PEAK-LOAD PRICING

By Marvin Castell and Joel Tanchuco

A developing country needs, among other things, access to telecommunications, rail-based mass transport, water and electricity. Consumption of these services is marked by significant periodicity. That is to say, consumption is high during peak periods, and lower in off-peak periods. More electricity, for instance, is consumed in the daytime, when offices and factories operate.

The pricing of these services, coupled with the fact that they have to be provided when needed, regardless of high or low demand, can lead to inefficiency in these markets. This is because efficiency happens when producers follow normal profit maximizing behaviour, i.e., when they charge higher prices for consumption during peak periods, and lower prices during off-peak hours.

The effect of peak-load pricing is to induce some consumption to shift, away from the times of peak demand, and toward times of lower demand. Consumers are rewarded -- in the sense that they pay less -- for using the service when there is ample unutilised capacity, rather than when demand takes up or even exceeds all the capacity. This makes for more efficient use of existing capacity.

Among the services listed at the beginning of this article, telecommunications services firms practice a limited form of peak load pricing. Globe Telecoms, for instance, charges a lower call rate from 10:01 pm to 6:59 am. Long distance calls made during off-peak periods also cost less. Some "decongestion" results from this practice. The same outcome happens when airlines charge higher fares during the tourist season, and when the theatres of Broadway charge more for evening performances than matinees -- the producers maximize profits and make better use of capacity. This shifting of consumption creates what economists call "efficiency gains." If airfares were kept uniform, airlines would forego profits because they have to turn away passengers when flights are fully booked, while other flights take off with a lot of empty seats.

What compels producers to impose a single price despite the periodicity of demand? One reason might be the rules imposed by regulatory authorities. Another is that the producer lacks information that allows differential pricing across periods of consumption. A third might be that installing equipment that allows the producer to impose different prices depending on times of consumption is itself an added investment cost.

Whatever the reason, when a producer imposes a single and common price, this policy generates inefficiency. This single price falls between the peak period price (the price that can be charged because of higher demand) and the off-peak period price (a lower price corresponding to lower
demand). This “average” price has the effect of encouraging higher consumption during peak periods and lower consumption during off-peak periods -- which producers and consumers don't really want. The high demand at certain hours would compel the producers to install additional capacity. Producers would have to pump in additional capital, and pass the cost on to consumers. However, the increased capacity becomes even more under-utilized during the off-peak hours.

While peak load pricing would help balance capacity usage, some disadvantages may follow. We’ve already mentioned the investment cost of installing time-sensitive measuring equipment. The new technology may entail switching costs. Producers may also have to hire field personnel and supervisors.

A more burdensome disadvantage would fall upon consumers unable to switch their time of consumption despite the pricing changes, such as, factories unable to adjust their operating hours because of workforce resistance, or inter-island ferries that cannot readily schedule more off-peak trips because of weather conditions. Consumers such as these will have to suffer the burden of higher prices during peak periods. The benefits of peak load pricing flow to those who adjust consumption to coincide with off-peak hours.

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