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**ABSTRACT**

Major technological, regulatory, and institutional changes have made finance more widely available in recent years, amounting to a *bone fide* “financial revolution”. In this article, we focus on the impact the financial revolution has had on the way firms are (or should be) organized and managed, and on the policy consequences.

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## **The Influence of the Financial Revolution on the Nature of Firms.**

Raghuram G. Rajan and Luigi Zingales\*

Major technological, regulatory, and institutional changes have made finance more widely available in recent years. The ability of financial institutions to price a variety of exotic instruments, and to assess and spread risks, has increased. More data on potential borrowers is now available, and it is also more timely. Improvements in accounting disclosure have resulted in greater borrower transparency. Deregulation has resulted in greater competition and better prices in financial markets. Finally, regulatory barriers protecting the turf of different kinds of financial institutions have come down, resulting in the emergence of new institutional forms.

These changes amount to a *bone fide* “financial revolution”. In this article, we focus on the impact the financial revolution has had on the way firms are (or should be) organized and managed, and on the policy consequences. To do this, we first need to understand what firms are and what drives their organizational structure.

A caveat is in order at the outset. Finance is not the only force transforming the nature of firms in the last two decades -- deregulation and technological change have also played a big role. These have been explored elsewhere (see, for example, Raghuram Rajan and Luigi Zingales (2000)), hence our focus.

### **I. Critical Resource Theory**

Ronald Coase (1937) described the realm of the firm or organization as the set of transactions that are governed by power or authority. This leaves the realm of the market as one where transactions are governed by arm’s length contracts. The fundamental question then is how does anyone in a firm possess power that differs from ordinary market contracting. Sanford Grossman and Oliver Hart (1986) suggest that because contracts are incomplete, there will be bargaining between parties involved in production in situations that are not covered by initial contracts. In such situations, the owner of unique alienable assets that are critical to production

obtains power because ownership gives her control over the assets. But where does power come from when the firm uses no unique alienable assets in production?

Consider, for example, what happened when institutional investors, worried about the direction the advertising agency Saatchi and Saatchi was taking, attempted to impose discipline by curtailing the pay of the charismatic chairman, Maurice Saatchi. Maurice Saatchi left, taking with him many key executives and some important clients – a sizeable portion of the firm. The point of this example is that power in a human-capital-intensive firm may not lie with the legal owners, and may come from sources other than alienable assets.

There is a long tradition in sociology (see, for example, Richard Emerson (1962)) and in management science (see, for example, Birger Wernerfelt (1984)) that suggests power flows from a variety of resources in short supply (including not just property, but also strategies, ideas, or skills) that are valuable to the production process. This literature, however, does not focus on how this power can, or should, be allocated within a firm. Raghuram Rajan and Luigi Zingales (1998, 2001) follow this literature in suggesting power flows from a variety of critical resources, but ask the further question of how this power can be allocated, and augmented, when the resource is not an alienable asset, the property rights to which can be enforced by a court.

They argue that while, sometimes, a person intrinsically possesses a resource (e.g., Maurice Saatchi's talent) in which case he has power directly, resources also attach through specialization. Clients and associates had become used to working with Maurice Saatchi and relied on his unique talents. They would have been much less productive without him. These induced complementarities (and the lower complementarities they enjoyed with the rest of Saatchi and Saatchi) tied them to him, allowing his critical resource to become a means of controlling even more critical resources (the associates' talents and the client relationships).

Thus, unlike ownership of unique alienable assets, which can be allocated simply by sale, control over other critical resources has to be built up through a variety of mechanisms such as

internal organization, work rules, and incentive schemes. These then induce complementarities between a resource and other resources (also see Milgrom and Roberts (1990) and Holmstrom and Milgrom (1994), for examples). More generally, while ownership legally links an inanimate asset to a firm, complementarities economically link some person or unit that cannot be owned to the critical resource at the core of the firm. According to critical resource theory, the organization, i.e., the realm of transactions governed by authority rather than prices, consists of the critical resource and the agents and other critical resources that are tied to it via complementarities. Note that we use the term “organization”, because the economic organization may have boundaries that are very different from the legal entity known as the firm.

