A COMPARISON OF US AND EU ENERGY POLICY IMPACTS IN THE MANUFACTURING SECTOR

Marvin J. Horowitz, Ph.D.

- Manufacturing: industries producing durable & non-durable goods.

- On average, manufacturing consumes over a third of national electricity & natural gas

- Energy efficiency policies differ between the US and EU
- Energy efficiency policies differ from state-to-state & MS-to-MS
- Energy efficiency policies differ between industries

EXAMPLES OF EU PROGRAMS

Title	Avg Score	Type	Starting Year
Domestic Environmental Support,	4.1	Financial	1986
Energy Auditing Programme. Industry and Energy Sectors	4.4	Financial, Information/Education/Training	1994
Energy Tax, Industry	3.6	Cross-cutting with sector-specific characteristics	1996
EIA: Energy Investment Allowance	3.7	Fiscal/Tariffs	1997
Energy audits and feasibility studies subsidies	4.2	Financial	2003
Operational Programme Industry and Enterprise	3.2	Financial, Legislative/Normative	2004
Energy efficient companies	3.2	Information/Education/Training	2005
The Programme for Energy Efficiency in Industry	3.2	Co-operative Measures	2005
Energy audits for industry	4.0	Financial	2006
Operational Programme Industry and Innovation	3.2	Financial	2007
SME Energy Efficiency	3.1	Information/Education/Training	2007
Improvements co-financed by community funds	4.2	Financial	2007
Financial incentives for efficient electricity consumption	4.3	Financial	2008
Incentives for obligatory implementation of Energy Management Systems	3.6	Financial, Legislative/Informative	2008
Long Term Agreements with the industry, third phase	4.2	Co-operative Measures	2008
Tax Relief for Energy Saving Equipment - Accelerated Capital Allowance	3.2	Financial	2008
Energy Efficiency Agreement of Industry	4.2	Co-operative Measures	2008
Management of demand for energy and the drawing up of energy balance sheets	4.0	Legislative/Informative	2008
Mandatory Energy Efficiency Audits for Industrial enterprises	3.1	Legislative/Informative	2008
Intensive Energy Consumption Management System	3.9	Legislative Fiscal/Tariffs, Info/Educ/Training	2008
Special fund for energy efficiency in SME´s	3.7	Financial	2008
Energy efficiency networks for the industry	3.7	Co-operative Measures, Info/Educ/Training	2009
Distribution of the National Indicative Target under Energy Efficiency Law	3.2	Legislative/Normative	2009
Complex Solutions for GHG Emissions Reduction	4.2	Financial	2010
Loans for small and medium sized enterprises	3.6	Financial	2010
Special Programme for Climate Change improvement	3.2	Financial	2010
Promotion of voluntary agreements in industrtal sector	3.4	Legislative Info/Educ/Training	2010

http://www.measures-odyssee-mure.eu

MAJOR US PROGRAMS

US EPA Energy Star

Plants achieve ENERGY STAR certification and reductions

Popular ENERGY STAR tools for the industrial sector include plant Energy Performance Indicators (EPIs), which provide companies with the information they need to make smart investment decisions. EPA provides ENERGY STAR certification for 19 types of manufacturing plants, and 100 plants earned ENERGY STAR certification for superior energy performance in 2018.

US DOE Advanced Manufacturing

Advanced Manufacturing: The Budget Request provides $82,000,000 in FY 2018 to support early-stage applied R&D focused on advancing and creating new understanding of underlying technologies, materials and processes relevant to the productive use of energy in manufacturing, as well as the competitive manufacturing of energy related products. The Budget for AMO reasserts the proper role of the Federal Government by reflecting an increased reliance on the private sector to fund later-stage research, development, and commercialization of energy technologies and focusing funding toward early-stage R&D. By fostering collaboration between National Laboratories, universities and companies (for-profit and not-for-profit), this budget will enhance the foundational knowledge base in materials and manufacturing processes, focusing on research challenges that present a significant degree of scientific or technical uncertainty and are beyond the horizon in terms of commercialization, making it unlikely that industry will pursue independently.

State and Local Programs

- administered by electric and gas utilities and/or not-for-profit organizations
- like all US programs, participation is voluntary

Recent peer-reviewed, published studies,
one for the US and one for the EU,
estimate aggregate or ‘top-down’ policy impacts

DATA COSTS

$0,000,000

€0.000.000

(processing and analyzing not included)

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ORIGINAL ARTICLE

Purchased energy and policy impacts in the US manufacturing sector

Marvin J. Horowitz

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A harmonized calculation model for transforming EU bottom-up energy efficiency indicators into empirical estimates of policy impacts

Marvin J. Horowitz [a,*], Paolo Bertoldi [b]

[a] Demand Research, LLC, Fairfax, VA, United States
[b] European Commission Joint Research Centre, Ispra, Italy

The two studies are like fraternal twins:

- same genetic origin
- same upbringing
- totally different
- fascinating to compare

GENETIC ORIGIN, SAME UPBRINGING

Y_{it} consumer-per-period final energy use
(consumer = industries, states, countries)
(period = days, months, years)

α_i distinctive consumer

$R_{t \text{ or } it}$ general (or consumer-specific) long-term trend

X'_{it} consumer-per-period econ/demo/socio/demo/physical conditions

Z_{it} energy efficiency policy-related variable (when unavailable, work with ε_{it})

$$Y_{it} = \alpha_i + \beta R_t + \gamma' X'_{it} + \delta Z_{it} + \varepsilon_{it}$$

DIFFERENT DATA

US (50 STATES)

- 5-digit NAICS, 184 industries
- 8 periods in estimation sample (2002-2009)
- Explaining:
  - MWH consumption
  - MWH expenditures
  - Other Fuel expenditures

EU (28 MEMBER STATES)

- 24 of 28 MS (na for Croatia, Cyprus, Greece, Malta)
- 12 periods in estimation sample (2000 to 2011)
- Explaining:
  - Electricity and Natural Gas consumption combined (Terajoules)

FASCINATING TO COMPARE

- MWH savings was 5.6% in 2010 (final consumption would have been 5.6% greater than actual in 2010 had there been no public programs since 2002)
- MWH expenditures were 2.6% lower in 2010 compared to what they would have been had there been no public programs since 2002
- OTHER FUEL expenditures were 5.7% lower in 2010 compared to what they would have been had there been no public programs since 2002

- Cumulative TJ savings was 5.8% in 2011(final consumption would have been 5.8% greater than actual in 2011 had there been no public programs since 2000)
  - accuracy of TJ estimate is +/- 26% at the 90% confidence level.
- Magnitude of savings was similar in the 2000-2005 and the 2006-2011 period
  - accuracy was +/- 23% in early period, but +/- 47% in the later period

THANK YOU

Please call or email if you'd like to discuss any of these topics further:

Marvin J. Horowitz, Ph.D.
(703) 352-4535

mhorowitz@demandresearch.net