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The impact of bank competition and concentration on industrial growth

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HIGHLIGHTS

- We study the role of bank competition on growth of other industries.
- We use a sample of about 6000 banks and 23 industries across 48 economies.
- Non-cooperative bank competition and bank stability promote growth robustly.
- Bank concentration may also have a positive effect on industrial growth.
- The effect of concentration increases in the presence of higher levels of competition.

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ABSTRACT

This paper studies whether bank competition affects growth of non-banking industries. We find that non-cooperative bank competition and stability promote industrial growth robustly. Bank concentration may also affect growth positively; the latter effect increases for higher levels of competition.

1. Background

The banking system is regarded as a mechanism that can convert the impact of the financial market development into growth[1] and it has been shown that competition can drive banks to reduce their lending costs, which can lead to an increase in demand for bank funds in order to support business and growth (Berlin and Mester, 1999; Beck et al., 2004). Previous research has suggested that competition promotes growth (Cetorelli, 2004; Cetorelli and Strahan, 2006), but it has been argued that increased market power in combination with less competition can help relax external financing constraints on non-financial firms (Mayer, 1988, 1990; Petersen and Rajan, 1995). It has also been observed that external-finance-depending industries experience a slowdown in growth when bank competition is high, as it makes it less attractive for banks to invest in the lending relationship Rajan, 1992;

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[1] For example, see Rajan and Zingales (1998); Vives (2001); Claessens and Laeven (2005); Cetorelli and Strahan (2006); Maudos and Fernandez de Guevara (2006) and Bertrand et al. (2007).

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Petersen and Rajan, 1995; and Chen, 2007). Claessens and Laeven (2005) found that sectors heavily dependent on bank financing grow faster in countries where there is fierce bank competition, while Maudos and Fernandez de Guevara (2006) suggest that the exercise of market power enhances economic growth, supporting the lending relationship argument, with the implication that bank competition may have a negative impact on the availability of funds for industries.

In light of the existing literature, if we consider competition to be a rival or non-cooperative process, then large banks can be developed through the process of a competitively rival selection (a firm grows at the expense of the growth of its rivals). With banks competing non-cooperatively, we would expect high concentration to be inevitable in an efficient market with a very selective process of rival competition. In order to verify the argument proposed by this paper, which is contrary to the prevalent view on concentrated market structure reducing competition, a key challenge would be to find out whether banks compete as rivals. In the absence of rivalry, concentration can imply a market environment in favour of business collusion and may weaken competition.

This study contributes to the literature by (a) identifying rival competition in the context of banking; (b) employing a large sample of over 6000 banks from 48 countries to examine whether rival competition exists in the banking business across countries; and (c) jointly studying rival competition and concentration for their respective impact on the growth of 23 financially-dependent industries.

2. Data and methods

We follow the approach introduced by Rajan and Zingales (1998), who focus on analysing the effect of financial development on growth, and test whether sectors which rely more on external funds yield higher growth in economies with a higher level of financial development. In order to avoid the drawback of identification that arises in the cross-country regressions that are observed in the literature on economic growth, Rajan and Zingales introduced an interaction between an industry characteristic (external financial dependence) and a country characteristic (financial development).

