

The EU energy crisis and calls for electricity market reforms

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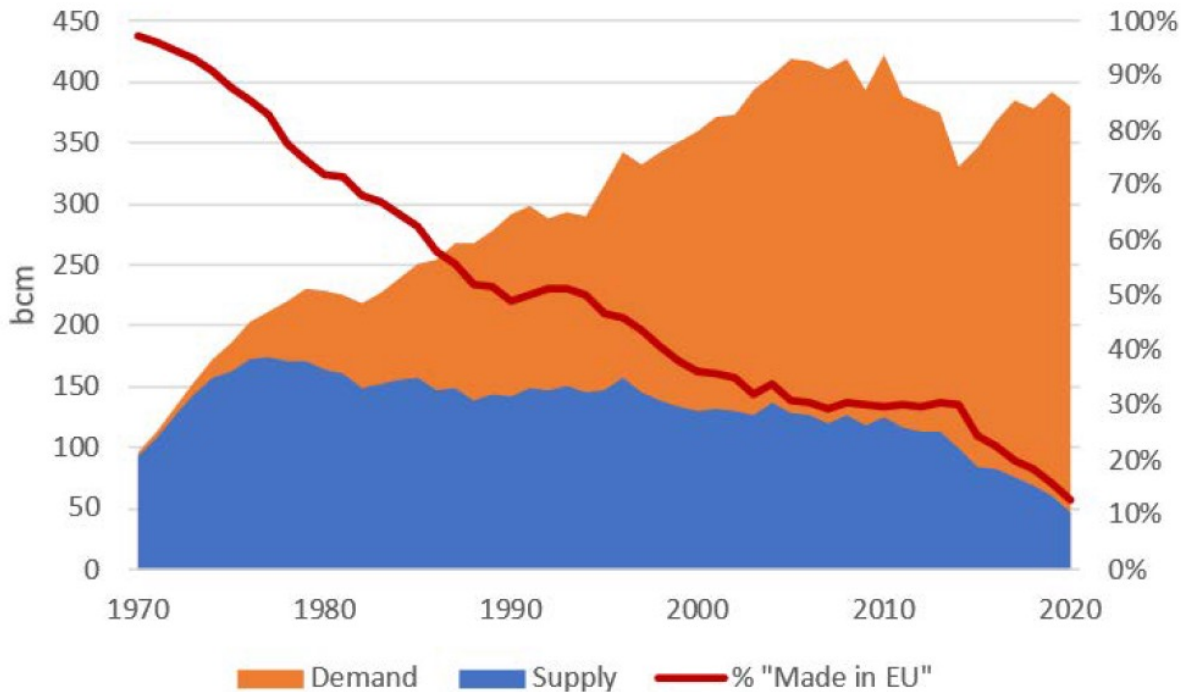
Spoiler: four key Q&A

- What is going on?
 - Silence before (another) storm (?)
- What is the issue?
 - Affordability
- What are the current interventions in EU power markets?
 - Not great, but could be worse
- What are the lessons for the future?
 - Consumer protection needed to avoid shooting the messenger

What is going on?

