

Energy Subsidies

Using a case study of Iran to illustrate two themes:
Energy subsidies encourage waste, reducing exports and
adding to pollution.

Plus they divert scarce resources which could be better used
for investment.

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Structure of Presentation

1. Iran's situation: (a) energy's role, (b) subsidies
2. Six problems created by energy subsidies
 - a) Excess demand → lower exports
 - b) Wasted opportunity: lower investment
 - c) Pollution
 - d) Corruption and inefficiency
 - e) Strategic vulnerability to foreign pressure
 - f) Quandary: ending subsidies → inflation

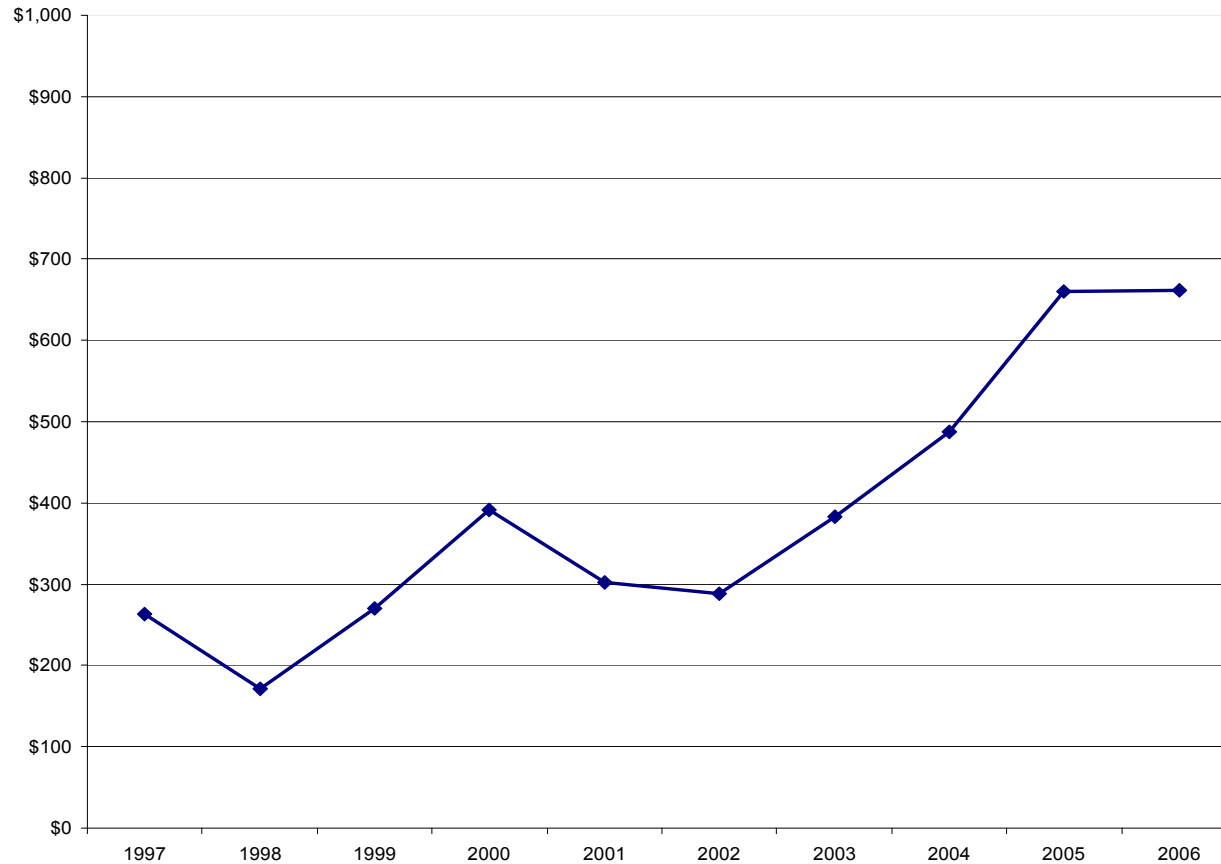
I. Iran's situation: hardly unique

- Much of what I say about Iran applies to Libya, Venezuela, Russia, Saudi Arabia and other subsidizing states
- Iran is a rather extreme case, so it brings out clearly some lessons

1. a) Oil Central to Iran's Economy

- About 80% government revenue
 - Would be more if not for energy subsidies
- About 80% of exports
 - Most “non-oil exports” are disguised oil exports
(energy-intensive goods made competitive only by low energy prices)
- So recent price rise has dramatic effect
 - More oil revenue Ahmadinezhad's 1st 3 years than all 8 Khatami years

