

POLICY BRIEF

The 5th EU electricity market reform: a renewable jackpot for all Europeans package?

Highlights

- We think that the electricity markets that were developed over the last two decades did what they were supposed to do during this crisis: through higher prices, they convey the message that energy is scarce. “Shooting the messenger” is not going to remove the problem.
- However, we also learned a lot during this crisis on how electricity markets can be completed and complemented with regulatory instruments, which is why we have three recommendations:
- First recommendation: Enable and incentivize consumers and suppliers to hedge via well-functioning forward markets (which would complete the sequence of electricity markets).
- Second recommendation: Give consumers access to cheap renewables with Contracts for Difference (CfDs) and Power Purchase Agreements (PPAs) that are compatible with short-term markets.
- Third recommendation: De-risk the investments in energy resources AND mitigate affordability concerns for consumers by redesigning Capacity Remuneration Mechanisms (CRMs) or by complementing these mechanisms with other regulatory tools.
- We finally observe that a broader reform could also aim at accelerating the innovations on the consumers’ side envisioned by the Clean Energy Package. These innovations can bring the much-needed flexibility in decarbonized energy systems.

Authors

Leonardo Meeus, EUI; Carlos Batlle, EUI; Jean-Michel Glachant, EUI; Leigh Hancher, EUI; Alberto Pototschnig, EUI; Pippo Ranci, EUI and Tim Schittekatte, EUI

Issue 2022/59

November 2022

1. Introduction

Electricity prices are extremely high. We are short of gas in Europe, and gas power plants are pushing up the prices of electricity. We are also unlucky that an unprecedented number of nuclear power plants are under forced maintenance in France, which increases electricity prices even further. We also had a dry year, with low hydro production. Consumers are suffering, and some producers of electricity are making largely unexpected high profits.

Many emergency measures have been taken to protect consumers and to claw back windfall profits. Beyond these short-term measures, the process towards an electricity market reform for the medium to long term has also started. This could become the fifth EU electricity market reform. Working title: Renewable jackpot for all Europeans package.¹

In the ongoing debate, some have argued that electricity markets are broken, that we should suspend or radically change them.² The objective of this revolution is to decouple gas and electricity prices, and by doing so giving consumers access to cheap renewables. Many revolutionary proposals in this area have been tabled (see Box 1). With these proposals, we risk going backward in the European electricity market integration process by introducing new obstacles for cross-border trade. This would be unfortunate because the market integration benefits are increasing with the ongoing transition to renewables. It is much cheaper to share our resources across borders in a renewable-based energy system, then to try to solve everything locally. The electricity markets that have been developed over the last two decades are the best way to share our resources across borders. The proposals also risk to distort the price signals we need for a cost-efficient operation of the power system and the engagement of demand response into the market.

The good news is that going backward is not necessary. The renewable jackpot for all Europeans can be organised within the existing

market framework.³ We “only” have to complete these markets, and we have to combine them with a few instruments that have already proven their usefulness during the current crisis. These instruments could be at the center of the market reform. It could become a revolutionary reform, but one that goes forward instead of backward.

To illustrate this point, we will discuss three recommendations: 1/ Enable and incentivize consumers and suppliers to hedge via well-functioning forward markets; 2/ Give consumers access to cheap renewables with Contracts for Difference (CfDs) and Power Purchase Agreements (PPAs) that are compatible with short-term markets; 3/ De-risk the investments in energy resources AND mitigate affordability concerns for consumers by redesigning Capacity Remuneration Mechanisms (CRMs) or by complementing these mechanisms with other regulatory tools. We end the brief with the observation that a broader reform could also aim at accelerating the innovations on the consumers’ side initiated by the Clean Energy Package. These innovations can bring the much-needed flexibility in decarbonized energy systems.

Note, to conclude this introduction, that the fourth electricity market reform took several years to develop with studies, impact assessments, and public consultations. The European Commission’s work plan foresees a reform proposal in 2023, which would be much faster than usual, and the European Council in October 2022 asked the Commission to speed the process up even more.⁴ Speed is important, the crisis requires us to move, but are we not confusing reforms with emergency measures?

