European Economic Review 100 (2017) 488–505

Contents lists available at ScienceDirect

European Economic Review

journal homepage: www.elsevier.com/locate/euroecorev

Rehypothecation and liquidity☆

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ARTICLE INFO

Article history:
Received 28 March 2017
Accepted 17 September 2017
Available online 28 September 2017

JEL classification:
E4
E5

Keywords:
Rehypothecation
Money
Collateral
Credit relationship

ABSTRACT

We develop a dynamic general equilibrium monetary model where a shortage of collateral and incomplete markets motivate the formation of credit relationships and the rehypothecation of assets. Rehypothecation improves resource allocation because it permits liquidity to flow where it is most needed. The liquidity benefits associated with rehypothecation are shown to be more important in high-inflation (high-interest rate) regimes. Regulations restricting the practice are shown to have very different consequences depending on how they are designed. Assigning collateral to segregated accounts, as prescribed in the Dodd–Frank Act, is generally welfare-reducing. In contrast, an SEC15c3-3 type regulation can improve welfare through the regulatory premium it confers on cash holdings, which are inefficiently low when interest rates and inflation are high.

1. Introduction

An agent wanting to borrow money can acquire more of it and at better terms by pledging collateral to incent repayment. The practice of using collateral to secure a debt is called *hypothecation*. The same agent may further improve the quantity and terms of his loan by granting the creditor temporary use-rights over the pledged collateral. The practice of re-using pledged collateral is called *rehypothecation*.

Because much rehypothecation evidently occurs in the shadow-banking sector, the true scope of the activity is not easily measured. However, data available for primary dealers suggest that rehypothecation was large and growing prior to the 2008 financial crisis. And while the practice appears to have diminished since the financial crisis, the present value of rehypothecated assets remains measured in the trillions of dollars; see Singh and Aitken (2010, Fig. 1) and Shkolnik (2015, Fig. 11).

The role of collateral in lending arrangements is easy to understand. The question of why a debtor should prefer a collateralized loan over an outright sale (and subsequent repurchase) of collateral, on the other hand, is less straightforward,

☆ We would like to thank the Editor and two anonymous referees for helpful comments. We thank conference participants at the 10th Annual Conference on General Equilibrium & its Applications at Yale University, the First African Search and Matching Workship in Marrakech, the Society for Economic Dynamics Annual Meeting, the conference "On Money as a Medium of Exchange: KW at 25!" in Santa Barbara, and the Summer Workshop on Money, Banking, Payments and Finance. We would also like to acknowledge the useful feedback we received from seminar participants at Arizona State University and the University of Iowa. The views expressed in this paper do not necessarily reflect official positions of the Federal Reserve Bank of St. Louis, the Federal Reserve System, or the Board of Governors.

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https://doi.org/10.1016/j.euroecorev.2017.09.010
0014-2921/

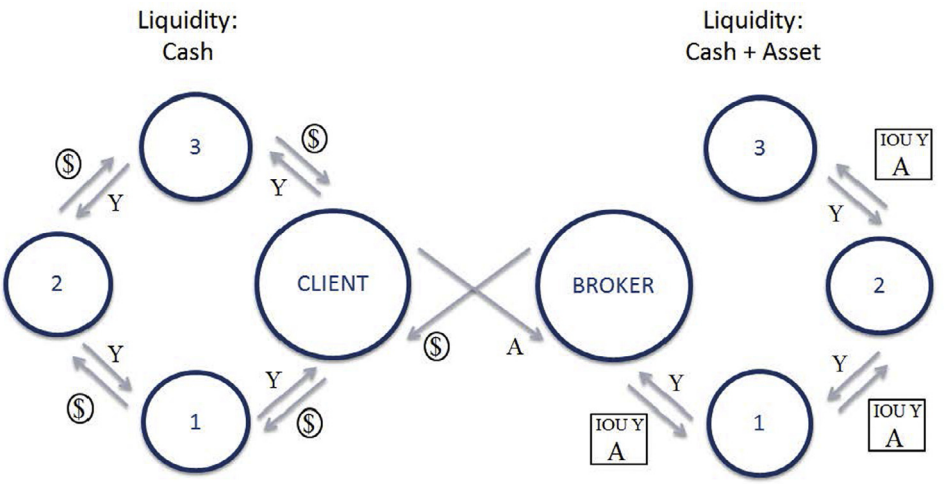

Fig. 1. Rehypothecation.

