SUTTLE ECONOMICS

Suttle Economics Notes #1

34 years an Economist: Lessons learned—often the hard way

Summary

In this (biographical) essay, I detail lessons learned from a long career as an economist. Mistakes that I have made in one business cycle have often helped me get it right in the next one:

- In the 1970s, there was a tendency to underappreciate how well the economy was doing, and over-focus on the negatives. **This has persisted**.
- The result is a tendency for policy makers to misperceive contemporary conditions, leading to the punchbowl being spiked, rather than taken away, just as the party gets going. In the 1970s, this produced price inflation. **In more recent cycles, it has produced asset inflation**.
- The best piece of advice that I got at university was that the worst economic theories were those based upon an accounting identity. **Beware: there are lots of them about!**
- In the 1980s, I experienced my first boom/bust in capital flows close up: the LDC debt crisis. This had the characteristic of many boom/busts that I've since experienced: **the push of a US rate cycle; the pull of a new normal that turned out to be temporary; and lenders lending despite a chronic lack of information**.
- The crisis led to a lost decade in many LDCs, but not for the global banks or the US economy: the favorable regulatory response helped. **Since then, however, regulatory policy has become worryingly pro-cyclical (too tight early in the cycle; too easy later on)**.
- In the 1990s, I watched capital flow cycles develop even more strongly, as capital controls were dismantled, markets became increasingly important in the financial intermediation process, and information sets became homogenous (i.e. Bloomberg).
- The beginning of this was the EMS crisis in 1992. **I received an on-the-job economics education, when I got just about everything wrong with sterling and the ERM**.
- I was able to redeem myself by applying these lessons as pegs fell apart, first in Sweden and then across the emerging world, starting in Mexico before extending to East Asia.
- In the 2000s, I watched from the perch of an EM analyst as external imbalances were built up in developed market economies. **It was supposed to be different: it wasn't. The people that got the post 2007 DM crises right were those with an EM background.**
- In the 2010s, I watched with dismay as the regulatory response to the 2008-09 crisis amplified the deleveraging that would have taken place anyway. The result was a far more anemic recovery than expected by policy makers in 2010. At the time, I argued vehemently that this would be the result. **Never have I been so accurate in a forecast, but wished I could have been wrong**.
- I have now left New York based financial institutions three times: in February 2001, March 2007 and June 2017. **In the first two cases, the US equity market fell 37% and 46%, respectively over the subsequent two years**. Just thought you should know.

34 years an Economist: Lessons learned—often the hard way

I have been a professional economist for 34 years. Before that, I studied economics for 9 years in England (school and university). After 43 years of education in economics, I am still learning on a daily basis. Many of these lessons are simple (e.g. what is in a particular data set; how has the relationship between one variable and another shifted in this expansion versus the last). Occasionally, however, these lessons have been profound, and have shaped my thinking, analysis and investing habits. Quite often, it has taken me a while to absorb the true implications of what I've seen. But mistakes made in one business cycle have helped me get it right in the next. **By putting the most significant ones down on paper, I thought that it might help users of my work both avoid some of the mistakes that I have made; and get to know me, my thinking and methodology a little better**.

It may seem a little odd to focus on mistakes and lessons learned the hard way. In my view, economists need to be humbler, but often are not. (I'm sure some names immediately spring to your mind). **One of the most striking aspects of many economists is that, however wrong they are in one period, they still seem to come back with bold, strong, confidently-held views in the next one.**[1]

My approach is to be fairly eclectic, recognizing that the economy is an ever-changing, complex system that it impossible to model with confidence. At heart, I am a true Keynesian, believing that the macro approach set out in the General Theory is the right way to think about the world. While the economy does have many equilibrating features, it often gets stuck in the wrong place. There are multiple paths along which the economy can move, partly driven by policy, but also by animal spirits. **In the past 30 years, it has been animal spirits in the financial sector, rather than the real economy, that have become more important**.

The best an economist can do is maintain a disciplined framework for analysis. Models should be used, but without becoming too dogmatic about their validity or durability. Aside from the use of a disciplining framework, I think an economist has the best hope in figuring out what might come next by getting to know and keeping a close eye on the data as it evolves, and trying to cross-check its consistency. Whenever I've trained younger economists, I've emphasized that the task of an applied macroeconomist is somewhat akin to trying to put a massive jig-saw puzzle together, with the problem that half the pieces are missing and the picture keeps changing.[2]

The 1970s: not as bad as it felt at the time

I began my economics education in England in the 1970s, and remember being struck by one thing: **everything always seems so dreadful!** In particular, the newspapers and nightly news were always full of gloom and doom (they generally still are). I especially remember the alarm when UK unemployment rose

[1] On a visit to the LSE in 2009, Queen Elizabeth famously asked (in reference to the 2007-08 credit crisis): "If these things were so large how come everyone missed them?". Indeed.

[2] Paul Krugman once divided economics into three kinds: a) Greek-letter economics (dry academic work written mainly to impress other academics); b) Elevator economics (this just went up; this just went down); and c) Airport economics (books written about dramatic topics that you typically only see on the bookstand at airports e.g. Dow 35,000). I view myself as at the sophisticated end of b).

above 1 million in the early 1970s (a staggering 4% rate). Relative pessimism was (and is) a fair takeaway, since UK economic performance was hardly stellar in the 1970s. In 1976, the UK was forced into the humiliation of an IMF program. Today, we associate IMF programs with Greece and low-income emerging market economies.

But UK growth performance in the 1970s averaged 2.6% per annum, even allowing for two years of outright contraction (1974-75). In the years when the UK is commonly perceived to have done much better—the Thatcher era of the 1980s—growth averaged 2.7% per annum. In each decade since, the average growth rate has slipped.[3] The point of this comparison is not to deny that the UK had deep problems in the 1970s (it did, and I'll go on to discuss my micro experience of this below). The key message, however, is that we had some really good periods that—at the time—were not seen as such. In 1972-73, for example, UK growth *averaged* 5.6%. Despite this, Ted Heath and his Conservatives lost two general elections in 1974.

This sense of underappreciating the good times and emphasizing the bad was not limited to the UK (nor to the 1970s). In the US, the Jimmy Carter era is widely seen as a period of very poor economic performance. Again, the US economy grew at an average rate of 3.3% in 1977-1980. In 8 years of Ronald Reagan, growth averaged 3.5%. The US had an investment boom under Carter (if only we could pull that off now!). Plus, Carter had the good sense to appoint Paul Volcker as Fed Chairman.

The 1970s was, of course, the decade when inflation slipped out of control in many countries, and it was that—not real growth—that helps shape our perception of the period. As the flip side of this, the performance of financial assets was very poor in the 1970s, and this played a big part in shaping perceptions about performance. By contrast, the performance of financial assets since 1982 has been stellar (with key exceptions in 2001 and 2008), which helps explain why the perception is that developments have been better since the 1970s.

In the developed market world, this inflation did not last: the Swiss and Germans (and IMF—then dominated by the hard money crowd) resisted it from the start; the Anglo economies took longer, but eventually did something about it in the late 1970s/early 1980s (Thatcher/Volcker). The burst in inflation was relatively short-lived and was largely the result of (at least) 10 years of running the western economies at increasingly high pressure. The trigger for the burst in inflation was surging commodity prices (largely, but not just oil), which had been repressed by western corporate and government influence. Although the oil price hikes of 1973-74 (Yom Kippur war) and 1979 caused headline inflation to surge, the real drivers of the inflation in the 1970s were irresponsible monetary and fiscal policies.[4]

I take three important lessons away from my early brushes with economics in the 1970s:

---

3 2.1%p.a. in the 1990s and about 1 ¾%p.a. since 2000. To paraphrase Monty Python's Four Yorkshiremen, we used to *dream* of having 2.6% growth and a 4% unemployment rate.

4 In the US, the Vietnam War played a major role. In the UK, we had the Barber boom, inspired by Chancellor Anthony Barber's expansionary 1972 budget. This was compounded by rapid credit growth associated with the Bank of England's new monetary framework (Competition and Credit Control). As former Bank Deputy Governor, Paul Tucker, likes to note, the Bank promoted competition among banks after many sleepy decades, but forgot the credit control part. The credit boom set the stage for the secondary banking crisis in 1974—the first credit boom/bust that I became aware of.

- **There is a tendency to underappreciate how well the economy is doing, and over-focus on the negatives**. This is true not only of the media, but also of professional economists.

- Following on from this, there is often a tendency for policy makers to misperceive contemporary conditions, generally erring on the side of undue pessimism.[5] This leads to a chronic tendency for the punchbowl to be spiked, rather than taken away as the party gets going. In the 1970s, this produced price inflation. **In more recent cycles, it has produced asset inflation. It seems to me that the latter is generally worse**.

- Economic performance is often perceived through the prism of asset market performance, rather than real economic data. For investors, this is more than understandable, although the fact that economies can do quite well in the face of poor asset returns (and vice versa) is not intuitively obvious.

There is one micro lesson that I learned in the late 1970s. For two summer breaks from university, I worked at the Whitbread Brewery in Luton, my home town (hence my periodic references to Luton Town, the local soccer team). On my first day, I was directed to the bottling machine, where a manager explained to me what to do: stand and make sure the bottles fed in on a conveyer belt without falling over; if one did remove it quickly and trash it; if not, the machine would jam and the whole production process would stall. Five minutes later the TGWU shop steward came over and said: "Don't listen to what he said. Every 5 minutes, knock a bottle over and jam the machine. That will allow us to run the rest of the line with less people and the guys can have more breaks in the bar" (FYI: each Department actually had a bar where you could spend your two ½ hour breaks each 8-hour shift; limit 2 pints per shift—scouts honor). Needless to say, I listened to the union rep, not the "white coat". This was an education in the poor level of productivity in UK manufacturing in the late 1970s, and the problems of having unions rather than management run a factory. Not surprisingly, that brewery had become a housing development by the late 1990s.

The 1980s: LDCs become emerging markets

I got a great economics education at Merton and Nuffield Colleges in Oxford. Many of my tutors were Indian, Italian and Greek (as well as British). Given the performance of all these economies in the 1970s, I often thought that there was an inverse relationship between the quality of economists a country produces and its economic performance. In graduate school, I was lucky enough to have Christopher Bliss as a professor. I'll always remember that he said that **the worst economic ideas were those based around an accounting identity. At the time, much of that shoddy thinking came from the left.[6] More recently, it has come from the right**.

5 My favorite illustration of this is a chart in from an Orphanides paper, which shows the Fed's estimate of the output gap in the late 1960s/early 1970s as perceived in the early 2000s versus the Fed's perception of that gap at the time. It is a modest 6% points of GDP (-1% "then" versus +5% "now"). Not surprisingly, I find output gap discussions (and their close cousin: NAIRU) very tenuous.

6 Chris had in mind the *Cambridge Economics Policy Group*, which was very influential in the 1974-79 Labour Government. See https://doi.org/10.1093/cje/ber046. Their playbook was remarkably similar to that of Candidate Donald Trump. I must admit that, as a well-meaning 22-year old, I fell for much of that shoddy thinking. To paraphrase Alan Blinder, I had a "Soft Head and a Soft Heart". In 1982, we organized a Seminar at Nuffield College on the Labour Party's Alternative Economic Strategy. I vividly remember John Flemming (both a College Fellow and the Chief Economist of the Bank of England) pointing out to us the errors in our thinking.

