

Policy changes in the Swiss electricity market: Analysis of likely market responses

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Abstract

The Swiss electricity market is still a public monopoly. Switzerland do not intend to be part of the single European electricity market, but given its strategic geographical position—Switzerland is in the middle of the core area of the European Union, Swiss power producers maintain electricity exchanges (imports and exports) with neighbouring countries. These exchanges represent an important source of revenue for Swiss utilities.

Switzerland is currently facing a period of fundamental policy changes. Even though the market has not been legally liberalised, emergent liberalisation is taking place. Furthermore, nuclear dismantling has been debated since the early 1980s. People have not yet accepted the dismantling proposition, so there is actually no law banning the construction of new nuclear plants, but given the current attitude of the population and the politicians any new nuclear investments are most unlikely.

The aim of this paper is to illustrate likely market responses to different policy changes in the Swiss electricity market, such as nuclear phase-out and changes in international exchanges policies that may arise as a consequence of the emergent liberalisation that is taking place in this market.

This article presents a conceptualisation model that helps understanding the logic of the dynamic behaviour of the Swiss electricity market, and illustrates the rationale of politicians and decision makers involved in the market planning process, as well as the possible consequences of the implementation of different policies. The purpose is not to forecast or quantify market response, but to identify and understand possible scenarios for market behaviour.

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1. Introduction

The original purpose of national electricity industries is to guarantee electricity supply to both households and industrial consumers. In order to guarantee electricity supply, the system must be able to manage demand peaks; that is, the supply of electricity must be sufficient to fulfil the highest point of the demand curve. Capacity of supply might be understood as the local installed generation capacity; however, contracts for importing electricity from neighbouring countries might also be considered as a source of reliable electricity supply.

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Under governmental monopolistic structure demand is captive and sufficiently predictable to allow planning of capacity expansion in the long term. But this advantage is generally lost when liberalisation takes place, because companies then need to predict their market shares in a competitive environment. Security of supply appears then as a crucial matter: market structure must be carefully designed in order to avoid disturbance on price evolution and the problems that could result from a shortage of electricity in modern life. Given the critical importance of electricity in our everyday life, any disruptions might prove to be very costly (as experienced in Italy and the Northeast of the USA in 2003, and California in 2000).

Security of supply in liberalised electricity markets has been widely studied. Authors like Borenstein, Bushnell, Helm, and Ford, among others, have analysed security of supply problems in the European and North American markets. Nevertheless, the aim of this paper is to understand the implications of different policies for electricity capacity planning for the Swiss electricity market.

The Swiss electricity market is a fairly interesting market. Even if the industry is supposed to remain regulated and competition is theoretically forbidden, some kind of liberalisation—which we call emergent liberalisation—has taken place since Migros—one of the major retail chains in Switzerland—has won the right to be supplied by Watt Suisse AG instead of the incumbent supplier FEW/EEF [1]. The Swiss electricity law does not forbid competition; furthermore, the Swiss Cartel Law protects third party access to the network.

In addition, even if Switzerland does not intend to be part of the single European electricity market, it has a strategic geographical position—Switzerland is in the middle of the core area of the European Union, thus, Swiss power producers maintain electricity exchanges (imports and exports) with neighbouring countries. These exchanges represent an important source of revenue for Swiss utilities.

Finally, nuclear dismantling has been debated in Switzerland since the early 1980s. People have not yet accepted the dismantling proposition, so there is actually no law banning the construction of new nuclear plants, but given the current attitude of the population and the politicians any new nuclear investments are most unlikely. This uncertainty of the future of nuclear generation added to the emergent liberalisation, creates an important risk of under-capacity in the next 10–20 years.

The purpose of this paper is then to illustrate the impact that policies like nuclear phase-out and emergent liberalisation could have on the Swiss electricity market in terms of supply reliability, capacity expansion, and international electricity exchanges (imports and exports). This is important from a policy point of view for both the government and utility companies; however, there is relatively little understanding of the changes that are taking place in the Swiss market and how they will influence energy policy and capacity expansion in the coming years.

This article presents a conceptual model that helps understanding the logic of the dynamic behaviour of the Swiss electricity market from a systemic point of view, and illustrates the rationale of politicians and decision makers involved in the market planning process, as well as the possible consequences of the implementation of different policies. The purpose is not to forecast or quantify market response, but to identify and understand possible scenarios for market behaviour.

First, a description of the state of research in the field is presented. Section 2 provides a description of the Swiss electricity market and its technical characteristics. Section 3 covers the policy changes in the Swiss electricity market, while Section 4 explains the dynamics of capacity expansion in the Swiss electricity market. A discussion and conclusion are presented in Section 5.

1.1. Background

Liberalisation in electricity markets is a recent phenomenon and thus a relatively new area in the academic world. The area first caught the attention of academics in the 1980s as a mainly theoretical topic [2], but it did not become a major area of interest until deregulation started to take place in the 1990s. Nowadays, there is a large literature on energy deregulation, spanning a wide area ranging from policy-type publications [3,4] through economic models [5,6] to detailed simulation studies [7–9].

A general description of deregulation and the use of economic models can be found in [10]. A description of the deregulation process in the US can be found in [11], and one for the UK in Surrey [12]. Further case studies

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