VERTICAL INTEGRATION: AN OVERVIEW

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Prepared for Communications Subcommittee of the Committee on Interstate and Foreign Commerce, U.S. House of Representatives Hearings on HR 13015, August 3, 1978
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SUMMARY

This paper provides a general discussion of the incentives for and consequences of vertical integration. The paper does not deal with specific industry details but rather tries to emphasize the main issue surrounding vertical integration so as to provide a general framework for the Congressional Subcommittee to use in formulating their own judgments on the bill under consideration. This paper also provides a hopefully useful yet brief bibliography for reference purposes.

This paper examines the main reasons given for vertical integration. These reasons include the desire to avoid costly negotiations with other firms, to achieve better coordination of activities, to foster technological development, and to remove uncertainty of supply. The paper concludes with a discussion of what data could be examined to help resolve the difficult question of how important is vertical integration in U.S. communications to the rate of technological progress in that industry.
Vertical integration occurs when a firm decides to satisfy some of its demand for a product or service by internal production rather than by external market purchases. Vertical integration is widespread in U.S. industry today. However it is measured [see Adelman (1951), Gort (1962), Laffer (1969) and Tucker and Wilder (1976) for quantitative studies], vertical integration seems to have been roughly constant (or very slightly increasing) at an aggregate level since 1946, although for particular industries more pronounced trends may be evident. Studies (Chandler (1963)] document that vertical integration was an important feature facilitating the formation of some of the largest U.S. firms.

My purpose in this paper is to provide a general discussion of the incentives for and consequences of vertical integration. Which of the incentives and consequences apply specifically to the communications legislation under consideration will depend on many details and facts that I am sure other witnesses who are expert in these areas will be relating to you. My discussion will not deal with specific industry details but rather try to emphasize the main issues surrounding vertical integration so as to provide a general framework for this Subcommittee to use in formulating their own judgments on the merits of the bill under consideration. I have also provided a hopefully useful yet brief bibliography for reference purposes.

Most of the reasons for vertical integration rely main-
ly on the idea that vertical integration is a means of reducing a firm's costs. Perhaps the simplest example is one in which the technology of production makes it clear why activities should be carried on under one firm. Consider the case of steel production in which molten iron is run into the steel furnace [Scherer (1970), p. 80]. Clearly the production cost would rise if instead of having one firm perform two operations, we first had one firm refine the iron ore (into pig iron) and then sell the (solidified) iron to a steel mill to melt down the pig iron for use in a steel furnace. (Why not have one firm sell molten iron to a second firm located beside it to refine for steel? Notice that this is a situation where each firm is dependent on the other and a close degree of coordination is required. The cost of achieving this coordination through formal contract is likely to exceed the cost of achieving coordination through internal ownership. See the discussion below on coordination costs.)

Another possible reason for vertical integration is to avoid price controls or profit regulation. For example, suppose firm A requires some input subject to price controls -- take a price ceiling for example. Suppose rationing of the input occurs because the price is set too low. Rather than rely on the private market, firm A might opt to produce the input itself and assure itself of a reliable supply. As another example, suppose that firm A's profits are regulated. If firm A can open another division which is underegulated, it
could shift accounting profits between the divisions by charging itself different transfer prices for the internally produced input. Tax advantages may also result from this practice. My impression is that these reasons for vertical integration are probably not the important ones to focus on in assessing this bill. Indeed, transfer prices are often closely monitored by regulators and tax officials.

Another related line of argument sees vertical integration arising in response to market power. Suppose firm A buys input from firm B. If firm A feels firm B is overcharging him, firm A can either buy from other firms or, if there are no other firms, can try to produce the input for itself. If firm B is a monopolist (e.g., suppose it has a patent), then firm B will have an incentive to acquire firm A. It is not possible to say whether society benefits from this resulting vertical integration [see Warren-Boulton (1974) and the references cited therein; see also Mallela and Nachata (1977) and McGee and Bassett (1976)].