Out of university, my first job was at the Bank of England. It was a close shave that I became a business economist. I almost remained an academic, with a lectureship at Oxford lined up after 5 years of studying there. Much to my surprise, however, the Bank of England offered me a job as an Economist in the International Division, starting in September 1983. It was too good a job to turn down: a good salary *and* a subsidized mortgage (I always thought that gave BoE workers a very perverse incentive to create inflation, safe in the knowledge that they would be insulated from the interest rate implications of this). The Bank took on only 3 economists that year; the other 20 or so graduates that joined that year were "generalists" (a few years earlier, Theresa May had been one of these). The Governor was Robin Leigh-Pemberton—who was also Lord Lieutenant of Kent. In the three decades since, the Bank has become far more dominated by economists, although it is not obvious that the Bank's management of the economy has been dramatically better. In 1983, the Bank was really the City Branch of Her Majesty's Treasury.

The Bank had both an International Division and a Territorial Division. The former looked at global issues in the aggregate, and the major countries; the latter focused on developing countries—especially those in the British Commonwealth where the Bank had helped establish a new local monetary authority after independence. The real reason for two divisions, however, was that there were two senior advisors, each of whom divided up a piece of the world.

In 1983, possibly the biggest challenge to doing international economic analysis was *finding the data*. Data vendors existed, but data could only be manipulated and downloaded using a mainframe computer. In my first year, one of my tasks was compiling a two-page note called Governor's Interest Rates (GIR). GIR was what it sounds like: a table of rates summarizing key global markets interest rates and other asset prices. I filled it out by walking around the Bank to different groups (including the dealing room) to collect their latest readings. In retrospect, a product such as Bloomberg was so obvious.

I was assigned to a group covering the less-developed country (LDC) debt crisis and that quickly became my focus for the next 4 years or so. That debt crisis was the first in a wave of capital flow boom-bust crises over the subsequent 30-40 years that have been the dominant experience of my career. The 1970s boom in capital flows to capital flows to LDCs was followed by a 1980s bust. The actual turning point came in August 1982, when Mexico sent telexes to the major international banks telling them that it would be unable to repay short-term debt falling due. When I joined the Bank in 1983, the crisis was widespread and had recently spread to Brazil.[7]

There were many ingredients to the LDC debt crisis, but three stand out, in retrospect:

- **It was a product of the oil and commodity boom of the 1970s**. The jump in prices led to a sudden rise in financial surpluses in oil producing economies (all denominated in USD): "*petro-dollars*". In turn, surplus countries preferred to deposit these funds in accounts with major international banks. The banks then "re-cycled" these funds into other developing countries, which were viewed as attractive by international bankers, in part because rising commodity prices made this group of countries look a very

[7] We used to joke that the single best indicators of whether a country would experience debt-servicing difficulties was whether it had green in its flag. In the Euro crisis, 30 years on, this factor did not perform too shabbily (Ireland, Portugal and Italy).

attractive bet relative to the old/sick economies of the G-10 (although good projects such as North Sea Oil and Gas in the UK could be easily funded).

- **This cycle in capital flows was intensified by the US interest rate cycle**. In the 1970s, LDCs could borrow at attractively negative ex-post rates as the dollar depreciated and commodity prices jumped. Rather than seeing these trends as a relatively short-lived trend apt for reversal, **borrowers and lenders saw them as the new normal, justifying persistently aggressive lending**. When Paul Volcker took over at the Fed in 1979, he pushed short-term interest rates above 20%, commodity price inflation slowed and ex-post real interest rates on LDC debt soared.

- **The crisis was made much worse by a lack of adequate information of the financial position of the borrowing entities**. This was the product of two factors. First, there were reporting systems in place, but they were inadequate. For example, we had some idea of how much each country owed from the World Bank's reporting system (which twenty years later I would be responsible for—see below). But this only captured a subset of borrowing, and the analyst community did a poor job of acknowledging. Second, bankers encouraged this casual approach by making false assumptions about the security of the (sovereign) lending that they were undertaking. Walter Wriston, former CEO of Citicorp,[8] argued that "countries do not go broke".

Each subsequent capital flow boom-bust that I have lived through in the subsequent 30 years or so (the fixed-income convergence boom-bust of the 1990s, the tech boom-bust of the early 2000s and the global housing/structured credit boom-bust in the mid/late noughties) all had similar characteristics (e.g. "house prices never fall").

My focus on LDC debt (and debt sustainability models) led me to work closely with Tony Bottrill, who was a superb economist at the UK Treasury. He seemed to annoy many of his own Treasury colleagues—and certainly staff at the Bank of England—by his focus on precise detail. But that was what I loved about Tony. He did not take reported facts as a given. He felt the need to pressure test and cross-check them, to make sure that they fitted together to produce an overall consistent, coherent picture of the economy.

In 1984, he moved to Washington DC to become Chief Economist of the newly-formed Institute of International Finance. This was an organization set up at the behest of the official sector (IMF, central banks and government agencies), who argued to the banks that they needed their own collective organization to provide the public good of coherent information on troubled (and potentially-troubled) developing countries. Many bankers resisted this, in part because they did not trust each other. The first 18 months of the IIF was a bit of a disaster, as the organization merely reproduced the existing incomplete public data sources that were easily available, charging the large banks an exorbitant fee for doing so. The leaders of the major American banks then shook the organization up, however, and (as part of this) Tony was appointed Chief Economist. He then looked to build a keen young staff, and I followed him out to DC in September 1985.

Everything revolved around the country databases at the IIF. Using the image of an incomplete jig-saw puzzle, with a blurred, changing picture, these were built by asking the very basic question: which data

---

[8] 1967-1984

sources can you trust the most? The answer was generally the information provided by creditors (official and private sector). Life was made somewhat easier by the fact that most private sector lending was through banks and they had fully declared their hand as part of the debt restructuring process. Differencing credit debt stocks and adjusting for exchange rate effects (which were huge in the 1980s because of the swings in the dollar against other major currencies) gave a set of implied capital flows by creditor. These could then be lined up with the reported current account for the country in question (which we had more, but not total, faith in, and adjusted accordingly), as well as reported asset flows (e.g. FX reserve accumulation).

The residual was a new balance of payments errors and omission line that had the major plus of highlighting how much capital flight that there had been from corrupt LDC countries through the 1970s and early 1980s. Most had “over-financed” their current account deficit (or borrowed when they had a surplus, but did not accumulate FX reserves). The result was a lot of black holes that made the turn in conditions devastatingly worse when interest rates rose. It may sound an obvious thing to say, but **having a good handle on the emergence of debt stocks and flows in the global financial system is key to risk management**. In the early 1980s, the banks frankly had no idea how much LDC debt there collectively was out there, and gambled multiples of their capital. One generation on, banks did pretty much the same thing in the mid-2000s with Structured Investment Vehicles (SIV) and other mortgage and housing-related assets.

The big difference between the LDC debts of the 1980s and the structured credit products of the 2000s was that the former were not initially market-based products. LDC bank loans had a specific face value, with a floating rate over LIBOR. In the years after the initial defaults of 1982-83, there was widespread agreement to keep the loans on banks’ books at face, while cutting the interest rate charged and extending the maturities. US banks could manage this loss in net present value without an undue hit to their capital. In turn, they could finance the domestic boom in the US economy in the mid-1980s. Over time, banks gradually fully provisioned and wrote down those loans. As they did, they were able to convert the bank debt gradually into tradeable loans and, eventually, into Brady bonds. The emerging debt markets were thus born, and they became a key focus of much of my work at JPMorgan in the 1990s.

The 1990s: First European currency crises…

I returned to the Bank of England in 1987, just as the “Big Bang” was taking hold in the City of London, and the demand for economists in the City was on the rise. More by luck than judgement, I got a job at JPMorgan and, even better than that, reported to Will Brown, who I would say is the most astute economist that I’ve ever known. He had the uncanny ability to be able to fit the pieces of the economy and financial markets together and **make very smart calls on both sides of the business cycle**. Most impressive of all, he trained a whole generation of economists, who now work across Wall Street and the official sector. To me, the best thing he ever did was conceive of the *Global Data Watch (GDW)* as an economics product.

Now in its 29th year, I’m proud to say that I was in on the ground floor of JPMorgan’s GDW and its development through the 1990s. **What the GDW approach to the world taught me was that data really matters and that your best shot at understanding the next important move in the economy—and in markets—came from being fully on top of the data just released**. In my last year at the Bank of England, I’d been responsible for running the Bank’s world model and, thus, the global forecast that served as the backdrop to the Bank's work on the UK economy. One fact that I'd never really processed, however, was that the current and subsequent year forecast was much more likely to be accurate by paying diligent attention to what had just happened and then extrapolating that based on observable recent developments. Large-scale econometric models are not good near-term forecasting tools, and are best reserved for simulation work (e.g. what are the effects of an x% rise in the oil price?).

When I joined Morgan in 1988, I did lots of different things in the London office. One of them was to be the economist covering the Nordic economies.[9] This was a fascinating job because small, open economies such as Denmark, Finland, Iceland, Norway and Sweden always have a lot going on in them. When I started covering them, Denmark and Norway were in the dumps (for Denmark, it was required austerity to meet the European exchange rate commitment; for Norway, it was the fallout from the 1986 oil price collapse). By contrast, Finland and Sweden were booming. A few years later, this picture had dramatically reversed, with Finland in depression (caused mainly by the collapse of the Soviet Union) and Sweden not far behind (banking boom/bust and ridiculous adherence to an ECU peg which, at one point, caused marginal overnight official rates to hit 500%). For all their calm Nordic qualities, the Swedes are prone to the most extreme economic policies—a tradition that they seem keen to maintain up to the current day.

From 1989 onwards, much of my time was dedicated to the drive towards European Monetary Union (EMU). To its credit, JPMorgan took the prospect of EMU very seriously from the start and was willing to commit considerable resources to studying the effort. Thanks in part to work that I'd done on the issue at the Bank of England when we were preparing for the Delors Report, I was in an ideal position to work on the topic. I spoke at lots of conferences and wrote articles on how a European currency might evolve and then operate, as well as on the trading opportunities associated with it.[10] I am most proud, however, of the article that I wrote in the January 1992 issue of JPMorgan's flagship publication *World Financial Markets*, which was called *EMU off the Maastricht Launchpad*. The thrust of the piece was that EMU should be taken very seriously and was likely to happen, with bumps along the way, by the end of the century. The key point of the article, however, was that the convergence criteria established in the Maastricht Treaty in order to judge whether a country was fit and suitable to join EMU were not the criteria that should be used in judging whether the component countries formed anything like an optimal currency area. Twenty years on, the region paid very heavily for the poorly-structured nature of the rush to EMU.