1 Title inspired by an article in Les Echos (July 18, 2022): “Eolien, solaire: vers un jackpot d’au moins 8,6 milliards d’euros pour l’Etat”. <https://www.lesechos.fr/>

2 President von der Leyen, in her State of the Union address (September 14, 2022) “This is why we will do a deep and comprehensive reform of the electricity market”. https://ec.europa.eu/commission/presscorner/detail/en/speech_22_5493

3 For an overview of the existing framework in Europe, see the open access book: Meeus, L., 2020. The Evolution of Electricity Markets in Europe. Edward Elgar. <https://cadmus.eui.eu/handle/1814/69266>. For a global overview, see Glachant, JM, et al, 2021, Handbook on Electricity Markets. Edward Elgar.

4 European Council conclusions from 20-21 October: <https://www.consilium.europa.eu/media/59728/2022-10-2021-euco-conclusions-en.pdf>

Revolutionary proposals

The Iberian mechanism⁵

Spain and Portugal introduced an emergency measure, which has been approved by the European Commission. They artificially lower electricity prices in their wholesale markets by obliging gas power plants to offer their electricity production at a cost that is lower than their actual opportunity cost for burning the gas. Gas power plants are compensated for that loss with an out-of-the-market side-payment, which is financed by consumers via a levy that is added to their bill.

Under this mechanism, gas power plants still recover their costs; they might even benefit because electricity prices in the wholesale market are made artificially low in Spain and Portugal due to this intervention, which results in an increase of production to export to France. The inframarginal generators in Spain and Portugal (e.g. renewables and nuclear) make less money because they receive an electricity price that is suppressed. Overall consumers in Spain and Portugal have benefitted so far as the current wholesale prices, plus the levy, are estimated to be lower than the wholesale price that would have resulted without the mechanism.⁶ However, they also cross-subsidise the French consumers (or the domestic producers of electricity-intensive goods which are then exported, so distorting competition).

The main drawback with this mechanism is that it reduces the incentive to save energy by artificially lowering the price. The mechanism also creates an incentive to limit cross-border exchanges to reduce the cross-subsidies. You could argue that there are better ways to capture the windfall profits of inframarginal generators without distorting the short term price signal.

The UK splitting the market proposal⁷

The proposal is to split the electricity market according to the characteristics of the technologies producing electricity so that they can be priced separately. The original proposal was made before the energy crisis, and argued for two markets, one for as-available resources (i.e., renewables),

and one for on-demand resources (i.e., all the others). The idea was to encourage consumers to consider what type of generator they want to source their electricity from. If they can be flexible in their consumption, they can source cheap as-available resources. If they cannot be flexible, they source the more expensive on-demand resources. During the crisis, this proposal resurfaced in a different way. It was seen as a way to introduce an electricity wholesale market price cap that only applies to renewables.

There are many questions on how such setup would actually work. One of the key risks of isolating “as-available” resources from the “on-demand” market price signals, is that they would not have any incentive to produce electricity in a “system-friendly” way. Even though the dispatchability of “as-available” resources is limited, the value of these resources coordinating with the system will only increase when decarbonizing the power mix. Examples of short-run decisions made by “as-available” resources influenced by the spot market are maintenance, curtailment, the provision of downward regulation, etc. In the longer run, investment-related and siting decisions are distorted: examples are whether to invest in capabilities for dynamic orientation of solar panels, the exact technical parameterization of a wind farm, the decision to co-locate a RES plant with storage, to go for locations with high overall production or lower production but more production at valuable hours etc.⁸

Moreover, if the sole purpose is to claw back revenues from renewables or other inframarginal generators in electricity markets, this can also be done in other ways that do not require markets to be split.⁹

The Greek proposal¹⁰

In preparing this brief, we have not been able to agree on a common interpretation of what the so-called Greek proposal implies. It has similarities with the UK “splitting the market” proposal, which we do not support, but it also argues for a bigger role for CfDs, which we agree with, if properly implemented.

5 Spanish Royal Decree-law 10/2022 of 13 May: mechanism for adjusting production costs factored into wholesale electricity prices and other important regulatory amendments: <https://www.boe.es/buscar/act.php?id=BOE-A-2022-7843>

6 An article doing this analysis is the following: <https://cepr.org/voxeu/columns/iberian-electricity-market-intervention-does-not-work-europe>

7 The often-cited origin of the proposals related to “splitting the market” is: Keay and Robinson, 2017. The Decarbonised Electricity System of the Future: The ‘Two Market’ Approach. The Oxford Institute for Energy Studies. Energy Insight: 14.

