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Field of Tension: Electricity Supply .vs. Electricity Trading: Management Challenges

Management Summary

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Management Summary

With liberalisation, electricity trading has assumed a central responsibility for electricity supply. Making use of the opportunities offered by power exchanges and OTC trading platforms, electricity trading is charged with marketing and securing electricity production as well as covering electricity supply contracts with industrial, commercial and household customers. Electricity traders are faced with the challenge of managing both volume and price risks. While electricity traders are very familiar with prices on exchanges and OTC trading places, those responsible for production are very familiar with the technical availability of power plant capacities and the corresponding production volume. The distribution staff have established a customer rapport and, for their part, are well placed to assess which services are important to the electricity customer in order to conclude contracts. We recognise that electricity trading functions as a kind of hub, and that efficient and unencumbered communication with the production and distribution entities therefore is an important foundation for successfully maintaining a joint position in the face of increasing competition.

The value creation of the electricity trading hub is defined by the management of volume and price risks that arise in connection with electricity production and the sales portfolio. Power plant operation must be optimally aligned to short-term price and volume fluctuations. The inherent volatilities of prices and volumes can be monetized by adequate trading strategies. These represent additional revenue at the market value of the physical delivery. For distribution purposes, electricity trading assumes risks that arise in connection with the guaranteed electricity supply. In electricity trading, it is important to implement cover strategies that result in competitive risk premiums for the contracted electricity supplies. These risk premiums are passed on to the end customers.

We recognize that the electricity trading hub manages the risks for the business units production and distribution and thus generates revenues. The market value of the physical delivery serves as the internal transfer price, which defines the revenues of the production business unit. Correspondingly, the market price of the cover portfolio for the sales portfolios is charged to distribution and, as a direct result, to the end customer.

In addition, electricity trading is granted the right to engage in speculative proprietary trading. If a delivery is opened in spot or forward markets without reference to available capacities, production or physical electricity deliveries, which is covered by speculative proprietary trading, it must be closed again before the end of the tradability of this delivery product. Thus, speculative trading transactions entail the financial risk of having to close out the position at excessive or at low prices.

Risks for production and distribution are managed in electricity trading by means of asset-backed trading. Trading transactions relating to physical capacities or physical deliveries or procurements are allocated to asset-backed trading.

The field of tension opens up vis-à-vis the production business unit if electricity trading sets the internal transfer prices for production too low and thus does not adequately reflect the value creation potential of the power plants. If electricity traders charge excessively high risk surcharges to cover electricity supplies to end customers and thus fail to take adequate account of the distribution portfolio's diversification potential, the field of tension will open up vis-à-vis the distribution business unit. In the worst case scenario, losses in speculative trading can

be financed with positive contribution margins from asset-backed trading if no clear distinction is made between asset-backed trading and speculative proprietary trading.

Using historical market data and based on the production volumes of the three major Swiss electricity producers *Alpiq*, *Axpo* and *BKW* reported in their financial reports, we have estimated the respective share of speculative proprietary trading from the gross cash flows of energy derivatives and their maturity structure. For *Alpiq*, we receive a volume in speculative proprietary trading roughly 20-24 times its annual production, for *Axpo* we receive approximately 12-16 times its annual production, and for BKW approximately 8-10 times.

The three largest Swiss electricity producers report their energy derivatives almost exclusively as Level 2 fair values. We can see from the notes to financial statements that these Level 2 energy derivatives are valued based on arbitrage-free price curves. However, since the electricity market is incomplete in the sense of financial market theory, arbitrage-free price curves will lead to many different fair values for a Level 2 energy derivative. As a result, there is ambiguity in the accounting for level 2 energy derivatives, which directly affects the energy derivatives balance sheet item and can lead to an overestimation of the reported equity.

We further note that these ambiguities in the Level 2 fair values of Level 2 energy derivatives can lead to accounting inconsistencies across two or more counterparties: let us assume that two contracting parties A (buyer) and B (seller) have opened a Level 2 energy derivative at a price of 37 EUR/MWh via an OTC trading transaction. The valuation using two different but arbitrage-free price curves leads to two different fair values of 35 EUR/MWh and 40 EUR/MWh. The buyer (A) of this Level 2 energy derivative uses the arbitrage-free price curve, which shows a fair value of 40 EUR/MWh at the closing date. As a result, this contracting party (A) reports a positive replacement value of EUR 3/MWh on the balance sheet date. In contrast, the seller (B) of this Level 2 energy derivative uses the arbitrage-free price curve, which shows a fair value of 34 EUR/MWh at the closing date. As a result, this contracting party (B) also recognises open trading transactions with a positive replacement value of EUR 2/MWh. This means that both counterparties report positive replacement values for one and the same trading transaction on the balance sheet date. This means that open trading transactions with Level 2 energy derivatives can be accounted for as assets by both counterparties as at the closing date. The balance sheets of these parties therefore show inconsistencies in the assets. This leads directly to an overestimation of at least one of the two reported equity capital amounts.

For the years 2017 - 2019, based on the energy derivatives recognised in the balance sheet, we obtain a possible overestimate of 12% - 25% of Alpiq's reported equity, 12 - 38% of Axpo's reported equity and 4-8% of BKW's reported equity.