Alongside the rush to EMU, the UK had also—somewhat begrudgingly—joined the Exchange Rate Mechanism of the European Monetary System (EMS). This was essentially a matrix of FX pegs, although the one that really counted was the peg against the DM. The UK joined at DM2.95 per £ (with a variation of +/-6% allowed). We used to joke at the Bank of England that the main rationale for joining the EMS was so we could blow it up. We did not realize how right we were to be.[11]

---

9 I learned early on that Finns do not like to be called Scandinavians.

10 We all assumed that the new currency would be called the ECU, as this existed (somewhat as the SDR does today) as a basket currency. The Germans complained, however, that this name sounded too much like their word for "cow" (although they also really didn't like the fact that it was old French monetary unit). The fact that the name chosen—euro—is very close to the Greek word for urine did not matter, although should perhaps have been taken more seriously as a red flag.

11 The UK had been a member of the Snake—the predecessor of the ERM—for all of 6 weeks in 1972. Judged against that benchmark, the UK's 23-month membership of the ERM looks pretty good.

I was transferred to Morgan's Office in New York in early 1992, to support the growing foreign exchange and fixed income trading business. A two-year move became, 3, 4 and—without a conscious decision—emigration. When I first arrived in New York, the US economy was in a very poor shape. The 1990-91 recession has been mild, but the 1991-92 recovery was perceived as very weak. Fed Chair Greenspan talked of "50mph headwinds". Talking to Morgan bankers, it quickly became obvious to me that one of the most important headwinds was regulatory overkill. Having allowed the financial system to be too fast and loose under Reagan (the S&L crisis and the commercial property boom/bust), regulation was cranked up in the early 1990s in a very pro-cyclical way. Regulators and supervisors did what they should have done earlier, but way too late. Instead of stopping the bust, they sat on the recovery. A more extreme version of this would follow after 2009 (see below).

My main job (on the trading floor) was to support the Foreign Securities Group. I was very busy in New York in 1992, travelling across the US to talk to Morgan's clients about the storms brewing in the EMS, which were mainly the result of post-reunification German strength (and associated high interest rates) and weakness elsewhere—especially in the UK. At this time, I was almost semi-religious in my belief that the UK would do everything necessary to hold on to the EMS parities. I went from client to client explaining how the word of UK policymakers could be trusted and (even more naively) how the costs of reneging on this commitment would be so severe that no policy makers in his (or her) right mind would choose to do so. I thought that I was very persuasive and was particularly impressed with myself when I went to our major hedge fund clients—including Tudor Investments, my future employer—and they listened intently. **I remember the folks at Soros, who led the charge against the pound in the summer of 1992, encouraging me to make sure that I ran through the "they will do whatever it takes" story with all of our major clients. I was too stupid at the time to realize why they wanted this. I figured that they were impressed by my arguments and wanted them to be spread as widely as possible**.

On the fateful day in September, I was marketing in Minneapolis. When we arrived for our first meeting, the Bank of England had raised rates 200bp—to 12%—to fight off speculation. By the time we were at our last, the Bank had raised them to 15%. "Look at that determination" I argued, somewhat nervously. Like most of the UK at the time, I had a floating-rate mortgage, so I knew that a 50% rise in monthly mortgage payments was hardly a good idea for an economy struggling to escape recession. **By the time we reached the airport to fly home, we'd had the news that the UK had left the ERM and put rates back at 10%. After this, I was sure that the UK would pay a rate premium for having broken its commitment. That view was wrong as well. UK rates were quickly slashed. Inflation did not surge post-devaluation because there was so much slack in the weak economy. Instead, the UK developed a better balance to its economy and I received an on-the-job economics education**.

I spent 1993 applying these lessons. I particularly remember a lunch with the CEO of Scandinavian Airlines, where I explained to him that Sweden's ECU peg was fundamentally unsustainable. When it fell apart a few weeks later (after 500% marginal rates), it was déjà vu. In part because the UK gave up earlier, it ended up doing less damage to its financial system than did Sweden, which managed to generate both a currency *and* a banking crisis.

Weak economies in Europe needed lower rates and this led to a massive rally in bond yields, which many US-based investors accessed through structured products. These trades were highly-profitable in 1993, but fell apart in February 1994 when the Fed raised rates for the first time in 5 years. The structured product debacle in 1993-94 was a good taster for what would follow in 2006-08.[12]

The 1990s: …and then emerging market currency crises

In early 1994, Will Brown asked me to take over the emerging markets economics group at Morgan. My vision was to take the same type of economic analysis that we were doing in the major countries and apply it to the emerging world. This led me to start the *Emerging Markets Data Watch*. The approach was also to put young, keen economists into our local offices in order to better follow the data, markets and events. I am pretty proud that two of this team: Alfonso Prat-Gay and Alfredo Thorne subsequently became Ministers of Finance in Argentina and Peru, respectively. And they were not the only strong horses in the group!

There were some howls of laughter at this approach. Many people argued that economic data were not relevant to emerging markets. Tracking emerging markets was all about being on top of policy reform, and being close to policy makers. No need to follow the economies—just talk to those in the know![13] There was a lot of cult of personality back then, with Argentina's Finance Minister—Domingo Cavallo—achieving near god-like status among many economists for reviving a version of the gold standard (never mind that it had crashed and burned a couple of generations earlier).

To me, the case that proved that data-watching in emerging economies paid off was Mexico. The Mexicans had undertaken significant policy reforms and were the darlings of the debt markets in the early 1990s. Having suffered almost a decade of foreign and domestic investors fleeing the country, capital had returned, creating a virtuous cycle. Inflows kept the currency strong; a strong currency pushed inflation down; capital inflows fueled both a boom in domestic spending (both investment and—especially—consumption); strong growth promoted solid tax revenues and, thus, an improvement in the government's budget. This virtuous capital flow cycle was all fine apart from one crack: a widening in the current account deficit.

As with the UK two years earlier, the Mexicans pegged their currency. The consensus in the market was that it would be madness for Mexico to break that peg. It was the symbol of the new disciplined framework. As Mexican growth slowed and the external deficit widened, however, I became convinced that the peg had to go. I particularly remember an argument with Àngel Gurría (now at the OECD), who was then a senior Mexican official, at a JPMorgan Conference at Westchester Country Club in September 1994. My point was straightforward: the combination of macro conditions—especially the wide current account deficit—made the peg unsustainable, and policy makers would be wise to figure their exit strategy sooner rather than later. **"You don't understand…" Àngel argued; "…the deficit is a sign of investor confidence in Mexico…plus, what does a little English guy know about Mexico?". Thinking of Norman Lamont singing in his bath two years earlier, I thought to myself: "more than you realize"**.

---

[12] For an excellent summary of this episode see Frank Partnoy's book "F.I.A.S.C.O."

[13] Aside from not being that helpful, I also felt that approach bordered on the illegal. Throughout my career, I have been surprised by how loose the official sector often is with its connections with the private sector when it comes to discussion of future policy.

In the case of Mexico, and subsequent emerging market currency crises, I always had a hard time getting across to both investors and policy makers the fact that although breaking a peg might be painful, the costs of trying to sustain it in an environment where it had outlived its usefulness would be far greater. In my view, there is no right or wrong answer to the simple question: which is better, fixed of floating FX rates? It all depends on the macro circumstances. A fixed arrangement can work wonders to import monetary credibility (as it did for many countries in the 1980s and 1990s). But once it has achieved that benefit, it can become a millstone round the neck if it is sustained too long. As time has progressed, however, the stock of mobile private sector assets that can move in and out of a currency (all driven by a similar information set) has become very large relative to the stock of official assets (possibly China excepted). Moreover, the abolition of exchange controls has made runs (first in and then out) more likely. This partly explains why there was a formal drive to EMU once the single-market developed in Europe, since sustaining the ERM would probably have been impossible.

Once Mexico was forced to devalue in December 1994, **I spent six months trying to get investors to see that it was not the end of the world**.[14] Instead of a never-ending recession (i.e. a repeat of the 1980s), we argued that the competitive FX rate would be the basis for recovery (similar to the UK in 1993). **NAFTA was very important in this context**. Of course, Mexico was forced to raise rates and its banks were in extreme difficulty in 1995 (similar to Sweden in 1993-94) but that would have happened anyway. **What helped us understand that the dynamic in 1995 and beyond would be different from post-1982 was tracking the data. Quite quickly, cyclical indicators rebounded and, before too long, employment data provided by the IMSS (the Social Security Administration) confirmed a recovery. 7 years of lost market access in the 1980s became just 7 months in 1995. Data Watching paid off.**

The focus then shifted on to the fallout from Mexico. Emerging markets had become the focus of attention for investors and traders in G7 markets, since the US rate cycle hit an inflection point in the Spring of 1995 (as it had done with Mexico's default in August 1982). USDJPY slumped below 80, which severely hit the Japanese economy. Sentiment on emerging markets shifted. Latin American countries went from being the favorites to the dogs; and Emerging Europe and Emerging Asia were seen by investors as more reliable. As we scanned the world to make sense of the new risk landscape, it seemed to us as though Argentina faced clear challenges, although was actually being helped by Brazil at last getting its act together with the *Real* plan. **When we asked: "who looks like Mexico?" one country stood out: Thailand.**

I spent 1996-97 marketing with this message. One speech was to a group called ICARE in Chile in November 1996, where I argued that the next EM currency crisis would occur in Thailand. I said "next" in the title of the slide used to highlight that point, implying that I was not sure of the timing. But the picture used to make the point—sharply slowing manufacturing output and M2 growth—was another case of tracking economic data to highlight an FX peg that was no longer working to a country's benefit.

In early 1997, I persuaded my colleagues at Morgan that we needed to integrate the Global (i.e. Developed Market) Data Watch with the Emerging Market Data Watch to produce a true Global Data Watch. In mid-

[14] For full disclosure, Morgan was retained by the Mexican government to be its financial advisor, as it rebuilt relationships with disaffected investors. I worked closely with Morgan's Vice-Chairman Rod Wagner on these issues. He was a wonderful man who did a huge amount to build and sustain private capital flows to emerging economies—especially Turkey.

1997, the Thai crisis and its subsequent spread to Indonesia, Korea and (in 1998) Russia validated this decision.

When you look back at the 1990s, it is the first decade when the global business cycle stopped being driven by swings in the economic policy cycle. Central banks went from being primary drivers of the cycle to first responders. Instead, what we had was a series of capital flow cycles that began with the great convergence trades of the 1990s (first Europe and then EM). One-by-one, these worked then blew up, culminating in the LTCM/Russian crisis in August 1998. Out of the ashes of that crisis, however, came the tech-related boom-bust of 1995 (Netscape)-2003 (Enron). The global housing boom-bust then followed the low interest rates regime that followed the tech bust.

A brief move back to the public sector

As the tech bubble overheated, stodgy well-capitalized banks such as JPMorgan underperformed and we became a takeover/merger target. Chase (which was already the merger of many money center banks) bought Morgan for what was then an inflated price. The new combined Bank felt very odd to me. Will Brown left and John Lipsky took over as Chief Economist. I felt uncomfortable in this environment and figured that I would quite like to return to work in the public sector. Briefly, I went to work with Terry Checki on the international side at the New York Federal Reserve. While I was there, the long-awaited Argentine default occurred. Importantly, also, the US entered recession. Throughout the whole time that the economy was in recession in 2001, the NY Fed domestic staff argued that it was not. The irony is that when 9/11 occurred the view was that this could tip us over into recession, even we had already been there all year. Moreover, the auto sales stimulus program of October 2001 actually spurred the onset of a weak recovery in 2001Q4. **My limited experience at the NY Fed tells me: don't think policy makers necessarily have an edge over the private sector when it comes to calling the business cycle**. The tragedy of 9/11, however, made my commute from New Jersey to Lower Manhattan impossible, so we decided to relocate to Washington DC, where I went to work at the World Bank.

