Domača naloga iz makroekonomije
Trg denarja

Preberi priložena članka in odgovori na sledeča vprašanja:

1. Kdo (kaj) določa količino Bitcoinov v obtoku (M^s)? Sledi količina Bitcoinov v obtoku nekemu naključnemu procesu (v smislu diskrecijske politike centralne banke) ali je v celoti podvžena vnaprej določenim zakonitostim?

2. Bitcoin ima zelo omejeno uporabno vrednost, saj se ga lahko le izjemoma uporablja kot plačilno sredstvo. Kakšni so torej razlogi za tako hitro naraščanje njegove cene (menjalnega tečaja)? Na čem temelji njegova vrednost?

3. Ponudba Bitcoinov narašča po padajočem geometrijskem zaporedju in je navzgor omejena z 21 mio Bitcoinov ($\lim_{t\to\infty} M_t^s = 21$ mio BTC). Kvantitativna teorija denarja opisuje razmerje med nominalnim BDP-jem, obtočno hitrostjo denarja in ponudbo denarja kot: $M \times V = P \times Q$. Nominalni BDP, torej zmnožek cen in količin ($P \times Q$), je enak zmnožku količine denarja v obtoku in obtočne hitrosti denarja ($M \times V$). Na dolgi rok velja, da je obtočna hitrost denarja (V) konstantna in je nominalni BDP torej proporcionalen denarju v obtoku. Predpostavimo, da imamo državo, v kateri so Bitcoini edini legalen denar. Država ima na dolgi rok v povprečju 3 % realno gospodarsko rast. Kakšna bo na dolgi rok povprečna letna stopnja inflacije v tej državi?

4. Zakaj je takšna dinamika cen gospodarsko škodljiva? Naštej nekaj razlogov omenjenih v članku!

Rok za oddajo: 10. december 2013

V primeru nejasnosti sem dosegljiv na: `gasper.ploj@gmail.com`

The Economist

Digital money

The Bitcoin bubble

It looks overvalued. But even if this digital currency crashes, others will follow

Nov 30th 2013 | From the print edition

BITCOIN is booming. Investors are piling into the digital currency, which is not issued by a central bank but is conjured into being by cryptographic software running on a network of volunteers' computers. This week the price of a Bitcoin soared to above $1,000, from less than $15 in January.

Having long been favoured by libertarians, gold bugs and drug dealers, Bitcoin is attracting some surprising new fans. Germany has recognised it as a "unit of account". Ben Bernanke, chairman of the Federal Reserve, told a Senate committee on virtual currencies that the idea "may hold long-term promise". A small but growing band of shops and firms accept payments in Bitcoin. Some like the way it allows funds to be transferred directly between users, without middlemen. Others are attracted by the potential for anonymous transfers, or by the fact that the number of Bitcoins in circulation has a fixed upper limit—so there is no way a central bank can inflate their value away by issuing more.

But the recent price surge, driven by Chinese investors stashing money offshore, looks like a classic bubble. Hoarding means that Bitcoin is currently more of a speculative asset than a currency. And a crash is not the only risk Bitcoin users face. As the price rises, Bitcoin theft is increasing, both from individuals and from online exchanges that store the coins and convert them into other currencies. Around $1m in Bitcoins was recently stolen from BIPS, a European exchange. GBL, a Chinese Bitcoin exchange, abruptly vanished in October, taking $4.1m-worth of deposits with it.

The system itself is straining at the seams (see *Technology Quarterly* (http://www.economist.com/news/technology-quarterly/21590766-virtual-currency-it-mathematically-elegant-increasingly-popular-and-highly)). The amount of computing power consumed by its transaction-verification system, which has the side-effect of "mining" new Bitcoins, is mushrooming: it now far exceeds that of the world's 500 fastest supercomputers combined. At the same time Bitcoin's method of recording and processing transactions, and compensating those who verify them, is becoming unwieldy. Adjusting Bitcoin's protocols, however, requires getting the volunteers who maintain its software to agree on the necessary changes, and the Bitcoin community to adopt them, before anything goes wrong.

Excitement about Bitcoin, and concerns about its limitations, have prompted the emergence of many other cryptocurrencies, or altcoins. Litecoin, for example, retains Bitcoin's limited money supply but offers faster transactions and is intended to prevent a computational arms-race among miners. And whereas Bitcoin was created by a mysterious figure known as Satoshi Nakamoto, who vanished in 2010, Litecoin's creator, Charles Lee, makes no secret of his identity. Peercoin has no money-supply limit, built-in inflation of 1% and a more energy-efficient mining process, though, as with Bitcoin, its creator is unknown. Anoncoin and Zerocoin, meanwhile, strive for complete anonymity—which Bitcoin lacks. And so on.

We've heard this song before

Bitcoin, then, is merely the first and, for the time being, the best-known example in a new category. In many ways it is akin to Napster, the pioneering file-sharing service that upended the music industry in 1999 by allowing internet users to call up almost any song at will. Though Napster, unlike Bitcoin, was illegal, it demonstrated that there was enormous demand for what it provided, prompting many other services to spring up in its wake. Just as Napster paved the way for BitTorrent, iTunes and Spotify, Bitcoin has triggered a surge of innovation in digital money.

So let a thousand altcoins bloom. In the meantime, if you are lucky or clever enough to have owned an asset whose price has risen 60-fold in a year, it might be time to sell.

Correction: This article originally stated that Litecoin was intended to be more energy-efficient than Bitcoin. In fact, its design strives to prevent a computational arms-race among miners by reducing the benefits associated with specialised mining hardware; Peercoin is designed to allow more energy-efficient mining. This was corrected on November 29th.