but is not the question we address here.[1] What we want to know is why – *given a collateralized lending arrangement* – an additional use-right over collateral is sometimes transferred to the creditor. Our answer is that–when collateral is *scarce* (in the sense of Caballero, 2006) –rehypothecation is a mechanism that increases the *effective* supply of collateral by permitting its reassignment to agencies in the best position to make use of it.

Selling a borrowed security (or re-using it as collateral) to exploit a trade that might not otherwise have happened sounds a lot like liquidity provision to us. Indeed, it is precisely this observation that motivates the title of our paper. In what follows, we seek to clarify the nature of rehypothecation, its connection to market liquidity, and how the practice may be affected by monetary and regulatory policies. To this end, we construct a dynamic general equilibrium model of monetary exchange with a security that can potentially serve as collateral in lending arrangements.

In our model, investors holding cash and securities gain random access to expenditure opportunities, some of which require cash financing and others for which securities can also be used. Investors with cash-only opportunities and investors with opportunities that can be financed more flexibly using cash or securities engage in a swap of assets to be reversed at a later date. In regions of the parameter space where both investors are liquidity constrained, it makes sense to have cash flowing to the cash investor (investor A) and securities flowing to the credit investor (investor B), with the exchange reversed (or otherwise settled) at a later date.

In reality, investor A could be a hedge fund and investor B a dealer bank. The hedge fund wants to borrow cash, offering government bonds as collateral.[2] Or investor A may be a retail investor holding a margin account with investor B, a discount broker. The retail investor wants to borrow cash to buy shares in a company, with the discount broker treating these shares as collateral for the cash loan.

In Fig. 1, the client and broker exchange cash and an asset (denoted by A). The client uses borrowed cash to purchase a good, service, or security, denoted by Y. The cash potentially circulates in a chain of transactions and is ultimately returned. If the asset pledged as collateral can be rehypothecated, the broker is permitted to re-use it. In the figure, the broker issues an IOU for Y that is backed by A. As with cash, this security may conceivably circulate in a collateral chain before it is ultimately returned.[3]

The investors in our model require exchange media to facilitate profitable exchanges involving untrusting third parties. We model these third parties as workers and the profitable exchanges as consumption opportunities. That is, workers want to get paid in cash (sometimes securities) in exchange for their labor services. Lack of trust (i.e., the absence of fully enforceable credit) between workers and investors gives rise to inefficient outcomes, as is standard in the monetary literature. Note that a degree of realism could be gained by replacing workers in our model with agents who present investors with profitable investment opportunities, but our central conclusions are not sensitive to such a modification. Our framework of analysis, therefore, can be based on a relatively minor adaption of the Lagos and Wright (2005) and Geromichalos et al. (2007) quasilinear models of money and asset exchange.

As far as we know, ours is the first dynamic general equilibrium model brought to bear on the question of rehypothecation. In our model economy, a low-return monetary instrument coexists with a high-return security because the former can be used in a wider array of transactions. The equilibrium real rate of return on money (the inverse of the inflation rate)

[1] Monnet and Narajabad (2012) provide a framework for understanding the circumstances in which repurchase agreements are preferred to asset sales.

[2] Again, we are not asking why a hedge fund in need of cash does not simply sell its security and reverse the transaction at a later date if so desired.

[3] We do not consider extended collateral chains in the formal model below, though such an extension can be easily incorporated without changing the flavor of our reported results.