The World Bank is a wonderful organization with a top-notch staff that has suffered from a dramatic erosion of its *raison d'etre*. It oriented itself to financing the developing world in the 1960s and it then had a near monopoly position. Private capital flows to emerging economies were minimal until the petro-dollar recycling boom began in the 1970s. As we saw above, however, this was relatively short-lived, and the LDC debt crisis reinvigorated the Bank. The only problem, however, was that the Bank increasingly moved away from its traditional strength—project lending—to balance of payments financing. Once private debt flows to emerging economies resume in earnest in the 1990s, borrowers (governments) much preferred to borrow from private lenders than the Bank (although China was an interesting and important exception to this trend). The World Bank asked the difficult questions that private markets did not (What are you using the money for? Can I have a receipt? A real one?).

By the time I got to the World Bank (in early 2002), it had somewhat lost its way in the world. The Research effort was then and remains a fine one, however. Jim Wolfensohn had encouraged a focus on corruption and Paul Collier (who had taught me trade theory at Oxford) was doing some fantastic work on issues related to conflict and resources, especially in Africa. In financial markets, you can make the best average returns by avoiding the crashes. Similarly, development is best achieved by avoiding catastrophic conflict and resulting collapses. I was lucky enough that Nick (now Lord) Stern (of Wimbledon) was Chief Economist of the Bank while I was there. Not only is he a delightful man, but he also is a micro-expert, with not much interest in the macro-side. I was lucky that he allowed me to step up and fill that gap—especially to Jim Wolfensohn, whose Salomon Brothers background demanded some degree of market savviness.

My specific job at the Bank was to run the Development Finance Group and our main role was to produce an annual publication fronting what used to be called the World Debt Tables. By the time I arrived, it was called *Global Development Finance* (GDF). Although I was only fully responsible for one annual issue, I am pretty proud of what we achieved. Most notably, we did a special feature on remittance flows (money that immigrant workers send home) highlighting their growing importance in the early 2000s and the challenges related to the crackdown on informal channels for flows in the post 9/11 world. We argued then that their power and influence was under-appreciated by policy makers—and the private financial sector. My co-author of the piece, Dilip Ratha, has become a leading expert on the topic and has given an excellent TED talk on the subject.[15]

The 2000s: The decade of (not-such-well) structured credit

The bureaucracy of the World Bank eventually became a little too much for me, however, so I returned to Wall Street. Initially, I went back to JPMorgan, but then followed many Morgan colleagues—led by Larry Kantor—to Barclays, where I became Head of Emerging Market Research. This phase of my career was least happy, mainly because I was working (on and off) in New York, while my family (especially teenage children) were based in Washington DC. **Memo to self and other who might try to do this: don't**.

My takeaway from two years at Barclays was how much you could see a debt problem building in the structured credit business in the developed markets (DM). Covering the EM side of the spectrum, we were aware of a reality where EM credit fundamentals kept improving (and spreads falling). Additionally, you could see China building up its external surpluses and foreign exchange reserves. China unpegged its currency in 2005 but retained close effective control, and continued to build reserves even more heavily to temper the rise in its currency.

There were, however, two more obvious illustrations of the tensions brewing in the DM world. First, our relatively small EM team kept getting squeezed on the Barclays trading floor at 200 Park Avenue. In early 2005 we had a relatively decent position on the floor; by late 2006, we had been squeezed to the side by the "structurers". I was particularly struck by the piles of boxes that built up around them. "That's a fire risk", I thought. I did not realize how right my instinct was, albeit a metaphorical one.

Second, **I wrote a negative piece about Iceland in 2006**. I was really using it to compare and contrast with the EM economies for which I was responsible. **The benchmark for a looming external crisis in an emerging economy was the current account deficit. If this was more than 5% of GDP, then there were likely problems ahead; 8% of GDP tended to signal crisis. Iceland's deficit was about 20% of GDP in 2006**. My point was "the risks in some DM markets look much bigger than in EM, but you are not

[15] https://www.ted.com/talks/dilip_ratha_the_hidden_force_in_global_economics_sending_money_home/transcript?language=en

compensated for that". I thought it was a responsible, non-controversial piece. But the debt structurers in London came after me and told me to stay well away from such topics. **"You don't understand…" they argued; "…the deficit is a sign of investor confidence in Iceland…plus, what does a little English guy know about Iceland?"**[16]

When you look back, the Queen was quite right to ask why no-one really foresaw the crises of 2007-2011 in the DM world (first the US and UK and then Europe). **When teaching junior analysts about sovereign risk, I've always argued that you should compile a matrix of sovereign credit indicators, but cover over the country names when studying the data to highlight areas of potential difficulty**. Don't look at historically poor credit countries (e.g. emerging economies) and assume that they must be the potential problems, and ignore a much-improved mix of fundamentals. Equally, don't look at chronic imbalances in high-income countries, and argue that this is no problem for them, as they are different. Of course, in a way they are, because they have (or, rather, had) a lot more credibility and trust with investors. **What this means, however, is that when things *do* go wrong in DM markets—as they did spectacularly following the collapse of Lehman Brothers—the adjustment in thinking (and investor behavior) that has to occur is dramatic.** Herb Stein—Nixon's Chairman of the US Council of Economic Advisors—famously argued that "if something cannot go on forever, it will stop". Simple, but useful advice to remember. (He was actually referring to US budget and trade deficits when he said this in 1989).

The 2010s: The lost decade

On the eve of the financial crisis in mid-2007, I rejoined the IIF in Washington DC, becoming Chief Economist of the organization two years later.[17] The IIF had been run by Charles Dallara since 1992. He had done a truly impressive job of building up the organization, pulling together the many different interests and voices of the international banking industry. This was like herding cats. The IIF had been originally created to pool bank resources to resolve the 1980s LDC debt crisis. As this was resolved in the 1990s, Charles reoriented the organization to focus on issues related to possible future crises. The work on external financing of emerging economies continued, but was supplemented by a lot of work on the regulatory environment—especially the Basle Accords on International Bank Regulation.

The IIF was a fascinating perch from which to watch the crisis of 2007-09 unfold. Most of the troubled institutions in the crisis were IIF members. **The paradox was that the CEOs and senior officials of many of the institutions (and policy makers) near the center of the storm seemed ill-prepared for what was happening around them. Cheery denial was a common tactic. By contrast, the CEOs and senior officials from most of our emerging market members were horrified by what they saw happening around them**. I remember Mexican Central Bank Governor Guillermo Ortiz emphasizing to his DM colleagues how bad things could get—and how fast. His consistent advice (shaped by his own experiences in Mexico in 1982 and 1994) was "get out ahead of this".

---

[16] Ironically, my Nordic economist experience in the late 1980s meant that I knew more about Iceland—and its modest fishing and resources sectors—than is healthy; and certainly, more than the average EM economist.

[17] I have now left New York based financial institutions three times: in February 2001, March 2007 and June 2017. **In the first two cases, the US equity market fell 37% and 46%, respectively over the subsequent two years**. Just thought you should know.

In the post crisis period, I found myself back in the area of bank regulatory reform—a topic that I had worked on tangentially in both the mid-1980s and the early 1990s. When I was at the Bank of England in the early 1980s, one of the responsibilities of the group that I worked on was supporting Peter Cooke, who chaired what was then known as the Cooke Committee. This met regularly at the BIS in Basle and it eventually morphed into the Basle Committee. In its early years, the main focus was on the achievement of equal regulatory standards across the major jurisdictions. This was because Japanese banks maintained very low capital ratios, which were perceived to give them an advantage when it came to gaining market share in the business of international lending. The first Basle Accords (Basle 1) was all about achieving a "level playing field"—a term that the public schoolboys who dominated the English contingent at international meetings gifted to the rest of the world.[18] In the early 1990s, I had seen close up how over-zealous regulatory reform in the aftermath of a financial crisis had held back the recovery in the United States. **Congress had passed the Federal Deposit Insurance Corporation Improvement Act (FDICIA) in 1991 and this cranked up capital requirements at just the wrong time, from a cyclical perspective**. At that time, even the Fed was severely critical of this pro-cyclical regulatory policy.

In my view, these US regulatory mistakes of the early 1990s were compounded by too lax and complacent a regulatory environment from the early 2000s onwards, especially in the mortgage market.

In the aftermath of the 2008-09 crisis, it was obvious that there were going (and needed) to be massive reforms forced on the global banking industry by politicians and policy makers angry and frustrated by what had occurred. A number of forces collided: policy makers were keen not to look as though they had any part in the mess, even though that was not the case;[19] academics were on the ascendant, often peddling aggressive idea that might previously have been ignored; and bankers were very definitely in the dog-house, with their input on reform totally unwelcome. One of the most powerful ideas pushed by the academics was that capital ratios should be lifted aggressively and that this would not be a problem since markets would readily welcome the increased safety buffer provided by the higher capital.

To me, one of the most unfortunate aspects of the official sector response during the financial crisis—especially in the United States—was to keep talking about how the financial sector had been bailed out. The Troubled Asset Recovery Program (TARP) was indeed quickly changed to become a device for providing equity to financial institutions to support the system. Even more importantly, central bank lending facilities were key to avoiding total financial collapse during the panic. **But—in the United States at least—these investment and lending programs provided a significant net return to the Treasury. Think of the support as a wise investment that paid off handsomely for the tax-payer, both in narrow terms of a healthy financial rate of return and (more importantly) because it stopped total financial collapse**. The latter is what the Federal Reserve was created to do, following the regular panics and

[18] The image is that a "level playing field" makes for a *fair* game, and that an "uneven playing field" gives the advantage to one side over another (presumably the one going downhill). The more you think about this metaphor, the more ridiculous it is, not the least because players always change direction during any game played on a playing field.

[19] Their errors were both strategic—running too lax a monetary policy in the mid-2000s, largely in response to an unjustified deflation scare—as well as tactical (mishandling of specific cases, most obviously Northern Rock and Lehman Brothers). But the only policy-maker that I'm aware lost his/her job as a result of the crisis was Clive Briault—a former Bank of England colleague, who took the fall for Northern Rock at the FSA. It is fair to say that Alan Greenspan also lost his "Maestro" halo.

collapses of the 19th and early 20th centuries. To this day, however, the average person thinks that the US taxpayer *gave* money to the banks, largely because policy makers tell them this is what happened.

At the end of 2009, however, the Basle Committee formalized its proposed changes. Superficially, these did not look that aggressive. The main component was a 2%-point rise in minimum core capital ratios, from 4% to 6% of risk assets. The only problem, however, was that this rise was accompanied by a whole host of other proposed reforms, which all served to raise capital requirements far more steeply, while also weakening bank profitability and thus lowering the return to the potential holders of that capital. Worse than that, however, this was occurring against a backdrop where bank equity had been the asset class that had been savaged through the financial crisis (in contrast to bank debt, which was consistently supported by policy makers for reasons best known to themselves). There was essentially no market in new bank equity, and the upbeat view of the academics that investors would be eager to hold more of a new "safer" asset was clearly ridiculous.