It is first and foremost a gas-crisis

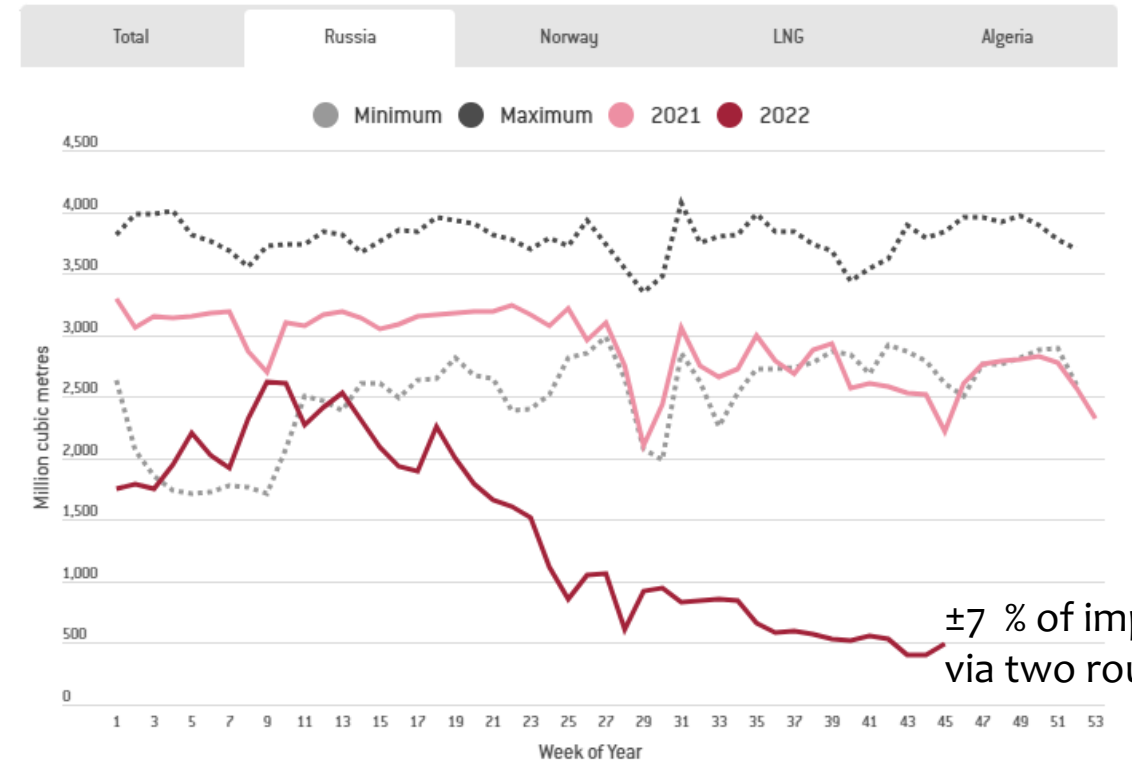
Historical EU-27 gas supply-demand and EU dependence



Source: BP Statistical Review of World Energy 2021

Figure 1: EU + UK Natural Gas Imports (by source)

Last updated: 15/11/2022 (updated every Tuesday)



