Energy Price Distortions in Iran

The scope and objectives of pricing

- social welfare considerations can not be attained without rational pricing mechanism
- energy conservation can not be realized by improper energy pricing
- optimal investment decisions is based on demand fulfillments and this will not be realized with distorted energy prices
- energy subsidization will barricade optimal resource allocation

mechanisms considered in order to decrease energy consumption growth rate

- price distortions (subsidy) removal which is concerned with pricing mechanism
- Autonomous Energy Efficiency Improvement (AEEI) which represents a non-pricing mechanism
- Regarding price distortions removal policy, the important issue is estimation of shadow price and its difference with domestic market prices

Autonomous Energy Efficiency Improvement

- potential increase in non-price efficiency improvements
- decrease in the energy system supply costs
- based on endogenous growth and learning by doing model
- Market barriers such as asymmetric information and transaction costs should be removed

Iran’s present situation

- state-owned for many years
- the government has responsibility for production, transmission and distribution of all kinds of energy
- sufficient energy is imported by the government to fulfill demand
- All investments needed for the development of energy sector are financed and managed by the government
- energy pricing mechanism is government oriented and is supported by on-budget subsidies

Iran’s present situation(continued)

- off-budget subsidies are less transparent and generally more variable over time than on-budget subsidies
- the energy price is determined in a socioeconomic context with severe political considerations
- all the prices are distorted from their marginal costs

Table 1. The ARDL models results for energy consumption in Iran

Energy Carriers Variables	**Gasoline**	**Gas oil**	**Kerosene**	**LPG**	**Fuel oil**	**Natural Gas**	**Electricity**
Intercept	1.02 (3.5)	0.6 (1.04)	0.91 (0.98)	0.10 (0.19)	2.46 (2.51)	----	----
Δ LGDP	----	0.44 (3.12)	0.51 (3.68)	0.22 (2.77)	----	0.38 (3.07)	0.41 (5.5)
Δ LVAT	0.18 (3.89)	----	----	----	----	----	----
Δ LVAIM	----	----	----	----	0.17 (5.7)	----	----
Δ LRPGA	-0.22 (-4.01)	----	----	----	----	----	----
Δ LRPKE		----	-0.005 (0.06)	----	----	----	----
Δ LRPGO		-0.10 (-1.57)	----	----	----	----	----
Δ LRPF	----	----	----	----	-0.07 (-1.45)	----	----
Δ LRPLPG	----	----	----	-0.12 (-3.56)	----	----	----
Δ LRPNG	----	----	----	----	----	-0.1 (-0.64)	----
Δ LRPEL	----	----	----	----	----	----	-0.02 (-0.60)
D 68	----	----	----	----	----	0.48 (2.33)	----
Ect (-1)	-0.19 (-5.82)	-0.19 (-2.30)	-0.52 (-4.42)	-0.21 (-6.39)	-0.35 (-2.82)	-0.34 (-3.17)	-0.06 (-2.32)

Table 2. Cointegrated vectors for energy consumption

Energy Carriers Variables	Gasoline (LGa)*	Gas oil (LGo)	Kerosene (LKE)	LPG (LLPG)	Fuel oil (LF)	Natural Gas (LNG)	Electricity (LEL)
Intercept	-5.51 (3.7)	-3.11 (1.26)	-1.74 (1.03)	-0.49 (0.18)	-7.08 (7.05)	----	----
LGa	1	1	----	----	----	----	----
LGo	----	----	----	----	----	----	----
LKE	----	----	1	----	----	----	----
LLPG	----	----	----	1	----	----	----
LF	----	----	----	----	1	----	----
LNG	----	----	----	----	----	1	----
LEL	----	----	----	----	----	----	1
LGDP	----	-0.95 (3.7)	-0.98 (5.55)	-1.04 (3.83)	----	-1.11 (21.41)	-1.23 (36.11)
LVAT	-0.97 (5.96)	----	----	----	----	----	----
LVAIM	----	----	----	----	-0.49 (3.76)	----	----
LRPGA	0.47 (-3.05)	----	----	----	----	----	----
LRPKE	----	----	0.27 (-4.55)	----	----	----	----
LRPGO	----	0.51 (-3.93)	----	----	----	----	----
LRPF	----	----	----	----	0.21 (-2.34)	----	----
LRPLPG	----	----	----	0.56 (-5.74)	----	----	----
LRPNG	----	----	----	----	----	0.29 (-0.73)	----
LRPEL	----	----	----	----	----	----	0.34 (-0.78)

Energy demand modelling results

- In Gasoline demand all short- and long-run price elasticities are less than unity
- Adjustment coefficient is estimated –0.19 indicating that occurrence of shock takes at least 5 years to be removed
- The largest adjustment coefficient is for kerosene demand

Energy demand modelling results(continued)

- The short run price elasticity of kerosene demand is insignificant, indicating unimportant role of price in the short run
- All findings based on cointegration approach indicate that energy price distortions removal (in fact, subsidization removal) can not play an effective role in energy conservation in Iran

A contradiction

- For a considerable energy conservation plan, a great deal of energy price adjustment will be needed
- extraordinary energy price adjustment will certainly cause great inflationary impact simultaneously

The inflationary impact of energy price adjustment

- In the year 2000, while the gasoline price was 4.8 ¢ per liter the optimal price was determined at 15 ¢ per liter
- the size of distortions for kerosene, gas-oil, fuel oil, LPG, natural gas, and electricity considering their conventional units were 13.1, 13.1, 7.29, 28.3, 3.16, and 6.19 ¢ per unit, respectively
- Total distortion for these seven energy carriers is equivalent to US$11.9 billion

The inflationary impact of energy price adjustment(continued)

- In order to compute the inflationary impact of energy price adjustment, an energy Input/Output model has been used

- The results show that removing energy price distortions will cause an inflation growth at a rate of 65.55%.

POLICY IMPLICATIONS AND CONCLUSIONS

- To realize successful energy efficiency plan, the energy price distortions removal is necessary condition but other market barriers should also be concentrated on
- Energy price distortions (subsidization) removal will cause inflationary impact, inducing welfare decreasing
- Autonomous energy efficiency improvement will provide an appropriate background for effective energy pricing policies