

Forecasting the Outcome of the Swiss Gold Initiative

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Abstract

On November 30th 2014, Swiss voters decide whether to require the central bank, the SNB, to hold 20% of its assets in gold. Before the vote on this initiative, financial markets' views about the likelihood of an acceptance are reflected in securities' prices. In particular, given the likely impact an acceptance would have on the SNB's exchange rate policy, options on exchange rates are informative about the likelihood of an acceptance of the gold initiative.

Based on my estimates, as of November 14, financial markets do not find it likely that the gold initiative will be accepted. The probability of acceptance is higher than 20%. Specifically, if markets believe that a yes vote implies a zero probability that the SNB can continue its CHF 1.20 cap for the euro, then the probability of an acceptance of the initiative is 20%. If the SNB is not necessarily expected to abandon its current policy upon an acceptance of the initiative, the probability of a yes vote is higher than 20%. For instance, to justify a 50% probability of a yes vote, one has to attach a 60% probability to the SNB maintaining the cap at CHF 1.20 despite a yes vote.

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Since September 2011, the SNB's official policy has been to maintain a minimum value for the euro in terms of Swiss francs of 1.20 CHF per EUR. So far, this minimum exchange rate for the euro, or equivalently the cap for the Swiss franc, has not been breached. In order to guarantee this cap, the SNB needs to be ready to buy euros in unlimited quantities at a price above or at 1.20 CHF per EUR. Foreign currency reserves at the SNB have recently increased substantially, and now stand at about 470bn CHF, of which 45% are in euros. This large position exposes the SNB to a significant risk of capital losses.

At current prices, gold amounts to about 7.5% of the value of the SNB's assets. If the initiative is accepted, the SNB would either have to buy about 80bn CHF worth of gold, or it would have to reduce its holdings of euros and other assets, or select a combination of the two. This would not need to happen immediately, as the initiative allows for a 5 year transition period. Nevertheless, any future purchases of euros to enforce the exchange rate cap will eventually require purchases of additional gold.

In itself this partial gold backing does not render a continuation of the SNB's exchange rate target for the euro impossible. However, another requirement of the gold initiative would make the continuation of the euro policy of the SNB very difficult. The initiative requires that gold purchased can never be sold again. Therefore, even if the euro would eventually stabilize, and euro holdings could be reduced, the SNB could find itself with very large gold holdings. Gold has no yield, contrary to bonds, the preferred asset of central banks. This would represent lost revenues to Swiss government entities accustomed to receiving "dividends" from the SNB. As a consequence, a continuation of the same policy for the euro appears quite unlikely if the gold initiative is accepted. A significant loss of credibility would in itself make the policy impractical, as waves of speculative capital inflows would likely convince the SNB to change its policy towards the euro.

Based on these considerations, the market's forecast of EUR dropping below 1.20 can give us information about the likelihood of acceptance of the gold initiative. In Jermann (2014), a method to extract the market's implied probability of the euro going below 1.20 is

presented. The basic idea is that the prices of currency options that pay only if the euro is below 1.20 when the option matures, give us information about the likelihood that the euro drops below 1.20. As we now show, this probability can be considered as a lower bound to the probability of the yes vote in the initiative.

Define $p_{|No}$ and $p_{|Yes}$ as the survival probabilities of the exchange rate policy conditional on the vote on the gold initiative being no or yes, respectively. Define π as the probability of a no vote.¹ With these definitions, the survival probability of the exchange rate policy p , which I can estimate from currency options, equals

$$p = \pi \cdot p_{|No} + (1 - \pi) \cdot p_{|Yes}.$$

If the initiative is rejected, it should not be hard to maintain the policy (at least for a while), so that $p_{|No} = 1$ or close to 1 seems a reasonable assumption. Then, the probability of a no vote equals

$$\pi = \frac{p - p_{|Yes}}{1 - p_{|Yes}}.$$

For the case where the policy will stop with probability one with a yes vote, that is $p_{|Yes} = 0$,

$$\pi = p.$$

In this case, the survival probability of the exchange rate cap equals the probability of a no vote to the gold initiative. Based on an estimated value of $p = 0.8$, the probability of a yes vote is then 20%.

Consider another scenario where $p_{|Yes} = 0.6$, the same estimated p now implies

$$\pi = \frac{p - p_{|Yes}}{1 - p_{|Yes}} = \frac{0.8 - 0.6}{1 - 0.6} = 0.5,$$

¹Strictly speaking these are risk neutral or risk adjusted probabilities. The assumption made throughout is that risk adjustments are small.

that is, a 50% chance of a yes vote. Equivalently, to justify a 50% chance of a yes vote, one has to believe that the SNB can continue its policy despite a yes vote with a probability of 60%.

More generally, it is easy to show that

$$\pi = \frac{p - p|_{Yes}}{1 - p|_{Yes}} \leq p \text{ for } p \text{ and } p|_{Yes} \in (0, 1).$$

Therefore, the survival probability is an upper bound for the probability of the no vote.