±7 % of imports via two routes

It is first and foremost a gas-crisis

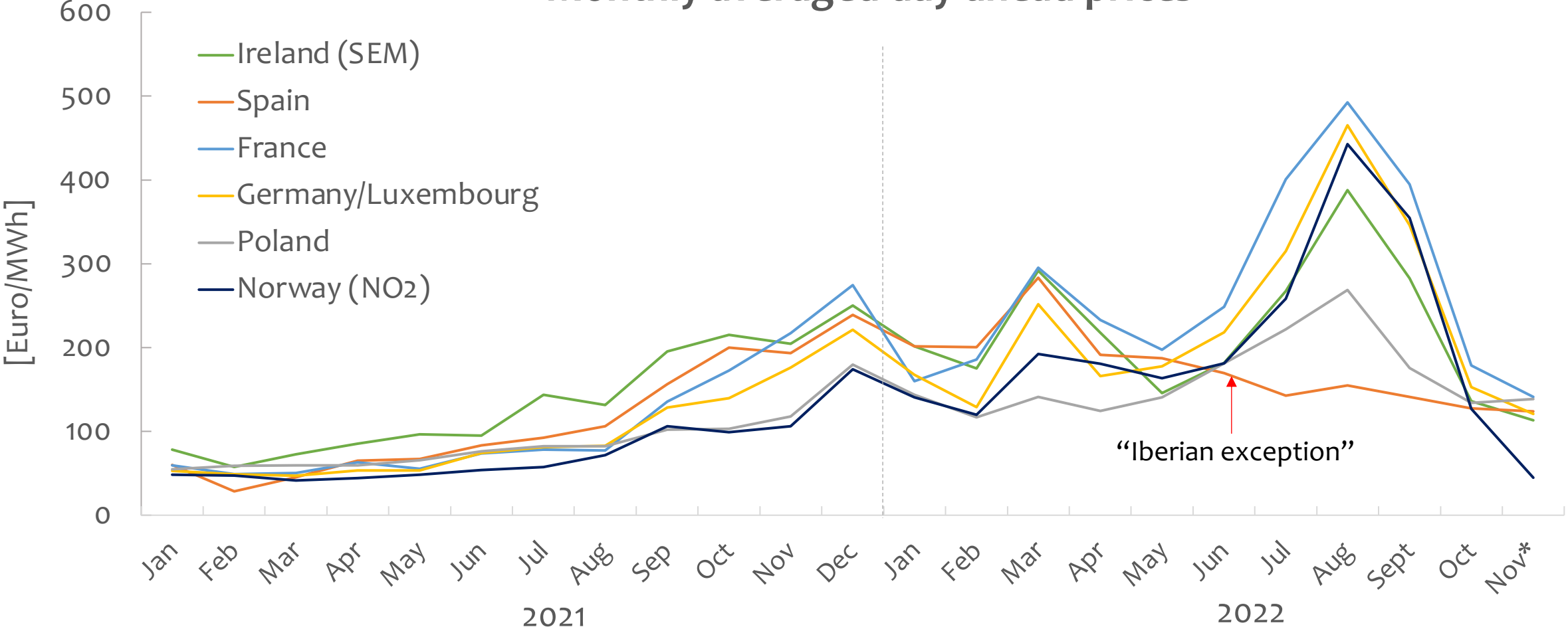


- Yesterday: TTF at 34.7 \$/MMBTU = 113.9 €/MWh
- >5 times HH yesterday (6.2 \$/MMBTU= 20.3 €/MWh)
- >6 times the average TTF price between 2014-2020 (17 €/MWh)
- Yesterday: TTF Cal '23 at 117 €/MWh & Cal '25 at 66 €/MWh

Source: Refinitiv Datastream | Reuters, Nov. 8, 2022 | By Vincent Flasseur

Electricity markets got “contaminated”