At the IIF, we built models to highlight this point, emphasizing that the cumulative impact of all these reforms meant that the cost of capital facing banks would go through the roof, forcing banks either to raise lending spreads sharply or cut credit (and risk-assets more generally). The consequence, we warned, would be slower growth over the 2011-15 period. Our best estimate was for lower growth in the G7 of about 0.6% points per year, with the largest effects in Europe. We (I) had lots of debate with policy makers over these issues, *most* of which were quite civil. In one of those debates (at the BIS in Basle), I was told "don't worry about this outcome; even if you are correct and our measures have more of a dampening effect on growth than we expect (a few hundredths per year), then we can always offset that by easing either through lower rates or quantitative easing".

It is easy to forget that when this debate was happening how sanguine global policy makers were about recovery prospects. In June 2010 (when we presented our report), the Euro area debt crisis was just a Greek affair and Fed estimates for US growth in 2011, 2012 and the long-run (i.e. 2013-15) were 3¾%, 4% and 2.7%, respectively (for an average of 3.2% per year). The outturn was 2.1% (i.e. a 1.1%-point shortfall per year). For the Euro area (as we had said), the outcome was even worse. Rather than recovering, the region spent much of 2011-13 in recession. The broad Euro area debt crisis had many causes (mainly the result of the poorly-designed Maastricht Criteria), but the catalyst was a massive (cross-border) deleveraging by the Euro area banking system.

The problem, of course, is knowing how much of this growth disappointment to assign to the impact of excessive regulatory reform.[20] Indeed, we can never run the counter-factual to know what would have happened if, say, we had taken the more reasonable route adopted towards banks after the 1982 LDC debt crisis (check out the US recovery in 1983-84). **Obviously, there were lots of things that happened to produce those lower-than-expected growth rates, but I strongly believe that the financial drags from the interaction of the regulatory changes with natural private-sector post-crisis risk aversion were**

[20] Or, as I like to put it, well-intentioned reforms, aggressively carried out against a backdrop of a very fragile private sector; an absence of investor appetite to hold existing bank equity, let alone hundreds of billions of dollars more; and a denial that the reforms could have anything but positive consequences.

<u>the</u> key ingredient.[21] **Of course, I'm not only saying that now—I said it (as loudly as anyone would listen) in early 2010**. What was scary for me about the debates that I had in 2010-13 on these issues was how ideological many in the official sector and, especially, in academia were about these issues.

In a way, it is even worse than that. The slow rate of growth contributed to the rise of populism in the United States and the United Kingdom. Whatever your view on that, **my worry is now that this well lead to pressure for an easing in regulatory burdens at just the wrong time in the business cycle, especially in the United States**. Banks will be allowed to run down capital buffers and small and medium sized lenders (the ones that typically get us into trouble) will be encouraged to become more aggressive at just the wrong time. **The sorry cycle of pro-cyclical regulatory policy continues, and is something bankers and investors would be well-advised to monitor in coming quarters and years. I will certainly be doing so**.

****

For the past four years, I have had the privilege of working for Paul Tudor Jones as Tudor Investment Corporation. My timing in joining the macro hedge fund world could not have been worse, however. After thirty years of stunning performance, fueled by wide swings in interest rates, FX and commodities, I joined the party just as G7 quantitative easing crushed volatility and suppressed nominal returns—except for equities.

While the returns at Tudor during my time there were not what I would have hoped for, the people at the firm were, collectively, among the smartest and nicest that I have ever met and worked with in a 34-year career. The correlation of smartest and nicest is pretty rare in our industry, and something I will remember as I embark on the next phase of my career as an independent economist.

[21] Many of the factors likely to slow growth in the 2011-15 period—a falling labor participation rate and the need for consistent fiscal tightening—were also very evident in mid-2010, as we highlighted in our IIF Cumulative Impact Report in June 2010.

LESSONS FROM 200 NOTES

Re-learning the economics of worldwide stagflation

Suttle Economics Notes #200

- The key feature of the past 5 years was a preponderance of negative supply shocks
- I did not grasp the true significance of many of these shocks when they first occurred
- Central bankers did an even worse job, however, and the result has been higher inflation
- Events have laid bare (again) the flaws of inflation targeting, especially the flexible kind

This is my 200th *Suttle Economics Note*. For the first, written just over 5 years ago, I wrote a biographical essay summarizing the lessons that I'd learned as a professional economist in the 34 years up to that point (often the hard way, by making mistakes).[1] Five years on, **this note takes stock of the "big picture" views that I have learned since August 2017 from the perch of being an independent economic analyst**. Again, I do this partly through the prism of mistaken calls and views.

When I started *Suttle Economics* in 2017Q3, I was conscious of the fact that the global expansion—especially the US expansion—was long in the tooth (it started in mid-2009). At the time, then Fed Chair Yellen liked to observe that "expansions don't die of old age". She seemed oblivious of the second half of the Rudi Dornbusch quip that she was quoting (…"they are always murdered by the Fed"). It turned out that the post-GFC expansion was not murdered by the Fed in 2018-19, in part because the Fed stepped back from tightening even as the unemployment rate fell to a level not seen since 1969 (Chart 1). Instead, it was ended by the dislocations resulting from the COVID-19 (C-19) pandemic which broke out in 2020Q1. The resulting recession was then the deepest, but shortest in record, not because of a demand slump but because of a closing of supply (lockdowns). In turn, the recovery in 2020H2-2021H1 was the most rapid on record and the US economy quickly moved back from high to low unemployment. The same was true for most other developed market (DM) economies.

Chart 1
US unemployment rate and the cycle
% of the labor force; bars denote recessions

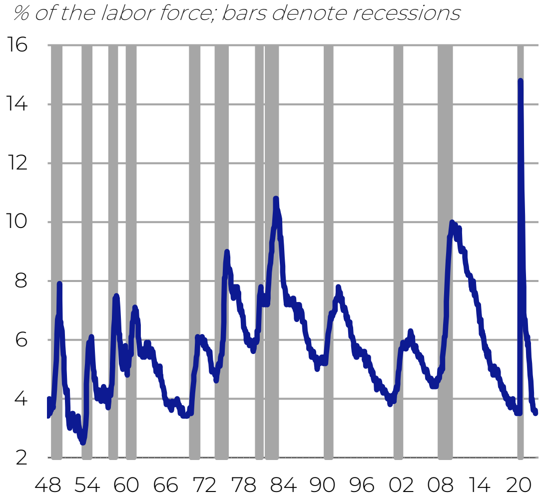
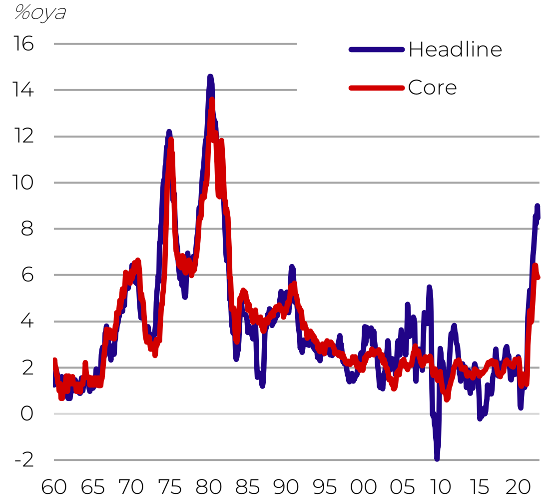


Chart 2
US: consumer prices
%oya



[1] 34 Years an Economist: Lessons learned (often the hard way) *Suttle Economics Notes #1*, August 9th, 2017

5 years on, the Fed is once again sharpening the murder weapon (policy tightening). Indeed, one way of thinking about where we now sit is that the pandemic slump was a short-lived hiatus in the post-2009 expansion, the true limits of which we are now testing. The now (far) more aggressive Fed is a response to an inflation problem that has slipped out of control for the first time since the 1970s (Chart 2). This inflation acceleration has been widespread across most DM economies, notably in Europe.

As I review events from the past 5 years, I am struck by one unifying theme. **This is the pervasiveness of negative supply-side developments**. These include: less openness in world trade and labor migration flows (Brexit and Trump's trade war); the dislocations resulting from COVID (some of which have been surprisingly lasting, in part because they have added to the forces of autarky); and, most recently, Russia's new invasion of Ukraine and broader rising geopolitical worries (e.g., China/Taiwan). As they were happening, these negative shocks reminded me of lots of things that happened in the 1970s (absent a pandemic). In addition, the trend rate of growth of every major economy has dropped alarmingly in recent years. Most notable has been the slide in Chinese potential growth from the 6%-8% range, to 3%-4% (Chart 3). Among DM economies, UK productivity growth over the past 15 years has averaged a paltry 0.4% per year (Chart 4). In the prior 4 decades when the UK was perceived to have a productivity crisis, the rate for over 5 times higher. I'd expected a pick-up in DM investment in the early part of this expansion, but the acceleration has so far been muted and is already showing signs of flagging.[2]

Chart 3
China: real GDP
%oya

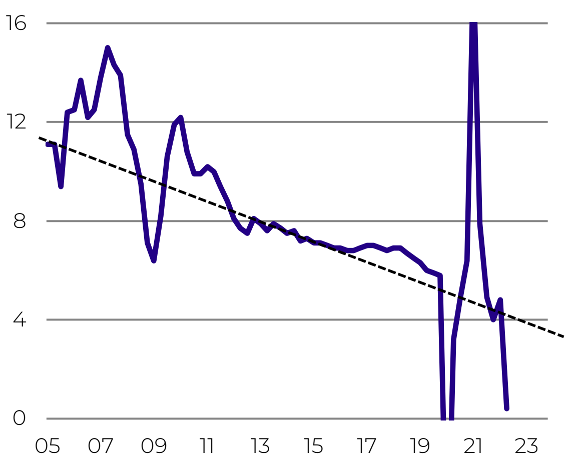
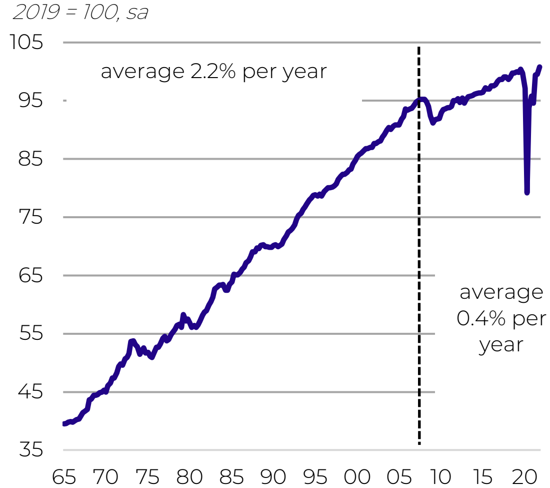


Chart 4
UK: output per worker
2019 = 100, sa



I don't think economists spend enough time looking at, or thinking about, the supply-side of the economy. This would include, but not be limited to **demographics**.[3] We also need to spend more time thinking about the factors that shape **investment and productivity**, as well as **the ways markets work** (e.g., competition policy). Given all the evident productivity-enhancing advances in IT, one important issue is why we see no obvious pay off in the recent data. Another issue is the supply-side constraints associated with policies to address climate change. In my view, **an underpricing of carbon on the first two decades of this century was one factor helping** lift growth and **lower inflation readings. More appropriate carbon pricing will likely raise DM trend inflation**.[4]

An under-focus on the supply-side is understandable since the short-term data-watching approach to the economy that I favor tends to focus on the wiggles in aggregate demand and what they mean for short-term interest rate policy. Paying attention to the supply-side smacks of watching paint dry and is not well-suited to the daily reporting flow. That said, I resolve to do better.