Figure 1 displays estimates of the recent evolution of the probability that the foreign exchange cap continues for another 3 months, as implied by EURCHF spot and options prices, following the method presented in Jermann (2014). In early August, this probability was over 95%. Since then, the credibility of the policy has declined. Most recently, it is around 80%.

The second panel compares the spot exchange rate EURCHF to the model estimate of what the exchange rate would be without the SNB's target for the euro, a latent fundamental exchange rate or shadow rate. The third panel shows implied volatilities of observed options and the model estimated volatility of the shadow exchange rate. Since early November, the EURCHF has approached 1.20 and option volatilities have continued to increase. This market pressure is interpreted by the model as a reduction in the shadow exchange rate and an increase in its volatility, while the credibility of the 1.20 cap has not further declined.

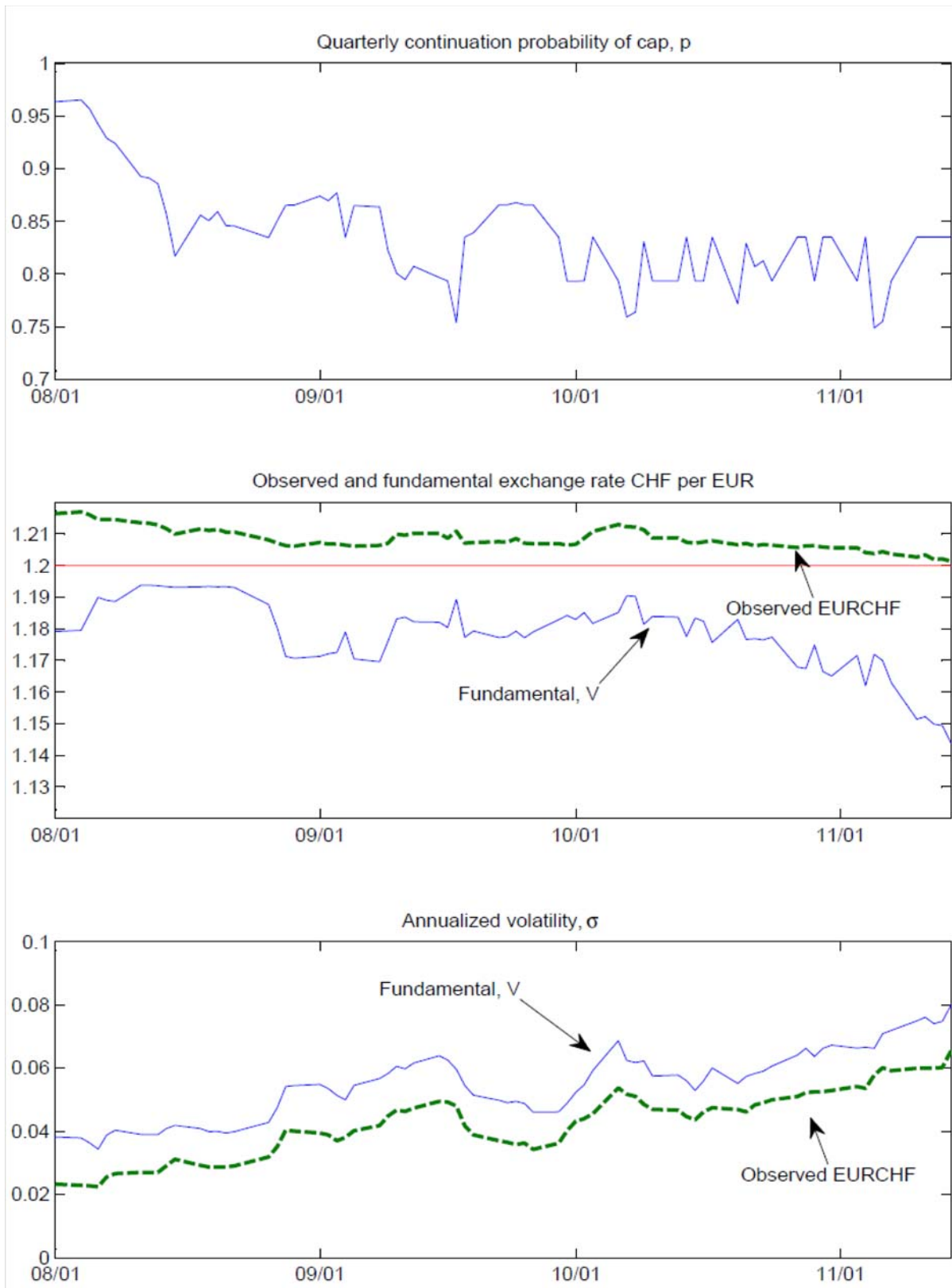


Figure 1: Daily model estimates and select market data.

References

- [1] Jermann U., 2014, Financial Markets' Views about the Euro-Swiss Franc Floor,
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