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Peg worth its weight in gold: a detailed analysis of the Swiss gold referendum

- On 30 November, the Swiss will vote in a referendum to decide whether the SNB's constitutional mandate should be changed to require the central bank to 1) never sell any gold reserves once acquired, 2) store all its gold on Swiss territory, 3) hold at least 20% of its official reserve assets in gold.
- The likelihood of a yes vote is considerable. The proposal requires a simple country-wide majority to pass, as well as a majority in at least 50% of Swiss cantons. Current polling shows the 'yes' campaign with a narrow but clear lead and there are reasons to believe that factors on the day could be favourable for the amendment. If an affirmative vote was recorded, there is little political leeway to delay or dilute implementation.
- We find that some of the concerns over the technical implementation of the 20% rule may be overblown. The SNB should be able to meet its gold demands with relative ease. Nor do we subscribe to the view that this would have a long term impact on gold price trends. In the event of further intervention, SNB rebalancing into gold could have a more marked impact on short term price trends, however. The SNB should easily be able to repatriate its gold holdings from abroad.
- The possibility that the SNB could circumvent the requirement through the creation of a sovereign wealth fund is remote. While technically attractive, this option is not politically feasible. However, the SNB could use gold swaps to mitigate some of the adverse implications of the gold vote, in particular with respect to asset return risk and market footprint.
- Contrary to popular belief and proponents of the gold referendum, the amendment would carry inflationary risks as it would result in a permanent constitutional expansion of the money supply. The SNB would be prevented from drawing at least 20% of the excess liquidity it had created from the monetary system.
- However, we do not believe that this risk would call into question the SNB's commitment to maintain the EUR/CHF floor. In the first place, the central bank would prioritize the known costs of deflation against the unknown risks of permanently increasing the money supply. There are also tools the SNB can use to reduce these risks. In particular, the SNB could commit to sterilizing the gold related liquidity creation through existing monetary policy facilities.
- The amendment would carry significant balance sheet risks for the SNB. As well as concentrating market risk, the SNB would be effectively short an option on gold but without having received a premium. Balance sheet risks could be mitigated by the SNB returning to marking gold at purchase rather than market prices.
- The amendment would incentivize the SNB to use negative rates as well as balance sheet expansion to maintain the EUR/CHF floor. These would probably have to be accompanied by macroprudential measures. For markets, the clearest implication is that the risk-reward for remaining long EUR/CHF remains intact.

Background

On 30 November, the Swiss will vote in a referendum to amend the constitutional mandate of the Swiss National Bank (SNB) with respect to its gold reserves. The proposal is that

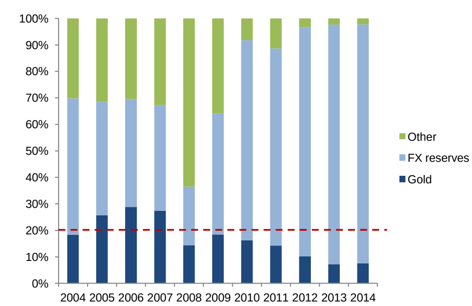
- the SNB never sells any gold reserves once acquired,
- the SNB stores all its gold reserves on Swiss territory,
- the SNB holds at least 20% of its official reserve assets in the form of gold.

Gold reserves would have to be repatriated within two years of the referendum, while the SNB would be given five years to align its gold reserves to the 20% minimum requirement.

The background to the proposal is concern among conservative observers that the SNB's reduction in its gold reserves in recent years has constituted a plundering of the nation's intergenerational wealth and economic status. The rationale behind a gold reserve ratio is the perceived association of gold-backed currencies with price stability: the exogenously constrained supply of gold is hoped will restrain the central bank in its creation of fiat money.[1]

Opponents of the proposal have warned against the constraints that would be placed on the SNB's monetary policy instruments. While the camps appear to have reached stalemate over the fundamental objectives of monetary policy, opponents of the 'gold initiative' have argued that gold reserves in the central bank's balance sheet yield no distributable interest and are excessively vulnerable to price shocks. Two-thirds of SNB profits have traditionally been distributed to the cantons and are an important source of regular income.

Composition of SNB's official reserves



Sources: Deutsche Bank, SNB

Risk of a 'yes' vote is high

The proposal requires a simple 50% majority to pass (*Volksmehr)*, with the further proviso that there be a majority in at least 50% of Switzerland's 26 cantons (*Ständemehr)*.[2] There is no minimum turnout. The *Ständemehr* is the lower hurdle, since the vote is biased towards smaller, conservative cantons more likely to vote yes.[3] In the absence of official polls, the proposal's likelihood of success can only be gauged from polls conducted by newspapers and other media outlets. The most respected polls are published by the radio and TV platform SRG. According to their latest poll (another poll is due next week), 44% of respondents intended to vote in favour of the amendment, with 39% rejecting it.