Monthly averaged day-ahead prices



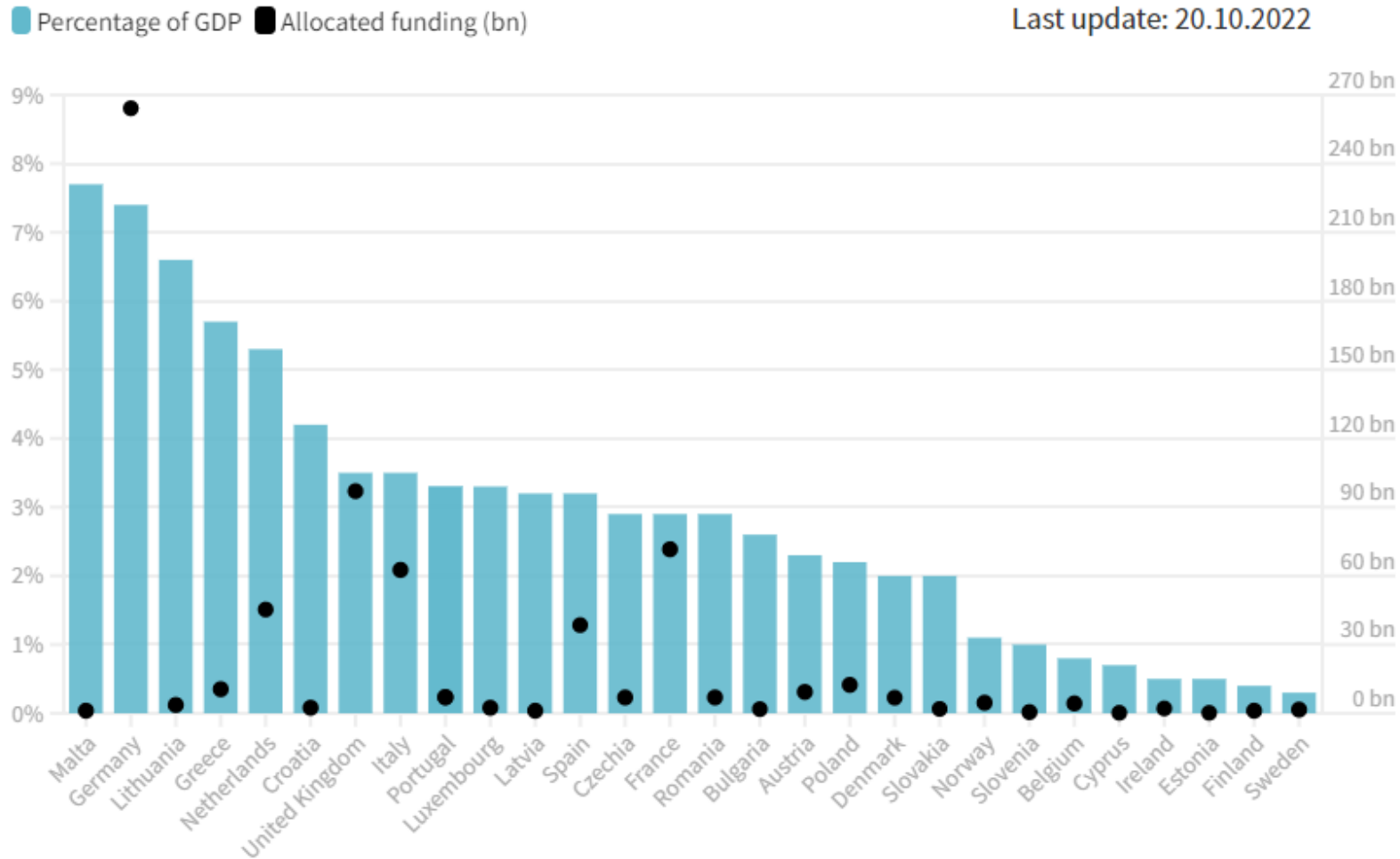
Source: ENTSO-E Transparency Platform

*Data until November 15, 2022

What is the issue?

What is the issue? Affordability

Governments earmarked and allocated funding (Sep 2021 - Oct 2022) to shield households and businesses from the energy crisis



What to do now to survive?

- **Is there another way to solve the affordability issue other than capturing “unexpected” income?**
 - It does not look like
- **The largest profits are in the gas market**
 - Big issue: a large share of the “unexpected” income is made outside Europe and cannot be captured
 - Unless...intervention in the gas market

EU talks on gas price cap mired in ‘impossible’ demands

EURACTIV.com with Reuters 9 Nov 2022



The matter has divided EU countries for months as they look to address an acute energy crunch that is driving record-high inflation and threatening recession in the bloc.

The European Union's executive body told its 27 member countries at a seminar on Monday (8 November) that it was not possible to create a gas price cap that would not affect long-term contracts or supply security, two diplomatic sources told Reuters.

- **Intervening in the gas market: Affordability vs scarcity trade-of**

Finding a scapegoat: the spot power market

Boris Johnson Hints at UK Energy Market Reform Amid Inflation Surge

- Prices tied to 'top marginal gas price' is 'ludicrous': UK PM
- Millions of British households are facing 'fuel poverty'

By [Donal Griffin](#)

25 June 2022 at 11:24 GMT-4



“This market system does not work anymore. We have to reform it. We have to adapt it to the new realities of dominant renewables”

What are the current interventions in EU power markets?

What to do now to survive (part 2)?

- **Three groups of interventions in power markets:**

Intervene in the short-term price setting (e.g., price cap, Iberian exception)

Intervene in the revenues of inframarginal generators (e.g., revenue cap, CfD)

Intervene in the income of inframarginal generators (“Tax”)

