Dynamic Risk Management in the Power and Utilities industry

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1. Introduction

The purpose of this paper is **to represent the dynamic risk management strategies undertaken by Utilities, in order to address the discussion of IASB and EFRAG about** the the DP/2014/1 *Accounting for Dynamic Risk Management: a Portfolio Revaluation Approach to Macro Hedging* and about the **application of macro hedge accounting to risks other than interest rate risk and, in particular, to commodity price risk**.

The Portfolio Revaluation Approach proposed in the DP **mainly focuses on the way in which Banks dynamically manage their interest rate risk**, even if dynamic risk management activities are largely undertaken for risks other than interest rates (*cfr.* DP 1.54 and 1.55), and, in particular, for commodity price risk. In such context, the DP limits the open portfolios eligible as hedged items to financial instruments recognised in the Financial Statements, allowing also the eligibility of some deemed exposures (i.e. equity book model, pipeline transactions and behaviouralisation) dynamically managed by Banks in their ALM strategies.

Therefore, **Utilities' dynamic risk management strategies should be better understood and analised, in order to catch the main differences of such strategies compared to ALM pursued by Banks for risk management purposes, so that an approach really able to be applied also in the utilities industry and not only by Banks could be developed**.

2. Utilities' need for a macro hedge accounting model

Dynamic risk management strategies are largely undertaken by utilities, in order to manage commodity price risk.

The DP notes that the measurement and/or recognition of exposures is done differently in accounting compared to risk management, but it focuses only on commitments to buy or sell commodities that are not usually recognised for accounting purposes, at the trade date, because own use exception applies. Such contracts are however considered from a risk management perspective.

Nevertheless, dynamic risk management strategies pursued by Utilities are much more difficult because the open portfolios managed are mainly related to risk exposures deriving not from contracts recognised in Financial Statements, but from the expected future production of the power plants, that constantly changes in response of market, physical and external variables. In such context, IAS 39 and IFRS 9 capture this hedge relationships just on a static basis, not taking into account the exposures moving on a continuous basis.

Therefore, it is often difficult to apply the general hedge accounting guidance to dynamic risk management strategies (*cfr*. DP 1.8 and 1.12) especially for the so hard documentation of the link between constantly evolving risks and hedges, that make impossible the practical implementation of hedge accounting in a dynamic environment.

This is the main reason why, under current hedge accounting models, **dynamic hedges are mostly accounted for at fair value through profit or loss, under IAS 39 and IFRS 9**, creating unjustified volatility in profit or loss from the accounting mismatch between derivatives recognized at FVTPL and their underlying affecting profit or loss in the subsequent years.

Therefore, **a best mitigation of this accounting mismatch is needed, in order to improve the understandability of financial information for users that, under the current conditions, are not provided with useful information about risk management strategies pursued by utilities and seek to understand how successfully an entity is achieving its risk management objectives**.

For this reason, Utilities strongly support the implementation of a model that allows to reflect dynamic risk management strategies into financial statements, in line with the general aim of IFRS 9 to better align hedge accounting with risk management activities.

Nevertheless, many concerns arise about the practical application of the Portfolio Revaluation Approach and of the alternative models proposed by EFRAG to commodity price risk dynamically managed, especially because, the DP suggests that forecast transactions that are not pipeline transactions should not be considered for inclusion in the PRA.

For this purpose, we will try to represent utilities dynamic hedging strategies, in order to better extend the PRA also to the core business of utilities and then to the risk exposure arising from the expected future production of generation plants.

3. Commodity price risk in the power and utilities industry

Commodity price risk in the Power and Utilities industry arises from fluctuations in commodity prices generated by their volatility and by existing structural correlations whose combination creates uncertainty about the margin on transactions in fuels and energy.

In particular, for risk management purposes, commodity price risk is determined by the netting effect of **market price risks** related to power and fuel prices and **volume risk**, due to fluctuation in the availability of resources (e.g., wind, water).