Swiss pre-referendum polls commonly see the share of 'no' votes rise during the lead up to the actual vote, as the political and business establishment ramp up campaigns against radical proposals. However, it is important to note that the Swiss vote on three separate referenda on 30 November. Most of the political debate has concerned the 'EcoPop' initiative which seeks to curtail immigration to Switzerland based on a quota system. Some observers fear that the political focus on the immigration debate might lead voters to pay less attention to the gold proposal. There is also a concern that moderately conservative voters uncomfortable with the anti-immigration initiative might vote in favour of the gold proposal in compensation.

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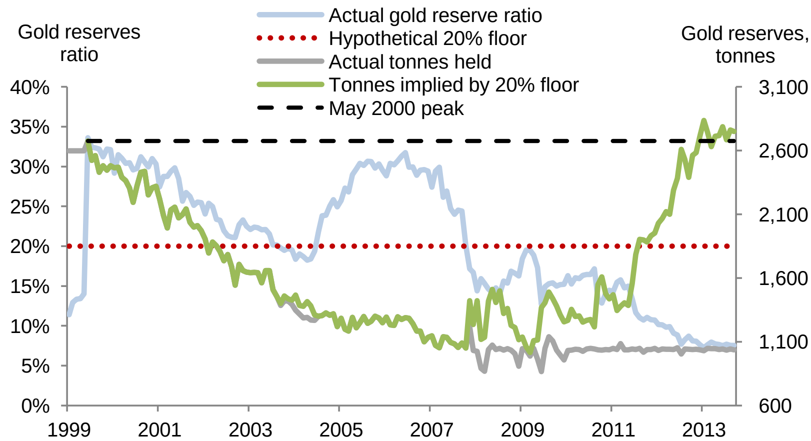
[1] See http://gold-initiative.ch/argumentarium/ for more detail

[2] Six cantons are given only half a vote for historical reasons; hence, there are 23 cantonal votes.

[3] Consider that a recent referendum rejected by the cantons despite a nation-wide majority proposed to make Swiss citizenship more easily available for young foreign residents (1994). By contrast, the last proposal to be rejected by the nation despite a *Ständemehr* was the 2002 initiative to curtail the supposed exploitation of Switzerland's asylum law. The vote of a citizen in the conservative canton Appenzell Innerroden famously has a weight forty times greater than that of a Zurich resident.

The Gold rule would take us back to levels of reserves held in 2000



Source: Deutsche Bank, SNB

The main Swiss parties have recommended that voters reject the proposal. Even the conservative SVP, to which the original sponsors of the initiative are considered to be close, has not centrally endorsed the proposal. However, the SVP is understood to be pushing the proposal informally at the local level.

Limited political scope for delaying or diluting implementation

Article 99 of the Swiss Federal Constitution provides the constitutional basis for the SNB's independence and specifies the obligation to set aside adequate currency reserves, part of them in gold, and to distribute at least two-thirds of its profits to the cantons. The proposed amendment of this article would require corresponding changes to the statutory National Bank Act of 2003 which sets out the SNB's mandate in detail.

There would be little political leeway for diluting or delaying changes to the legislation. First, article 99 contains only four clauses and affects no other national or supranational legislation meaning that the proposed amendment is legally too straightforward to warrant lengthy consideration by the legislative branch. Indeed, the ratification and implementation of more complex referenda similarly opposed by parliament has tended to be swift. [4] Second, the time windows set for the implementation of the reforms are fixed to begin from the day of the successful referendum. By delaying the legislation, authorities would only reduce the time they have to implement the reform.

More generally, constitutional referenda are a core tenet of Switzerland's direct democracy. Any attempt by the political establishment to counteract the will of the sovereign is difficult to imagine given Switzerland's political traditions. It is possible that voters opposing the gold initiative would call for a follow-up referendum, proposing to delete the amendment of article 99. However, the procedure of initiating a constitutional referendum is cumbersome, and it would take at least two years for a new referendum to be held even if parliament and the executive proactively facilitated the process.[5] Hence, we do not think that there is much political scope for delaying or diluting implementation, and solutions will have to be technocratic ones.

[4] In the case of a highly contentious earlier referendum on immigration quotas in February, which violates treaties with the EU, the Federal Council produced a draft law within only four months. It is expected to be ratified by both parliamentary chambers by year-end.

[5] Initiators of referenda are given eighteen months to gather 100,000 signatures in support of the initiative. It then typically takes between two and three years for the final proposal to be put to the entire electorate.

The gold market impact may be less than thought

The proposal requires that all Swiss gold be repatriated within two years and that the gold ratio of official reserves rise to 20% within five years. Are these timelines realistic?

The SNB should face little technical difficulty in repatriating its gold within two years. Switzerland stores about 300 tonnes of gold abroad, almost exclusively in the UK and Canada. History suggests that this gold could be shipped to Switzerland within a short period of time (for more detail, see appendix). It would be easier to repo Swiss gold held abroad and insist on physical delivery upon expiry, or to sell the gold abroad to fund contracts deliverable over the next five years. Counterparties could source the gold to be delivered most cheaply in Switzerland itself, given the country's large private holdings.