Oil Export Revenue



Oil exports per person (\$ at 2000 prices)

But economy is only doing okay when should be soaring

- Modest growth: 5% a year on average
- Unemployment down but little
 - Data are poor; plus many underemployed
- Inflation has soared to 20+% per year
 - Particularly for goods used by the poor
- Popular mood about economy is sour
 - The rich invest abroad (Dubai), not at home

Short-Term Outlook: Highly Dependent on Oil Price

- IMF: Budget deficit if oil below \$90/barrel
- Reserves could let coast for about a year
 - Past practice, current rhetoric suggest will not adjust until absolutely have to
 - If run out of reserves, would be hard to borrow in light of world banking crisis, nuclear impasse

1. b) Subsidies

- Economists distinguish two types of subsidy:
 - “Budgetary subsidy” or “explicit subsidy”: government’s revenue less than its cost
 - “Implicit subsidy”: price less than world market price (revenue may cover cost, but lost potential revenue)
- Subsidy for an input means what is produced with that input is subsidized
 - Example: if oil/gas is subsidized, then it costs less to produce electricity with that oil/gas
 - So even if the charges recover all of the costs, those costs are artificially low, so the electricity is subsidized

Iran subsidizes all types of energy

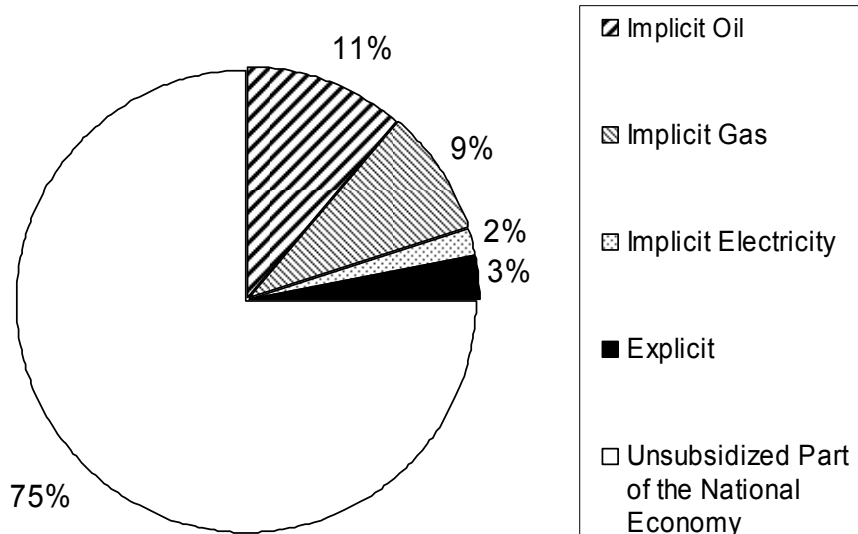
- Value of domestic sales at international prices: oil \$66 billion, natural Gas \$69 billion, electricity \$8 billion
- Revenue: oil \$5 billion, natural gas \$2 billion, electricity \$3 billion
- Subsidy= value less revenue
 - Oil \$61 billion, natural gas \$67 billion, electricity \$5 billion

Subsidies: most implicit

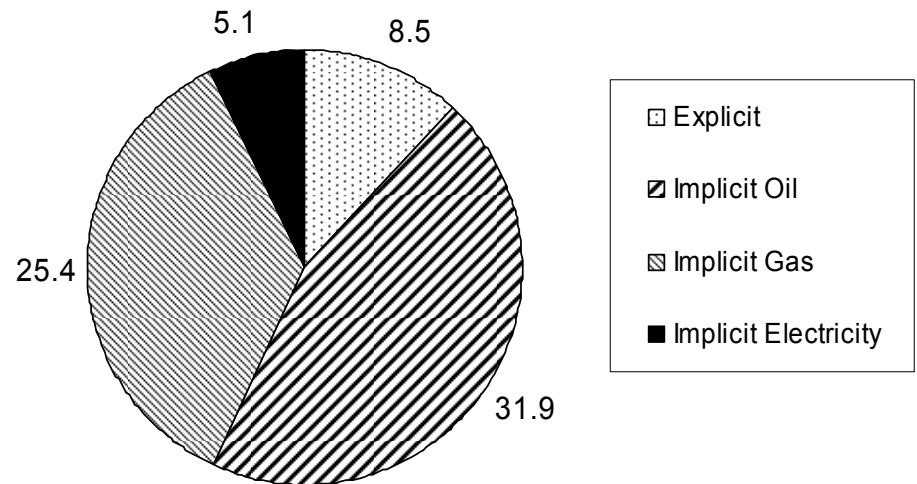
- Iran has some explicit subsidies, mostly on basic foods
- Implicit subsidies on energy are much larger than the explicit subsidies
 - Impact is hidden: subsidy is not in budget, size of subsidy is not calculated by government

