

**COMPARATIVE STUDY OF MIBEL PRICES (SPOT AND FORWARD)
WITH OTHER EUROPEAN MARKETS AND THEIR RELATIONSHIP
WITH THE INTERNAL ENERGY MARKET**

EXECUTIVE SUMMARY

July 2019

Work done by the MIBEL Board of Regulators

Comissão do Mercado de Valores Mobiliários

Comisión Nacional de los Mercados y la Competencia

Comisión Nacional del Mercado de Valores

Entidade Reguladora dos Serviços Energéticos

INDEX

1	INTRODUCTION AND MOTIVATION.....	5
2	CONCLUSIONS	6
3	MEASURES THAT COULD BE IMPLEMENTED FOR THE DEVELOPMENT OF MIBEL [CONFIDENTIAL]	9

1 INTRODUCTION AND MOTIVATION

The MIBEL Board of Regulators (CR MIBEL), in the scope of the initiatives oriented to the development and proper functioning of the Iberian Electricity Market (MIBEL), included in their working plan the elaboration of a comparative study of the MIBEL prices (spot and forward) with other European markets (France and Germany) and their relationship with the Internal Energy Market.

The objective of the study is the characterization of the wholesale market of MIBEL (spot and forward) and the analysis of the main determinants of prices in that market, in comparison with the German and French European markets, with the aim of making a proposal for possible measures that contribute to the better functioning and development of MIBEL. In particular, this proposal would be oriented towards the implementation of measures that, taking into account the specific characteristics of the MIBEL wholesale market and, where appropriate, the independence of the market operators, contribute to foster greater transparency, competition and liquidity of this market, in order to promote the efficient price formation (spot and forward), within the framework of the internal energy market.

The analysis of the determinants of the price level and the ex-post forward risk premiums of the electricity market has been carried out for Spanish, French and German markets, from 1st January 2010 to 31st December 2018.

This executive summary includes the conclusions drawn from the study carried out, as well as the main measures that could be implemented for the MIBEL development.

2 CONCLUSIONS

The following conclusions are drawn from the comparative analysis carried out for the wholesale electricity markets of MIBEL, Germany and France throughout the period 2010 to 2018:

- There are similarities between the power installed capacity of MIBEL and Germany, considering that, in both markets, fossil and renewable technologies are those with the highest installed capacity and the highest percentage of demand coverage.
- In MIBEL and in the German market, the spot prices distribution tends to have values lower than their mean (negative asymmetry), which could be justified by the presence of a high percentage of renewable generation covering the demand¹. On the other hand, in the French market the asymmetry of the spot price in the considered period is positive, in which, the spot prices distribution tends to values greater than their mean, which could be justified by the greater weight of the nuclear energy on its generation mix².
- For the whole period analysed (2010-2018), the mean volatility of the spot price in the French market is higher than the mean volatilities of spot prices in the Spanish and German markets (the later with the lowest price volatility).
- With the implementation of the Price Coupling of Regions (PCR) initiative, the correlation coefficient between the Spanish spot price and the spot prices in the French and German markets (much more correlated between them) increased from 0.16 and 0.21, respectively, in the period 2010-2015, to values of 0.63 and 0.61, in 2018.
- The liquidity of the Spanish forward market is significantly lower than the German and the French markets. Thus, in 2018, the trading of the MIBEL base load forward contracts in the Spanish market, with financial settlement and delivery period greater than or equal to one month (monthly, quarterly and annual contracts, traded in OMIP, EEX and OTC), was 13 and 1.9 times lower than the trading volume of the equivalent forward contracts in the German and French markets (cleared in ECC), respectively, and this liquidity differential increased in the period analysed (2010-2018). In 2018, the ratio between the trading volume of forward contracts³ and the electricity demand of

¹Increases in the production of technologies from renewable sources have a downward effect on the spot prices, when replacing the more expensive production technologies. As an example, the decline in the mean spot price in the Spanish market in 2016, compared to the previous year (-27.1%), would be justified, to a large extent, by the high share of renewable technologies in demand coverage, in the first months of the year.

²Decreases in the nuclear production have an upward effect on the spot prices, having to replace the energy not produced by nuclear technology by other energy that came from more expensive production sources.

³Trading volume (TWh) of base load forward contracts, with financial settlement and delivery period greater than or equal to one month (monthly, quarterly and annual contracts) with underlying the German and French spot prices (cleared in ECC) and with underlying the Spanish spot prices (traded in OMIP, EEX and OTC).

each of the three markets was 55.2% for Spain, 361.1% for Germany (data to November 2018) and 60% for France⁴.