To properly manage commodity risks, the risk exposures are grouped in two different types of books:

- **industrial book** (power, fuels, etc.) related to the **native commodity risk exposures** generated by gaps between expected production/supply and purchases/sales;
- **proprietary trading book** (power, fuels, etc.) related to trading activities aimed to profit from the fluctuation of commodity prices (oil products, gas, coal, CO2 certificates and electricity in the main European countries) through arbitrage transactions carried out on the basis of expected market developments related to financial derivatives and physical contracts traded on regulated and over-the-counter markets.

Generally, the risk exposure arising from commodity prices relates to the purchase of fuel for power plants and to the purchase and sale of gas under indexed contracts as well as to the purchase and sale of electricity at variable prices (bilateral contracts and sales on the electricity spot market). In order to minimize the effects of fluctuations in prices and stabilize margins, Utilities define specific strategies such as sourcing in advance and hedging with derivatives entered into in order to sterilize the variable components of prices, in accordance with specific policies and operational limits, specified under risk governance arrangements.

Risk exposures are monitored monthly, assessing the Profit at Risk, in the case of industrial portfolios, and daily, calculating Value at Risk, in the case of the trading book. In particular:

- **Profit at Risk (PaR)** represents the difference between yearly expected profit (gross margin) and minimum profit achieved in a given confidence interval;
- **Value at Risk (VaR)** corresponds to the maximum possible portfolio value loss, i.e., the maximum shift with respect to a reference scenario at a given level of certainty, and based on the assumption that all net positions will be closed within a certain period of time (the so-called “holding period”).

4. Power plants dynamic hedging strategies

As abovementioned, in the Power and Utility industry, the sources of market risks in the "native positions" of the industrial/commercial activities are mainly related to the **power plants Expected Future Production**, whose risk exposure concerns power generation and related fuel consumption and carbon emission rights.

Such exposures are managed through dynamic hedging strategies constantly updated on forecasts depending on several external, market and physical variables (e.g. commodity price scenario, electrical consumption, renewable generation…) and, in substance, arise from **highly probable transactions** mainly embedded in power plants accounted for under IAS 16 Property, Plant and Equipment.

Risk management strategies related to the expected future production are based on expectations resulting from complex models that consider the following main drivers of electric power generation plants:

1. **Gross Domestic Product (GDP)** whose changes influence the forecast of the electricity demand and, therefore, the expected output of the generation plants;

2. **Commodity prices** (gas, coal, freight, CO2, oil) whose expectations impact the competitiveness of the different technologies used to generate power (combined-cycle gas turbine power plant (CCGT) versus coal plant versus open cycle gas turbines,...); for example, in case of a strong growth of the CO2 price, coal plants (which produce more emissions) will result less competitive than CCGT plants (which emit less emissions) producing a reduction of the first plants expected output in favor of the latter;

3. **Climatic factors** (water availability, wind, solar irradiance, temperature) determine the level of renewable energy plants expected output and, as a result, they impact the residual power demand, which will be satisfied by thermoelectric power plants; furthermore, temperature is a key factor in determining power consumption/demand.

Forecasts can evolve significantly also due to external elements related, for example, to the authorization to operate or to the risk intrinsic in power plants and to natural environment that can impact client consumption as well as production levels.

The expected risk exposure depends on the expectations of changes of all the above mentioned drivers. Their continuous changes produce a sort of "moving target" for risk managers. For this reason, Utilities' risk management strategies are based on complex models which forecast numerous, complex and often interlinked variables, subject to frequent updates (usually every 15-30 days) of the relevant inputs.

Moreover, when the price of a single commodity moves, then the whole position and risk exposure changes and the hedging strategies shall be adjusted and dynamically optimized.

The specific nature of the risk exposure being dynamically hedged in such a context is, in substance, a "future transaction" based on the expected future production of the generation plants.