Massive Subsidies

Subsidies as a % of National Income



2008/2009 Subsidies in Billions of \$



Source: annex to IMF 2008 country report on Iran

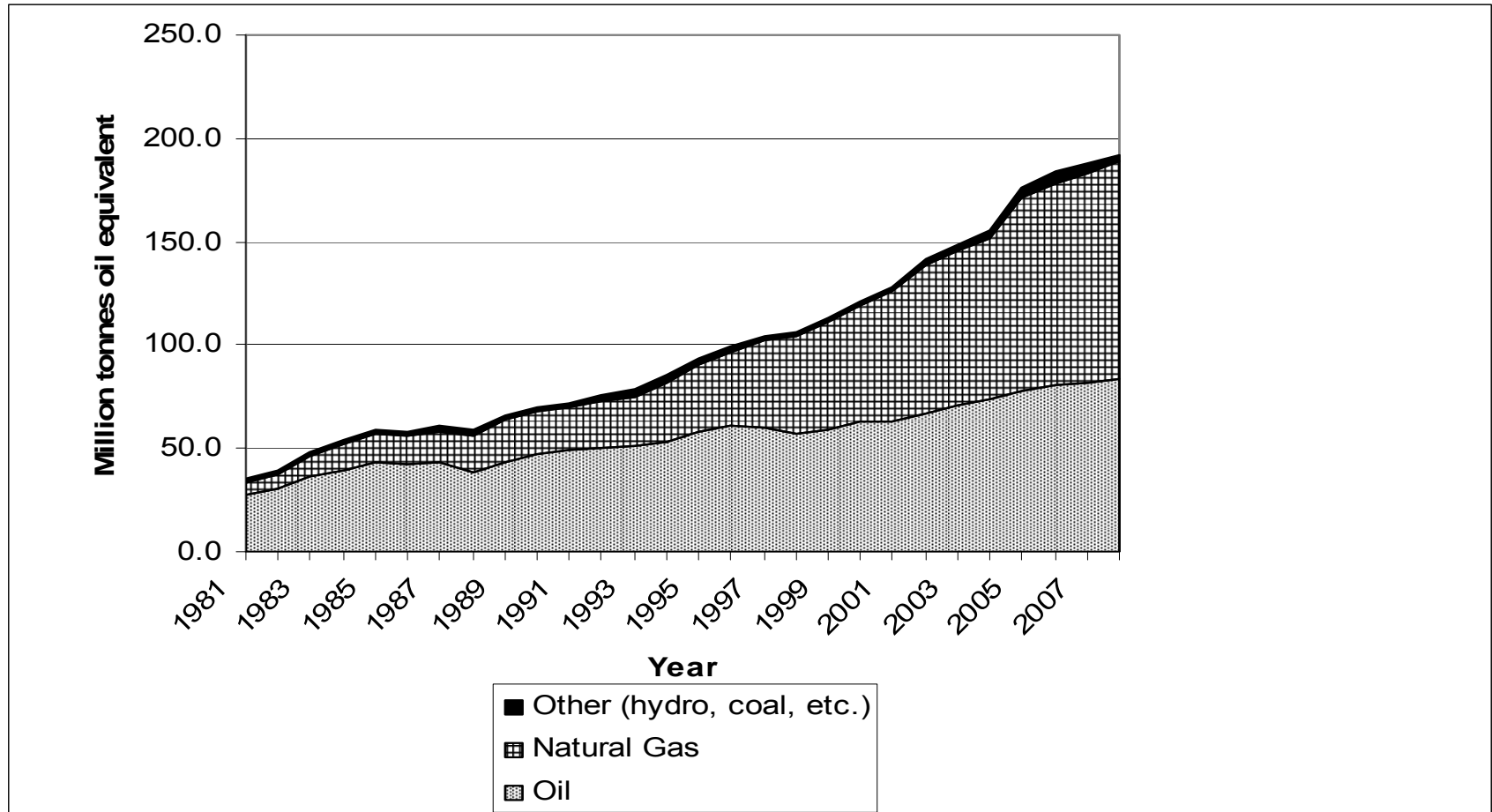
2. Problems with Energy Subsidies

- a) High energy demand, reducing exports
- b) Pollution: bad for health, global warming
- c) Wasted opportunity: lower investment
 - Oil producers experiencing “demographic transition”: opportunity, but a challenge
- d) Corruption and inefficiency
- e) Strategic vulnerability to foreign pressure
- f) Quandary: ending subsidies→inflation

