% cumulatively, but boosts the GDP contribution from energy capex by 0.12% cumulatively.

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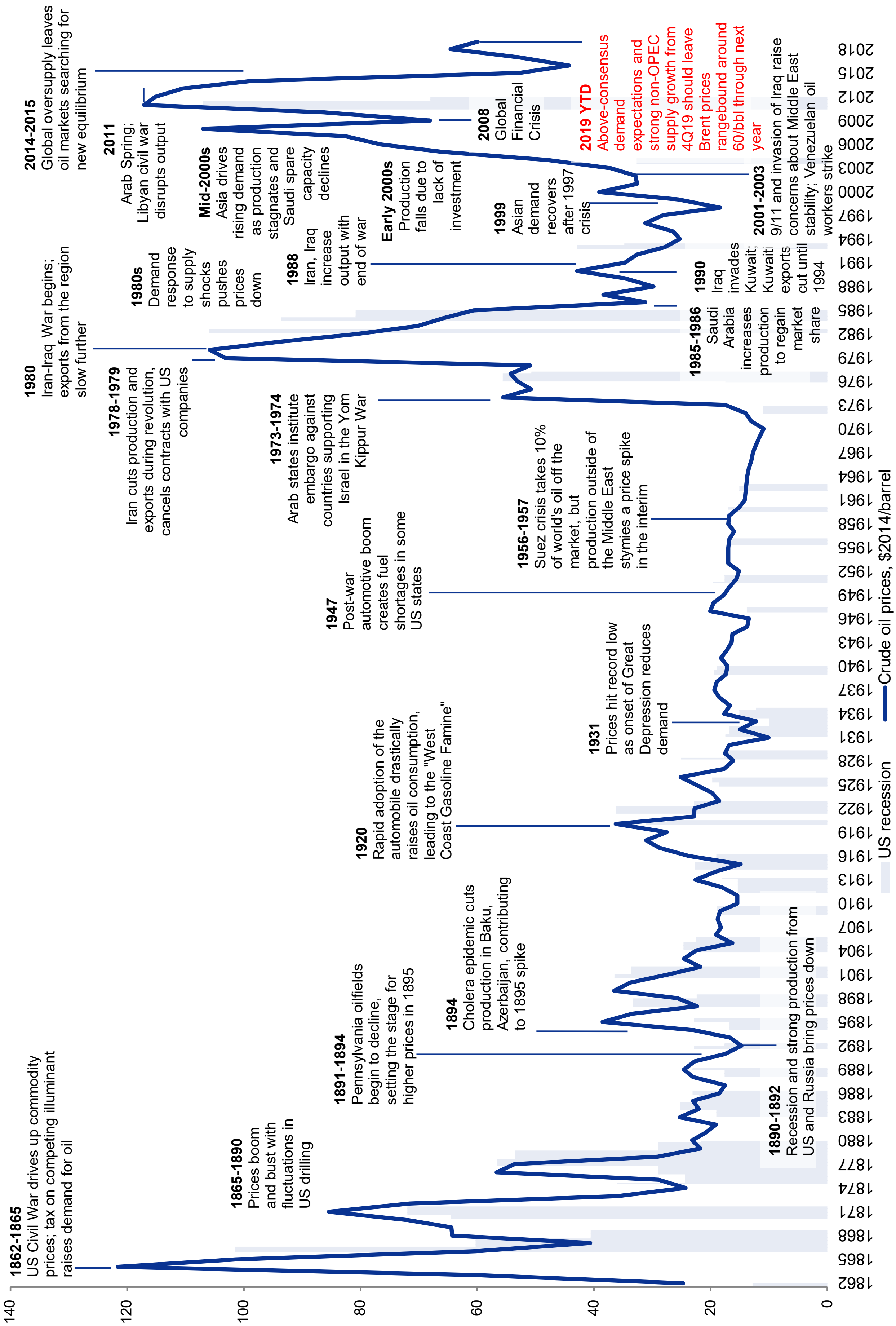
# Oil shocks: economic rules of thumb