Similarly, the SNB should be able to relatively easily meet its rebalancing needs in the global gold market. The SNB's current gold reserve ratio amounts to 8%. At the current balance sheet size, and assuming that all gold purchases were met through seignorage, which we believe is unlikely, it would need to buy CHF 65bn of gold or 1,500 tonnes at market prices.

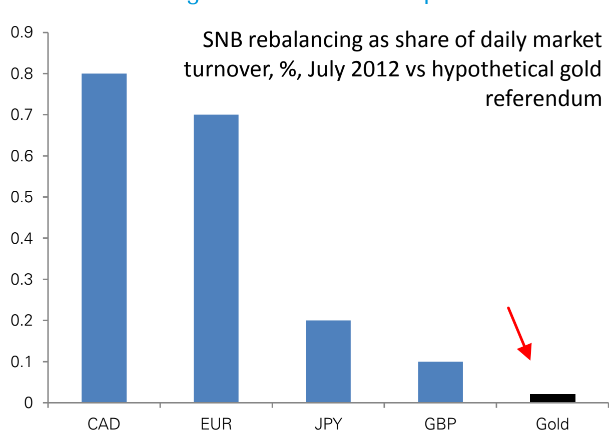
It has often been noted that 1,500 tonnes represents more than half annual gold production. However, if purchases were spread over 5 years, SNB demand would amount to 1.2 tonnes per trading days. This is a small fraction of average daily turnover in the gold market. According to LBMA, average daily trading volume in the London market as of Q1 2011 was 174 million ounces or 5,400 tonnes. Spot transactions made up 90% of turnover. A more conservative estimate from the World Gold Council puts average daily turnover at 1,500 tonnes. In the listed derivatives space, the CME sees a daily forwards volume of 540 tonnes.

A key question for both the SNB and the gold market is what impact SNB demand would have on prices. A previous SNB rebalancing exercise can provide us with a useful point of comparison. During the summer of 2012, the SNB were forced to aggressively buy euros to maintain the 1.20 EUR/CHF floor. A proportion of these euros were then sold to buy other foreign currencies based on the relative weights of the SNB balance sheet. This was widely regarded as exerting downward pressure on euro crosses.

At the time, the RBA estimated the size of SNB rebalancing in each currency

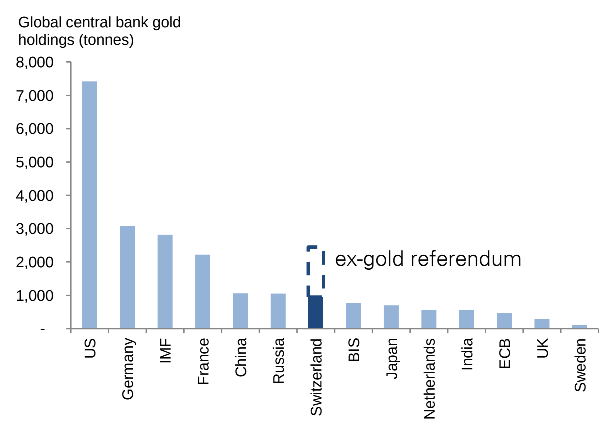
relative to total market turnover. Compared to these, hypothetical SNB gold purchases appear small (see chart).

Initial rebalancing would see small impact on market



Source: Deutsche Bank, RBA, Bloomberg Finance LP, World Gold Cocuncil

Global monetary institutions have sizeable gold reserves



Source: Deutsche Bank, World Gold Council

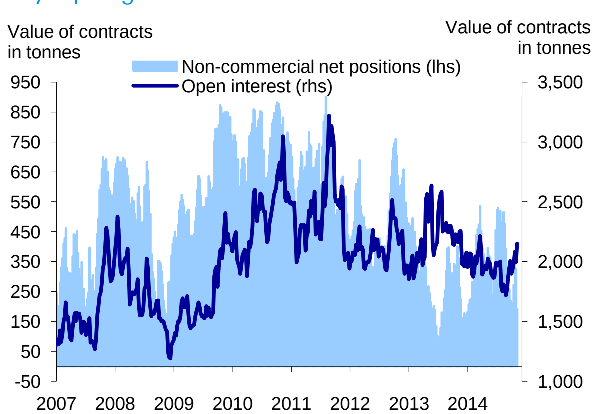
In reality, it is unlikely that the SNB would conduct all of its gold purchases through the global gold market. Large sovereign gold sales and purchases are often conducted off-market, directly with other central banks or supranational institutions such as the BIS or IMF, precisely to minimize price disruptions.

A recent example is the IMF's program of gold sales announced in September 2009. Initially, the IMF sold 212 tonnes to the central banks of India, Sri Lanka, Bangladesh, and Mauritius in off-market transactions. The IMF then sold another 181 tonnes on the market between February and December 2010. Central bank gold holdings are vast, with joint holdings of large monetary institutions more than 30,000 tonnes. It is interesting to note that although the twenty signatories to the fourth Central Bank Gold Agreement in May of this year insisted they did not have any plans to sell gold, the Agreement, unlike the previous three versions, contained no formal cap on gold sales.