2. a) Subsidies fuel rapid increase in demand for energy

- Energy consumption has doubled in last 12 years
- Oil consumption has been rising steadily
- But natural gas consumption has been growing even faster
 - Iran uses oil primarily for transportation

Energy consumption explodes

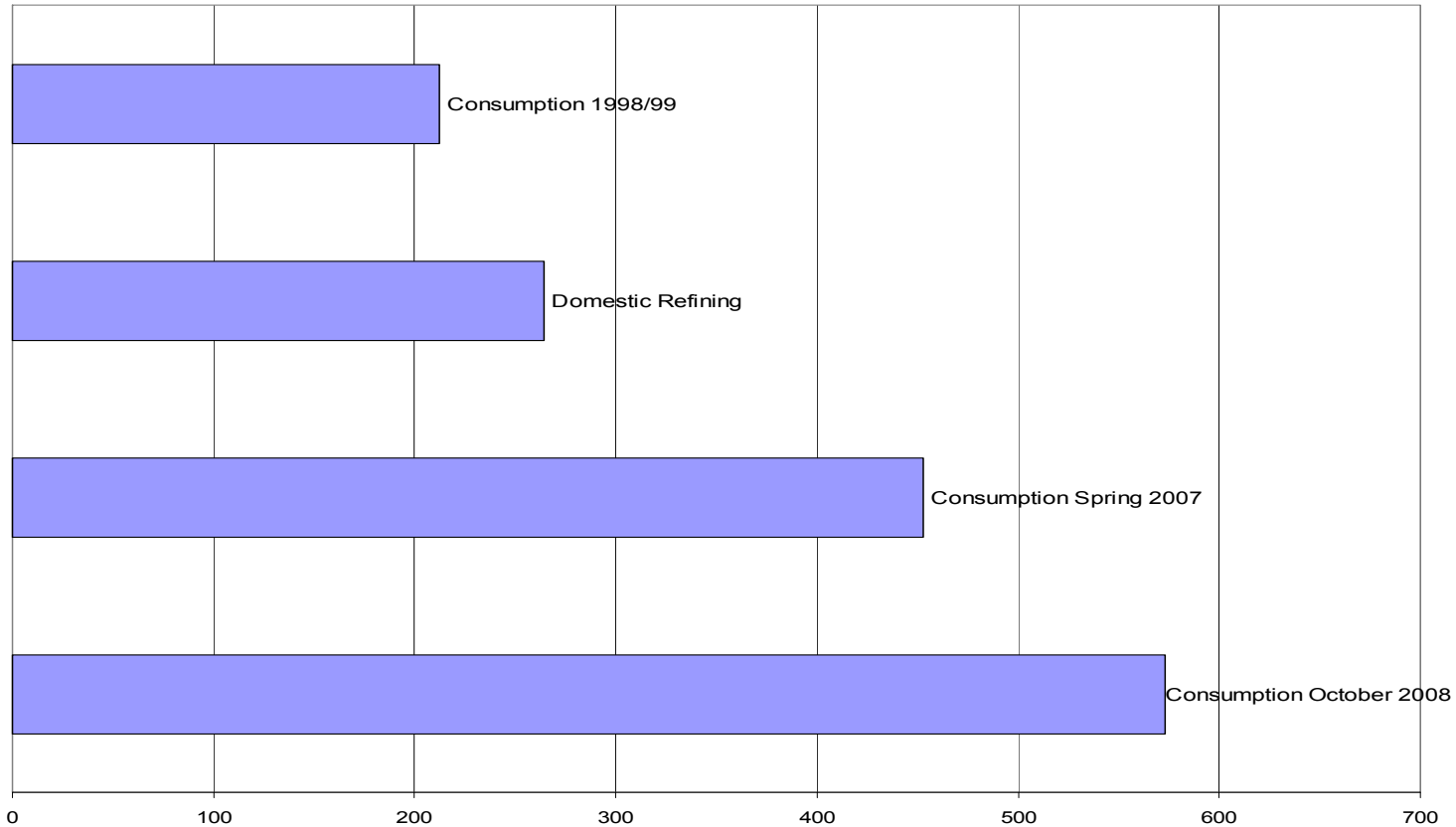


Half-Hearted Reforms: Gasoline

- Little political will to raise price
 - For years, the price not even cover costs of producing and distribution
 - Refineries, losing money, refused to expand capacity
- After much delay, rationing began in June 2007
 - But steadily undermined by extra rations, scams
 - Unlimited sales at world market price; ration at $\frac{1}{4}$ that
- Major government commitment to auto industry makes the gasoline problem worse and worse
 - 900,000 vehicles produced in Iran last year
 - Many new roads built; still, horrific traffic