Over the past 10 years, massive value adjustments have in some cases been made in the European electricity industry, which have led to a collapse in equity of up to 30%. Given the political debate on the profitability of Swiss large-scale hydroelectricity, we have been examining the 2009-2018 financial and annual reports of the major Swiss electricity producers *Alpiq*, *Axpo* and *BKW* since 2017. In a number of stages, we have developed a model that analyses the balance sheets on the basis of the operating results with a focus on electricity trading.

In the following, we look at the years 2009-2018 to avoid period effects. Over the years 2009-2018, *Alpiq's* production volume (including purchase agreements) was 238 TWh and *Axpo's* 335 TWh. Based on their financial reports for the years 2009-2018, *Alpiq* and *Axpo* have recognized billions of euros in impairment losses. In order to distinguish depreciation and amortization from extraordinary depreciation and amortization, we use the SFOE ratio of 1.25 cents/kWh as the basis for estimating ordinary depreciation and amortization. *Alpiq* wrote off 3.36 cents/kWh of the 238 TWh it produced. Extraordinary depreciation therefore amounts to 2.11 cents/kWh. This results in an impairment loss for *Alpiq* of 5.0 billion (rounded) over the period 2009-2018. *Axpo* has written off 2.15 cents/kWh of its total production of 335 TWh. This leads to an extraordinary depreciation of 0.9 cents per kWh and thus to an impairment of rounded billion 3.0. In addition, it should be mentioned that *Alpiq* made provisions of billion 0.9 and *Axpo* of billion 3.1 in this period.

Compared with *Alpiq* and *Axpo*, *BKW's* production volume was 114 TWh. Over the period 2009-2018 *BKW* wrote off an average of 1.10 cents/kWh, resulting in value added of 0.15 cents/kWh. Over the period 2009-2018 this corresponds to a total value added for *BKW* of rounded 175 million. In 2013 *BKW* made depreciation of 3.57 cents/kWh, resulting in a one-off extraordinary depreciation of 2.52 cents/kWh. However, this was more than compensated for on average over all 10 years 2009-2018. In the same period *BKW* made provisions in the amount of 774 million.

In order to illustrate the tension between electricity supply and electricity trading, we analyse the contribution of electricity trading to the total reported EBIT of *Alpiq*, *Axpo* and *BKW* over the years 2009-2018. In view of the high level of depreciation at *Axpo* and *Alpiq* in the years 2011 - 2016, we have quantified the extraordinary depreciation of *Alpiq* in the amount of CHF 5.0 billion and of CHF 3.0 billion for *Axpo* based on SFOE indicators. As a result, the EBIT of *Alpiq* and *Axpo* was relieved of these extraordinary depreciation and amortisation charges.

Structurally, we define the EBIT of the electricity trading business unit as the sum of hedging success, asset-backed trading and speculative proprietary trading. We estimated the proceeds realized with the real production schedules based on market data and relevant SFOE documents. This estimate is used for the internal transfer price to the production business unit. In our analyses, the hedging success as well as the market value of the production schedules are documented separately for each fiscal year according to the two closing dates September 30 and December 31. We have estimated the revenue potential from asset-backed trading on the basis of our own models. For the revenue potential from system services, we have relied on relevant SFOE documents and the annual financial statements of *Swissgrid*. This revenue potential is also documented separately for each fiscal year according to the two balance sheet dates of September 30 and December 31.

We have derived the income from speculative proprietary trading for each financial year as a residual figure from the EBIT relieved of extraordinary depreciation and amortization: relieved EBIT from electricity trading less hedging income, less revenue potential from asset-backed trading results in the income from speculative trading. Over the period 2009-2018, based on the EBIT for *Alpiq* relieved by CHF 5.0 billion, we estimate a loss in speculative proprietary trading of CHF 1.1 billion for *Alpiq*. Over the same period, based on the EBIT relieved by CHF 3.0 billion, we estimate a loss in speculative proprietary trading of CHF 4.6 billion for *Axpo*.

For BKW we estimate the loss in speculative proprietary trading at CHF 1.7 billion. This estimate is based on BKW's EBIT realised over the years 2009-2018. Since BKW has not made any de facto extraordinary write offs over this period, we do not see any need to reduce EBIT.

Based on the estimated losses in speculative proprietary trading and the EBIT figures published in the segment reporting, we conclude that in the period 2009 - 2018 speculative trading was cross-subsidised by asset-backed trading.

We see the reasons for these losses in the ambiguities in determining the Level 2 fair values of energy derivatives in OTC trading as well as in the insufficient differentiation between asset-backed trading and speculative proprietary trading. We understand power plants as "equity securities" which, in addition to the market value for the production schedule, also generate "dividends" via asset-backed trading. In our comments, we do not net these "asset dividends" with risk capital or with any losses in proprietary trading. In our view, speculative proprietary trading should be separated from asset-backed trading in order to ensure that no offsetting or netting of "asset dividends" against "risk capital" or "possible losses in proprietary trading" takes place and that no false incentives arise as a result.

The revision of the StromVG is intended to ensure an economically efficient power supply. This goal requires the inclusion of the full revenue potential from electricity trading. In order to ensure this economic efficiency, we believe it is necessary to rule out the possibility of cross-subsidizing speculative proprietary trading through asset-backed trading.

Link to the White Paper: Link (in German)