*We compile GS economists' recent views on implications of an oil price shock for GDP and inflation.*

| | |
|---|---|
| **GLOBAL** | **GDP forecast implication:** A 10% supply-driven rise in oil prices would reduce global real GDP by nearly 0.25%, according to our estimate, with the largest portion of the impact coming within the first few quarters following the shock. |
| **US** | **GDP forecast implications:** We estimate that a persistent $10/bbl increase in oil prices typically lowers US GDP by around 0.03%, with a negative 0.15% cumulative contribution from lower consumption partially offset by a 0.12% cumulative boost from increased energy capex.<br>**Inflation forecast implications:** We estimate that a $10/bbl shock would boost core inflation by around 3-4bp. |
| **EUROPE** | **GDP forecast implications:** We estimate that a 10% supply-driven oil price increase reduces the level of Euro area real GDP by 0.25% after about one year.<br>**Inflation forecast implications:** We estimate a persistent 10% increase in oil prices would add about 0.2pp to Euro area consumer inflation within a year. |
| **JAPAN** | **GDP forecast implications:** We estimate a persistent 10% rise in oil prices lowers Japan GDP by around 0.2pp over a 2-year period, mainly through the channel of higher CPI reducing consumer activity by 0.3% (-0.2pp contribution to GDP).<br>**Inflation forecast implications:** We estimate a 10% rise in oil prices would boost inflation by 0.3pp, all else equal. |
| **ASIA EX-JAPAN** | **GDP forecast implications:** We project that a sustained $10 rise in oil prices from $60/bbl to $70/bbl would provide a 0.2pp drag on regional GDP on a PPP-weighted average basis, with the largest impact being felt in the region's more oil-sensitive economies, such as Korea, Taiwan, Thailand, and the Philippines, while having a more modest effect on growth in China and Indonesia.<br>**Inflation forecast implications:** We estimate that a sustained $10 rise in oil price would boost regional inflation by around 25bp, and Thailand, the Philippines, Malaysia, and Indonesia would experience the most sizeable increase in price levels. |
| **CEEMEA** | **GDP forecast implications:** For the region's oil importers, we find that a 10% fall in oil prices typically reduces GDP levels by between 0.3-0.4pp, on average, over 2-3 years, with the biggest hit to growth in Hungary (-0.45pp), the Czech Republic (-0.65pp) and Turkey (-0.8pp). In contrast, such a shock increases growth for oil exporters, such as Russia, which would experience a 0.9pp GDP boost over the same period.<br>**Inflation forecast implications:** A negative 10% oil price shock has a more uniform impact on regional inflation, with the pass-through to regional CPI ranging from 0.4-0.8 percentage points. |
| **LATIN AMERICA** | **GDP forecast implications:** We estimate that a 10% shock to oil prices would lead to a cumulative GDP increase in Mexico and Brazil of 0.11% and 0.02%, respectively.<br>**Inflation forecast implications:** We estimate a 10% shock to oil prices would have a muted effect on inflation, increasing prices by 0.08% in Mexico and 0.07% in Brazil, given that domestic fuel prices are regulated and don't move proportionally to international prices. |

Source: Goldman Sachs Global Investment Research.