Iran's Gasoline Quandary

Demand for gasoline is exploding; supply is not



Gasoline use and refining, in thousands of barrels per day

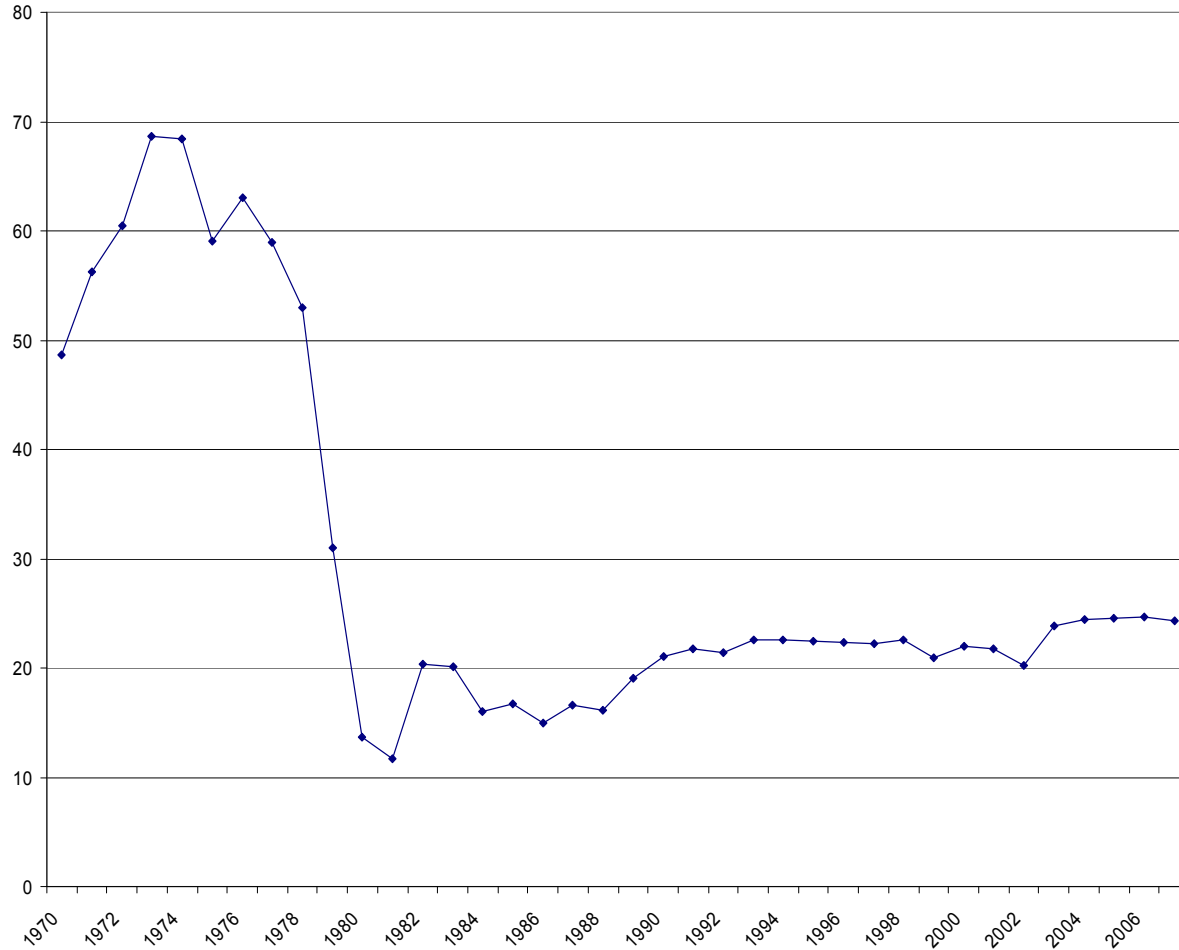
With domestic demand growing, exports are under pressure