Of course, the passing of the referendum could act as a signal for speculators to 'front-run' SNB purchases. This additional demand could drive up prices. But there have been a number of examples of publically flagged large-scale official gold transactions that have had a limited market impact. In the IMF example above, gold prices rose steadily despite the IMF being a reliable seller of almost 20 tonnes each month. In another example, the Chinese government's open market purchases of roughly 500 tonnes per year have not prevented the gold price from plummeting in recent years.

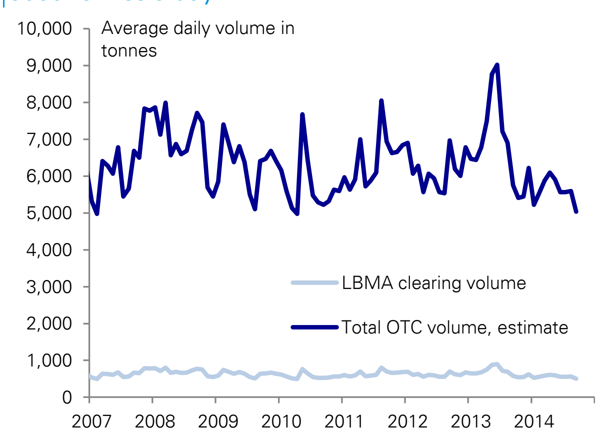
If the SNB were forced to buy gold as part of future currency interventions this could have a more significant impact on prices. In the summer of 2012 the SNB were obliged to aggressively intervene to protect the 1.20 EUR/CHF floor, resulting around CHF 150bn of balance sheet expansion. As noted above, SNB rebalancing out of euros and into other currencies had a noticeable impact on FX markets. Under the current proposal, 20% of future intervention would have to be directed into gold. The size of the intervention, as well as the flexibility of the SNB over the timing of rebalancing would be important drivers of the market impact. It is likely that the SNB would use off-market transactions as well as gold swaps (discussed in more detail below) to minimize its market footprint.

Speculators have reduced their net long positions in a very liquid gold futures market



Source: Deutsche Bank, CME

The LMBA clears gold transactions worth more than 5000 tonnes a day



Source: Deutsche Bank, LMBA

Technical fixes limited

There are ways in which the SNB could circumvent large-scale gold purchases in the event of an affirmative referendum vote.

Sovereign wealth fund politically unfeasible

One solution would be for the SNB to transfer its FX reserves to a sovereign wealth fund (SWF). This would artificially lower the size of its balance sheet and therefore the need to purchase gold.

This idea is not new. In the past, the SNB rejected calls to create a SWF, citing three arguments: 1) it would not enhance monetary policy 2) it would not eliminate exchange rate risk 3) removing FX reserves from the SNB's balance sheet could limit policy flexibility. The SNB have also pointed out that unlike other SWFs, invested assets would come from money printing, not (most commonly) income earned on commodity exports.

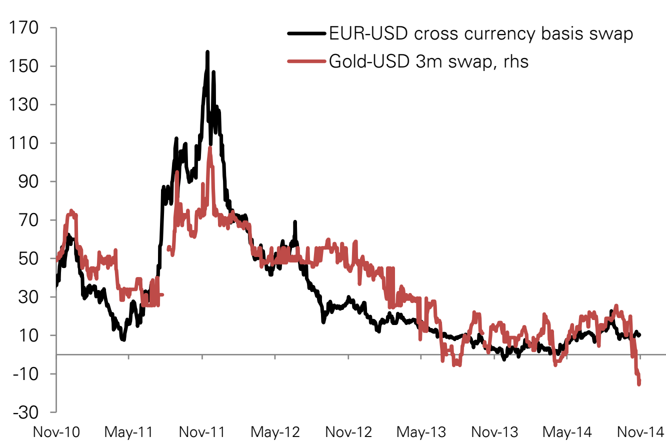
If the referendum were to be successful, the SNB's first argument clearly falls down. The central bank could in theory continually transfer intervention-related reserves into the sovereign wealth fund as an accounting matter, meaning that full policy flexibility was retained. It is also unlikely that the SNB will need FX reserves to support CHF in the foreseeable future. Neither is a SWF necessarily an obstacle to using them. The SNB could follow other countries in specifying certain 'trigger points' at which funds would flow from the SWF to the central bank to be used in interventions.

The main objection is political. An early suggestion of the 'gold initiative' was to transfer Swiss gold reserves to a sovereign wealth fund to protect them from perceived mismanagement by the SNB. This idea was soon dropped. The concern behind the referendum is not the SNB's management competence but the perceived shortage of gold reserves. Transferring the SNB's FX reserves to a fund to avoid gold purchases would therefore be a blatant disregard of the political will and probably involve another referendum.