Why is the allocation of power so important? First, the allocation of power affects incentives. Whenever contracts are incomplete or can be easily renegotiated, power serves as a credible currency with which an internal party who has to take a self-denying action is assured future compensation. Second, the allocation of power can determine the range of feasible actions a party has. The powerful head of the bond-trading group in an investment bank can allocate roles so that members of the group will work together smoothly, and without overlap. Finally, the allocation of power today can affect the constellation of power in the future, and thus the future efficiency of the organization.

## **II. The Effects of the Financial Revolution**

Let us now use this framework to explore the consequences of the financial revolution. With capital easy to come by, alienable assets such as plant and equipment have become less unique, especially to those with specific skills. A group of managers in a division are no longer beholden to the parent because the latter owns their assets. If need be, they can break away, raise finance directly in the market, and replicate the assets. From the firm’s perspective, resources other than alienable assets have become more critical to its ability to survive competition. From the owner’s perspective, these resources – people, ideas, strategies – are harder to control directly. In

particular, some of the “glue” holding these other resources to the organization in the past was their dependence on it for financing. With the glue evaporating, how should we expect corporations to respond?

### **III. An Application: Growth opportunities.**

Consider, in particular, new project ideas, i.e., growth opportunities. A firm’s existing assets generate cash flow, and also provide collateral, with which to finance new projects. New projects also need the technical expertise of employees. In the past, the complementarity between inside financial capital and human capital held the firm and its growth together. Owners were happy to let insiders use the funds generated by existing assets to finance new investments because this secured them property rights on growth opportunities. Insiders were happy to exercise these options within the legal framework of the existing firm, because their career and earnings potential was enhanced and, lacking financing, they could not have done it on their own. This balance of power is reflected in the traditional view of the corporation (e.g., Gordon Donaldson and Jay Lorsch, 1983), which assumed cash flow “belonged” to insiders, in the sense that they could, and should, use it to grow the organization.

The corporate governance revolution of the 1980s broke this equilibrium. In order to invest, insiders had to make a case to shareholders that the investment would be profitable, and a variety of mechanisms were put in place to compel insiders to repay cash if the case was found wanting. These changes enhanced the efficiency of investments. At the same time, however, they helped sever the link between assets in place and growth opportunities. If insiders could now convince both the corporate bureaucracy and outside shareholders of the merit of new internal projects, they could probably also convince outside financiers to fund the projects as separate ventures.

In other words, the financial revolution has subject internal decisions to greater scrutiny, while making outside decisions easier. Unless there is a strong complementarity between assets in

place and growth opportunities from a technological point of view, there is no reason why new opportunities should be undertaken within the legal shell represented by the existing company. The same developments that led outside owners to gain control over internal cash flows, may have weakened their ability to appropriate many valuable growth opportunities!

Of course, there are also legal links, such as patents, between assets in place and opportunities. But patent laws can be maneuvered around, especially by those who know, such as former employees. Interestingly, Amar Bhidé (2000, p.94) reports that 71% of the firms included in the Inc 500 (a list of young, fast growing firms) were founded by people who exploited a growth opportunity created by the previous firm that employed them.

These developments are not all bad. Employees have more options, and their creative talents need not be stifled by a corporate bureaucracy, thus resulting in more free enterprise. But the perceived returns to investment in the past included the value of growth options. The decoupling of growth options from assets in place reduces private returns. So, paradoxically, as financing becomes more available and cheap, aggregate investment need not increase.

Existing corporations, however, are unlikely to sit idly by, watching their opportunities vanish. They will adopt strategies to secure them. Consider some.

*How growth options can be secured: Strategy*

One strategy is to build complementarities between assets in place and growth opportunities. By requiring employees to market a new product under its umbrella brand name, for instance, a firm ties the product and accessories that might emerge to its existing family of products, making it harder for any product group to pull up stakes and leave. Thus, something that initially has no value, like a brand name (or company culture), becomes a critical resource that other products (or people) are specialized to, helping a firm retain growth opportunities.

