



Can electricity companies be too big to fail?

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ABSTRACT

The 2008 financial crisis has drawn attention to the concept of “too big to fail” companies, more recently relabelled “system-critical” institutions, referring to situations where the actual or near-bankruptcy of a company threatens the future of a service essential to the functioning of society. But such instances are not limited to the financial sector. We argue that if policymakers and regulators are not vigilant, a similar situation could occur in the electricity sector. So far this industry has only experienced occasional problems, but we can observe several precursory signals indicating that these problems might become more frequent. These include a tendency to globalisation in the absence of a supra-national regulator and the disruption caused by large amounts of renewable energies, resulting in companies being stranded with loss-making thermal generators. Still, these units are essential for the electricity supply security. We discuss several cases illustrating these trends. We conclude with a discussion of how electricity regulators and policymakers should approach the “too big to fail” problem, focussing both on preventive measures that can be taken to keep such a situation from occurring and on proactive actions aimed at avoiding a crisis once a system-critical company seems at risk of collapsing.

1. Introduction

Over the last decade mismanagement, hubris and a general regulatory inefficiency have endangered major players in essential industries, resulting in near-catastrophic crises. Examples include the financial sector world-wide (Stiglitz, 2010), the rail industry in the UK (Shaoul, 2004), health insurance in Switzerland (Assura, 2012a, 2012b) and ambulance services in Denmark (Fyns.dk, 2017). Common to all these cases has been the actual or near-bankruptcy of one or more companies, threatening the future of a service essential to the functioning of society. This raises the following question: how should a government react in a situation where it simply cannot allow a service to break down? For instance, in the Danish ambulance case, authorities could neither let the company go bankrupt (implying an interruption of the service), nor continue to tolerate substandard response times endangering patients' lives.

These events have drawn attention to moral hazard issues (Allen et al., 2015), which have long been a concern at the individual level, e.g., bonus systems rewarding high profits, without properly penalising poor performances induce traders to take excessive risks. When the downside of decisions carries little or no sanctions, actors have an incentive to focus on the upside. During and after the financial crisis there has been a significant debate concerning whether the precedent of

bailing out certain financial institutions might lead to a higher level of risk-taking in the sector, due to increased reliance on government intervention should things go wrong (Allen et al., 2015). The term “too big to fail” was coined following the 2008 financial crisis, at a time when global financial stability was under threat, to characterise the key players that were critical to the stability of the system. More recently, these companies are being referred to as “system critical” by financial sector regulators.

We argue in this paper that if policymakers and regulators are not vigilant, a similar situation could occur in the electricity sector. So far, this industry has only experienced occasional, local, problems. Examples include the challenges faced by the nuclear sector in England and Wales (Taylor, 2007), the well-known problems in California at the beginning of this century (Sweeney, 2013) and the difficulties faced by smaller distribution companies in Colombia (Larsen et al., 2004). However, we can observe several precursory signals pointing to more serious problems.

A first symptom is the increasing size of many companies. For instance, the Danish company DONG has evolved from being a regional oil company to becoming a dominant player in the national electricity market (DONG, 2017a). In other countries, despite deregulation, there has been reluctance to split up incumbent national champions, e.g., EDF still dominates the French market. More generally, since deregulation

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we observe a transition from local or national companies to international, if not global concerns. Companies have expanded across borders, and even continents. For instance, Vattenfall and E.ON today have subsidiaries in several European countries, while Endesa (now owned mainly by Enel) expanded rapidly across South America. This consolidation across the industry results in a situation where the failure of one or a small number of companies can create havoc, as occurred in the financial sector, where the bankruptcy of a single company had world-wide consequences. While larger companies may benefit from economies of scale, they represent a risk factor; this is particularly the case in the electricity sector, where companies often have a very low degree of diversification.

A second concern relates to who actually regulates the electricity sector. Financial services have both national regulators and international surveillance bodies, such as the Bank for International Settlements (BIS), the Financial Stability Board and the International Organization of Securities Commissions, or the European Banking Authority at the European level. While electricity markets are under the control of regional (in the USA) or national (most European countries) regulators, there is a lack of coordination across jurisdictions. This missing element enables companies to try to game the different legislators. Where such coordination does exist (e.g., EU regulation and the Federal Energy Regulatory Commission in the USA), the focus is on market access and environmental regulation, not on companies' long-term financial health. The existence of supra-national regulatory bodies did not prevent the 2007–2008 financial crisis: early warning signs were overlooked and actions were delayed by the lengthy negotiations required to reach agreements. Still, these institutions have proven very useful in the aftermath of the financial crisis as a forum to try to agree common rules for large financial institutions.

