

Essays on Input Misallocation in China

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Intermediate Goods and Misallocation in China's Manufacturing Sector (JOB MARKET PAPER)

Similar to capital, purchases of intermediate goods by firms are subject to borrowing constraints and real frictions. This paper quantifies the role of intermediate goods frictions in accounting for measured misallocation of inputs across firms in China (Hsieh and Klenow, 2009; Brandt, Van Biesebroeck and Zhang, 2012). I extend the firm investment model of Cooper and Haltiwanger (2006) to include intermediate inputs in production. Firms order and prepay for a fraction of intermediate goods one period in advance (real frictions), and face one borrowing constraint for capital and intermediate goods. Following Hsieh and Klenow (2009), I compute the gross output gain in the model and the data if capital, labor and intermediate goods were reallocated to equalize marginal products across firms. When calibrated to key moments in the CIES, the model accounts for 70 percent of measured misallocation in the data: the gross output gain is 96 percent in the model and averages 140 percent in the CIES over 1998-2007. Half of the output gain in the model is attributed to removing intermediate goods frictions: a quarter from its borrowing constraints, and another quarter from real frictions. While the output gain from removing borrowing constraints on capital is small, removing time-to-build and adjustment costs in capital accounts for the other half. The larger gain with intermediate goods frictions arises from its 70 percent gross output revenue share, seven times the share of capital. Therefore, prepaying intermediate goods significantly tightens the borrowing constraint and crowds out capital investment. I conclude that intermediate goods frictions are quantitatively important in accounting for measured misallocation in China.

Dynamic Reallocation in China Industrial Enterprise Survey Data: 1998-2007

Substantial misallocation of inputs across firms is well documented in the China Industrial Enterprise Survey Data (CIES)(e.g. Hsieh and Klenow, 2009). Is this measured misallocation due to distortions in reallocation across existing firms or distortions in entry and exit? To answer this question, I follow Bailey, Hulten and Campbell (1992) and decompose 5-year output-weighted aggregate productivity growth into contributions from reallocation, net entry, and firm-level productivity growth in the CIES. I find that net entry and firm-level productivity growth account for 91 percent and 18 percent of aggregate productivity growth, respectively. Reallocation across existing firms lowers growth by 9 percent. This is surprising, since the literature finds that reallocations account for over 30 percent of the U.S. manufacturing productivity growth (Bailey, Hulten and Campbell, 1992; Foster, Haltiwanger and Krizan, 2003). One potential explanation for this difference is that the CIES includes only privately owned firms with sales above 5 million yuan, while the U.S. census data covers all manufacturing firms. Over 1998-2003, only 57 percent of entrants in the CIES are new firms, while the rest are existing firms whose sales rise above 5 million yuan. The measured 17 percent exit rate from the CIES is also biased upwards, since many exiters are continuing firms whose sales fall below 5 million yuan. To quantify the impact of this measurement bias, I redo the decomposition with several alternative exit rates in the CIES. Varying the exit rate from 8 percent to 5 percent implies a decreasing contribution of reallocation from an upper bound of 20 percent to 2 percent. Given that large firms have a lower exit rate than the 8 percent for all manufacturing firms, I conclude that reallocation in China is more distorted than in the U.S., but less than what the direct decomposition in the CIES suggests.