Even worse, however, I think monetary policy makers have been very biased to think about both the problems of weak trend growth and sudden negative hits to growth as if they were solely demand-

---

[2] The coming US investment boom, *SEN #157*, March 28th, 2021
[3] The demographic path ahead, *SEN #39*, May 30th, 2018; Probing the supply side, *SEN #45*, July 18th, 2018
[4] An invisible hand for an inconvenient truth, *SEN #150*, January 22nd, 2021

side developments. When that is the case, supportive demand policies are the correct response. **When the drags on activity emanate from the supply-side, however, the correct response is quite different and I think this is a lesson that many DM central bankers are learning today in real time**.[5] **In a later part of this note, I will be very critical of the practice of modern central banking. I am very concerned that the overreach associated with the implementation of excessively activist and expansionary monetary policies throughout the 20th century could lead to an even worse outcome with a very unproductive backlash (involving the loss of central bank autonomy) over coming years**.

Towards the end of my "34 Years an Economist" note, I argued that the weak DM recovery from the 2008-09 slump could best be understood in the context of de-leveraging forced by a mix of over-zealous financial regulation and private sector caution (especially from financial institutions). These were a response to a series of actual (and many more near) death situations among the business sector. The right approach would have been to go slow on the regulatory side but crank up those requirements as the expansion matured. This, of course, was easy for me to argue but harder for politicians and regulators to stomach after some of the evident excesses in the build-up to the financial crisis. In my view, there was an over-emphasis on micro mismanagement by (grossly overpaid) bankers, and an underemphasis on macro policy mistakes made ahead of the crisis (excessive laxness). Many speeches made by Fed officials in 2004-05 are a difficult read even now.[6] I remember then BoE Deputy Governor Tucker arguing to me at a BIS meeting in Basel (in 2010) that any contractionary effects from regulatory reform could be offset by the BoE's new tool: QE. Whatever the rights and wrongs of these arguments, I think it fair to say that we were then all discussing the demand side and the problem of re-establishing effective transmission of monetary policy to aggregate demand.

1. The world looks very different when the negative shocks are on the supply-side

Once the last expansion moved into its middle years (and QE policies had been used aggressively in most DM jurisdictions), **the nature of what began to ail the global economy shifted from the demand side to the supply side. In my view, this problem took two forms: (a) weakness in labor supply growth and fixed investment which further lowered already sluggish trend growth; and (b) greater trade frictions, which disrupted competition in goods markets, making goods supply curves more inelastic.**

When the shocks are negative supply shocks, they will have the implication of lowering the path of activity and/or raising the path of inflation above what they would otherwise have been.

In retrospect, one of the most important developments was when Russia annexed Crimea (from Ukraine) in 2014. **Looking back, I realize that I did a very bad job of following the logic flow from this development through to the current crisis, which now involves the substantial loss in the supply of a significant part of the European energy supply. Modern military conflicts tend to last**.

The **next major negative supply-side even came when the heavy global migration flows of 2015 fueled nationalist backlash in many countries**.

In the UK, this coincided with PM Cameron's promise to hold an in-out referendum on EU membership. This was held in June 2016 and the no vote set the stage for the disruptive debacle that became Brexit. Whatever you think of Brexit (my view has been and remains that it ranks with going back on gold at the pre-war parity in 1925 as Britain's greatest economic policy mistake), it simply is not a good idea to tear up your trade and labor movements relationships with your biggest trading partners on the hope that they can be smoothly and quickly replaced elsewhere. The process of negotiating a smooth exit from the EU was never going to be easy, but one of the consistent negative themes of my work in 2017-19 was the problem of both arriving at, and implementing, a smooth divorce.[7] Brexit has had a corrosive effect on UK economic performance, undermining business investment and adding frictions in goods markets, which have (further) worsened the UK growth-inflation trade-off. The sustained fall in UK exports to its dominant trade partner—the EU—is very notable (Chart 5).

---

[5] Three lessons from the 1970s, *SEN #170*, August 2nd, 2021. See also *Economics of Worldwide Stagnation*, Bruno and Sachs, Harvard University Press.
[6] See, for example, Mortgage banking, remarks by Chairman Alan Greenspan, September 26th, 2009
[7] Britain and the EU: scenarios ahead, *SEN #23*, January 31st, 2018, and The Nightmare before Brexit, *SEN #78*, April 24th, 2019

US President Trump opted for a more piecemeal approach to implementing trade frictions, starting with tariffs on steel and washing machines, before spreading (in 2018) to a full-fledged trade war with China.[8] Before the pandemic, the tariffs acted as a (regressive) rise in indirect taxes on US consumers (more than offset by tax cuts for corporates). The rise in washing machine prices in 2018 in response to a 20% tariff is a good example of how the incidence of tariffs played out (Chart 6).

Once the excess demand from pandemic support was unleashed US trade frictions made the supply curve of importables to the United States (especially from China) more inelastic than would otherwise have been the case. A graphic example of the supply distortions resulting from protectionism came in 2022H1 when an acute US shortage of baby formula developed and could not be easily alleviated by imports from Canada because of restrictions introduced as part of the renegotiated NAFTA (USMCA).

Chart 5
UK trade volumes with the EU
Jan 1997 = 100, sa, both scales

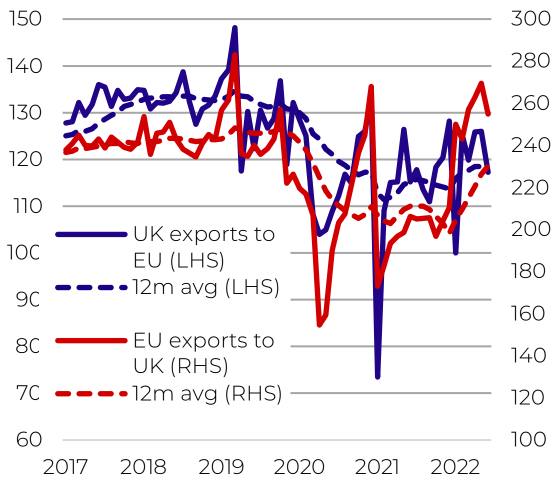
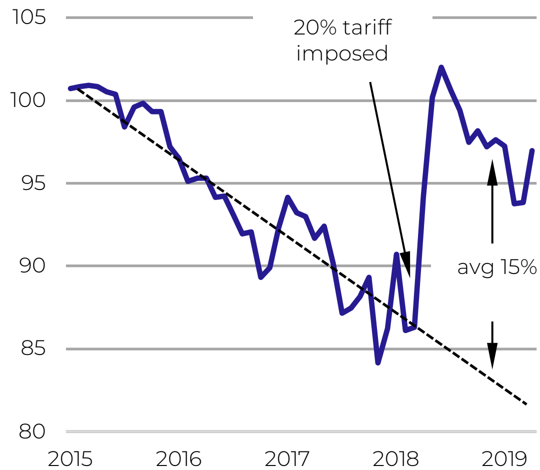


Chart 6
US: laundry equipment prices in the CPI
1982-84 = 100



2. What I got wrong and what I got right in C-19

The next negative shock to hit the global economy was the most severe: the COVID-19 pandemic. This started in China in January 2020 and spread to Europe and beyond in March. **When I look back at my global analysis in 20Q1, I am struck by my underappreciation of how serious the C-19 crisis would quickly become**. In mid-February, I wrote a note on recession risks (the expansion had just become the longest on record). I did not even mention C-19.[9] My forecast evolved quite fast, and by the 2nd week of March I was projecting a 20H1 global recession.[10] **Even then, I dramatically underestimated the severity of the shock**. In mid-March 2020, I marked down my Q1 global GDP forecast to +¼%q/q, saar, and my Q2 global GDP view to down 0.6%q/q, saar. The outturn for 20Q1 (as of the latest data) was down 11.1%q/q, saar (China down 35.3%q/q, saar; my March 2020 view had been down 3¼%q/q, saar). The outturn in 20Q2 was down 25.6%q/q, saar. Very quickly, DM labor markets began to slump, especially in North America.

As the severity of the C-19 recession deepened, I began to worry about what I had seen as the weakest feature of the expansion late in 2019: the vulnerability of corporate debt. My concerns about corporate health (and likely weakness in equities) through 20Q2 ended up being too pessimistic, as I did not fully realize the significance of the Fed's aggressive actions taken on March 23rd that effectively underwrote the corporate sector. By June, US corporate debt had become a protected species.[11]

---

[8] A tariff here and a tariff there, and soon…, *SEN #28*, March 7th, 2018; The US-China trade war resumes, *SEN #81*, May 15th, 2019; America's trade war: what has it been good for? *SEN #108*, December 19th, 2019
[9] Expansions don't just die of old age, *SEN #115*, February 19th, 2020
[10] The global growth damage from COVID-19, *SEN #117*, March 11th, 2020
[11] US corporate credit: protected or endangered? SEN #127, June 18th, 2020

I did figure, however, that the crisis would have profound implications for the supply-side of the economy. Some sectors were going to boom and others contract (likely for an extended period; Chart 7). World trade would further be hindered. **Moreover, the boom in goods demand created by stimulative monetary and fiscal policies (especially in the United States) was going to spur severe problems of excess demand** (Chart 8). I began to emphasize one of the concepts that I had learned in my "O-level" economics course: that unemployment can be (notionally) decomposed into four components (voluntary, cyclical, structural and frictional). My argument was that C-19 was going to raise the structural and frictional components of unemployment, as the fallout from the virus forces some sectors to contract (leisure and entertainment and travel) with others (goods production and residential construction) boomed. The result was going to be a rise in what economists think of as the "natural" rate of unemployment (also dubbed the NAIRU).