Another strategy is to create a competitive gap between the loyal core of the firm, and any employees who might be audacious enough to compete. Rajan and Zingales (2001) assume extreme

increasing returns to scale in marketing, so that a larger firm captures a disproportionate share of the market. In these circumstances, specialized employees become a critical resource who can help retain unspecialized employees. Intuitively, specialized employees, who have high switching costs, can be trusted not to expropriate. These loyal Praetorian guards provide the firm with sufficient scale to dissuade unspecialized employees from leaving and trying to compete. In other words, the specialized employees give the organization the capability for growth.

Of course, a firm can protect its opportunities by maintaining a lead in dimensions other than its organizational capabilities, for instance, with technology. But technology, by itself, can be imitated. Therefore, the most enduring leads are based upon a combination of organizational capabilities and technological leadership. When a firm innovates at a very fast pace, and it has a large specialized core of employees to implement these innovations, its opportunities will be well protected. By the time a group of departing employees can fill out the gaps in their organizational structure and ramp up, the technology they depart with may already have become obsolete. Interestingly, the fact that successful firms are the ones that hold together better will exacerbate any inherent tendency of product markets to become winner-take-all.

That complementarities between assets and growth opportunities help a firm retain control of the latter may explain why the response of many firms to the financial revolution has been a greater emphasis on focus. This ensures that the growth opportunities the firm generates are in areas where it has a comparative advantage so that it has a greater chance of retaining them.

The opportunities emerging from an activity may not always be a natural extension of it, and may correspond better to something that is related but not identical. Thus too narrow a focus can also lead to a loss of opportunities. Perhaps the best way to capture all possible growth opportunities in an area is to maintain the widest possible competence in that narrow area. This may suggest why successful firms spend so much time and effort in identifying their “mission”. A well-defined corporate mission keeps firms on a lookout for emerging technologies, which they can

weave into their platform through mergers at an early stage. The widest platform for a given mission gives the firm ownership over the greatest range of growth opportunities, and thus potentially greater value.

### *Governance*

While owners may attempt to protect their interests through changes in business strategy, we would also expect changes in the emphasis of governance. When a firm's critical resources were mostly alienable assets, outside financiers could easily control a company by owning these assets, so long as the legal system granted them sufficient protection of their property rights. When these rights are protected, as in most developed countries, alienable assets gave outsiders so much power vis-à-vis insiders that, absent appropriate incentive schemes, insiders were not properly rewarded for their effort. This may explain the emphasis on pay-for-performance and on the use of debt as an incentive device, especially in mature industries with little growth opportunities and a lot of internal free cash flow (Michael Jensen, 1986).

The financial revolution has weakened the power of alienable assets. Competition has also increased in many industries, in part for reasons we have not focussed on. In this situation, the need to maintain a temporal lead over outsiders, and perhaps more important, stave off potential competition from insiders, may be sufficient to force managers, even in dominant firms in an industry, to stay on their toes. Resources and effort are less likely to be underemployed when product market competition is so fierce. As the fate of Encyclopedia Britannica (which was eclipsed by new, electronic, encyclopedias such as Encarta) indicates, a period of rapid technological change is unsparing even of mature firms in hitherto mature industries. As a result, the problem of appropriability, rather than managerial shirking may now be the more important problem of governance.

And this could imply very different methods of governance. While Maurice Saatchi's compensation might have seemed excessive by industry standards, it was not given the power he

had. If the directors had wanted to get a greater share of the surplus the firm generated for shareholders, they should have been focused much earlier on garnering more power. Instead of simply overseeing the appointment and compensation of top management as most boards do, they should have been more involved in the details of management and organizational design – for example, specifying who reported to whom and who saw what clients – so as to build complementarities that tied the firm together. By ceding these functions to management, they also ceded power vital to preserving their interests. In the future, governance will have to focus more on the acquisition and allocation of power than simply its exercise.

