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Tariff Design - Advanced Topics

Donald Hertzmark

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Look at the tariff as an outsider would

- Find out what is going on at country level
- Assess similarities & differences other countries' approaches
- Identify important impacts of tariff methodologies, levels and structures

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Tariff Analysis & Assessment

- Assess consistency of approach throughout tariff construction
  - Cost coverage
  - Impacts on efficiency, trade and investment
  - Treatment of generation
  - Charges for other services
  - Special tariff categories
  - Impacts on lower income consumers

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What considerations go into your network tariff construction?

1. There is tremendous variation in both the components and the final product
   a. Variations among EU countries due largely to treatment of stranded costs & priority for new transmission investments
   b. Limiting transmission charges is one of key ways to reduce retail charges
2. Tariffs can have a significant impact on trade and investment:
   a. Optimal transmission tariffs, while desirable, are not necessary to stimulate trade and investment
   b. A “good enough” tariff that covers costs and sends the right signals on congestion and location is an excellent starting point

Tariff Construction *(cont.)*

3. Cost coverage in full is a feature of all of the respondents that have successfully restructured
4. Many countries, including some EU members, use some sort of cross-subsidy to protect certain classes of electricity users
5. Where cross-subsidies are significant relative to the overall tariff revenue, potentially beneficial effects of separate tariffication of transmission are lost in the noise of the transfer payments
6. Incentive clauses in tariffs play a more prominent role than in the past

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Impacts of Pricing Policies on Trade and Investment

- Prices only have to be ”good-enough” to stimulate some trade and investment - especially if significant transmission investment is needed.
  - A “good-enough” tariff will
    1. Cover all costs of transmission, including new capacity
    2. Provide “reasonable” signals regarding congestion and location of new generation
    3. Reflect energy policy priorities - renewables, cogeneration, etc.

A few years of “good-enough” can provide enough financial strength to implement a more sophisticated tariff

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Impacts of Pricing Policies on Trade and Investment

- Subsidizing your customers, especially if they are foreigners, will not stimulate investment from them to improve transmission service
- Transmission and generation prices have asymmetric impact:
  - Effective pricing system is necessary but not sufficient for good outcomes,
  - Inefficient pricing system is sufficient in itself to assure bad outcomes

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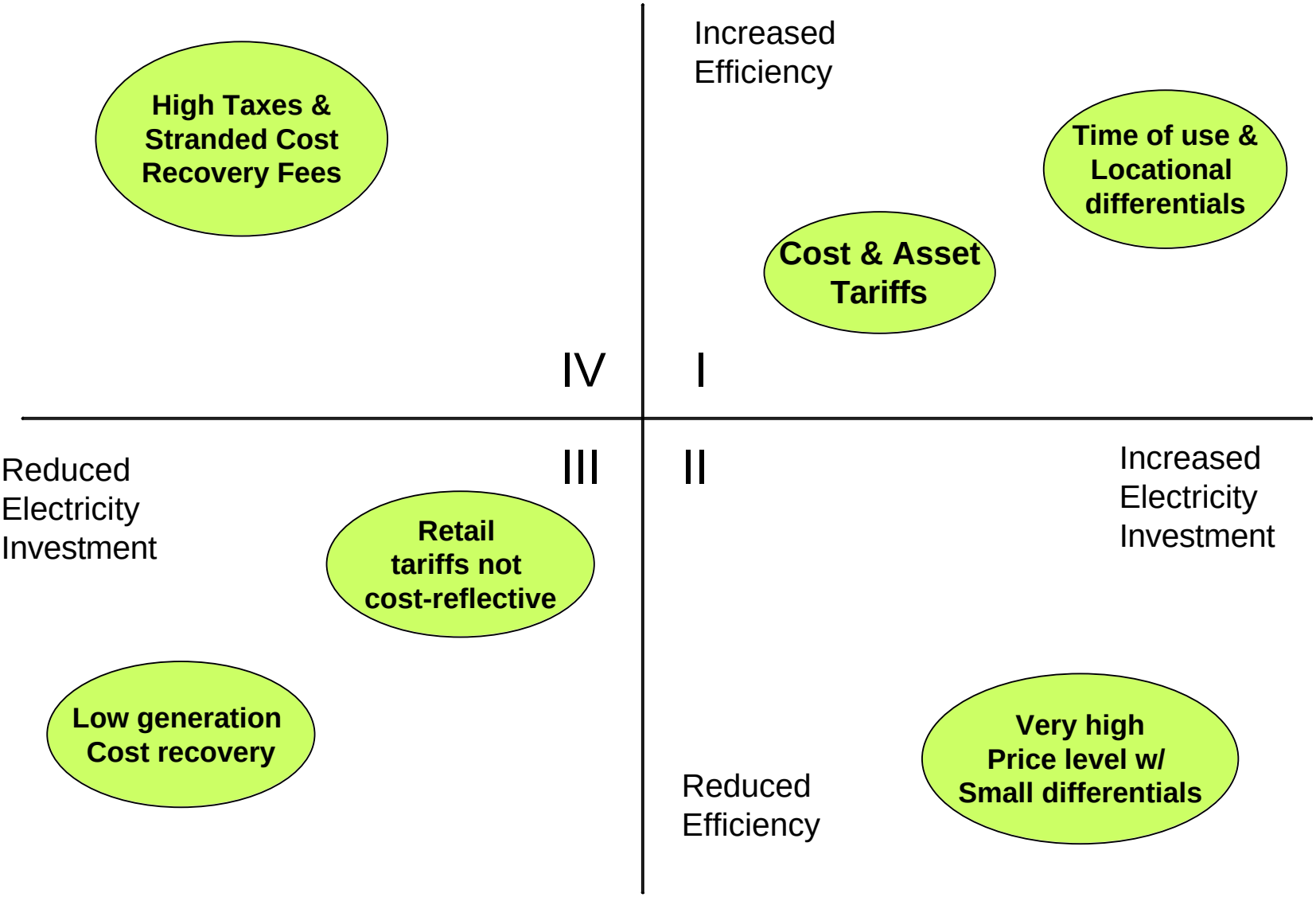
Impacts of Tariff Structure on Efficiency & Investment