Gold swaps a more realistic option

Another option for the SNB would be using gold swaps to 'window dress' its balance sheet rather than holding physical gold or futures contracts. The SNB could borrow gold from counterparties prior to monthly balance sheet reporting dates, re-exchanging it for currency the following day.

Gold swap rates have recently traded negative



Source: Deutsche Bank, Bloomberg Finance LP

There would be two advantages to such an approach. First, by borrowing gold to meet reserve holdings disclosure requirements for one day of the month, the SNB would be free to invest in other, higher yielding assets during the rest of it. Second, if the SNB chose to meet its gold requirements through physical or paper gold, it could still use swaps to smooth out purchases beyond the initial 5 year implementation period thereby minimizing its market footprint.

Gold swaps are politically more straightforward than the introduction of a SWF. There is a long history of monetary institutions using gold swaps dating back to the early 20th century. Indeed, in era of pre-Bretton Woods convertibility, gold swaps were frequently used to make up the gold ratio requirements of central banks. The SNB was in fact one of the most frequent users of gold swaps over the course of the 20th century (see appendix for more detail).

Second, using gold swaps to meet reserve ratio requirements would be consistent with international accounting standards. Gold swaps are recognized by the IMF as a legitimate means for managing central bank reserves.[6]

Third, the amendment does not specify whether the gold has to be in physical or derivative form. The movement behind the gold initiative had initially demanded that all gold be held in bullion, rather than in financial derivatives such as swaps, but this is not an explicit demand of the constitutional amendment. The proposal does specify that SNB gold must be held in Switzerland. In theory, however, the SNB could meet this requirement by transacting swaps with counterparties whose gold is stored in Swiss vaults.

Is the gold swap market large enough to accommodate Swiss demand? It is unknown to what extent the major central banks engage in gold swap and repo transactions, since official statistics no longer disaggregate these. The BIS alone currently holds 236 tonnes of gold under swap agreements with banks. The IMF is prevented from entering gold swaps by its statutes. National central banks would need to step into the breach, as they did pre-Bretton Woods.

The SNB could also choose to use the market to conduct swaps. It is interesting to note that benchmark gold-dollar swap rates have recently traded negative (see chart above), meaning investors are paying to borrow gold. This is unusual as gold is traditionally used as a source of collateral for cash financing. While a number of factors may play a role, such as excess dollar liquidity or an increased demand for collateral on the back of the global regulatory developments, it is possible that anticipation of an affirmative vote in the gold referendum has played a role.

It is important to note that while gold swaps could help address concerns surrounding asset returns and the technical implementation of gold purchases, they do not solve the fundamental issue that the SNB would be obliged to commit a fixed share of its balance sheet to gold, in derivative form or otherwise. Under the terms of the proposal, these reserves would not be available for sale and therefore free to use for monetary policy. Moreover, they would be recorded in reserves, and therefore expose the SNB to balance sheet risks. These issues are explored in more detail in the section below.

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[6] According to the IMF's BPM5 standard, paragraph 434, "deposits (in foreign exchange) acquired by the central bank initiating the [swap] arrangement are treated as reserve assets because the purpose of the exchange is to provide the central bank with assets that can be used to meet the country's balance of payments needs. Reciprocal deposits acquired by the partner central bank also are considered reserve assets. Arrangements (gold swaps) involving the temporary exchange of gold for foreign exchange deposits should be treated in a similar fashion."

A referendum not a deal breaker for EUR/CHF floor

Analysts, commentators and the SNB have all argued that the gold proposal would shackle the central bank's monetary policy and could even call into question the future of the EUR/CHF floor. How worried should markets be?

Briefly, if the SNB were required to return gold holdings to and maintain them at the 20% level, this would create a lower bound on the size of their balance sheet. Due to the large interventions the central bank has conducted in recent years this lower bound would initially be in the region of CHF 104bn, or a fairly hefty 18% GDP (120bn and 20% GDP if financed through seignorage). Future intervention would increase this lower bound at a constant rate. Additionally, if the SNB began to unwind its reserves, gold would make up an increasingly large percentage of its balance sheet. In theory, the SNB could end up with a balance sheet comprised entirely of unsellable gold reserves.

It is helpful to think of this in terms of three risks for the SNB.

1. **Permanent expansion of the money supply**
2. **Balance sheet risk**
3. **Asset return risk**

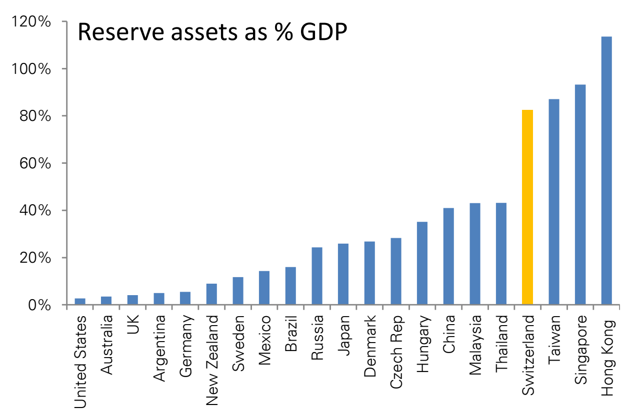
Gold constraints can be overcome

The first and most important risk would be the creation of permanent liquidity totaling 20% of the value of the SNB balance sheet. The SNB would not only be buying gold it could never sell but also printing money it could never take out of the financial system.