The expected production of the plant fleet of a generation company is function of the power price level in the following years and of the corresponding consumptions of the thermoelectric plants that determines the exposure to the other main energy commodities (e.g. coal, gas, fuel, CO_2, freight).

These exposures are hedged through the purchase and sale of derivatives on the above-mentioned commodities prices. The objective pursued by the utilities through such hedging strategies is the stabilization of the expected cash flow related to revenues/costs in the relevant year.

Therefore, hedge accounting is required, in order to avoid the accounting mismatch that arises if derivatives are measured at fair value through profit or loss, while the risk exposure being hedged will impact profit or loss in a subsequent reporting period.

For companies operating in the Power & Utilities industry, the main risk to be managed in an efficient hedging strategies is related to the variability of the underlying exposure to commodity prices (power, coal, CO_2 gas, fuel...) due to the periodical update of the estimates on production and consumption of power plants, resulting from complex models. Therefore, it should be really easy to understand that the current hedge accounting models, under IAS 39, are inadequate to capture such hedging strategies, especially for the strict effectiveness and discontinuing requirements.

For example, in the case of a thermoelectric generation company that seeks to totally and constantly neutralize the risks related to the volatility of commodity prices, in order to stabilize the expected margin, the practical application of IAS 39 creates a strong asymmetry in the accounting treatment of two different cases of the same dynamic hedging strategy:

1. **increase of the expected production**: the designation of new hedging instruments allow to align hedge accounting with risk management purposes;
2. **decrease of the expected productio**n: in case of partial ineffectiveness, the ineffective portion of the hedge shall be immediately recognized in profit or loss even if risk management objectives are still met and, in effect, the hedging strategy is still effective. Moreover, some hedging instruments will be dedesignated and measured at fair value through profit or loss because of the disappearance of part of the hedged items. **In substance, ineffectiveness is generated by an adjustment of the expectations about all the above mentioned inputs, that is physiologic in such risk management strategies and not because an hedging instruments is ineffective in offsetting the hedging risk due to errors in forecasts.**

Also requirements of IFRS 9 about rebalancing seem to be inadequate to such strategies where the hedged item is an open portfolio. Because the general hedge accounting model allows hedge accounting for hedges of groups and net positions in relation to closed portfolios, entities should designate hedging relationships for an open portfolio as if it were a closed portfolio for a short period and at the end of that period look at the open portfolio as the next closed portfolio for another short period. The dynamic nature of this process for utilities, would involve frequent rebalancing, discontinuations and restarts of hedging relationships that would be really burdensome.

These accounting constraints have a great impact on risk management strategies pursued by utilities as, in order to avoid ineffectiveness and discontinuations of hedge relationships, often risk managers applies hedge accounting only to a part of the whole managed portfolio for risk purposes or even completely renounce to hedge accounting, creating financial results totally unaligned with risk management objectives and without providing any useful information to users.

The result was the unexpected increase of profits in 2008, while correspondent hedged revenues in the subsequent years were completely exposed to market risk, despite the hedging strategies in place.

Suppose a power plant located in Germany, with an annual production equal to 100TWh. From year X the power producer implements a hedging strategy over three years based on the expected production of each of the following years. This implies that the expected production for the year X+4 is hedged using forward derivatives contracts on Calendar x+4 executed in order to get a completely hedged position at the beginning of each delivery year (i.e. 33% during the year X+1, 33% during x+2 and 33% in the year x+3).

Suppose also that prices are equal to the average spot prices actually recorded in each year in Germany.