Building on the work of Coase (1937) and Malmgren (1961), Williamson puts forth a very sophisticated interpretation of the view that vertical integration can lower costs by avoiding monopoly power and reducing operating costs. Williamson argues that in most transactions involving a complex product, it is simply too costly to write down how every conceivable contingency will be resolved. Therefore, a contract exposes a buyer to risk an unfavorable outcome that he could possibly avoid by doing the task himself.
A closely related idea is that once the initial contract is signed, the seller is usually in a position of market power. For example, if firm B agrees to develop a complicated product for firm A, then after development of the product has begun firm B could demand higher prices. Firm A could either pay the price, or take the unfinished project to some other firm to finish. Often this last possibility can be so costly as to preclude it. By developing the project itself, firm A can avoid the potential of being taken advantage of after a project has begun. (Of course, repeat dealings between firms and reputations help to create "trust" between firms. Still, costly disagreements can arise in a contracting mode of operation that could be avoided by vertical integration.) Moreover, suppose firm A buys a machine from firm B. The machine lasts 100 years. Firm A has to be certain for as long as it requires the machine, that spare parts and repair service be available. If the machine is specialized to firm A, and uses some fancy technology developed by firm B, then how can firm A be sure firm B will be around for the next hundred years to supply service and parts? Vertical integration can remedy this problem. The basic point is that vertical integration can sometimes allow better coordination or harmonization of interests than contracting among many firms. If a disagreement arises, a manager resolves it in the best interests of the company. Costly negotiations can be avoided.

The coordination role of vertical integration is often
stressed, especially the ability of a vertically integrated firm to "assure" itself of input supplies [see Chandler (1963)]. It is possible to construct a model in which the amount of input a firm receives delivery is random [Carlton (1978)]. This uncertainty does indeed create incentives for vertical integration. A firm that produces its own input assures itself of an adequate input supply. It is possible, however, that this vertical integration need not be socially desirable [Carlton (1978)].

The information transmission within a vertically integrated firm is often argued to be a key feature of vertical integration. The notion is that when dealing with complicated products, it is necessary for the people selling the product to communicate with the people manufacturing the product who in turn must speak with the people designing the product. Such communication may have to be of an informal unstructured sort -- an arrangement difficult for a market to duplicate. Such communication is purported to help foster desired technological change. It is the case that by having control over the characteristics of its inputs, that a vertically integrated firm could choose a technology that is superior to the one chosen by a non-integrated firm [Carlton (1978)]. The point is that communication by price signals need not be as efficient a means of communication and coordination as by direct control. Arrow (1975), argues further that a vertically integrated firm may have better advance knowledge of events by dealing in several related markets.
than a non integrated firm.

The dependence of the rate of technical innovation on the type of market structure is obviously of critical importance in assessing the consequences of this communications bill. It is clear that technical innovations have occurred in market organizations involving vertical integration and in ones involving contracting through outside firms. I am not aware of a systematic quantitative comparison across industries explaining when one type of organization is likely to be preferred to the other or how different market structures might influence the direction of technical change. Whether the increased coordination, better information flow, avoidance of costly transaction disputes associated with vertical integration would do more to stimulate technical change in communications than would an environment of having several competing non integrated suppliers is difficult to determine. It is clear, however, that all divisions within a firm need not be of the same importance regarding technological innovation. An intermediate step of allowing vertical integration into those areas that seem likely to foster technological development might be a useful alternative to consider.

In summary, vertical integration can often lower a firm's cost of operation -- a beneficial effect in most instances. Vertical integration can also have a beneficial influence on the rate and direction of technical change. The costs of vertical integration are that firms, as they
get bigger, may cause bureaucratic costs to rise, and efficiency may suffer as supervision becomes more difficult. (If such costs did not exist, then every firm would be vertically integrated.) It has also been argued [see, e.g., Scherer (1970)] that a vertically integrated structure could sometimes "foreclose" markets to independent suppliers -- thus restricting entry. Deciding whether the costs of vertical integration in the U.S. communication sector exceed the benefits will be complicated, but it must be done carefully. Examination of the degree of innovation in less integrated foreign communication industries would help establish the importance of vertical integration in the U.S. communication sector, a sector to which rapid technological progress is crucial.
BIBLIOGRAPHY