This would mark a fundamental change from previous monetary policy. In principal, the SNB can sell its holdings of FX reserves at any time and 'retire' the corresponding amount of francs, thereby reducing the money supply. Indeed, this is likely to be the SNB's desired outcome when and if the franc weakens against the euro. Under the gold proposal, however, the SNB would only be able to remove a maximum of 80% of these francs from the system.

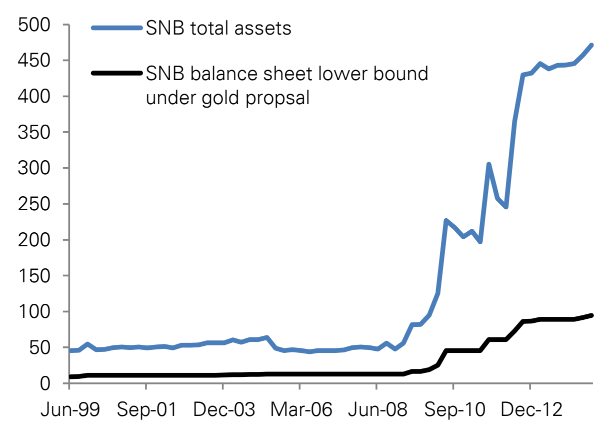
In monetary terms, this is equivalent to buying of primary government debt, or debt monetization. This is ironic because one of the main objections of those

Swiss reserves large but not largest



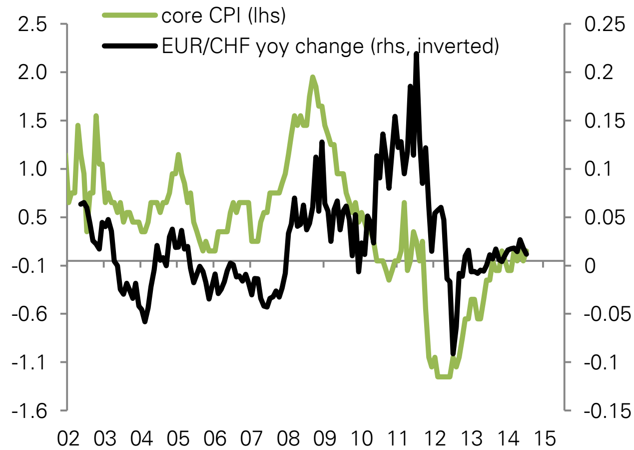
Source: Deutsche Bank, World Bank

Lower bound of balance sheet size



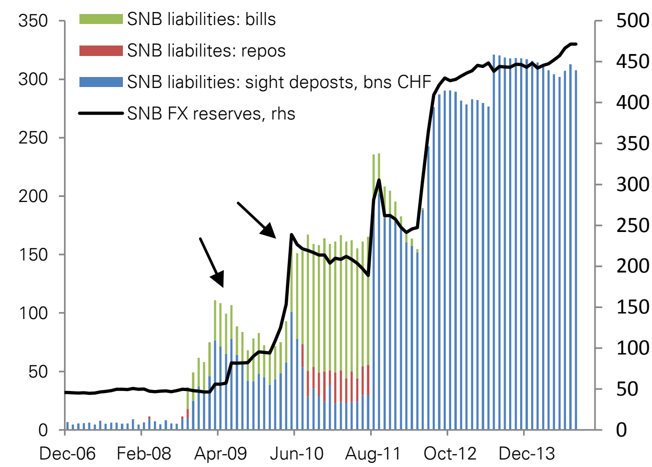
Source: Deutsche Bank, SNB

Risks of deflation in Switzerland remains high



Source: Deutsche Bank, Bloomberg Finance

The SNB has sterilized liquidity creation before



Source: Deutsche Bank, SNB

proposing the constitutional amendment is the perceived unrestricted creation of fiat money, or 'debasing' of the currency. In practice, however, the amendment would constitutionally raise the equilibrium level of the money supply.

Indeed, inflation is the main risk of such a policy. Currently, the likelihood of high inflation in Switzerland is slim. CPI is currently at very low levels. Moreover, the significant expansion of liquidity from the SNB in recent years has found its way into bank deposits, illustrated by the increase in sight deposits at the SNB, rather than the real economy. However, this could change if economic conditions started to improve.

Such a risk could disincentivise the SNB from further intervention. If the market believed that the SNB would be less willing to engage in unlimited intervention to protect the EUR/CHF floor, pressure on the floor would increase, requiring the SNB to intervene and raising yet further the risks of balance sheet expansion. The collapse of the EUR/CHF floor would become self-fulfilling.