- Several factors would have had influence in the negative evolution of the liquidity of the MIBEL forward market. On one hand, it should be pointed out some specific factors of intrinsic nature to MIBEL: (1) regulatory aspects, such as the disappearance of CESUR auctions, the existence of a last resort tariff in Spain (indexed to the spot price) or the lack of incentive for the participation of production facilities from renewable energy sources while remained regulatory framework of remuneration and economic incentives for production with these technologies; (2) structural aspects, such as the lack of incentive for the participation in the MIBEL forward market of vertically integrated groups, the tendency towards hedging the price risk of the spot market by doing bilateral contracts at a fixed price, instead of trading in the forward markets, the lack of knowledge and greater difficulties regarding the participation in the forward market remarked by smaller market agents and consumers, or the exit of the MIBEL forward contracts market by financial entities and funds (which concentrate their trading activity on commodities in "more liquid" markets).
- On the other hand, it should be highlighted some aspects that have affected, in general, all forward markets, such as the uncertainty regarding the impact of changes in the financial regulation on the obligations of the agents that trade energy commodities or the change in the trading models, with the disappearance of the specialized traders by markets (underlayings) and the evolution towards a multi markets and multi products trading model.
- From the comparison of the ex-post forward risk premium for baseload month-ahead futures in the Spanish, German and French electricity markets, it is concluded that forward risk premium in the Spanish market is generally higher, during the 2010-2018 period, than the forward risk premium in the German and French markets. The Spanish future prices were 6% higher than the monthly spot market prices mean, compared to 3.7% for the French market and 2.8% for the German market. Likewise, in the analysed period, there is a greater volatility of the ex-post forward risk premium in the Spanish market⁵ and a lower correlation of this premium with those registered in the French and German markets (more correlated between them⁶), which would be justified by the lower interconnection of MIBEL with the rest of European markets.

⁴The percentages for Germany and France would be even higher, since for these countries the trading volume of forward contracts in the OTC market is not being accounted for.

⁵ From 2010 to 2018, the standard deviation of the ex post forward premium in the Spanish market was 18.9%, relative to 14.6% in the French market and 9.2% in the German market.

⁶ From 2010 to 2018, the correlation between the ex post forward premium in the French and the German market was 0.71. The correlation between the ex post forward premium in the Spanish market and the German market, just as in the French market, was about 0.2.

- From the meetings held by the CT MIBEL with the stakeholders, throughout 2018, it is concluded, that historically the Spanish forward prices have been systematically placed above the spot price, and with a high risk premium, is a factor that disincentivise the long positions in the forward market, shrinking their liquidity and promoting alternative hedging strategies by doing electricity supply contracts at a fixed price for example.
- Regression analysis carried out, for the period 2010-2018, concludes that there are statistically significant variables in the ex-post forward risk premium for baseload month-ahead futures in the Spanish, German and French electricity markets that are made up of the information available in the market in the last trading month of the contract. This shows that the market agents have myopic expectations in the sense that the market participants are influenced by current and historic events on the spot market rather than rational expectations about the expected spot price in the delivery month of the forward contract.
- Additionally, it must be remarked that the evolution of the percentage of demand covered by renewable energy were statistically significant in the ex-post forward risk premium for baseload month-ahead futures in the three markets, both in the last trading month of the contract and in the delivery month thereof.
- On the other hand, the regression results suggest that other variables were statistically significant in the ex-post forward risk premium for baseload month-ahead futures in the three markets. Thus, in the Spanish market, there are two variables that were statistically significant in the ex-post forward risk premium, related to the liquidity of the forward market: the volume traded in the forward market in the last trading month of the contract and the volume auctioned through call auctions (CESUR and OMIP) in the last trading month of the contract. For the French market, other variables were statistically significant in the ex-post forward risk premium: the volatility of the spot price in the last trading month of the contract and the spread between the monthly baseload contract price and the monthly average spot price in the last trading month of the contract. Finally, in Germany, the variable that was also statistically significant in the ex-post forward risk premium is the spread between the monthly baseload contract price and the monthly average spot price in the last trading month of the contract.

3 MEASURES THAT COULD BE IMPLEMENTED FOR THE DEVELOPMENT OF MIBEL

[CONFIDENTIAL]