Economic assessment of energy political changes in Germany– "Energiewende" revisited

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(1) Overview

The summer 2010 and 2011 was a turning point in German energy policy. In 2010, the new energy concept was developed, then against the background of increased legal operating time for nuclear power plants. The event in Fukushima then led to close down of the 7 oldest nuclear power plants in Germany and the decision to phase out of nuclear power. Both decisions together are often called the "Energiewende". What are the results of these policies one year after they were decided? Are there measurable economic impacts? How can they be quantified? This contribution suggests answers to these questions.

(2) Methods

The energy concept bundles already existing measures and new measures for the increase of energy efficiency, the increase in renewable energy (power and heat) and CHP. Therefore, our approach compares three scenarios to find the economic impacts of the Energiewende:

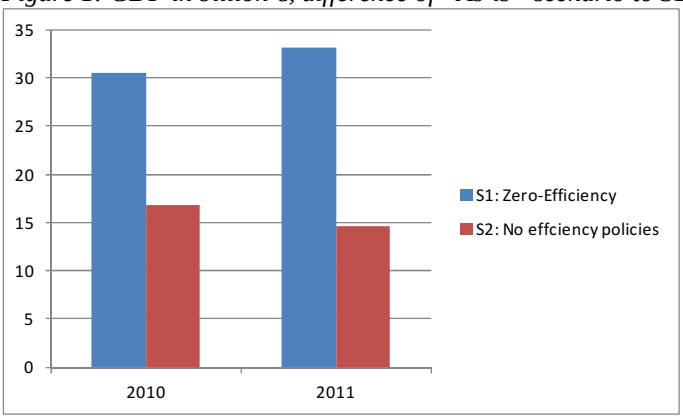
- An „As-is"-scenario, which reflects the real development from 1995 until 2011 in energy efficiency, renewable energy and CHP. The renewable energy results are comparable to the results which can be found in O'Sullivan et al. (2012).
- A „Zero-efficiency"-scenario (S1), which has the same renewable energy expansion as the As-is-scenario, but differs with respect to energy efficiency. Between 1995 and 2011 no CHP measures are included and all top-down measures from the National efficiency plan are excluded.
- A „Zero-efficiency-policy"-scenario (S2), which differs from the latter in the respect that it allows for autonomous technological change but excludes all policy induced efficiency measures.

We apply the environmental economic model PANTA RHEI (cf. Lehr et al. 2011, Lutz 2011) to estimate the economic impacts of the German climate and energy policy.

(3) Results

Comparing scenario S1 to As-is yields the following results: GDP is in 2010 by 30.6, and in 2011 by, respectively, 33.1 billion Euro higher than in scenario S1. The largest increase comes from measures in the building sector and the eco-tax reform. Comparing as-is to S2, the largest impacts comes from reduced imports (Figure 1)(Lehr 2011).

Figure 1: GDP in billion €, difference of "As-is"-scenario to S1 and S2



GWS, own results.

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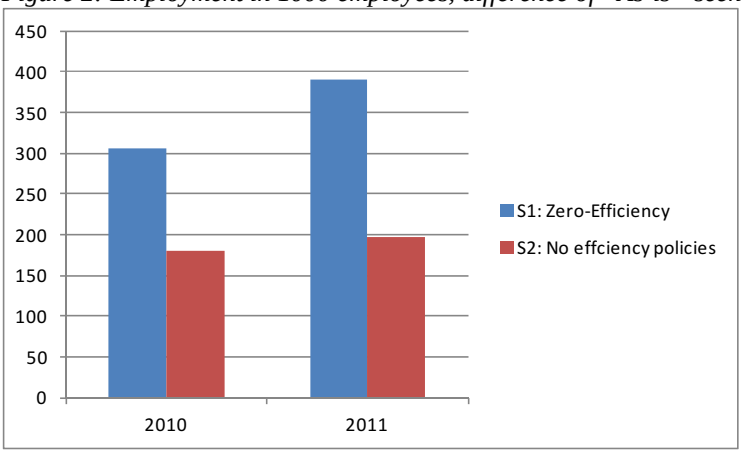
In terms of employment, approximately 300,000 (400,000 in 2011) people have been additionally employed in the as-is scenario compared to scenario 1. The largest single effect again comes from the eco-tax reform and its labor-cost reduction elements. The construction sector is the second most important pillar of employment from today's efficiency and energy policies (Figure 2).

Figure 2: Employment in 1000 employees, difference of "As-is"-scenario to S1 and S2



GWS, own results.

When we look at sectoral effects, we find the largest impacts in the construction sector and in the service sector. Indirect effects of the former concern a wide range of other sectors covering the intermediate goods for the construction sector. Impacts in 2011 mainly are larger due to higher fossil fuel prices. Import prices for oil, gas and hard coal were in 2011 up to 35% higher than 2010.

(4) Conclusions

Energiewende successes or failures are an important issue of political debate, even though it is early to actually observe measurable effects. The procedure suggested gives some proximates which help to attach an order of magnitude to the effects to be expected. The paper discusses these above briefly outlined effects and gives results for a wide variety of economic indicators, such as GDP, imports, sectoral employment, consumer prices etc.

References

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