However, we believe such an outcome is unlikely. First, the SNB would have to weigh the uncertain inflationary consequences of permanent liquidity creation against the certain deflationary costs of abandoning the EUR/CHF floor. The very strong link between the exchange rate and CPI and extremely fragile price dynamics in the country suggest that abandoning the floor would be very detrimental for long term price stability.

Second, the SNB has tools to manage this extra liquidity. In the past, the SNB along with other central banks have sterilized liquidity created via asset purchases or currency intervention. Academic evidence suggests that sterilization has been effective tool in constraining the expansion of the monetary base and holding down prices.[7]

A solution for the SNB would be to commit to permanently sterilize all the extra liquidity created from gold purchases. It could use either its existing repo facility or issue SNB bills to achieve this. Both of these measures have previously been used to sterilize liquidity in the Swiss banking system following past intervention (see chart). There are risks associated with large-scale excess reserve management in creating higher volatility for Swiss money markets.

[7] See, for example, Zhang, "Sterilization in China: Effectiveness and Cost," September 2010

As an aside, it is important to note that central banking has changed radically since before the crisis. Some have argued that may not be realistic for central banks to reduce their balance sheets to pre-crisis size and in fact positive externalities derive from large quantities of excess liquidity in the monetary system.[8] The SNB may simply have to live with the consequences of a larger balance sheet.

Balance sheet risk more of a problem

The second risk is that with a balance sheet increasingly comprised of gold, the SNB's market risk would become more and more concentrated.

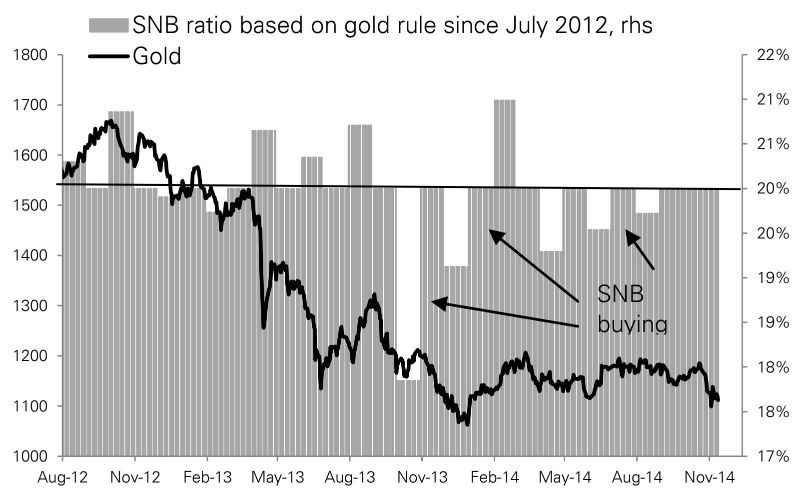
Moreover, because the SNB mark their balance sheet to market, a fall in the value of gold relative to the dollar would require additional gold purchases in order to maintain the 20% reserve requirement. The SNB would have to 'delta hedge' their gold reserves by buying the commodity as it fell in value. In effect, the SNB would be short an option without any premium.

This is particularly concerning because gold demonstrates significant price volatility. To take one example, in April of last year the gold price fell over 13% in the space of a week. In the short term, additional SNB demand should offset some of the downside volatility in prices. However, as we have noted above, we do not believe that additional SNB demand would be sufficient to offset medium term price trends.

In theory, losses incurred by central banks on their assets are purely an accounting matter. However, the issue of central bank profits is politically sensitive in Switzerland because the SNB typically distributes two-thirds of its profits to the Cantons and is accountable to its shareholders. The most obvious solution would be for the SNB to mark gold holdings at cost rather than market value. Such a move would have precedent. The SNB only began to mark gold holdings to market in 2000. The Fed have set a statutory par value of their gold reserves of USD 42.22 per ounce since 1973.

The final risk for the SNB is that gold is a non-interest bearing asset and would

SNB would have to buy gold on the way down



Source: Deutsche Bank

[8] See for example, Gagnon and Sack "Monetary Policy with Abundant Liquidity: A New Operating Framework for the Federal Reserve" Peterson Institute for International Economics, January 2014

therefore reduce SNB returns. While important, we believe this problem could be relatively easily overcome. As we note above, the SNB could engage in gold swaps, allowing them to invest in higher yielding assets except during balance sheet disclosure dates.

Negative rates more likely

In sum, while an affirmative vote in the gold referendum would create significant risks for the SNB, we believe that they are small compared to the certain deflationary consequences of abandoning the 1.20 EUR/CHF floor. Moreover, there are technocratic solutions available to manage these risks.