Less
interference



Less legal
obstacles



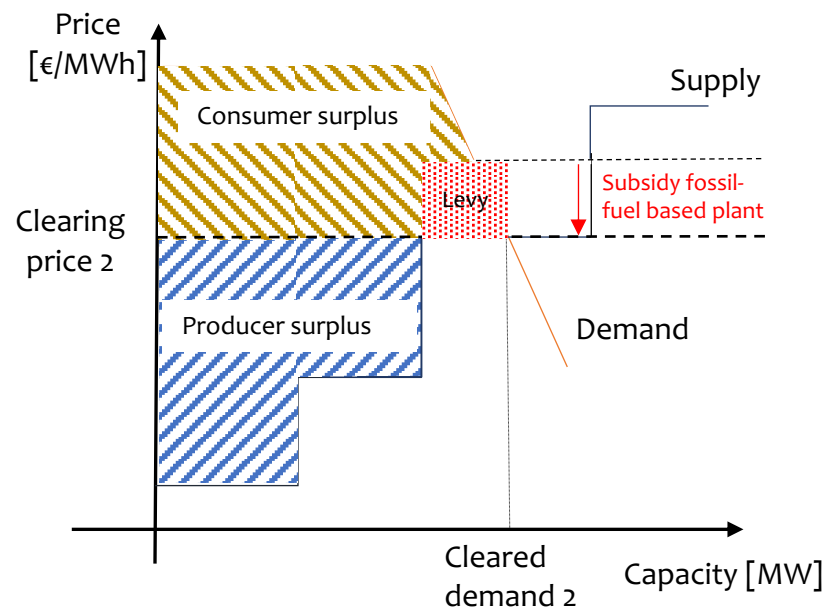
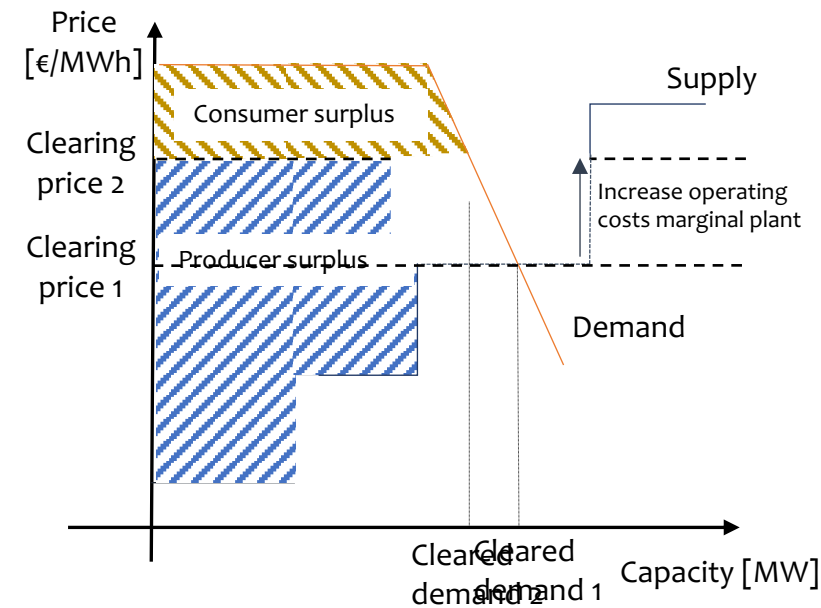
- Interventions in the revenues of inframarginal generators seems to be the political preference (at least at EU-level)

- However, also increasing support intervening in the price setting: bad idea

The Iberian exception: subsidizing bids of fossil-fuel generators above a certain cap

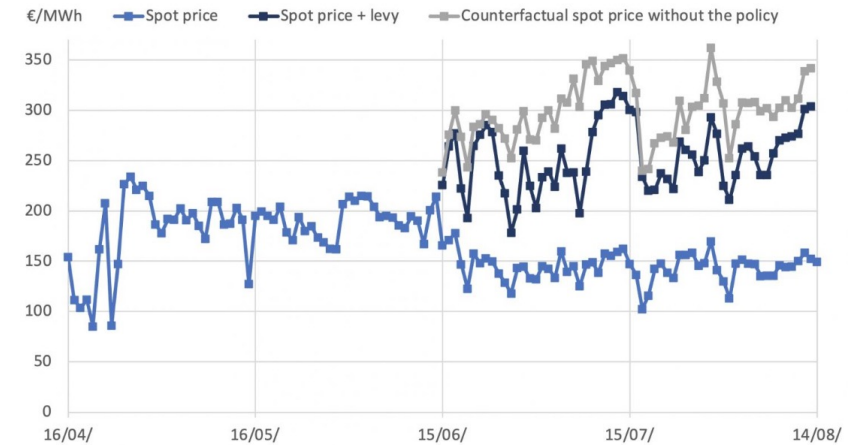
Increased operating costs marginal unit (gas-fired generation)