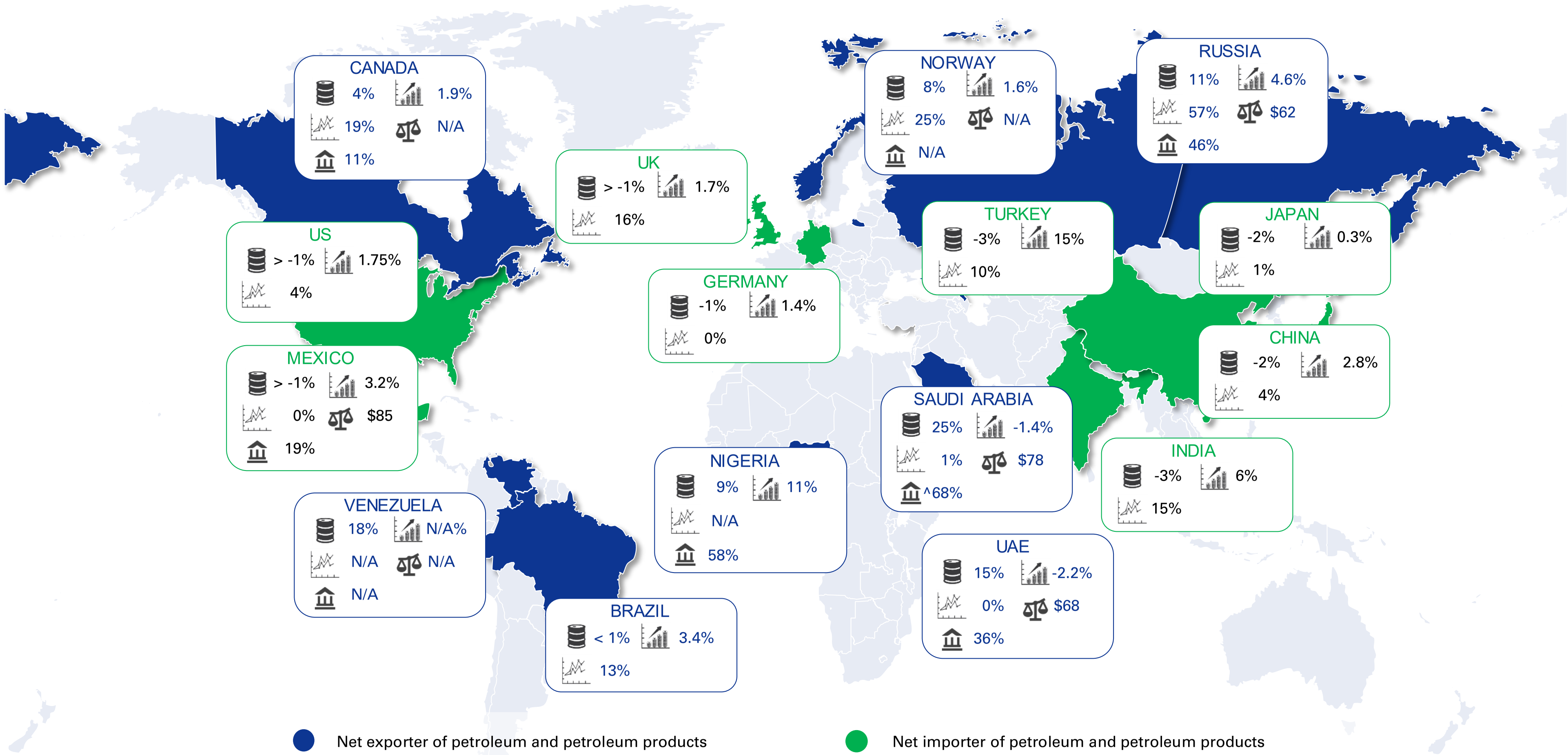
# The long history of oil prices




*Source for annotations: ©James Hamilton, "Historical Oil Shocks," University of California, San Diego, February 2011; various news sources; Goldman Sachs Global Investment Research.*

*An earlier version of this chart appeared on pg. 16 of Top of Mind Issue #53: OPEC and Oil Opportunities.*
*Note: 2019 price shown is YTD average as of Oct. 7, 2019.*
*Source for data: BP, NBER/Federal Reserve Bank of St. Louis, Haver Analytics.*
*Source for annotations: ©James Hamilton, "Historical Oil Shocks," University of California, San Diego, February 2011; various news sources; Goldman Sachs Global Investment Research.*

# Oil exposure: the facts




Net exporter of petroleum and petroleum products

Net oil and product exports as a % of GDP (2019)

Weight of energy sector in country's segment of MSCI All Country World Index (as of Sep. 2019)

Oil revenues as a % of government revenues (latest data available); ^ indicates a sovereign wealth fund

Net importer of petroleum and petroleum products

Headline inflation, yoy (August '19 or latest available)

Breakeven oil price (price required to set primary deficit to zero based on expected 2020 production)

*Note: Net exports as a percent of GDP calculated by taking 2019 supply minus demand times a $60 bbl price assumption divided by GDP.*

