

Understanding Misallocation: The Importance of Financial Constraints*

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Abstract

This paper analyzes the effects of financial liberalization on the allocation of capital across firms and aggregate productivity. Focusing on a group of Eastern European countries, we exploit cross-sectoral differences in financial constraints and find that deregulation increases productivity disproportionately in highly financially constrained industries. We conduct a productivity-decomposition exercise and find that productivity gains are primarily driven by a reduction in misallocation across firms. We also document that the reform reduces the within-industry variance of the marginal product of capital. Finally, we document that deregulation increases the market share of domestically-owned firms, which ex-ante are more financially constrained.

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Executive Summary

Differences in income per capita across countries are extremely large. Since the work of Klenow and Rodriguez-Clare (1997) and Hall and Jones (1999), there is a growing consensus that aggregate productivity is the most important factor in accounting for these differences. An emergent line of work has developed in order to understand why aggregate productivity differs so much across countries. One particular strand, starting with Banerjee and Duflo (2005), has argued that differences in the allocation of resources across different firms may be a significant factor in accounting for cross-country differences in aggregate productivity.

One potential source of misallocation relies on financial market frictions. Consider an entrepreneur who begins with a business idea and needs capital to implement it. An economy has many such entrepreneurs: some poor, some rich, some with great ideas, and others with ideas not worth implementing. In a world with well-developed financial markets, only the most talented entrepreneurs would run businesses. Among the existing entrepreneurs, those with similar levels of talent would demand similar amounts of capital.

However, when financial markets are underdeveloped, occupational and investment decisions are based not only on talent, but on individual wealth as well. Some high-quality but poor entrepreneurs might have to operate their businesses with sub-optimal levels of capital. Some talented individuals might actually be excluded altogether from the market, as they are unable to cover start-up costs.

By distorting decisions at the individual level, financial frictions can also have negative consequences for productivity at the aggregate level. If we were to reallocate the existing capital from rich and untalented entrepreneurs towards poor and talented entrepreneurs, aggregate output would increase. Failure to reallocate is referred to as capital misallocation. Such a misallocation shows up in aggregate data as low aggregate productivity.

This paper studies the relationship between financing frictions and misallocation by focusing on the episode of financial liberalization by a group of ten Eastern European countries. Until not long ago, the financial sector in transition economies was heavily repressed. Banks were controlled by the government, the interest rates they charged were subject to ceilings, and the allocation of credit was similarly regulated. Explicit or implicit taxation also weighted on the volume of financial intermediation. Entry restrictions and barriers to foreign capital flows limited competition.

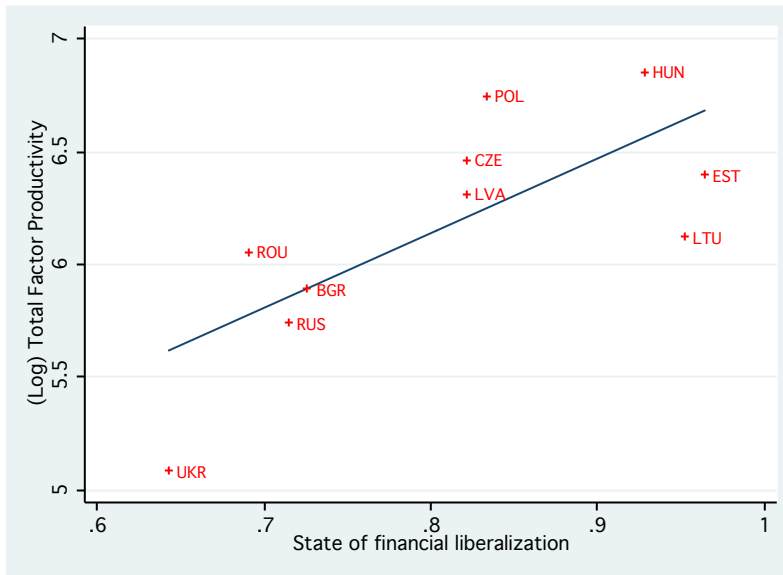
Starting in the mid 1990s, these countries started liberalizing and deregulating drastically their financial sectors, reducing the intervention of the government in financial activities. As a result, financial markets became deeper and more credit flowed to firms. The main goal of this paper is to use microeconomic data to analyze whether these financial reforms led to higher productivity by allowing a better allocation of capital across firms.

Our paper contributes to a recent literature aiming to understand the relationship between finance, misallocation, and aggregate productivity (Banerjee and Moll, 2010; Midrigan and Xu, 2010; Buera et al., 2011; Moll, 2012). Until now, this literature has exclusively used quantitative models to analyze these

issues. The main contribution of our paper is to provide the first reduced form assessment between a concrete financial reform and aggregate productivity through reallocation.