In order to ensure distinct effects between bank competition, the constraint of bank stability and financial depth, we include a proxy of financial depth (i.e. domestic credit to private sector) in the estimation (as in Cetorelli and Gambera, 2001; Claessens and Laeven, 2005 and Maudos and Fernandez de Guevara, 2006). We make a further distinction between financial depth, bank market structure, bank stability constraint, and bank competition. When banks are involved in rival competition, efficient banks can grow by acquiring higher market share from inefficient banks, which inevitably leads to a more concentrated market structure in the long run. To see if this holds, we include market structure and rival competition effects on growth in the estimation. This specification is distinctive from existing studies that consider market structure as a key determinant of competition (Rajan and Zingales, 1998; King and Levine, 1993; Levine and Zervos, 1998; Cetorelli and Gambera, 2001; Cetorelli, 2004). We use country dummies to capture any characteristic time-invariant effects of an economy on growth, including information quality, which, according to Claessens and Laeven (2005), can affect growth, and a variable for institutional quality (property rights protection). Regarding financial dependence in relation to growth, raised by Rajan and Zingales (1998), there are usually two empirical strategies used to estimate this. One is to directly assess it using the dependence variable, and another is to integrate the dependence with other explanatory variables. The latter approach has been applied by King and Levine (1993), Levine and Zervos (1998), Cetorelli and Gambera (2001), and Cetorelli (2004). When an opportunity for growth arises, an industry that demonstrates high reliance on internal funds will find it easier to grow, regardless of the situation in the financial sector. However, for an industry that relies on external sources of funding, the success of the effort to secure funding will very much rely on the circumstances in the banking sector. Therefore, the interaction term of external dependence should apply to any variable that may affect (positively or negatively) the circumstances in the banking sector, while they may be irrelevant to industries with high reliance on internal funds. Therefore, apart from financial depth, an interaction with external dependence should also apply for concentration (Cetorelli and Gambera, 2001), competition and stability.

We collected data for 23 industries over the period 1993–2007 for 48 emerging and mature markets[2] and used OLS to estimate the following empirical model:

$$\begin{aligned} Growth_{i,c} = {} & Const + \beta_1 SectorDummies_i + \beta_2 CountryDummies_c \\ & + \beta_3 Share\_in\_value\_added_{i,c} \\ & + \beta_4 External\_Dependence_i \times Financial\_Depth_c \\ & + \beta_5 External\_Dependence_i \times Bank\_Competition_c \\ & + \beta_6 External\_Dependence_i \times Control\_Variables_c \\ & + \varepsilon_{i,c}. \end{aligned} \tag{1}$$

The dependent variable *Growth* is the average compounded annual growth rate of value added in a particular sector in each country over the period 1993–2007, based on our own calculations from the UNIDO database. Variable *share in value added* represents the value added of each sector as a percentage of the total value added of an economy in the first year of the study period (1993), which is also based on our own calculations from the UNIDO database. *External Dependence* captures the external financial dependence of US firms by ISIC sector over period 1980–1989, based on Rajan and Zingales (1998). *Financial Depth* represents domestic credit provided to the private sector, as a proportion of GDP (data obtained from IMF-IFC). *Bank Competition* is a degree of bank sector competition measured as the responsiveness of growth of bank market share to change of bank cost efficiency (source: BankScope and own estimations based on Hay and Liu, 1997). In particular, for this variable, we employ a simplified version of Hay and Liu's model to estimate efficiency competition within the context of the banking business, which is as follows:

$$MS_{it} = \alpha + \beta \frac{c_{it}}{c_t} + \gamma P_{it} + \varepsilon_{it}. \tag{2}$$

MS_{it} is the market share of a bank i in year t; c_{it} is the unit overhead cost (total non-interest expenses) of total assets of a bank in year t; c_t is the average overhead costs per unit of the total assets of the bank sector in year t. P_{it} is the interest rate spread, implying a price of bank assets employed for banking business. In a competitive market, we expect a negative coefficient (β) because in any non-cooperative competition, firms with higher costs relative to the market average costs will grow slowly and then lose their market share. We employ a dynamic GMM panel method to estimate β for each economy, which is then used in the empirical model. As this variable enters the main model of the paper as a generated regressor, it can lead to a bias in the estimated coefficients and the confidence intervals may be underestimated. For this reason, we checked the initial regressions that we performed in order to estimate β for each economy. As the coefficients are highly

[2] The sample includes 25 mature markets (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, The Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States) and 23 emerging markets (Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Estonia, Hungary, India, Indonesia, Malaysia, Mexico, Morocco, Peru, Philippines, Poland, Russia, Slovak Republic, Slovenia, South Africa, Thailand and Turkey).