8 For a discussion see e.g.: Neuhoff, K., May, N. and Richstein, J., 2017. Incentives for the long-term integration of renewable energies: a plea for a market value model. DIW Economic Bulletin, 7(46/47), pp.467-47

9 Council Regulation (EU) 2022/1854 on an emergency intervention to address high energy prices: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022R1854>

10 The proposal forwarded by the Greek delegation at the European Council in 2022 can be found here: <https://data.consilium.europa.eu/doc/document/ST-11398-2022-INIT/en/pdf>

2. Recommendation 1: Enable and incentivize consumers and suppliers to hedge via well-functioning forward markets (which would complete the sequence of electricity markets)

Introduction. In Europe, we have a sequence of electricity markets from forward to day-ahead, intra-day, and balancing markets. These markets allow us to exchange electricity across country borders with standardised contracts from a few years ahead of delivery all the way to real-time. Cross-border trade via electricity markets is very beneficial leading to annual savings of billions of euros.¹¹ This achievement is unique in the world, and it is an important asset in the transition towards a more sustainable energy system.

Performance during the crisis. When market integration started, Belgians feared transits would increase between France (exporter of nuclear power) and the Netherlands (importer of power) with limited benefits for Belgium. A few years later, Belgium faced power shortages in winter, and the country was saved by imports. France was benefitting from the ability to export, and today France, short of power, is also receiving the neighbors support. An integrated electricity market in Europe is a stabilising factor in times of crisis, and also organises solidarity among countries. If we were to suspend electricity markets, it would be up to governments to organise that solidarity. We risk short-sighted and expensive blame games with limited solidarity. In the current debate, the market is seen as the problem, but the problem would be much worse if it were not for energy markets that organise the flow of energy to where it is most needed. Sharing our resources across borders via markets (and cross-border network infrastructure) will be even more important in a future with a greater penetration of renewable energy. The alternative is energy autarchy, i.e. each country investing in their own backup systems and flexibility, which would be way too expensive, and also unnecessary as long as we do not close our borders within Europe. Spot markets are merely doing their job: reflecting the value of electricity and by doing so coordinating the least-cost dispatch at a pan-European scale. The

issue is that the spot markets, while they are a great coordinating tool, need to be complemented with hedges to shield both generators and consumers from their inherent volatility (not only from one hour to another but also, as shown in this crisis, from one year to another).

Lessons learned for reform. The crisis has been a wake-up call for the importance of hedging and the regulatory framework for long-term investments. In face of these completely unexpected price levels, corresponding to a war economy, we all wished we had entered into a fixed-price retail contract with a multi-year duration or another insurance against high prices, and some retailers have gone bust during the crisis because they were not sufficiently hedged. Academics have long talked about completing the EU electricity markets with better functioning forward markets. There are many ideas to do that, like introducing regulated incentives for consumers and retailers to hedge¹², the introduction of market makers, or improved coupling forward markets across borders. Each of these ideas deserves to be looked at in more detail.

3. Recommendation 2: Give consumers access to cheap renewables with Contracts for Difference (CfDs) and Power Purchase Agreements (PPAs) that are compatible with short-term markets

Introduction. As renewable energy has matured, subsidy schemes have also evolved. Renewables have gradually integrated into electricity markets. Many countries started with fixed “feed-in” tariffs and no exposure to market prices for renewable developers, and then evolved towards “premium” schemes with support that comes on top of market prices. Other countries started to introduce Contracts for Difference (CfDs) to support renewable energy. The developers compete via tenders for the price they need to lock their desired return on their investment. If market prices turn out to be lower than the awarded price, their counterpart covers the difference (usually a government entity); if market prices are higher, developers pay back the difference.

¹¹ The savings are documented and explained in the ACER/CEER annual market monitoring reports: <https://www.acer.europa.eu/electricity/market-monitoring-report>

¹² See the FSR policy briefs by Pototschnig, A., et al. (2022): “Recent energy price dynamics and market enhancements for the future energy transition” <https://hdl.handle.net/1814/73597>

Performance during the crisis. Inframarginal generators, including renewables, gained windfall profits during this crisis. Retroactively taxing them or capping their revenues is difficult and creates a lot of uncertainty. However, not all renewable developers made windfall profits; only those that benefit from one sided support schemes, like premium schemes. This is not the case for renewables under a feed-in tariff or a CfD scheme. Government entities that entered into CfDs with renewable developers have experienced a ‘renewable jackpot’ during this crisis, which is for example the case in Denmark, France and the UK. When entering into these contracts, governments probably did not anticipate earning so much money. In the current crisis, the public money that governments are handing out to compensate for high prices is much larger than the money they collected with CfDs. Only a limited number of CfDs were in place at the start of the crisis, and government support for consumers has not been very targeted.