*Sources: Net exports/imports as a share of GDP – Goldman Sachs Global Investment Research; FX – Haver Analytics; Energy sector weights in MSCI All World Index – MSCI, FactSet; Breakeven prices and oil revenues as a share of government revenues – IMF.*

# Summary of our key forecasts

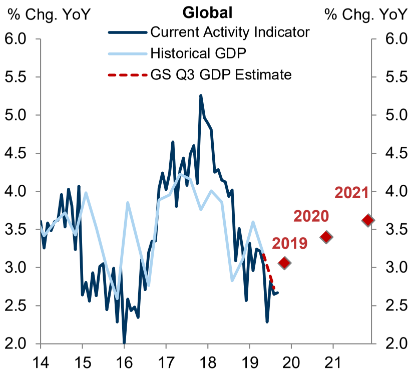
## GS GIR: Macro at a glance

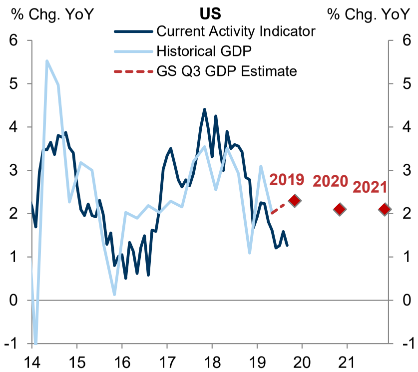
### Watching

- **Global growth stands** at 2.6% in September (vs. 4% one-year prior); we still expect trend-like GDP growth around 3% in 2019, and a slight uptick in 2020 based on the expectation that trade policy escalation is nearing its end, though we don't anticipate a comprehensive US-China trade deal before the 2020 presidential election.
- **In the US,** we expect the trade conflict will keep growth just shy of 2% in H2, down from 2.6% in H1, before edging above 2.0% in 2020 as positive tailwinds from easier financial conditions, rebounding housing, and resilient consumption offset headwinds from manufacturing weakness. While trade war escalation and slower momentum have recently increased recession risk, we still believe that US recession fears are overblown, especially as financial imbalances remain notably absent.
- **We think the Fed will deliver one additional 25bp cut this year in October;** we see the funds rate remaining below 2% through the 2020 election.
- **In the Euro area,** we expect industrial weakness and continued trade war risks to keep GDP growth at a subdued 0.5% pace in H2 2019 and see only a modest growth pick-up to 0.9% in 2020, largely on the assumption of an orderly Brexit resolution and no auto tariffs. We see 60% odds of a Brexit deal before the October 31 deadline.
- **We think the ECB will deliver an additional 10bp deposit rate cut in Q1 2020 (to a trough of -0.6%) and keep QE running into H2 2021,** on continued weak growth and low inflation.
- **In China,** we expect full-year GDP growth of 6.1% in 2019 and 5.9% in 2020. We expect additional modest policy easing in the coming months, though trade tensions still pose a downside risk to growth.
- **WATCH TRADE.** We expect the Trump Administration will delay a scheduled Oct 15 tariff increase for a short period in an effort to reach a mini-deal with China. But regardless of the near-term outcome, we don't expect an end to the conflict anytime soon and see no comprehensive US-China trade deal until after the 2020 election at the earliest. We do not expect broad US auto tariffs. We believe passage of the USMCA is more likely than not by year-end, though heightened political tensions skew risks to the downside.

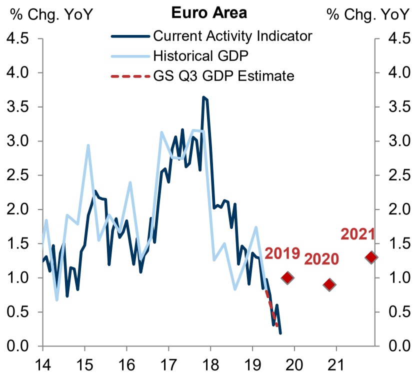
*Source: Goldman Sachs Global Investment Research.*

### Growth








*Source: Haver Analytics and Goldman Sachs Global Investment Research.*
*Note: GS CAI is a measure of current growth. For more information on the methodology of the CAI please see "Trackin' All Over the World - Our New Global CAI," Global Economics Analyst, February 25, 2017.*