Increased operating costs marginal unit but not shown fully in the price



Cleared demand 2 > Cleared demand 1

Figure 2 Average daily Spanish spot prices with and without the levy

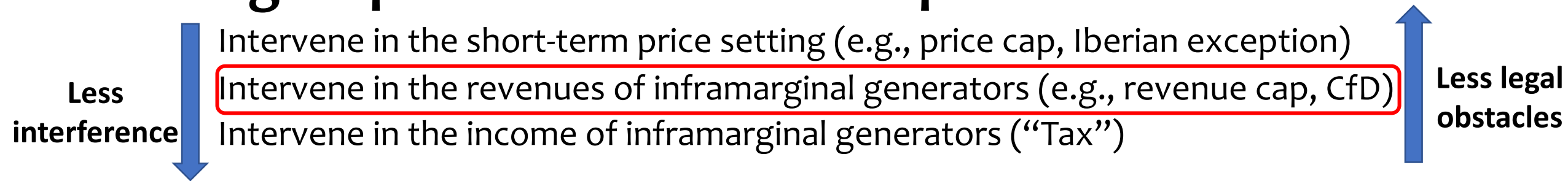


Increased exports and increased electricity consumption as a response to the depressed prices lead to more gas being burned in power stations. In Spain, gas-fired power generation increased by 42%. In the Iberian case, that may not be a huge problem because of the abundant LNG import capacity. It is dramatically different between North-Western and Eastern Europe, where gas prices are much higher, and import terminals cannot channel additional shipments (Heller 2022).

Source: Eicke et al. (2022)

What to do now to survive (part 2)?

- **Three groups of interventions in power markets:**



- **Interventions in the revenues of inframarginal generators seems to be the political preference (at least at EU-level)**
- **Such interventions could mimic a tax but careful design needed**

The EU revenue cap in power markets

- Scope: revenues from electricity sales from inframarginal units
- Duration: 1 December 2022 to 30 June 2023
- Level: Max. 180 €/MWh

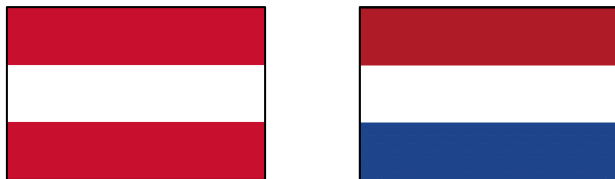
- Implementation issues:
 - Dealing with existing long-term contracts
 - Keep incentives in check when spot prices > cap
 - Arbitrage between power markets



What to do with captured “excess revenue”?

- Any intervention in the price setting impacts all consumers and needs to be directly accompanied by demand reduction measures
- Interventions in revenue and income allow to differentiate support among end users

Inclined block rates:



...

 **Laszlo Varro** • Following
VP Global Business Environment at Shell
3h • 

I just received an email from my utility informing me that i will get an automatic deduction as part of the efforts of the Dutch government to keep energy bills affordable. Thank you so much, Dutch taxpayers. I'm sure me getting this subsidy was a result of a careful calibration incorporating social inequality and just transition considerations. I promise i will personally invest the money into renewable energy.

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What are the lessons for the future?

Don't try to fix what ain't broken

UK energy crisis - time to split the power market?

Published on August 18, 2022



Michael Liebreich

Speaker, analyst, writer, advisor, investor in the future economy. Host of Cleaning Up podcast on leadership in an age of climate change

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Time to blow up electricity markets

Opinion Piece By Yanis Varoufakis | 31/08/2022

The EU's power sector is a good example of what market fundamentalism has done to electricity networks the world over.

With the end of cheap natural gas, retail consumers and businesses are paying the price for their governments' embrace of a shoddy theory.



VS.

Electricity Market Design and Zero-Marginal Cost Generation

William W. Hogan¹

Accepted: 15 November 2021 / Published online: 24 February 2022
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Abstract

Purpose of Review Competitive electricity systems arose in the context of thermal generation with dispatchable production and increasing variable costs. This paper addresses key impacts on efficient market design with increasing reliance on renewable energy sources such as solar and wind that are intermittent and have very low marginal costs.

Recent Findings The basics of efficient electricity markets design have been adopted by all the organized electricity markets in the USA. This is the only competitive electricity market design that supports the principles of open access and non-discrimination.

Summary An expansion of intermittent zero-marginal cost generation does not change the fundamentals of efficient electricity market design. Rather, it increases the importance of implementing the design and associated reforms that have been identified from market experience. These include improved scarcity pricing, demand participation, and carbon pricing.