- Natural gas exports: Iran vs. Qatar
 - They share world's largest gas field
- Qatar developed for exports, became rich
- Iran could have used the gas well
 - Excellent potential export markets (Turkey, Pakistan), LNG
 - Could have used the natural gas to raise oil output in aging fields through injection
- Instead, Iran subsidizes gas consumption
 - Iran is a net IMPORTER of natural gas
 - In winter 2008, Iran could not supply gas to 1+ million people who use it for heating

With oil being used at home, less available for export

- Iran has not been able to raise oil output much
 - In 1989, Iran announced with big fanfare plan to restore 6 million barrels/day output
 - But has not been able to finance this because:
 - Oil revenues are used for subsidies
 - Has not been able to attract foreign investment
 - Partly due to political isolation, especially recently
 - Mostly due to poor terms, corruption, tough negotiations
- Fields are aging, and problem getting worse
 - Each year, 500,000 barrels/day less output
 - Impressive that Iran each year replaces this and adds a bit more

Oil output has barely kept up with population growth



Barrels produced per person per year

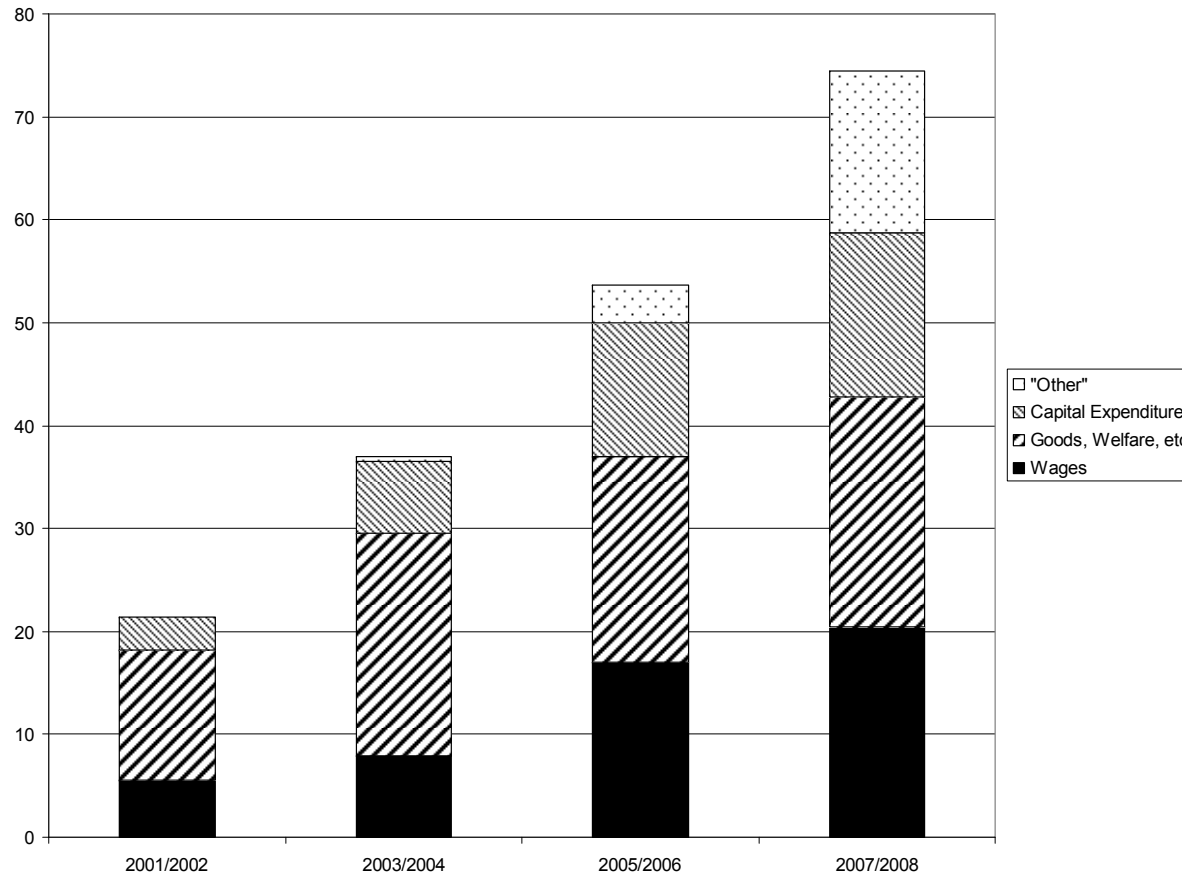
2. b) Wasted Opportunity for More Investment

- Oil income is used to fund government spending
 - Could have used income to finance private investment, through bank loans
- Government spends money on subsidies rather than investment

Low government investment

- Government spending boom
 - Increased oil income translates almost entirely into increased government spending
- But little additional investment
 - Government spends four times more on subsidies than on investment
 - Much of increase on “other” (now \$15 billion)
 - Presumably mostly security (military, nuclear, etc.)