Looking at a cross-section of the ten transition economies under study in the year 2000, we observe a positive association between the state of financial liberalization and aggregate productivity (see figure 1). However, since these countries were transitioning from a command to a market economy, other events that took place during the same period might be driving this relationship.

Figure 1: Financial liberalization and aggregate productivity in a cross-section of Eastern European countries



Notes: the figure plots the relationship between the state of financial liberalization (normalized to be between 0 and 1) and the (log) of aggregate productivity in a cross-section of ten transition economies in 2000. Sources: own calculations based on data from Abiad et al. (2010) and AMADEUS.

To identify the causal impact of financial deregulation on productivity, we make use of the fact that this policy should have a stronger effect on those industries that are more financially constrained. In particular, the reform should affect disproportionately industries that have high requirements of external finance (Rajan and Zingales, 1998) and high levels of asset tangibility (Braun, 2003; Claessens and Laeven, 2003).¹ We therefore exploit cross-sectoral differences in financial constraints and estimate the differential effect of financial liberalization on productivity across industries.

Exploiting differences in financial constraints across industries allows us to disentangle the effects of financial liberalization from other policies that could have taken place at the same time and that affect industries uniformly. To allow for a differential effect of other reforms across industries, we explicitly control for a large array of reform indicators constructed by Campos and Horvath (2009).

Another threat to identification is that financial liberalization is itself a political outcome, which might be endogenous to a specific pattern of industry-level productivity growth. We argue that this possibility is highly unlikely, since financial deregulation was largely induced by external pressures from outside governing bodies such as the European Union (EU), IMF, and OECD. Most of the countries were seeking EU membership, and accession imposed strict guidelines regarding financial repression. Also, many of the countries were asking for financial support from the IMF and expressed their commit-

¹External financial dependence is defined as the fraction of capital expenditures not financed with cash flow from operations. Asset tangibility is the fraction of net plant, property, and equipment in total assets.

ment to undertake financial sector reforms in order to obtain such help. In addition, we document that financially constrained industries have relatively low political strength, which makes the possibility of reverse causality even more implausible.

We estimate firm-level productivity as the residual from a Cobb-Douglas production function. We then calculate industry productivity as the weighted average of productivity of all firms producing in that industry. Our first set of results indicates that financial liberalization increases productivity disproportionately in industries that are heavily dependent on external finance and that have a high level of asset tangibility. The differential effect across industries is sizable. After a large financial reform, productivity in industries with high financial dependence increases by 15% more than in industries with low dependence. Likewise, productivity in industries with low asset tangibility increases by 30% more than in industries with high tangibility. However, these industry productivity gains could be the result of an improved allocation of capital across firms or of firms becoming individually more productive.

To identify the source driving the productivity gains, we conduct a standard industry productivity decomposition exercise (Olley and Pakes, 1996). We express industry productivity as the sum of two components: an average-productivity term and an allocation term. The first component measures the individual efficiency of firms of the industry. The second component is the within-industry cross sectional size-productivity comovement. It measures the efficiency with which resources are allocated across firms within a sector.

We find that industry productivity gains are primarily driven by an increase

in the comovement term, that is by a reduction of misallocation across firms. Reallocation explains 70% of the differential effect of the reform on productivity across industries with different levels of external financial needs. Similarly, reallocation explains 60% of the differential effect of the reform across industries with different levels of asset tangibility.

Our theoretical framework of financial frictions and misallocation implies that any improvement in the size-productivity comovement must be driven by a reduction of the within-industry comovement between productivity and the marginal product of capital. We find evidence for this mechanism in the data. We also provide evidence that the reform lowers the within-industry dispersion of the marginal product of capital across firms. In addition, we document that, consistent with our model, financial liberalization does not decrease neither the comovement between productivity and the marginal product of labor nor the variance of the marginal product of labor.

Finally, we analyze the effect of financial liberalization across firms that ex-ante face different levels of financial constraints. In particular, we compare domestically-owned firms with foreign-owned firms. Since foreign firms have access to an internal capital market, they should be less constrained than domestic firms. We find that financial deregulation increases the market share of domestically-owned firms relative to foreign-owned firms. The effect is particularly strong in highly financially constrained industries. In highly externally dependent industries, the market share of domestic firms increases by 7% more than the foreign firms' share. Likewise, in industries with low asset tangibility, domestic firms see their market share increase by 10% more than the share of

foreign firms.

Summing up, given the growing consensus that differences in aggregate productivity explain a large fraction of cross-country differences in income per capita, financial market frictions have the potential to explain an important part of these income differences. Our paper highlights that one concrete policy, namely financial liberalization, can contribute to closing the gap of income per worker across countries by reducing capital misallocation

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