As a corollary of this thinking, I argued that the crisis was likely to raise inflation in the years ahead: "the longer-run scars left on the global economy by the C-19 crisis could tilt inflation upwards in the decade ahead for two reasons. First, and most importantly, the virus may well have damaged the economy's supply capacity more durably than demand. Many companies will struggle to survive, likely lowering competitive pressures within economies. Moreover, the virus is likely to accelerate a trend away from global integration that was already well-evident pre-crisis. Second, macroeconomic policy has become very expansionary, and is likely to remain so. At some point during H2 (most likely September), the Federal Reserve is likely to commit to accepting and welcoming a sustained overshoot in inflation above 2% in 2021 and beyond. Whether or not this is a credible commitment is an issue. It raises the likelihood that the oil tanker of inflation expectations will begin to change course, as in the early 1970s." [12]

Chart 7
US: employment by sector through C-19
% change in employment

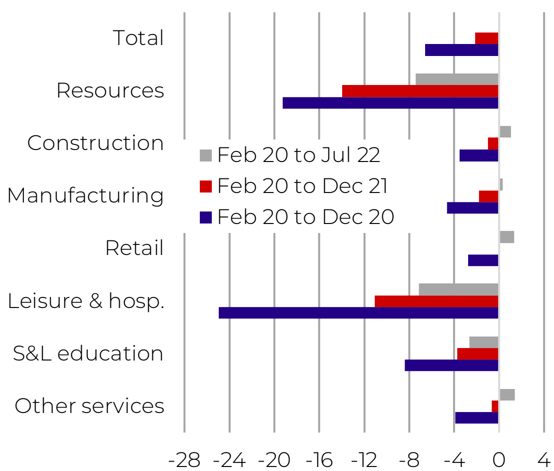
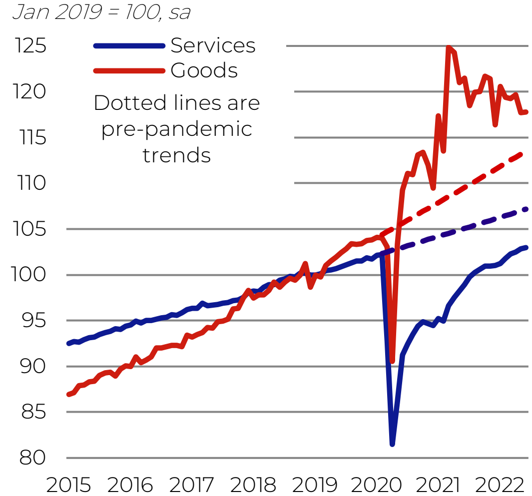


Chart 8
US: real consumption by component
Jan 2019 = 100, sa



3. Understanding inflation (and broader monetary policy lessons)

Through 20H2 and 21H1, I was involved in many discussions with clients (and a number of public debates) in which I positioned myself as having a "high inflation" view.[13] As I argued then: "the major difference in views [between mine and those of the market and the Fed] is not so much about 2021, but what happens in 2022 (and beyond)". At the time, I viewed myself as sticking my neck out quite a lot but did not want to appear too extreme. Hence, I projected that the US core PCE deflator would end 2022 at 3.3%oya. Even this high-side view looks as though it will turn out to be way too low (Chart 9). In rationalizing my high-side inflation view, I was struck by what I had come to see as irresponsibly expansionary US policies. **On the fiscal side, the stimulus program of the new Biden Administration was excessively scaled relative to my best guess as to the scale of available economic slack at the time** (Chart 10). The Fed's monetary

[12] The inflation outlook in a post-COVID world, *SEN #135*, August 14th, 2020
[13] The US inflation outlook: more than a bulge, *SEN #159*, April 18th, 2021

program was a commitment to near-zero rates and substantial further QE *until* the pre-crisis level of employment (i.e., one of the tightest labor markets in history) had been re-attained. Policy excesses were most significant in the United States but were not limited to just there (especially on the monetary side).

Chart 9
US: core PCE deflator
%oya

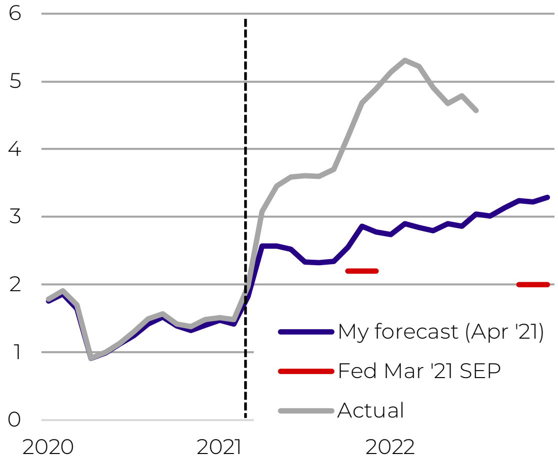
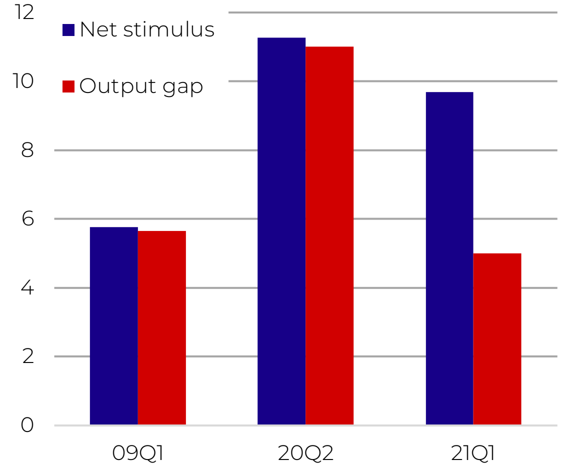


Chart 10
US fiscal stimulus programs & output gaps
% of GDP



Importantly, the inflation acceleration became widespread across most DM economies. Japan remains the notable exception, although both headline and core rates there have picked up (Chart 11). This broad-based acceleration in DM inflation partly represents the role of rising energy prices (and the shock of the Ukraine war). Something more fundamental has been going on, however. The inflation world has been overturned since the start of 2021, with DM inflation persistently above that in EM (Chart 12).

Chart 11
G3 core consumer price inflation
%oya

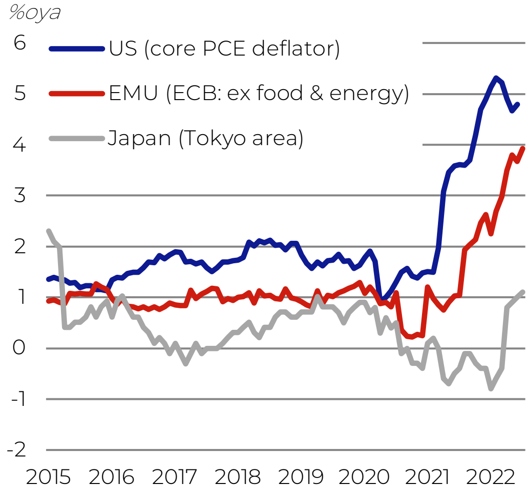
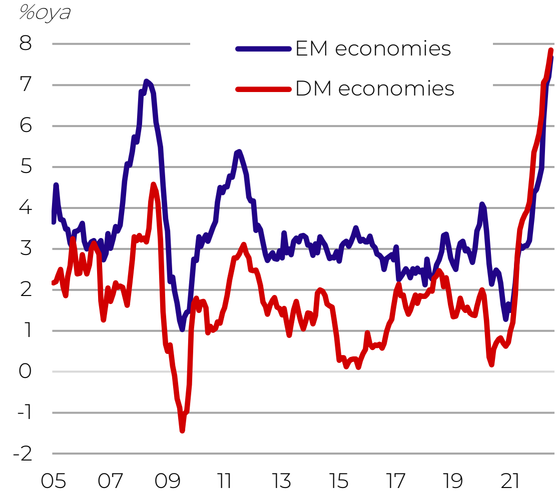


Chart 12
Global consumer prices
%oya



I think the emergence of a serious DM inflation problem helps serve to highlight that inflation is a far more complex process than most economists think it to be. Early on in my work, I stressed that monolithic explanations of the inflation process were not satisfactory, and that a "bottom-up" framework was more sensible.[14] The essence of this approach was to argue that there were multiple

[14] A bottom-up approach to US inflation, *SEN #2*, August 16th, 2017

drivers of any inflation process and thus that a series of developments were needed to generate a sustained acceleration in inflation. In my 2019-21 inflation work I began to reference the "Yellen model" of inflation[15]. This is a linear framework featured by then Fed Chair Yellen in speech in 2015.[16] In this framework, the path of inflation is driven by four key variables: (a) a measure of overall economic slack, proxied by the deviation in the actual unemployment rate from the Fed's estimate of the NAIRU; (b) imported inflation; (c) lagged inflation and (d) expectations. The third and fourth terms reflect the importance of inertial factors in shaping the inflation process. Once it is in a particular state (low and stable; or high and volatile) it can stay there as behavior and expectations adjust. Japanese experience since 2000 has been a very good example of this inertial effect operating on the low side. Brazilian experience in the 1980s and 1990s illustrated that inertia effect on the high side. The tendency for EM inflation to exceed DM inflation because of this inertia is all the more reason to be surprised by the relative performance of the past two years highlighted in Chart 12 (page 6).

As events played out through 2021 and 22H1, I came to understand four very important aspects of the inflation process more clearly, in part by puzzling over the errors in the Yellen model (Chart 13). **First, and most importantly, a linear model did not pick up <u>important non-linearities in the inflation process</u>**. Inflation tends to be a stable process until the causal disturbances become large enough that they reach a tipping point. This is something that we have seen regularly (and thus should have learned), but somehow the economics community convinced itself that this time was different. The experience of the last expansion, when inflation remained sluggish even as the unemployment rate fell to unusual lows, helped shape this perspective. **Second, goods pricing proved to be far more liable to accelerate in the real world than the Yellen model would have predicted, based on the relative price of imports**. In turn, I think **this reflected a three factors: (a) the importance of domestic excess demands for goods** (see Chart 8, page 5); **(b) the cumulative preponderance of negative supply shocks to global goods markets, versus their tendency after 1990 to be positive and thus inflation reducing; and (c) the severe extent to which food and energy goods prices jumped. Instead of this being noise, it became inflation signal, which shaped the evolution of core goods pricing**. **Third, the expectations** term in any inflation model is critical, but the expectations **that matter are those of price setters in the economy (especially businesses responding to higher costs), not the long-term views of "professional" forecasters** (Chart 14). To argue that long-term inflation expectations were "well-anchored" even as short-term expectations rose (as many Fed officials did through 2021) was not wise. Finally, the "slack" term is unobservable in the real world. No-one knows the NAIRU, *ex-ante*. As noted earlier, it has probably risen.

Chart 13
US: Yellen model* versus actual core PCE
%oya

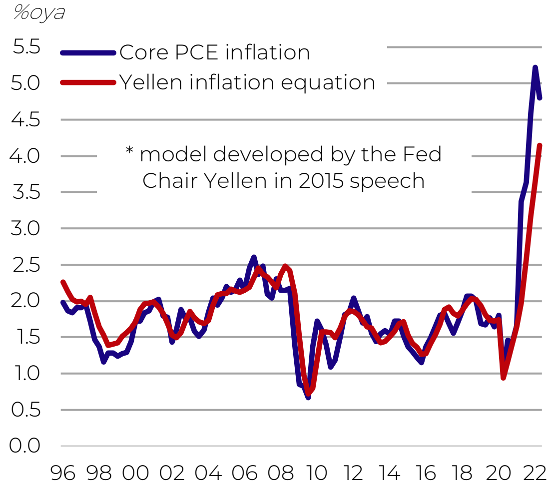
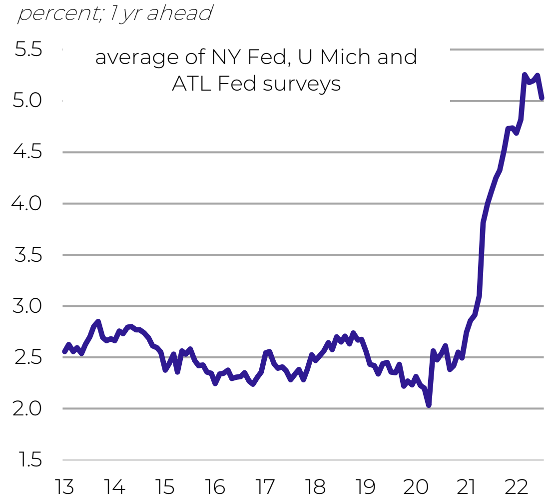


Chart 14
US survey-based inflation expectations
percent; 1 yr ahead



I now think that a forest fire is the most appropriate analog of the macro inflation process. A series of conditions is necessary for an outbreak (excess fuel on the forest floor = easy money; dry weather

[15] Come back Janet, all is forgiven, *SEN #103*, November 15th, 2019
[16] Inflation dynamics and monetary policy, *Lecture at UMass Amherst*, September 24th, 2015

and high winds = full employment in the service sector); and a major combustion (lightning strike or careless camper = a commodity price shock). One without the others doesn't give you a problem. The coincidence of all three can quickly get out of hand.