Iran's government spending



In billion dollars (Source: IMF)

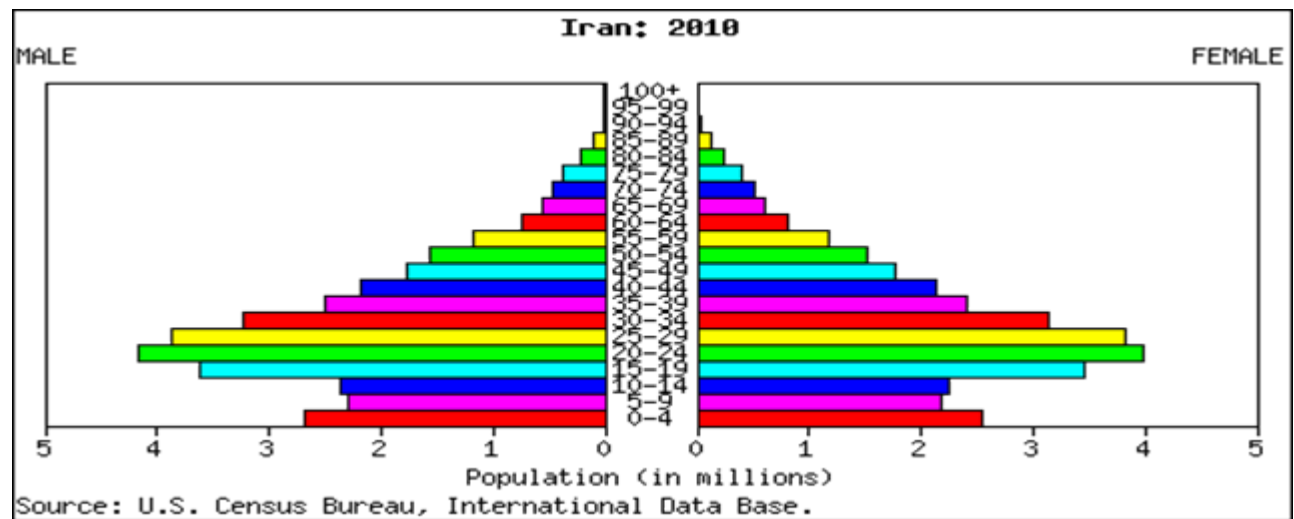
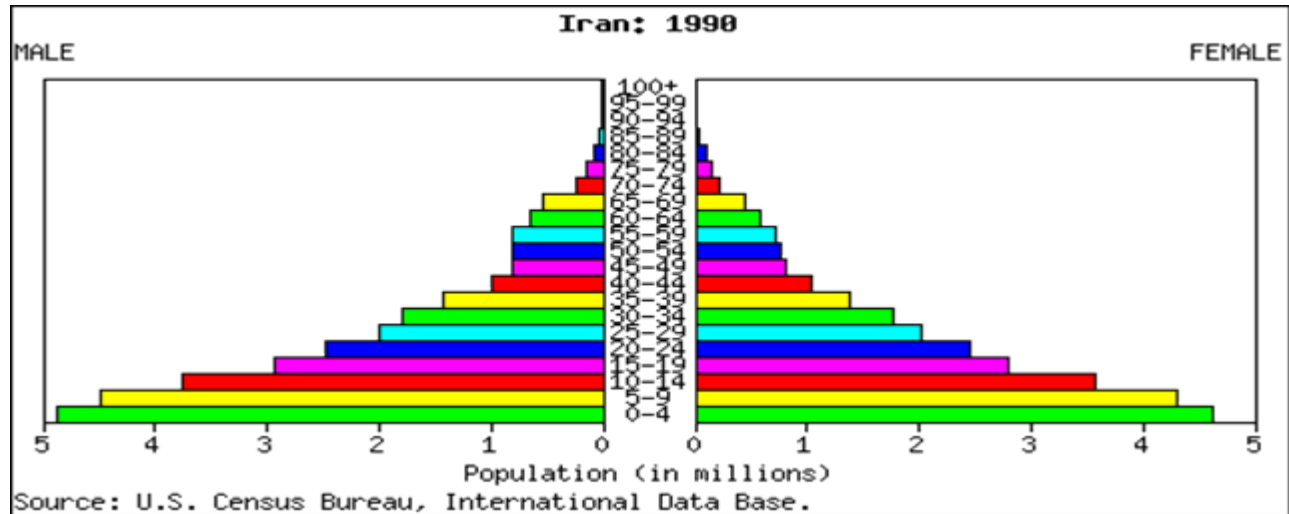
Dire need for investment to create jobs: human capital wasted