What does not work? Market incompleteness

- Past ~ investment issue in new generation
- Today ~ affordability issue for end users

eex — Products and Units —

EEX GERMAN POWER FUTURE ▼

2022-01-21 Day Weekend Week Month Quarter Year

Baseload

Name	Last Price	Last Volume	Settlement Price	Volume Exchange	Volume Trade Registration	Open Interest
Cal-23	124.00	8,760	122.63	2,592,960	2,540,400	45,897
Cal-24	92.30	8,784	92.13	597,312	1,168,272	11,410
Cal-25	87.95	17,520	87.00	70,080	271,560	2,505
Cal-26	-	-	84.38	-	35,040	198
Cal-27	-	-	83.09	-	-	96
Cal-28	-	-	81.87	-	-	30
Cal-29	-	-	81.40	-	-	-
Cal-30	-	-	80.59	-	-	-
Cal-31	-	-	79.73	-	-	-

EEX FRENCH POWER FUTURES ▼

2022-01-21 Day Weekend Week Month Quarter Year

Baseload

Name	Last Price	Last Volume	Settlement Price	Volume Exchange	Volume Trade Registration	Open Interest
Cal-23	131.35	8,760	131.34	8,760	122,640	5,908
Cal-24	-	-	95.54	-	-	599
Cal-25	-	-	91.43	-	-	92
Cal-26	-	-	-	-	-	-
Cal-27	-	-	86.08	-	-	1
Cal-28	-	-	-	-	-	-

Different issues require different solutions

- **A different issue: resource adequacy (general)**
 - Problem: uncertainty when financing new investment
 - Potential solution: capacity remuneration mechanisms
- **Another issue: resiliency (e.g., Puerto Rico, Texas)**
 - Problem: difficult business case to hedge against very low probability high-impact events
 - Potential solution: mandates to tackle underinvestment in resilience
- **Another issue: decarbonization (e.g., EU, US)**
 - Problem: RES initially too expensive to make a business case (innovation spillover)
 - Potential solution: feed-in tariffs, CfD auctions, tax credits,...
- **The issue here: affordability**
 - Problem: insufficient use (and availability) of hedges
 - Potential solution: regulatory-led hedging on behalf of (part of the) consumers

What to do with new access to the network?

	<i>Choices</i>	
<i>Connection</i>	First come first serve	Auction for access
<i>Exposure to the price risk</i>	Merchant	Auction for long-term hedge

} Bundled

Big issue is not lack of willingness to invest in new capacity (especially renewables) but physical network access, NIMBY, permitting,...

Contracts for new (renewable) entrants

- **Counterparty:** government + market parties (“Pool for LT-contracts”)
- **Length:** 10-15 years
- **Objective:** risk sharing while minimally interfering with the short-term dispatch
- **Two possibilities (not mutually exclusive):**
 - *Stability CfD:* competition for the strike price of CfD -> “Bill/revenue stabilizer”
 - *Affordability Option:* competition for a premium of a call option with a strike price set equal to maximum tolerable average electricity price+ leave room for bilateral deals (PPAs etc.) to sell the energy-> “Bill protection/revenue cap”
- **Volume of the contracts:** “yardstick” approach
- **Settlement of the contracts:** monthly or alike
- Hard to organize technology-agnostic auctions
- Increased risk for generators but more efficient coordination with spot
- However, higher demand for connections than supply of connections

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**Efficient Renewable Electricity Support:
Designing an Incentive-compatible Support Scheme**

David Newbery

How to engage with existing generation?

- Imposed revenue cap cannot (?) last forever
- Pace of new entrants with contracts protecting the consumer-side might be too slow to be ready for a next “shock”
- Proposal: Centralized (regulatory-led) auction for sale of affordability options
 - Contract: monthly-settled call option
 - Buyer: central entity on behalf of share of consumers deemed to need protection
 - Seller: Any market player—technology agnostic but physical and/or financial backup required
 - Volume: determined by the seller
 - Contract duration: 5-10 years
 - Maximization of competition: 1/ limit demand; 2/coordinate with new entry
 - Cost allocation option premium: levy (cfr. RES support but not €/kWh)
 - Pay-out: lump sum payment or cheap “energy” block (via predefined key)



Conclusions

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Questions, comments, critic?

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