Undoubtedly, the SNB would be incentivized to broaden its range of monetary policy instruments away from pure intervention to protect the EUR/CHF floor. Most obviously, it is likely that they would use negative rates to disincentivise investors from holding CHF liquidity. As we have noted, this has proved highly effective in other countries fighting currency appreciation.[9] However, it would also heighted macro-prudential risks as domestically held liquidity was pushed into other domestic assets.[10] A successful gold referendum would therefore likely be accompanied by both negative rates and a further set of macroprudential measures.

For markets, the clearest implication is that the risk-reward for remaining long EUR/CHF remains intact. Also, given that a successful gold referendum would add to the marginal costs of balance sheet expansion, the SNB may be more aggressive in using other measures to push EUR/CHF away from 1.20.

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[9] See FX Daily, *CHF: Get Negative*, 9th September 2014
[10] See FX Daily, *How to Lose Friends and Influence People*, the SNB's dilemma, 19th October 2014

Appendix

Gold repatriations in the 20th century

Theoretically, as Keynes wrote in 1931, “a modern liner could convey across the Atlantic in a single voyage all the gold which has been dredged or mined in seven thousand years.” In practice, little gold is normally moved across country borders, with much of the world’s supplies stored and cleared in London or permanently held by central banks.

The largest one-off transport of a nation’s gold reserves in recent history took place in 1936 when the government of the Second Spanish Republic, following the outbreak of the Spanish Civil War, transported 510 tonnes of gold, more than two-thirds of the Spanish gold reserve, to the Soviet Union. Sadly, Stalin did not give his comrades-in-arms a discount, charging the young Republic 3.3% in brokerage fees. More recently, in 2011-12, Venezuela repatriated 160 tonnes of gold stored in foreign vaults at an unknown cost.

Most recently, the gold community paid great attention to the decision of the German Bundesbank to “bring German gold home”. At the beginning of 2013, the Bundesbank announced it would repatriate 300 tonnes of gold stored in the US by 2020. It is well behind schedule, citing logistical difficulties. Yet diplomatic difficulties are more likely to be the chief cause of the delay, especially seeing as the Bundesbank has proven its capacity to organise large-scale gold transports. In the early 2000s, the Bundesbank incrementally repatriated 930 tonnes of German gold held by the Bank of England.

Gold swaps in monetary history

Gold swap lines are still used between central banks today, but they naturally were a more important staple of global central banking during eras when global currencies were pegged to gold. Interestingly, gold swaps are historically strongly associated with the Swiss National Bank. Although the first gold swap arrangement was made between the Fed of New York and the Bank of England in 1925, worth US$200m of US gold against sterling, the SNB was the most frequent initiator of swaps during the Bretton Woods era. Transactions were made with both the BIS and other central banks. In 1955, the BIS accepted the first US dollars from the SNB in exchange for gold in a swap arrangement with a maturity of three months. In 1959, the SNB received gold from the BIS and the Bank of England in return for US$50m and US$20m, respectively, or roughly US$700m in today’s prices. The rationale was balance sheet window-dressing. Towards the end of 1959, a number of Swiss commercial banks were short of liquidity in Swiss francs given contemporary minimum reserve requirements. They thus entered dollar/franc swaps with foreign banks. The rapid influx of francs threatened the SNB’s own note cover and it in turn had to scramble to obtain additional gold holdings over the year end. Swaps did the trick, plugging the gold gap in its balance sheet at least temporarily.

Gold swaps came to be reciprocated between central banks. In 1961, the SNB entered a large gold/sterling swap with the Bank of England after the revaluation of the German mark had put downward pressure on sterling. To support the Bank of England, a series of bilateral swap arrangements were formalized among a number of central bank and the BIS under the ‘Basle Agreement’. By mid-1961, total swaps under the Basle Agreement amounted to US$904m, with the BIS accounting for US$154m of gold swaps alone.

After currencies were unshackled from gold at the end of the Bretton Woods era, gold swaps lost their significance somewhat, but they remain a customary tool of international monetary cooperation. It was commercial banks which most recently revived the concept during the financial crisis, when they entered extensive gold swaps with the BIS. The gold collateral was provided by national central banks such as the Swedish Riksbank.

France's sterilization policy in the 1920s

French monetary policy in the 1920s provides a useful historical precedent of a central bank amassing seemingly unlimited gold reserves. In 1926, one year after Britain had returned to the Gold Standard at the overvalued pre-war rate of $4.26, France decided to stabilize its currency, debased by two years of hyperinflation, at an undervalued external rate given high domestic interest rates. Unlike Britain, furthermore, France decided not only to back its currency by gold, but to restore full convertibility. The Monetary Law of 1928 formally set the gold reserve ratio at 35% of short-term liabilities. As a result of the handsome carry profits on offer, France experienced massive capital inflows in the form of gold, but barely expanded the money supply, as prescribed by the tacit rules of the classical Gold Standard. By 1932, the Bank of France's cover ratio had risen to almost 80%, prompting Keynes to quip that France lived in a "gilded grotto". Yet international complaints about the Bank's sterilization of gold inflows left the French unfazed. After all, the increasingly powerful US Federal Reserve effectively pursued the same policy.

Appendix 1

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