### Forecasts

**Economics**

| GDP growth (%) | 2019 GS | 2019 Cons. | 2020 GS | 2020 Cons. |
|---|---|---|---|---|
| Global | 3.1 | 3.2 | 3.4 | 3.1 |
| US | 2.3 | 2.3 | 2.1 | 1.7 |
| China | 6.1 | 6.2 | 5.9 | 6.0 |
| Euro area | 1.0 | 1.1 | 0.9 | 1.0 |

| Policy rates (%) | 2019 GS | 2019 Mkt. | 2020 GS | 2020 Mkt. |
|---|---|---|---|---|
| US | 1.63 | 1.30 | 1.88 | 1.17 |
| Euro area | -0.50 | -0.63 | -0.60 | -0.66 |
| China | 2.25 | 2.57 | 2.50 | 2.62 |
| Japan | -0.05 | -0.15 | -0.05 | -0.19 |

**Markets**

| Interest rates 10Yr (%) | Last | E2019 | E2020 | FX | Last | 3m | 12m |
|---|---|---|---|---|---|---|---|
| US | 1.56 | 1.75 | 2.10 | EUR/$ | 1.10 | 1.10 | 1.15 |
| Germany | -0.58 | -0.55 | -0.20 | GBP/$ | 1.23 | 1.22 | 1.35 |
| Japan | -0.23 | -0.30 | -0.10 | $/JPY | 107 | 103 | 100 |
| UK | 0.36 | 0.70 | 1.10 | $/CNY | 7.15 | 7.20 | 7.10 |

| Commodities | Last | 3m | 12m | Credit (bp) | | Last | E2019 | E2020 |
|---|---|---|---|---|---|---|---|---|
| Nat Gas ($/mmBtu) | 2.3 | 2.5 | 2.5 | **USD** | IG | 119 | 108 | 115 |
| Crude Oil, Brent ($/bbl) | 58.4 | 62 | 60 | | HY | 409 | 342 | 365 |
| Copper ($/mt) | 5,685 | 5,900 | 7,000 | **EUR** | IG | 125 | 112 | 119 |
| Gold ($/troy oz) | 1,501 | 1,575 | 1,600 | | HY | 392 | 336 | 357 |

**Equities**

| S&P 500 | E2019 GS | E2019 Cons. | E2020 GS | E2020 Cons. | Returns (%) | 12m | YTD | E2019 P/E |
|---|---|---|---|---|---|---|---|---|
| Price | 3,100 | -- | 3,400 | -- | S&P500 | 13.0 | 19.1 | 18.1x |
| EPS | $167 | $164 | $177 | $181 | MXAPJ | 4.0 | 6.8 | 14.3x |
| Growth | 3% | 1% | 6% | 10% | Topix | 2.0 | 8.7 | 13.7x |
| | | | | | STOXX 600 | 6.0 | 12.7 | 14.7x |

| Consumer | E2019 CPI (%, yoy) | E2019 Unemp. Rate | E2020 CPI (%, yoy) | E2020 Unemp. Rate | Wage Tracker 2019 (%) Q1 | Wage Tracker 2019 (%) Q2 |
|---|---|---|---|---|---|---|
| US | 1.8 | 3.7 | 2.3 | 3.4 | 3.0 | 3.4 |
| Euro area | 1.3 | 7.8 | 1.2 | 7.7 | 2.4 | 2.2 |
| China | 2.6 | -- | 2.7 | -- | 7.0 | 7.0 |

*Source: Bloomberg, Goldman Sachs Global Investment Research. For important disclosures, see the Disclosure Appendix or go to www.gs.com/research/hedge.html.*

**As of Oct 7, 2019.**

# Glossary of GS proprietary indices

## Current Activity Indicator (CAI)

GS CAIs measure the growth signal in a broad range of weekly and monthly indicators, offering an alternative to Gross Domestic Product (GDP). GDP is an imperfect guide to current activity: In most countries, it is only available quarterly and is released with a substantial delay, and its initial estimates are often heavily revised. GDP also ignores important measures of real activity, such as employment and the purchasing managers' indexes (PMIs). All of these problems reduce the effectiveness of GDP for investment and policy decisions. Our CAIs aim to address GDP's shortcomings and provide a timelier read on the pace of growth.