The graph below shows the financial results achieved by such hypothetical power company in the following cases related to the same risk exposure:

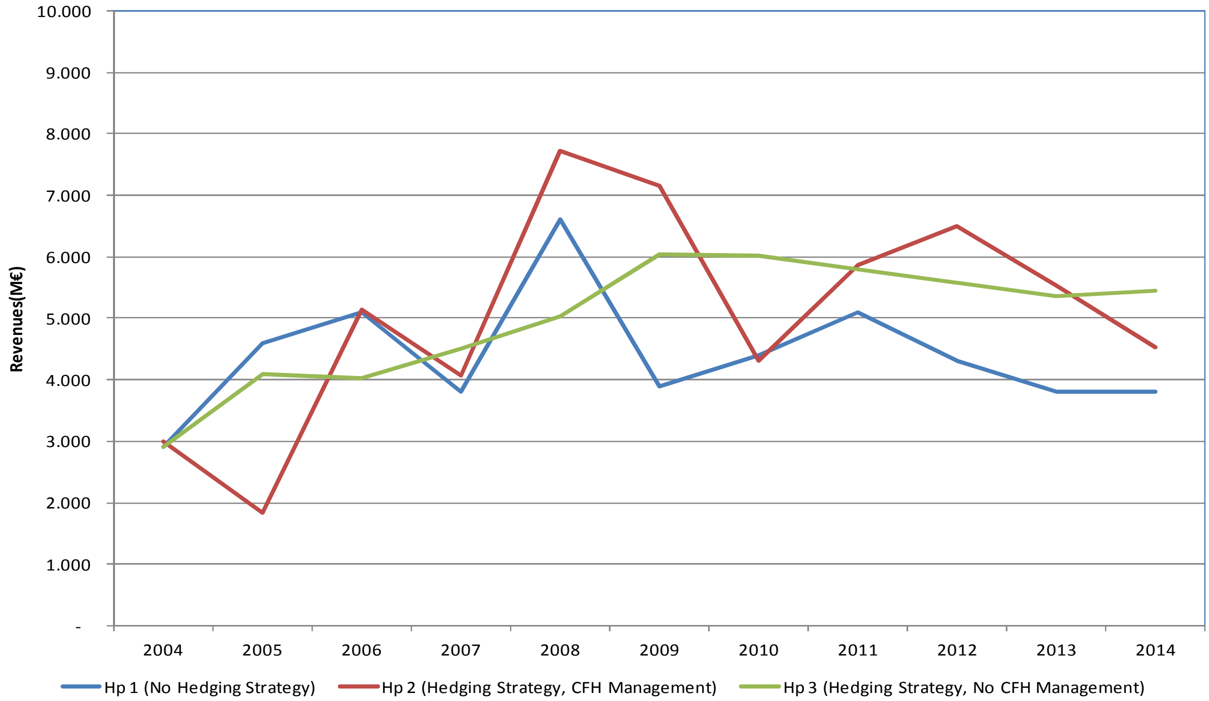
1. No hedging strategies with the consequence that the expected production is fully exposed to the spot prices;

2. Hedging strategies reflected in the financial statements applying the current cash flow hedge model provided by IAS 39;

3. The same hedging strategies above mentioned without applying hedge accounting.

As the graph shows, the implementation of the hedging strategy over the following three years, ensures a substantial reduction in the volatility of the financial performance compared to the case where any hedging is performed.

In the event that derivatives entered into for hedging purposes are recognized at fair value through profit or loss, the volatility arisen is even higher compared to the case in which no hedge is performed.



5. Conclusions

Given all the above mentioned issues related to commodity risk dynamically managed by utilities, the recap of the main conclusion reached analyzing the Portfolio Revaluation Approach will follow:

- **Definition of dynamic risk management**: current description proposed in the DP is adequate, but should be further completed, as, for utilities, the external exposures that are included within the managed portfolio relates mainly to the expected futures production of power plants and forecasted purchases and sales related to firm or deemed commitments. Moreover, considering that the hedging instruments available on the market are referred to an horizon not large as the lifetime of the assets and commitments, **it is necessary to allocate to the managed portfolio only those exposures that are managed**, excluding longer-term exposures of the same hedged item.
- **Scope**: the portfolio revaluation approach should be applied to those exposures for which there is an active risk management and hedging activity has started and/or are deemed to be hedged.

