

Abstract

With increased integration of the global economy, telecommunications has become the key infrastructure for rapid economic development. Hence, the Government of India decided to liberalise the value added and basic telecom services in 1994 to increase efficiency. Given the socio-economic importance of the telecommunication services, it is necessary to analyse the economic rationale behind such reform policies and the institutional structures needed for their success. This thesis addresses empirically and theoretically some of the issues raised by the liberalisation of the Indian telecommunications sector.

An analysis of the past performance of Department of Telecommunications (DoT), and comparison of the ongoing Indian liberalisation with that of other countries point to severe shortfalls in DoT's performance. In its twin role as a regulator and competitor, DoT has also failed to carry out adequate restructuring of the organisational, financial and institutional frameworks necessary for fair competition.

In order to analyse efficiency and sustainability of competition given the existing production technology of DoT, a frontier translog multi-product cost function is estimated. The results show that DoT is a highly inefficient natural monopoly, with severe over-utilisation of capital reflecting the presence of *Averch - Johnson* effect. This implies that the reform policies should consider the trade-off between loss of scale and scope economies and gain in efficiency.

To study the effect of market structure on firm performance, a frontier stochastic production function is estimated for the telecommunications equipment industry. The results show that while public firms are as efficient as private firms in a competitive industry, the major factor contributing to higher efficiency of public firms is the preferential treatment given to them by the government. This finding emphasises the need to adapt the reform policies to the interplay among ownership, market structure and regulation rather than considering any one factor in isolation.

Given that regulation plays an important role in enhancing production and allocative efficiency even in a liberalised environment, two theoretical models are considered to regulate the firm in a dynamic environment with asymmetric information about cost of production when technological progress takes place over time. The first model considers the case where the regulator threatens to introduce a fixed amount of commodity into the market from an exogenous source, if the declared cost of the incumbent in the second period is more than the expected cost. The results show that with reduced incentive to lie for low cost firms, the output produced by firms in the high cost range increases violating the monotonicity of the incentive contract. As a result, second period incentive contract is characterised by a pooling interval.

In the second model, the regulator considers dual sourcing in the second period as 'technological progress reduces the fixed cost along with the marginal variable cost. The optimal market structure depends on the regulator's belief about entrant's cost and the incumbent's first period action. This results in countervailing incentives for the incumbent in first period. As countervailing incentives also break the monotonicity of the incentive contract, the first period contract is characterised by a pooling interval.