- Baby boom entering labor market
 - Government estimate: need 700,000 jobs annually
- Official figure for youth unemployment: 25%
- Only 10% of women work
 - Women $\frac{1}{2}$ university students, but Iran is not making effective use of this human capital

Past “baby boom” makes jobs problem worse

- Baby boom of 1970’s and 1980’s will dominate country for decades
- As most countries have, Iran is going through a “demographic transition”
 - From many children born per woman to few
 - Iran’s transition was fast
 - Births in 1987: 2.0 million
 - Births in 2007: 1.0 million

Age Pyramid



Missed opportunity for rapid growth

- During “demographic transition,” few kids and few elderly, so large working-age population
- If the “youth bulge” works, rapid growth (China); if unemployed, social unrest (Algeria)
- If well used, oil income would have let Iran finance jobs for the baby boom
 - But the money went for subsidies instead

2. c) Pollution

- Excessive gasoline consumption exacerbates terrible air pollution problem in Tehran
 - Transport depends on gas-guzzling cars
 - Estimated 5,000 deaths per year from air pollution
 - One more recent estimate: now, 10,000 a year die
- One estimate: air pollution costs 8% of national income

Global Warming

- Excessive consumption in energy-subsidizing countries increase global warming emissions more than Kyoto Treaty lowers it
- UN Environment Programme: if subsidies end, Iran's global warming emissions drop by half
- Generous treatment for developing country emissions is hard to justify when they have excessive energy use

2. d) Corruption and Inefficiency

- Energy prices below world market level creates many economic “distortions” – that is, decisions based on the wrong price
- Some of the problems are corruption or crime, but another category is inefficient use of resources
 - “Inefficient” because had the resources been used elsewhere, they would have led to more output

Subsidies lead to smuggled exports

- Gasoline price in Turkey is 7-10 times higher than in Iran; similar problem with Pakistan
- Smuggling was very common before rationing
 - 10-20% of domestic sales of gasoline were smuggled
 - Gasoline was up to 90% of all smuggling from Iran
 - Under rationing, situation remains a problem: assuring adequate supplies for border regions when temptation is to smuggle

Inefficient use of energy investment in energy-wasting industries

- In 2008, Iran energy consumption was:
 - 187% that of Turkey
 - 110% that of Italy
 - 91% that of Great Britain
- Iran invests in industries which survive only because of subsidized energy
 - Steel, petrochemicals, aluminum
- Would be more efficient to export the oil or gas, while developing industries in which Iran can compete on world markets without subsidies

2. e) Strategic vulnerability to foreign pressure

- U.S., Europe, UN have imposed various sanctions on Iran
 - UN/Europe aimed mostly at nuclear/missile programs
- Proposals to impose new sanctions
- Iran wants to reduce its vulnerability to foreign pressure
- Oil subsidies make Iran vulnerable
 - Gasoline consumption is high
 - Iran's refineries lose money on gasoline, so resist investing in expanding capacity to meet growing demand
 - Result: Iran imports much of its gasoline – at least 1/3, perhaps more

Vulnerability is not good for Iran

- UN not likely to order a ban on gasoline sales to Iran; US/Europe not likely to act
 - But just the uncertainty created by the proposals are bad for Iran's economy and its national security
- Iran could adjust to a gasoline import ban, but the effects would be tough
 - High economic cost, possible political impact

2. f) Quandary: Ending subsidies would feed inflation

- If Iran were to raise energy prices to world market levels, that would raise costs throughout the economy
- Businesses would try to pass the higher costs on to consumers
- Likely result: higher inflation
 - IMF estimate: end subsidies, inflation up 10-13%
 - To avoid implicit subsidies, energy prices would have to go higher still

Conclusion:

Energy subsidies waste an opportunity, create distortions

- High oil income hides the fact that Iran could have done much, much better economically
- A big part of the problem has been the use of scarce resources for energy subsidies, rather than investment
- Plus energy subsidies have diverted scarce resources in inefficient ways, for instance, to energy-intensive industries