- **Risk exposure and hedged item**: Utilities believe that the forecast transactions mentioned above are not of the same nature of the future transactions listed in IAS 39/IFRS 9, as they relate to and are embedded in native positions that are "economic assets" and firm and deemed commitments, strictly in accordance with the entity's expected production, sale and usage requirements. Therefore, **the scope of the PRA should be clearer on the fact that also future transactions related to the expected future production, whose risks are managed by utilities, are included**.

  Therefore, a macro hedge approach, based on future transaction, should be better investigated by EFRAG and IASB, as PRA explicitly excludes such transaction as eligible hedged items and also the alternatives models proposed by EFRAG that include forecast transactions, but do not go in deep on such issue.

  In such context, the main issue is to define **how the managed risk exposure arising from such future transaction should be represented**. The issue is if it would be more reliable the recognition in P&L of the revaluation of an expected future exposure (embedded in generation power plants and for this reason more certain than a mere future transaction) or the development of a FVTOCI approach, more adherent to the risk management objectives, but difficult to be implemented, considering that it would be very difficult to identify the effective portion to be included in OCI when no clear link can be made between the hedged items and the hedging instruments, and, for the same reason, to manage the recycling of OCI.

  From a first analysis, utilities prefer the application of a macro fair value hedge approach, even if a cash flow hedge model would met the actual objective of risk management, aimed to hedge the expected cash flows related to future transactions "more than highly probable", because of the related operational difficulties and burdensome effectiveness test and recycling from OCI.

- **Delta hedge:** Another important issue to be considered, is that the **hedging activity in the utilities consists in the optional nature of the generation assets**; indeed, a thermal generation plant can be described as a real option, in which the strike price equals variable costs; therefore, the more efficient hedging strategy is the so called **delta hedge**. In this view, the option reflects the principle that the plant is only dispatched when the margin between power price and variable costs is positive, because only then it generates a pay-off.

Currently, IAS 39 deals with delta hedging in IG.F.1.9 Delta-neutral hedging strategy: **"*Does IAS 39 permit an entity to apply hedge accounting for a 'delta-neutral' hedging strategy and other dynamic hedging strategies under which the quantity of the hedging instrument is constantly adjusted in order to maintain a desired hedge ratio, for example, to achieve a delta-neutral position insensitive to changes in the fair value of the hedged item?***

*Yes. IAS 39.74 states that 'a **dynamic hedging strategy** that assesses both the intrinsic value and time value of an option contract can qualify for hedge accounting'. For example, a portfolio insurance strategy that **seeks to ensure that the fair value of the hedged item does not drop below a certain level**, while allowing the fair value to increase, may qualify for hedge accounting. To qualify for hedge accounting, the entity must document how it will monitor and update the hedge and measure hedge effectiveness, be able to track properly all terminations and redesignations of the hedging instrument, and demonstrate that all other criteria for hedge accounting in IAS 39.88 are met. Also, it must be able to demonstrate an expectation that the hedge will be highly effective for a specified short period of time during which the hedge is not expected to be adjusted.*"

At this regard, we strongly support the inclusion of delta hedging strategies in the new standard, as, currently, hedge accounting is extremely burdenstone and for this reason, all delta hedging strategies pursued by utilities are accounted for at fair value through profit or loss, even if they are put in place for real hedging purposes.

- **Internal derivatives:** Many integrated utility companies have established a centralised trading/risk management unit over the last decade, in response to the restructuring of the industry. The operation of the central trading unit is similar to the operation of the bank's trading unit, based on a transfer of the market risks deriving from the various generation entities. Such central trading unit is, in effect, responsible to hedge a net exposure to the market, performing risk management strategies and meeting specific VAR limit. **The net risk transferred to the central trading unit is, in substance, the risk that is managed by the Group and, therefore, represents the risk/exposure**

embedded in the native position to be remeasured in a portfolio revaluation approach.