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Impacts of Retail Pricing Policies on Trade and Investment

- The basics of pricing policy (cost recovery with reasonable differentials) goes far to promote both efficiency and investment - fancy tariff structures are secondary to basic cost recovery with reasonable fairness
- High fees will encourage efficiency (low use) but discourage investment in new capacity
- Effort made to unbundle systems must be matched with efforts
  - to improve information flow through metering and operations analysis, and
  - to implement tariffs based on this information.

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Retail Tariff Benchmarking - Impacts on Trade & Investment

- Tariffs often kept below full cost recovery
- Difficult to generate investment in sector with low tariffs
  - Investors are wary of situations requiring subsidies
  - Problem of competition with legacy plants - countries subsidize consumption to keep plants running - reduces overall efficiency of power sector

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Retail Tariff Benchmarking - Impacts on Trade & Investment

- Insufficient distinction between & among customer categories
- Increased trade helps to force retail tariff rationalization - c.f. Hungary & Slovenia

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Issues & Options With Regard to More Complex Tariffs

- How has unbundling affected the ability of system operators to minimize losses?
- How accurate are loss calculations in an integrated system given the large transit flows?
- What are the tradeoffs between tariff complexity and the implementation cost of the tariff?

What Comes Next?

- Unbundling
  - What is it?
  - Unbundling is the de-integration of utility charges for specific segments - generation, transmission, distribution, system operation, etc.
  - Why do we care about unbundling?
    - Unbundling, by making the utility operation more transparent, should provide regulators, users and suppliers with some of the information needed to assess and inform utility pricing policies; and . . .
    - The EU requires all entities trading into the Single Energy market to carry out, at a minimum, a financial unbundling of the utility accounts

What Comes Next? (Unbundling)

- How is unbundling carried out?
  - Utility must undergo a thorough audit
  - All costs are assigned to one or another of the operational units
  - As many common costs as can be identified will be assigned to one or more of the operational units
  - All transactions between operational units will be done on basis of approved tariffs (arms length)
  - TX and DX systems will be open to non-utility parties, provided there is sufficient transmission or distribution capacity

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What Comes Next? (Unbundling)

- This is so complex, what is the upside?
  - With almost all costs identified, key parameters come to the fore, with their impacts on costs and prices
    - Time that electricity or power is supplied
    - Temporal or locational bottlenecks in TX system
    - Impacts of purchased power on retail prices
  - Private sector participation is eased with open access and transparent network pricing
  - Permits further corporatization of utility structure & improves transparency of organization

What Comes Next? (Unbundling)

- What is functional unbundling?
  - Functional unbundling is the creation of separate organizations to carry out the segmented services of the utility - Gx, Tx, Dx
  - This is normally done when
    - The utility is to be privatized in parts
    - There is the potential for establishing more than one company in one or more segments (usually Gx or Dx)

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Time of Use and Locational Pricing

- Knowing how much it costs to supply electrical energy at a specific time is a key to more efficient operations
  - Time of use pricing (TOU) correlates the marginal cost of supply at any given time with the prices charged to some or all customers at that time
    - Usually applied to larger industrial, commercial and some residential customers
    - Additional metering required
    - Informed customers may be able to shift load, thereby reducing additional temporal costs

Time of Use and Locational Pricing

- Knowing how much it costs to supply electrical energy to a specific location is another key to more efficient operations
  - Locational pricing is based on the understanding that all system face constraints somewhere
    - Where there are constraints, there will be additional costs (e.g., redispatch, higher losses)
    - Locational pricing sends a signal to the causes of the problem (loads) and the potential cures (new generation or Tx) regarding location of facilities and value of additional Tx capacity

Open Access

- Open access is the name given to non-discriminatory access to the network by generators or loads
  - Open access facilitates private investment by removing one of the normal obstacles to new entrants, the absolute monopoly of the incumbent utility
  - Pricing the value of access is a key incentive for utilities
    - Price it too high and no one invests
    - Price it too low and there is little or no incentive for network utility to invest in system improvements

Industrial and Commercial Tariffs

Country	Tariff Type & Description	Time of Day Differential	Average Values (€/MWh)	
			Industrial	Commercial
Albania	Cost + rate of return (price discrimination by ownership status)		69.9	65-79
Bosnia-Herzegovina	Cost + rate of return	Time of day & seasonal	36-60	100
Bulgaria	Cost + rate of return	Industrial only	40	*
Croatia	Cost + rate of return	Industrial & commercial	54	77
UNMIK	Cost + rate of return	Time of day & seasonal	48-54	58-84
Former Yugoslav Republic of Macedonia	Cost + rate of return	Time of day & seasonal	32	77
Montenegro		Time of day	39-95	100-170
Romania	Cost + rate of return	Time of day	66	66
Serbia	Cost + rate of return	Seasonal	25	42
Turkey	Prepared by retail licensees	No	51	65

Residential Tariffs

Country	Time of Day Differential	Average Values (€/MWh)
Albania	n/a	77
Bosnia-Herzegovina	Time of day & seasonal	57
Bulgaria	Industrial only	51
Croatia	Time of day	74
UNMIK	Time of day & seasonal	70
Former Yugoslav Republic of Macedonia	Time of day & seasonal	37
Montenegro	n/a	69
Romania	Time of day	58
Serbia	Seasonal	33
Turkey	n/a	53