A third concern results from technological change. Nuclear, hydro and thermal generators typically worked with a time horizon of thirty years or more. But over the last decade many of the largest players of the electricity sector have been caught off-guard by the rapid, large-scale, introduction of subsidised intermittent renewable generation technologies, i.e., wind and PV. Their profitability has suffered significantly as prices have dropped: they are stranded with significant investments which cannot be amortised under the new market conditions. This has resulted in companies mothballing recently built plants (e.g., CCGT plants (Reuter, 2015)) or decommissioning plants earlier than scheduled. The accelerated closure of thermal plants has caused concerns about the availability of generation capacity at times where the intermittent capacity is not available, leading many countries to introduce subsidies for thermal plants, often through capacity mechanisms (Höschle and Doorman, 2017).

While the failure of a critical generator or distributor endangers supply, this is only one aspect of the security of supply in the electricity sector (Larsen et al., 2017), another essential element being transmission. But, as the transmission grid is operated as a monopoly in most countries, investment decisions and profitability of grid owners and operators are directly controlled by the regulator. In this paper we thus focus on generating companies, and to a lesser extent on distributors.

The three concerns we have discussed (company size, regulatory issues and technological change) are not the only elements affecting whether or not a company is system-critical. Resilience also plays a role. For instance, other things being equal, a plant situated in a poorly interconnected area is much more likely to become system-critical. Such risks should be taken into account by policy makers when assessing whether or not a company is “too big to fail”.

The paper is organized in the following way. After a brief recall of the 2007 financial crisis we provide an overview of recent events in the electricity industry, identifying trends that point towards the emergence of “too big to fail” companies in this sector. We discuss how such companies could be identified and identify possible governmental actions. We conclude with a discussion of what can be learned from the past and what could be done to limit the risks related to system-critical companies in the electricity industry.

2. Background

What sectors are subject to the “too big to fail” syndrome? As discussed above, any sector, public or private, where a breakdown would have an immediate, large scale, detrimental impact on the provision of an essential good or service, whether at a regional, national, or global level, is concerned. We do not consider events such as the closure of a large factory resulting in regional unemployment, with possibly devastating effect on the local economy, or environmental disasters such as the Deepwater Horizon oil spill (Encyclopedia Britannica, 2017). While these problems are important and need attention, they are outside the scope of this paper as they do not lead to a long-term disruption of an essential good or service.

The issue of what happens when the collapse of a few firms in an industry can potentially take down the sector, or at least major parts of it, came to the forefront in connection with the financial crisis in 2007. While the discussion of its causes is still ongoing, there is general agreement that this led to a sudden awareness, among both policy-makers and the general public, of the potential global consequences of the failure of large companies in essential industries.

The attitude and behaviour of many financial institutions in the decade preceding the 2007 crisis created concerns about the resilience of the financial system. Without going into details, there is a fair degree of agreement that the crisis resulted from a combination of factors, including weak regulation (e.g., excessive leverage enabled by insufficient capital requirements (Admati and Hellwig, 2014)), herd behaviour (e.g., housing bubbles resulting from overly optimistic price expectations (Krugman, 2009)) and what some have labelled global greed (e.g., investors getting used to high returns while becoming complacent about the risk of losses (Reavis, 2012)). This crisis has been extensively described and analysed in many publications, without reaching consensus on the exact causes and responsibilities. See, e.g., Taylor (2013), Wolf (2014), Sorkin (2009) and Paulson (2013). Neither is there consensus on the actual costs of the crisis, nor on who footed the bill, apart from some obvious victims such as evicted home owners and (small) companies that did not survive the ensuing credit crunch. While it is clear that the tax payers initially bailed out the financial institutions, the extent to which they have since recouped their losses remains disputed; so is the size of the gains or losses of the shareholders of the financial institutions. While there clearly were multiple causes to this crisis, there is no doubt that regulatory failure was one of them.

3. Collapses, near-failures and other horror stories from the electricity sector

The events from the last decade and the experience gained from the financial sector raises the following questions: could something similar happen in the electricity sector, on what scale, what precursory signals (if any) should one look out for and, maybe most importantly, what preventive actions can regulators take to avoid getting into such a situation? Due to its physical characteristics (electricity is not a global commodity; it can only be traded over a limited distance) an instantaneous global collapse of the sector is unlikely. But significant problems at the national or regional level are possible as companies internationalise and cross-border markets are established. In this section we discuss a number of collapses or near-collapses in the electricity sector. We have chosen examples with different underlying causes to illustrate the variety of problems that can occur. For each case we provide a short vignette and discuss the causes of the problem. A table providing an overview of all the cases is given in Appendix.

Maybe the best-known example is the California crisis during the 2000–2001 period, which affected more than 35 million people. The background to this crisis consisted of the combination of increasing demand and stagnating capacity in a partially deregulated market. These events having been described in detail elsewhere (see e.g., Joskow, 2001; Borenstein, 2002; Wolak, 2003; Sweeney, 2013), we

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