Lessons learned for reform. If government entities sign more CfDs on behalf of their citizens, they would have more money available during a crisis in the future. If this money is then more targeted to vulnerable consumers, it can be an interesting tool for softening the impact of a crisis. It is also important that we preserve the incentive to save energy by supporting consumers with vouchers or rebates rather than retail price caps.¹³ If more renewables are contracted under CfDs, these contracts will also have to evolve. CfDs were initially kept simple because the focus was on reducing investment risk for investors. Now that some renewable technologies are largely mature, CfDs need to be tweaked to make them compatible with short-term markets, to preserve the incentives for the developers to respond to prices, while still stabilizing their revenues.¹⁴ CfDs can also be smartly combined with Power Purchase Agreements (PPAs). Some large consumers and suppliers already entered into Power Purchase Agreements (PPA) with renewable developers. PPAs can provide a long-term hedge against high prices. However, if these agreements are indexed to spot prices, they do not help in

times of crisis. The government entities that sign CfDs with renewable developers can allow part of the project to be covered by PPAs and/or can act as intermediaries between the developers and the consumers that want to buy PPAs.

4. Recommendation 3: De-risk the investments in energy resources AND mitigate affordability concerns for consumers by redesigning Capacity Remuneration Mechanisms (CRMs) or by complementing these mechanisms with other regulatory tools

Introduction. In the last decade, some utilities have argued that electricity markets need to be supplemented with capacity remuneration mechanisms to allow for the recovery of past investments (alleged to be needed as back-up) and to make sure that there are adequate investments. Even if it would be possible to complete the current shorter-term electricity markets with better functioning forward markets, these markets do not necessarily guarantee enough and adequate investments. Due to the many uncertainties in the transition, the length of the contracts and/or liquidity in forward markets risks to remain limited.¹⁵ However, before the crisis, the common concern was that these mechanisms could be abused to favor certain technologies, or to provide state aid to utilities that are not able to recover the investment costs of outdated and dirty technologies.

Performance during the crisis. The current energy crisis that we are facing today is not due to a lack of installed capacity in the power sector; the issue is that the fuel needed to produce a significant part of our electricity needs is scarce and thus very expensive. The CRMs currently in place aim at de-risking investments in generation, which should benefit consumers indirectly, but they have not been designed to protect consumers from high prices.

Lessons learned for reform. The increasing need for electrification of transport, heating and industry leads to an increased risk aversion against un-

13 See also the FSR policy briefs by Pototschnig, A., et al. (2022): “Recent energy price dynamics and market enhancements for the future energy transition” <https://hdl.handle.net/1814/73597> & “Consumer protection mechanisms during the current and future periods of high and volatile energy prices” <http://hdl.handle.net/1814/74376>.

14 See for example: Newbery, D., 2023. Efficient Renewable Electricity Support: Designing an Incentive-compatible Support Scheme. *The Energy Journal*, 44(3).

15 See for example: Batlle, C., Rodilla, P., and Mastropietro, P., 2021. Market for efficient decarbonization. *IEEE power & energy magazine*. https://www.ieee.org/ns/periodicals/PES/Articles/PE_JanFeb2021_Batlle.pdf

der-investments. While long-term contracting (e.g. CfDs and PPAs) can lock in the needed investments in renewables, CRMs can help to ensure enough investments in (flexible) backup resources. Note that CRMs in Europe have mainly financed supply-side solutions, while it is important to include energy storage and demand-side solutions, which can include demand response capacity as well as energy efficiency measures.¹⁶ Note also that to protect consumers against high prices, even when unexpected events happen like the current crisis, the design of CRMs will need to evolve or be complemented. The proposed concept of affordability options is one way of doing that.¹⁷ The EU Clean Energy Package paradigm was to avoid the abuse of capacity mechanisms. The package also made sure that these mechanisms are designed in a way that minimises the possible negative impact on short-term electricity market signals. If we change the paradigm and consider these mechanisms as part of the electricity market target model, we can go a step further in harmonising and integrating them. This could be achieved through network codes and guidelines, which is a process that has also been successfully used for other aspects of electricity markets.

