Energy Efficiency and EU Industrial Competitiveness

Background Study for the European Competitiveness Report 2014

What we knew about Energy in the EU:

- **Electricity** price for industrial use is two times higher than in the USA
- **Gas** price for industrial use is three/four times higher than in the USA

What we wanted to learn:

1. How are European firms coping with this problem?
2. Were they able to **improve their efficiency** in order to compensate for the higher costs?
3. Has their **competitiveness deteriorated**?

What we discovered:

Energy cost shares in the EU and the USA (2011)

	Total economy	Manufacturing	Manufacturing*
U-27	4.6	7.5	3
USA	4.6	11.3	2.9

Note: * not including NACE Rev. 1 23 coke, refined petroleum and nuclear fuel. Source: WIOD; wiiw calculations. % of gross output in basic prices

1. Despite the price difference, Energy Cost Shares are relatively close in the EU and in the USA total economy, suggesting that **European firms have partly compensated the price disadvantage with higher energy efficiency.** But was it enough to keep them competitive on international markets?
2. In reaction to increasing prices, European firms have significantly reduced their **energy intensity**, but for most industries the **reduction was not large enough to offset the price increase**: the long-run price elasticity of electricity and gas is negative and in most cases smaller than one. In particular:
   - Europe (21 MS): elasticity of electricity ranges between -0.3 and -1.6, with only one sectors showing a value smaller than -1. This means that for most sectors only a fraction of the price increase (as low as one third) was offset by efficiency gains.
   - As a result, energy cost shares increased in the EU.
   - Full sample of 30 EU and non-EU countries: elasticity of electricity ranges between -0.3 and -0.7, and are generally lower than for the European sample. This means that European industries were able to improve their energy efficiency more than their competitors.
3. However, econometric estimations reveal that the cost share of electricity, gas, steam and hot water had a significant impact on extra-EU export competitiveness. Data suggest that the effect may have been much stronger for **Energy Intensive Industries.**

Policy Implications

- Caution is needed in using prices as a policy instrument to induce energy savings: the **increase of energy prices created a real burden** that most European firms were not able to fully compensate for**.**
- The impact of energy cost on the competitiveness of EII industries ought to be better studied, using more disaggregated data.
- It is very important to design **well-targeted policies** for Energy Intensive Industries rather than horizontal actions for manufacturing industries: different sectors show very different levels of resilience to changes of energy costs.

Contact: Paolo CASINI