From the print edition: Leaders

The Economist

The global economy

The perils of falling inflation

In both America and Europe central bankers should be pushing prices upwards

Nov 9th 2013 | From the print edition

WHAT is a central banker's main job? Ask the man on the street and the chances are he will say something like "keeping a lid on inflation". In popular perception, and in their own minds, central bankers are the technicians who squeezed high inflation out of the rich world's economies in the 1980s; whose credibility is based on keeping it down; and who must therefore always be on guard lest prices start to soar. Yet this view is dangerously outdated. The biggest problem facing the rich world's central banks today is that inflation is too low.

The average inflation rate in the mostly rich-world OECD is 1.5%, down from 2.2% in 2012 and well below central banks' official targets (typically 2% or just under). The drop is most perilous in the euro area: annual consumer-price inflation was only 0.7% in October, down from 2.5% a year ago. That is partly because commodity prices have been falling, but even if you strip out volatile food and fuel prices, the euro zone's underlying or "core" inflation is 0.8%, as low as it has ever been since the single currency began. In America the headline rate in September was 1.2%, down from 2% in July—and the core rate, as defined by the Federal Reserve, has stubbornly stayed at 1.2%, close to its low point. There were inklings this week that some at the Fed want even looser monetary policy. True, things are improving in Japan, which seems finally to have escaped 15 years of falling prices, but even there underlying inflation is still only zero. The only big, rich economy where prices are rising at a clip is Britain, where overall inflation is 2.7%.

That sinking feeling

These are depressing numbers (see article (http://www.economist.com/news/finance-and-economics/21589439-rich-world-and-especially-euro-zone-risks-harmfully-low-inflation)). The most obvious danger of too-low inflation is the risk of slipping into outright deflation, when prices persistently fall. As Japan's experience shows, deflation is both deeply damaging and hard to escape in weak economies with high debts. Since loans are fixed in nominal terms, falling wages and prices increase the burden of paying them. And once people expect prices to keep falling, they put off buying things, weakening the economy further. There is a real danger that this may happen in southern Europe. Greece's consumer prices are now falling, as are Spain's if you exclude the effect of one-off tax increases.

In America and northern Europe deflation is less of an immediate risk. Most economies are growing, albeit slowly. And surveys show consumers still expect medium-term inflation to be at or above the central banks' target of 2%. But if an economy with high unemployment grows too slowly for too long, prices and wages are eventually likely to fall. In Japan deflation did not set in until seven years after the asset bubble burst.

Even without reaching that critical level, ultra-low inflation has costly side-effects. It tends to go with a weaker economy and higher-than-necessary joblessness: America's unemployment rate is 7.2%, France's 11.1% and Spain's 26.6%. It also means that nominal incomes grow more slowly than they would if prices were rising faster. This makes both government and household debts harder to pay off. And low inflation makes it tougher for uncompetitive countries within a single currency to adjust their relative wages. With Germany's inflation rate at 1.3%, Italian or Spanish firms need outright wage cuts to compete with German factories.

What's more, too little inflation will undermine central bankers' ability to combat another recession. Normally, during a period of growth bankers would raise rates. But policy rates are close to zero, and central bankers are reliant on "unconventional" measures to loosen monetary conditions, particularly "quantitative easing" (printing money to buy bonds) and "forward guidance" (promising to keep rates low for longer in a bid to prop up people's expectations of future inflation). Should the economy slip back into recession, the central bankers will find themselves unusually impotent.

An attitude for altitude

Most rich countries, then, would be better off if consumer prices were rising a bit faster. But what is "a bit", and how should central bankers go about nudging prices upwards without losing control of them? Too often in the past a bit of inflation has turned into a lot—with nasty consequences. And it is not as if central bankers have been doing nothing: from the Federal Reserve to the Bank of Japan, their balance-sheets have exploded. That has pumped up asset prices, and leads many to fret that dangerously higher consumer-price inflation will eventually appear too.

One response might be to raise official inflation targets, say from 2% to 4%. But changing what has been the cornerstone of central banking for decades could easily prove counter-productive, by unnerving financial markets. Nor is such radicalism yet necessary. Central bankers' first step should be to work harder at reaching their existing inflation goals.

The European Central Bank, which cut its main policy rate from 0.5% to 0.25% on November 7th, still has the most work to do. Bolder moves to loosen financial conditions, including broad bond-buying and a new cheap financing facility for banks, are needed. The ECB must also stress that its target is an inflation rate close to 2% for the euro zone as a whole, even if that means higher inflation in Germany.

The Fed, which is still buying $85 billion-worth of bonds a month, does not need to expand quantitative easing. But it can change its forward guidance. This week's kerfuffle was based on the idea that the Fed should reduce the "threshold" below which unemployment must fall before rates are raised, lowering it from 6.5% to 6% or below (see article (http://www.economist.com/news/finance-and-economics/21589425-promise-higher-inflation-central-banks-might-spur-recoveryif-it)). That looks a good idea. The Fed's boss-in-waiting, Janet Yellen, could introduce an inflation threshold of, say, 1.75%: prices would have to rise faster than that for her to raise rates.

None of this means that inflation will not one day be a risk. But it is not today's problem. All the "sound money" fanatics who issued dire warnings about rampant inflation when central bankers began their unconventional measures might usefully reconsider whether Western policymakers did too little, not too much. Be afraid of inflation, by all means; but life can be even scarier when it sinks.

From the print edition: Leaders