5. Observation: A broader reform could also aim at accelerating the innovations on the consumers' side envisioned by the Clean Energy Package. These innovations can bring the much-needed flexibility in decarbonized energy systems

So far during the current crisis, extreme prices have been solving our shortages. In countries that have not been capping retail prices, domestic and industrial consumers are responding by saving energy, we only wished that demand was responding at lower price levels. However, we are also reminded that we are not yet well organised to deal with emergencies. Hopefully it will not come to that, but the energy shortage in Europe could lead to rationing. If everything is voluntary, and people are not responding enough to the price signals, we would need to ration energy. We have load shedding plans to organise rationing in case

of emergencies. We always hope that we will never need to implement these plans. For instance, in the winter of 2021, Texas did have to activate their load shedding plans, which led to chaos and public outrage. People did not understand why they were cut off from the electricity system, while others could continue to consume unlimited volumes. The rotation of the power cuts was unclear, and some grid users also discovered they were never cut because they happened to be connected via the same feeder of a hospital or another protected consumer.

The EU Clean Energy Package represented a big step forward to engage consumers and to modernise networks and system operation. Consumers are for instance entitled to a smart meter in combination with a dynamic retail price contract. TSOs are increasingly welcoming aggregated consumer flexibility in balancing markets. DSOs are increasingly engaging with flexibility service providers at the local level to manage congestion in their grids. The EU Clean Energy Package also introduced a regulatory framework for individual and collective action by citizens to take ownership of the energy transition. The EU Clean Energy Package paradigm, however, was to focus on voluntary flexibility, which is incentivised via cost-reflective network tariffs, dynamic retail prices and market-based procurement of flexibility services by the system operators. For emergency situations, it would be useful to get a step further. We should be able to reduce everyone's load to a basic energy consumption level, which would be less painful and more acceptable than rotating power cuts. Grid users could also volunteer to have their available power reduced in case of emergencies in exchange for compensation.

Note finally that all the above can be implemented with different levels of consumer choice. For example, the money collected by Contract for Difference schemes during a crisis, could be socialised, it could be reserved for vulnerable consumers, or it could be offered to consumers that want to subscribe to this type of scheme individually or collectively. Power Purchase Agreements have so far mainly been used by large companies. Capacity remuneration mechanisms can be centrally organised or

¹⁶ For an overview of the EU experience, see the book edited by Leigh Hancher, Adrien de Hauteclocque, Kaisa Huhta, and Małgorzata Sadowska Capacity Mechanisms in the EU Energy Markets, 2022. Oxford University Press.

¹⁷ Batlle, C., Schittekatte, T. and Knittel, C.R., 2022. Power Price Crisis in the EU: Unveiling Current Policy Responses and Proposing a Balanced Regulatory Remedy. MIT Center for Energy and Environmental Policy Research. WP-2022-04.

decentralised with an element of consumer choice. We could provide some affordability protection for a minimum level of consumption, with voluntary subscriptions for higher levels of protection. Differentiation in capacity subscriptions can be used to deal with energy shortages, as well as to deal with congestion in networks. Electrification is expected to result in (temporary) network bottlenecks. Instead of creating long queues for network access, we can offer what is referred to as non-firm connections. For this type of connections, we face the same dilemma regarding the extent to which we can differentiate between users/consumers with an element of choice.

6. Conclusion

We think that the electricity markets that were developed over the last two decades did what they were supposed to do during this crisis: through higher prices, they convey the message that energy is scarce. “Shooting the messenger” is not going to remove the problem.

If we suspend markets or cap electricity prices, governments will have to step in to ration energy, and organise the solidarity across borders. It can be a bit counterintuitive for some at present, but electricity markets provide stability, and automatic solidarity, because they bring energy to where it is most needed. The impacts of this crisis on consumers might have taken longer to come to surface without markets but, in the end, would have been worse.

However, we also learned a lot during this crisis on how electricity markets can be completed and complemented with regulatory instruments, which is why we have three recommendations, and one observation.

Three recommendations

- Enable and incentivize consumers and suppliers to hedge via well-functioning forward markets (which would complete the sequence of electricity markets)
- Give consumers access to cheap renewables with Contracts for Difference (CfDs) and Power Purchase Agreements (PPAs) that are compatible with short-term markets

- De-risk the investments in energy resources AND mitigate affordability concerns for consumers by redesigning Capacity Remuneration Mechanisms (CRMs) or by complementing these mechanisms with other regulatory tools

We finally observe that a broader reform could also aim at accelerating the innovations on the consumers' side envisioned by the Clean Energy Package. These innovations can bring the much-needed flexibility in decarbonized energy systems.

