



Credit constraints, firms' precautionary investment, and the business cycle



Ander Pérez-Orive ^{a,b,*}

^a Boston University, Questrom School of Business, USA

^b Universitat Pompeu Fabra and Barcelona GSE, Spain

ARTICLE INFO

Article history:

Received 5 December 2012

Received in revised form

15 January 2016

Accepted 22 January 2016

Available online 1 February 2016

Keywords:

Investment types

Financial frictions

Business cycles

Idiosyncratic risk

Firm heterogeneity

ABSTRACT

Credit constrained firms prefer types of capital that generate significant pledgeable output and are liquid, since they loosen current and future credit constraints. Because pledgeability and liquidity are low for long-term firm-specific capital, a negative temporary aggregate productivity shock that tightens credit constraints creates a bias towards liquid short-term investments. This dampens the short-run negative output reaction to the shock, at the expense of strong medium-run propagation effects. This mechanism can create a short-run expansion when a future tightening in credit conditions is anticipated.

© 2016 Elsevier B.V. All rights reserved.

1. Introduction

How do financial constraints of firms affect the dynamics of the aggregate composition of investment? And how does the behavior of the composition of investment in the presence of financing constraints influence the response of an economy to shocks?

This paper focuses on the distinction between investment in liquid and illiquid capital. Capital is liquid when it can be resold easily, or when it generates most of its output in the short run. Examples include inventory, machinery and equipment, and commercial or industrial structures with a high resale value. Capital is illiquid when it generates most of its output in the long run and cannot be resold easily in the short run, such as research and development (R&D), firm-specific structures, firm-specific human capital, firm branding, and growth options. Firm-level empirical work has found that financially constrained firms are more likely to invest in short-term, redeployable and tangible capital.¹ Work starting with Rajan and Zingales (1998) has shown that industries with a long duration of investment projects grow less in poorly developed financial systems and tend to do worse in recessions (Braun and Larrain, 2005). At the aggregate level, the average maturity of aggregate investment falls in downturns (Dew-Becker, 2012), and particularly so in less financially

* Correspondence address: Universitat Pompeu Fabra, Boston University, 595 Commonwealth Avenue, Boston, MA 02215, USA. Tel.: +1 617 353 4615.

E-mail address: aperezor@bu.edu

¹ Credit constrained firms are more likely to increase price markups at the expense of longer-term market share building (Chevalier and Scharfstein, 1996), prefer investment projects that deliver cash flows earlier (Peyer and Shivdasani, 2001), display a more procyclical pattern of their share of R&D investment (Aghion et al., 2012), and tend to purchase used, rather than new, capital, with a more front-loaded pattern of cash flows (Eisfeldt and Rampini, 2007). Brown et al. (2009) and Gatchev et al. (2009) show that firms finance most of their R&D expenditures, marketing expenses and product development internally out of retained earnings. Investment in commercial real estate, instead, is primarily financed with mortgage loans, and the amount of external finance it attracts increases with its redeployability (Benmelech et al., 2005).

developed economies (Aghion et al., 2010). Taken together, this evidence is consistent with a preference of financially constrained firms for liquid capital.

We develop a model that delivers firm policies consistent with this evidence and use it to address several questions. Does the ability of firms to choose the liquidity of their investment projects interact with financing constraints and idiosyncratic firm risk to dampen or amplify the short-run effects of aggregate productivity shocks? Does it influence how the effects of productivity shocks propagate through time? How does it influence the impact of financial shocks? To answer these questions we introduce a dynamic general equilibrium model of an economy in which heterogeneous firms produce a homogeneous final good using two decreasing returns to scale technologies, which they can operate simultaneously. The liquid technology produces cash-flows only in the short-run, and is meant to capture investments that either generate most of their cash-flows early, or that can be resold easily in the short run. The illiquid technology produces most of its output in the long run, and uses capital that depreciates slowly and can only be resold at a large discount because of its firm specificity. Firm heterogeneity arises from idiosyncratic operating cost shocks, and firms face the possibility every period of being forced to exit the economy. External finance is restricted to riskless debt, and firms can only pledge a fraction of their future earnings. As a result, they optimally accumulate units of the final good as a buffer against problems in obtaining credit in the future.