### *Surplus-sharing*

It may, however, turn out that it is simply not cost-effective for owners to intrude in such a manner. If so, they will have to part with some of the organizational surplus that hitherto they appropriated. One way to formalize the future claims of employees is to offer them an explicit equity stake. Furthermore, a system of delayed vesting of their equity makes their share of the surplus contingent on staying, serving as additional glue binding the organization. Moreover, equity-like instruments may also do more – they can act as a coordinating device. Let us explain.

We have argued that new strategies may have components that make them increasing returns to scale. In any business with increasing returns to scale, being perceived as a leader can become self-fulfilling. Interestingly, equity participation can be used as a coordinating device. Consider a virtual exchange – a firm that provides the means for others to trade. Its value is a function of the number of people trading on it, which, in turn, is determined by the number of people expected to trade there. Distributing shares of a virtual exchange among actual and potential customers achieves two objectives. First, it gives customers a payoff contingent on success, making them co-conspirators in the success of the exchange. Second, it provides a signal of the expected liquidity of the exchange, because the value of the shares will be a function of the expected volume of trading.

A new entrant will find it difficult to lure away customers. His equity will not be so valuable because people do not expect him to succeed. Thus widely distributed equity keeps the leader and stake-holders together, but also serves to reinforce expectations as a barrier to entry. Of course, such expectations induce a layer of fragility to the firm – a misstep provides an opportunity to competitors at the same time that the firm's integrity is compromised.

#### *Caveats*

In addition to financing, much else has changed. For example, as physical assets have become less unique, intellectual property may also have become more important and better protected over time. This may explain why, for example, consulting firms have grown in size, because at the heart of their business is a shared, appropriable, database of past work.

Improvements in information technology have also helped owners and top management monitor and control large, far-flung businesses more easily. Of course, to take advantage of this, firms require more formalized management practices so that decisions are made on the basis of hard, easy-to-monitor, information (see Jeremy Stein (1999)). This could leave niches open for smaller employee-owned enterprises that are willing to make decisions on the basis of soft information. These developments may explain, for example, the seemingly surprising co-existence of both mega-banks and small community banks in the same industry.

We have also focused on the steps owners and top management will take to regain power. It may be optimal in some cases for them to relinquish power, and for firms to continually subdivide as new opportunities arise. New sharing arrangements such as corporate venturing (where the corporation funds its employees to set up on their own) and incubation (where the corporation nurtures a venture with the promise that it will be set free) may reflect this.

#### **IV. Conclusion and Policy Implications**

The transformation in the nature of the firm spurred by the financial revolution has broad policy implications. Consider anti-trust. Anti-trust takes as given that the legal firm is a coherent

whole, competing with other legal firms. But, as a result of the financial revolution, links within the firm may be much weaker than in the past, and conversely, links between firms, tied together for instance by complementary technologies, may be stronger. This matters.

For example, one of the concerns about monopoly is that the monopolist may lose the incentive to innovate. But when financing is easy and the ownership of growth options is up for grabs, the fear of employees leaving with crucial technology and appropriating a share of the rents forces a monopolist to maintain its technological lead. Potential internal competition may be more of a threat than external competition!

As another example, horizontal mergers in some industries may not be attempts by firms to gain some market power over customers, but to regain some power over the employees and key suppliers they used to have when alienable assets were a bigger source of rents.

Another implication is that the changing nature of the firms requires changes in what is disclosed to provide a true and fair picture of a business. Thus far, accounting disclosure has focused on assets in place (balance sheet) and the cash flow generated (income statement and statement of cash flow), because these were the main sources of value. But if an important source of value is the ability to retain human capital, and exploit growth opportunities, changes in the accounting system are warranted. At a minimum, it should disclose how successful the firm is at retaining (key) employees. Clever measures to capture the value of these employees as well as the fraction of generated growth opportunities that are exploited are also called for.

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Footnote

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