The line taken by many central bankers in recent months has been somewhat along the lines of: how could we have known that dynamics might play out in such a non-linear way? The obvious retort is that we have seen a very similar situation develop before, in the early 1970s.[17] Then, a sharp slowing in productivity growth coincided with a sudden jump in global food and energy prices (two important negative supply shocks). The policy response then was to use stimulative monetary and fiscal policies in an effort to spur growth, at the unfortunate cost of embedding inflation into expectations at a higher level. **The good news is that we have the experience of the 1970s to highlight to us the costs of running such a strategy. If the Fed acts sufficiently aggressively over the next 18 months, then we might need only replay the problems of the mid-1970s, rather than the extremes of the late 1970s. The bad news is that we ever got here again, having lived through the policy errors of the early 1970s.** Importantly, the Fed in 1974-75 was hardly inert. The problem was once it created a recession in those years, the policy focus quickly shifted to reviving growth even as inflation remained higher. This set the stage for the even more serious inflation problem in the second half of the 1970s.

In my view, the correct monetary policy takeaway from recent quarters is not simply that policy makers waited too long before withdrawing monetary stimulus in 2021. The failure is much broader and stems from an over-optimistic belief in the efficacy of a (fine-tuning) policy of inflation targeting. I have been an opponent of inflation targeting since its early days.[18] In 1996, I argued that it can "lead to de-stabilizing monetary policy over the cycle", and this is exactly what seems to have happened in recent years. The issue is not whether central banks should try to keep inflation low and stable—I take that as a given. The negative (political) feedback from the recent surge in prices is good evidence that price stability is overwhelmingly better than moderate inflation, especially for the poor. **A declared inflation <u>cap</u> of 2% indeed makes a lot of sense**. Central banks that have monetary discretion have a persistent history of generating excess inflation, mainly because of domestic political pressures. When dissatisfaction with the outcome of this discretion led to rule-based policies (in the late 1970s), some (larger countries) opted for targets for monetary aggregates; smaller, open economies often tried exchange rate pegs. When the demand for money later became unstable and FX pegs proved unworkable in a world of massive capital flows, many countries instead adopted inflation targets (initially ceilings).

The policy problem of recent years has been that the Fed, ECB, the RBA, RBNZ and Riksbank have adopted a number of other inflation targeting adventures that have not worked well. These have been based in two stylized assertions that (in my view) have turned out not to be valid.[19]

First, there was a general assertion that low inflation (and even mild deflation) was as much of a problem as high inflation. This justified thinking of the 2% target as a center not a ceiling. Episodes of severe deflation generally are indeed a worry to be avoided, but this is not because of deflation *per se*, but because of the macro (demand) collapse that generates the (sharp) deflation in the first place. When prices are stable, or even fall gradually because of positive supply-side developments, this is generally a healthy development, not a policy concern. Keeping interest rates (and risk spreads) artificially low in such condition simply encourages excessive debt growth—a key aspect of the phase in which inflation targeting has been the dominant strategy.

Second, *any* sensible (engineering) **targeting framework requires that the variable being targeted (inflation) by the controlling agent (the central bank) is controllable (pulling lever X produces outcome Y). As observed, central banks have found it very challenging to understand, project and predict the inflation process. The notion that the Fed can tweak a few policy levers and push inflation a little above 2% for a short while was at the core of the 2019 strategy review. This has proven to be a spectacular failure and should be abandoned quickly in order to restore the credibility of the Fed's commitment to re-establish price stability**.

[17] See my note, Three lessons from the 1970s, *SEN #170*, August 2nd, 2021

[18] I wrote an essay on this subject in the September 1996 issue of JP Morgan's *World Financial Markets*: Inflation targeting—tried but only partially tested

[19] Confessions of an inflation-targeting skeptic, SEN #91, July 31st, 2019

4. The rise, fall and relevance of crypto "currencies"

A final important development of the past 5 years has been the evolution of crypto "currencies" (I do not think the term currency fits private sector issued crypto assets, most notably bitcoin, as they lack *the* key aspect of a currency—a stable value relative to goods and services). I have written three notes on this evolution (a 4th is planned for 22Q4). The first was at the end of the 2017 bull market in crypto assets (Bitcoin, BTC, peaked in January 2018)[20]. The second came after a year of consolidation in 2019, during which the main innovation was the (proposed) private-sector development of stablecoins, led by Facebook[21] (crypto liabilities ideally matched currency-board-like to a stock of USD assets, thus ensuring a stable value; stablecoins backed by smoke and mirrors, such as Terra, have been anything but stable). The third followed the move to more serious digital currency experiments by central banks (central bank digital currencies, or CBDC).[22] CBDC are a new form of conventional currency, raising different issues. The most notable is how they might affect the viability of the traditional fractional banking system, which is a structure with large private banking sector assets (loans) and liabilities (deposits) built on a (now less) narrow base of central bank money.

The market value of crypto assets has remained on a roller-coaster following the boom-bust of 2017-18 (Chart 15). The major speculative surge occurred during 2021, when the market cap of crypto assets peaked at $1.615 trillion in mid-November. In the 9 months since, that value has fallen by 64%, close to the level it attained at the January 2018 peak and where it was in March 2021. The share of BTC in global crypto market cap has been about 40% in the past year. In my view, **there have been three factors promoting the emergence of crypto assets in recent years, one of which reflects a healthy trend, but two of which reflect less wholesome trends**.

Chart 15
Market value of cryptocurrencies
$ billion, coinmarketcap.com; end of August

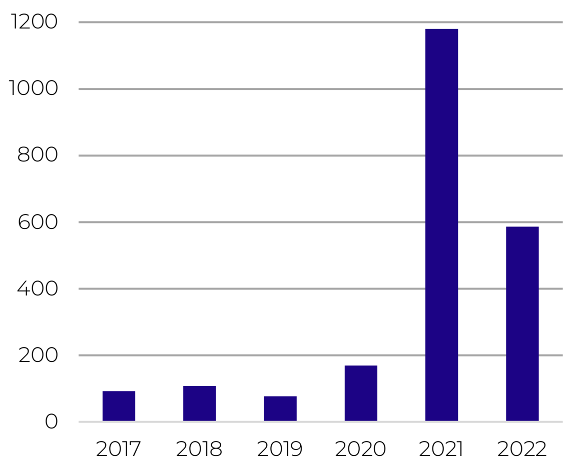
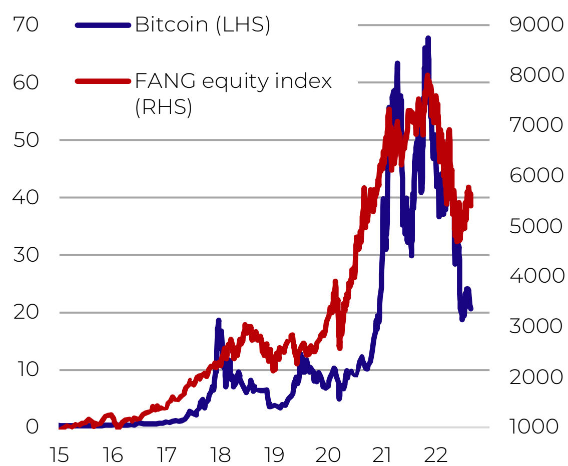


Chart 16
Speculative market developments
$'000 *index*



The positive development is that they reflect the increased use of technology to make the payments system—especially the retail payment system—more efficient. The US retail payment system is geared around the use of credit cards, which have become an increasingly regressive form of payment technology.[23] CBDC could help offset some of these adverse distributional effects (offset by lower card issuer profits). Given the advanced nature of electronic payments in China and Sweden, it is no surprise

[20] The emergence of digital currency—a macro view, *SEN #17*, December 6th, 2017
[21] Digital currencies—an update, *SEN #99*, October 10th, 2019
[22] Digital currencies, Take 3, *SEN #142*, October 24th, 2020
[23] See Distributional effects of payment card pricing and merchant cost pass-through in the US and Canada, *FRB Boston Working Paper #20-13*

the central banks there are leading efforts to develop CBDC. Early in 2022, the Fed issued its first official discussion paper on a digital dollar.[24]

The first less wholesome aspect of this emergence of private sector digital assets is that they are an aspect of the speculative excesses inspired by excessive easy monetary policies in the major DM economies, especially in the United States. Some of the most avid promoters of crypto assets have emphasized the tendency for issues of traditional money to debase it over time—a narrative that central bankers played into from March 2020 onwards when their policies became *and remained* extraordinarily easy. While many proponents of crypto assets argued that they offered an important inflation hedge (i.e., a modern-day version of gold), the reality is that they have been nothing of the sort. They have been weak as inflation has soared since mid-2021. Rather, they matched speculative tech-oriented stocks as an outlet for excess liquidity in a phase of policy excess (Chart 16).

The second less wholesome aspect of the rise in crypto assets is their role in promoting and sustaining illegal financial activity around the world. There were sustained efforts to clean up the global financial system through the first 15 years of this century, focusing on ensuring that the banking system—especially offshore banking centers—could not be used for illicit transactions, including (after 9/11) the financing of terrorist activity. The array of crypto assets now provides convenient new vehicles for those bad actors that had been squeezed out of the conventional financial system. Bitcoin has been adopted as legal tender in the Central African Republic and El Salvador. The unregulated aspect of crypto assets (seen as an advantage by financial libertarians) makes them vulnerable to theft, fraud, and a sudden collapse in confidence, akin to a run on a bank (e.g., Terra in May 2022). In addition, the rise of crypto assets has occurred alongside the growing propensity of the United States to use financial sanctions as a tool of foreign policy (Trump and Iran; Biden and Russia). **The availability of credible global payment alternatives to USD (and other major DM currencies) might not only undermine the near-term effectiveness of US-led sanctions but could also erode the dollar's long-term role as anchor currency of the global financial system. Realistically, this is (highly) unlikely to result from private crypto assets, but could be a longer-term result of the emergence of a successful Chinese digital-RMB**.

Philip Suttle
phil@suttleeconomics.com
202-378-6793

[24] Money and payments: USD in the age of digital transformation, FRB, January 2022