Credit constraints create a preference for liquid investments through two mechanisms. First, because debt is restricted to be riskless and because the firm might not exist in the period after next, only cash-flows that occur next period are pledgeable to lenders. As a result, firms with a currently binding credit constraint prefer liquid capital because it produces relatively more pledgeable output and can attract more external finance. Second, the anticipation of future credit constraints also creates a bias towards liquid investment. Illiquid capital runs the risk of having to be liquidated at a cost in the future if the firm is in financial distress after suffering several negative idiosyncratic operating cost shocks, and this causes illiquid capital to have a lower expected return for firms with low net worth. This precautionary behavior is in line with evidence that the expectation of future financing constraints has important implications for current firm behavior.²

Next, we describe and quantify a novel mechanism that delivers short-run dampening of productivity shocks and long-run propagation. In an economy with frictionless credit markets, following a negative temporary aggregate productivity shock, firms decrease their liquid investment, which offers poor returns in downturns, but barely alter their illiquid investment, whose returns are less cyclical because they occur mostly in the long run. Output contracts sharply but recovers quickly. In an economy that features credit constraints, the decrease in profits and net worth increases the share of firms with binding credit constraints. Firms' net worth recovers slowly so credit constraints are expected to remain tight for some time. Because of the currently binding credit constraints and the anticipation of future constraints, many firms are unable or unwilling to sustain previous levels of illiquid investment and instead increase the share of their investment allocated to liquid capital. This shift to liquid projects increases the production of goods in the short run and dampens the short run output fall. Over the first five quarters, the output fall is smaller in the financially constrained economy by an accumulated amount equivalent to 2.3% of quarterly steady state output. However, the large drop in illiquid investment generates significant propagation effects. Convex costs of adjustment in investment and the slow recovery of firms' balance sheet strength mean that the large initial fall in the stock of illiquid capital takes a long time to recover and over the subsequent thirty-five quarters the output fall in the financially constrained economy is greater than in the unconstrained economy by an accumulated amount equivalent to 6.9% of quarterly steady state output. As a result, a trade-off arises between contemporaneous amplification and long-term propagation of the effects of shocks; stronger dampening is associated with more propagation. Our results about the aggregate dynamics of the composition of investment contribute to a large theoretical literature starting with Bernanke and Gertler (1989) and Kiyotaki and Moore (1997) that studies how aggregate investment responds to shocks in the presence of financing constraints, and to a small literature that studies how distortions in the composition of investment caused by financing constraints may affect long-run growth (Acemoglu and Zilibotti, 1997; Matsuyama, 2007; Aghion et al., 2010).

Our analysis also delivers other insights. First, it introduces a novel explanation for the countercyclicality of financing constraints. The incentive to shift towards illiquid projects in recessions because their returns are relatively acyclical decreases the amount of pledgeable output for a given level of total investment, and makes it more likely that credit constraints bind and that firms' capital mix moves away from its unconstrained optimum in recessions. Second, our analysis highlights the important role that idiosyncratic risk plays for our results. Decreasing the volatility of these shocks reduces the strength of the contemporaneous dampening and intertemporal propagation of productivity shocks.

Highlighting the role of firms' precautionary behavior in anticipation of future credit constraints, news of a future financial shock can generate a short-run boom in the economy. Firms' precautionary behavior in reaction to the news that their financing constraints will be tighter in the future induces a shift into the liquid investment, which raises current output, at the expense of a fall in illiquid investment that generates large future decreases in output.

We also study the impact of investment tax credits given their direct relationship with the distortions presented in this paper. Cyclical expensing allowances that allow for larger tax credits in downturns have an important impact on the

² Surveys by Graham and Harvey (2001) and Bancel and Mittoo (2004) find that Chief Financial Officers consider having enough internal funds to avoid having to forego positive net present value projects in the future to be the primary determinant of their policy decisions. Almeida et al. (2011) and Caggese and Cuñat (2008) provide evidence that shows that the expectation of future financing problems significantly affects firms' current investment and hiring policies.

Download English Version:

<https://daneshyari.com/en/article/967581>

Download Persian Version:

<https://daneshyari.com/article/967581>

[Daneshyari.com](https://daneshyari.com)