The Florence School of Regulation

The Florence School of Regulation (FSR) was founded in 2004 as a partnership between the Council of the European Energy Regulators (CEER) and the European University Institute (EUI), and it works closely with the European Commission. The Florence School of Regulation, dealing with the main network industries, has developed a strong core of general regulatory topics and concepts as well as inter-sectoral discussion of regulatory practices and policies.

Complete information on our activities can be found online at: fsr.eui.eu

Robert Schuman Centre for Advanced Studies

The Robert Schuman Centre for Advanced Studies (RSCAS), created in 1992 and directed by Professor Erik Jones, aims to develop inter-disciplinary and comparative research on the major issues facing the process of European integration, European societies and Europe's place in 21st century global politics. The Centre is home to a large post-doctoral programme and hosts major research programmes, projects and data sets, in addition to a range of working groups and ad hoc initiatives. The research agenda is organised around a set of core themes and is continuously evolving, reflecting the changing agenda of European integration, the expanding membership of the European Union, developments in Europe's neighbourhood and the wider world.

www.eui/rsc



Co-funded by the
Erasmus+ Programme
of the European Union

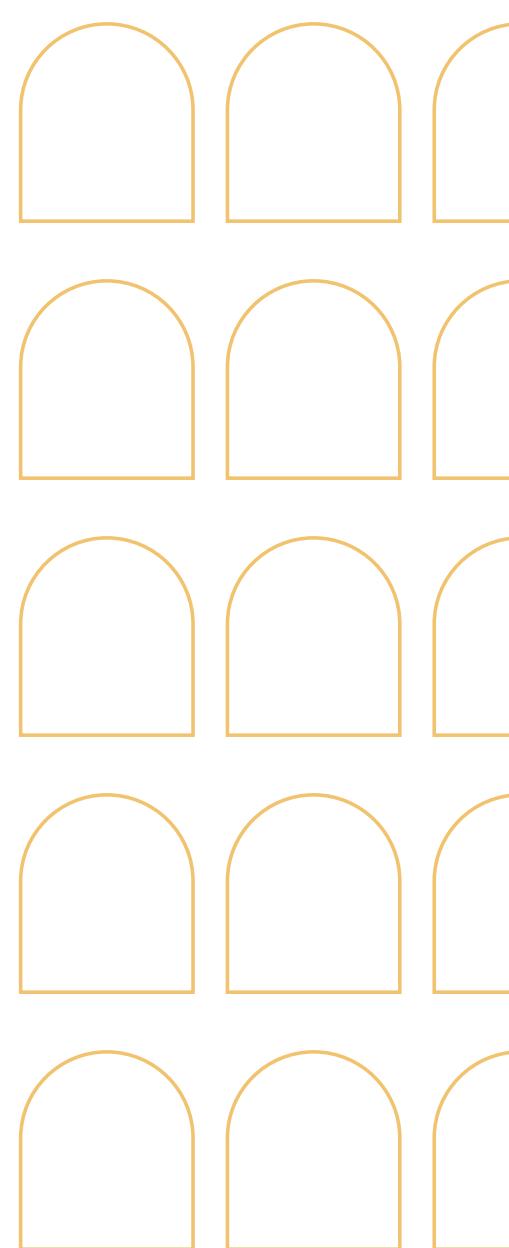
© European University Institute, 2022

Editorial matter and selection © Leonardo Meeus, Carlos Batlle, Jean-Michel Glachant, Leigh Hancher, Alberto Pototschnig, Pippo Ranci, and Tim Schittekatte, 2022

This work is licensed under the [Creative Commons Attribution 4.0 \(CC-BY 4.0\) International license](#) which governs the terms of access and reuse for this work. If cited or quoted, reference should be made to the full name of the author(s), editor(s), the title, the series and number, the year and the publisher.

Views expressed in this publication reflect the opinion of individual authors and not those of the European University Institute.

Published by
European University Institute (EUI)
Via dei Rocchettini 9, I-50014
San Domenico di Fiesole (FI)
Italy



doi:10.2870/407931
ISBN:978-92-9466-257-6
ISSN:2467-4540
QM-AX-22-059-EN-N