*For more, see our CAI page and Global Economics Analyst: Trackin' All Over the World – Our New Global CAI, 25 February 2017.*

## Dynamic Equilibrium Exchange Rates (DEER)

The GSDEER framework establishes an equilibrium (or "fair") value of the real exchange rate based on relative productivity and terms-of-trade differentials.

*For more, see our GSDEER page, Global Economics Paper No. 227: Finding Fair Value in EM FX, 26 January 2016, and Global Markets Analyst: A Look at Valuation Across G10 FX, 29 June 2017.*

## Financial Conditions Index (FCI)

GS FCIs gauge the "looseness" or "tightness" of financial conditions across the world's major economies, incorporating variables that directly affect spending on domestically produced goods and services. FCIs can provide valuable information about the economic growth outlook and the direct and indirect effects of monetary policy on real economic activity.

FCIs for the G10 economies are calculated as a weighted average of a policy rate, a long-term risk-free bond yield, a corporate credit spread, an equity price variable, and a trade-weighted exchange rate; the Euro area FCI also includes a sovereign credit spread. The weights mirror the effects of the financial variables on real GDP growth in our models over a one-year horizon. FCIs for emerging markets are calculated as a weighted average of a short-term interest rate, a long-term swap rate, a CDS spread, an equity price variable, a trade-weighted exchange rate, and—in economies with large foreign-currency-denominated debt stocks—a debt-weighted exchange rate index.

*For more, see our FCI page, Global Economics Analyst: Our New G10 Financial Conditions Indices, 20 April 2017, and Global Economics Analyst: Tracking EM Financial Conditions – Our New FCIs, 6 October 2017.*

## Global Leading Indicator (GLI)

The GS GLI was designed to provide a timelier reading on the state of the global industrial cycle than existing alternatives did, and in a way that is largely independent of market variables. The GLI has historically provided early signals on global cyclical swings that matter to a wide range of asset classes. The GLI currently includes the following components: a consumer confidence aggregate, the Japan IP inventory/sales ratio, Korean exports, the S&P GS Industrial Metals Index, US initial jobless claims, Belgian and Netherlands manufacturing surveys, the Global PMI, the GS AUD and CAD trade-weighted index aggregate, global new orders less inventories, and the Baltic Dry Index.

*For more, see our GLI page and Global Economics Paper No. 199: An Even More Global GLI, 29 June 2010.*

## Goldman Sachs Analyst Index (GSAI)

The US GSAI is based on a monthly survey of GS equity analysts to obtain their assessments of business conditions in the industries they follow. The results provide timely "bottom-up" information about US economic activity to supplement and cross-check our analysis of "top-down" data. Based on analysts' responses, we create a diffusion index for economic activity comparable to the ISM's indexes for activity in the manufacturing and nonmanufacturing sectors.

## Macro-Data Assessment Platform (MAP)

GS MAP scores facilitate rapid interpretation of new data releases for economic indicators worldwide. MAP summarizes the importance of a specific data release (i.e., its historical correlation with GDP) and the degree of surprise relative to the consensus forecast. The sign on the degree of surprise characterizes underperformance with a negative number and outperformance with a positive number. Each of these two components is ranked on a scale from 0 to 5, with the MAP score being the product of the two, i.e., from -25 to +25. For example, a MAP score of +20 (5;+4) would indicate that the data has a very high correlation to GDP (5) and that it came out well above consensus expectations (+4), for a total MAP value of +20.

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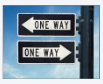
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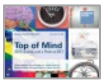
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We, Allison Nathan, Gabriel Lipton Galbraith, Damien Courvalin, Jeffrey Currie, Christian Mueller-Glissmann, Ian Tomb, Kamakshya Trivedi, and Daan Struyven hereby certify that all of the views expressed in this report accurately reflect our personal views, which have not been influenced by considerations of the firm's business or client relationships.

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