Available online at www.sciencedirect.com

ScienceDirect

Procedia Economics and Finance 25 (2015) 278 – 284

Procedia Economics and Finance

www.elsevier.com/locate/procedia

16th Annual Conference on Finance and Accounting, ACFA Prague 2015, 29th May 2015

Duration of Demand Deposits in Theory

Hana Džmuráňová[a]* Petr Teplý[a]

[a]*Charles University in Prague, Faculty of Social Sciences, Institute of Economic Studies, Opletalova 26, Prague 11000, Czech Republic*

Abstract

This paper deals theoretically the estimation of duration of demand deposits that are defined as non-maturing products without any defined liquidity and interest rate behaviour by a contract as maturing products. Due to this fact, banks estimate liquidity and interest rate characteristics including duration of demand deposits by their internal models. We also describe the procedure called "replicating portfolios" than can be used to estimate duration of demand deposits.

Peer-review under responsibility of University of Economics, Prague, Faculty of Finance and Accounting

Keywords: Non-maturing accounts; Demand deposits; Duration; ALM; Interest rate risk

1. Introduction

This paper deals with the description of the estimation of duration of a subgroup of non-maturing products, of demand deposits. Non-maturing products are banks' liabilities and assets that do not have defined contractual characteristics, i.e. their maturity is unknown and their interest rate behaviour (duration) is also unknown. Due to this, interest rate risk management of non-maturing products is an art as well as a science. On the contrary, maturing products have defined maturity and interest rate behaviour and their interest rate risk management is therefore less complicated than the interest rate risk management of non-maturing accounts.

Typical maturing products in in bank's balance sheet are mortgages and consumer loans on the asset side and term deposits on the liability side. Typical non-maturing products on the asset side are overdrafts and credit cards and current and savings accounts on the liability side. In this paper we focus at current accounts and savings accounts and we denote both as demand deposits.

* Corresponding author.
E-mail address: hanadzmuranova@gmail.com

Peer-review under responsibility of University of Economics, Prague, Faculty of Finance and Accounting
doi:10.1016/S2212-5671(15)00738-8

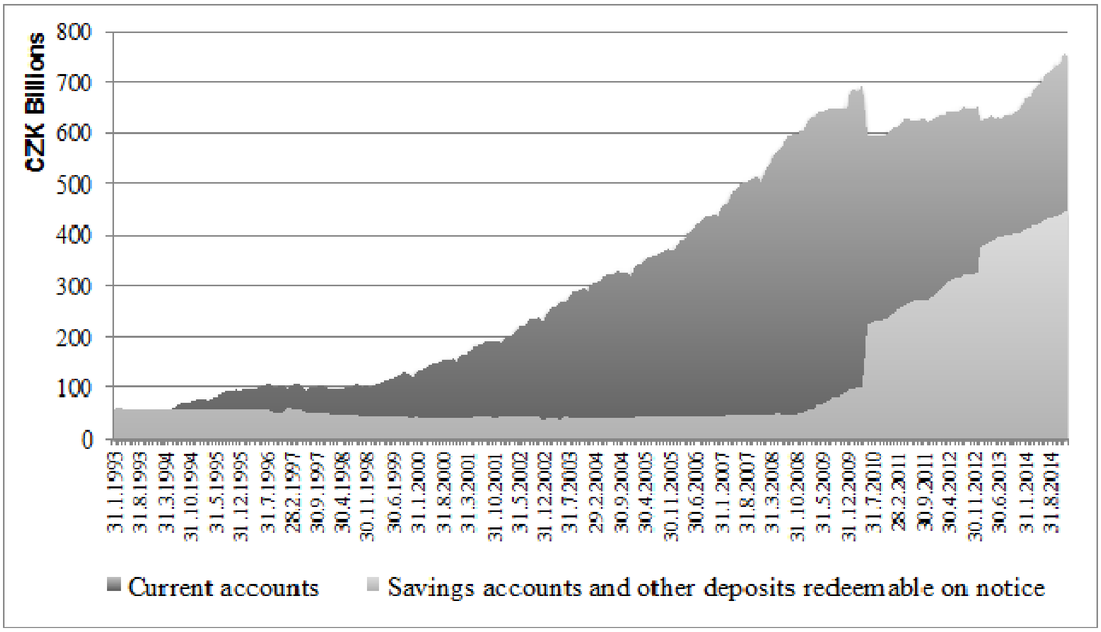
One of principal responsibilities of Asset and Liability Management units ("ALM") in a bank is to estimate the market value of a bank under changing interest rate environment. To do so, ALM needs to know all liquidity (maturity) and interest rate characteristics (duration) of products in bank's balance sheet. In case of maturing products, ALM uses contractual characteristics plus embedded options like early withdrawals and prepayments to generate future cash flows from these products. Using these cash flows and using standard formulas for present value and duration, ALM is than able estimate the market value and duration of maturing products, i.e. interest rate risk of maturing products. On the other hand, in case of non-maturing products, ALM must somehow estimate the maturity and interest rate behaviour of non-maturing products in the first place, as these are unknown. This paper describes the procedure how to estimate maturity and duration, i.e. the measure of interest rate risk, of non-maturing products, particularly of demand deposits.

The main contribution of this paper is the theoretical description of the management of demand deposits that is somehow lacking in the Czech academical research, which is interesting as the Czech environment is an environment where demand deposits form a major source of funding and reinvestment possibility for a bank.

The following text is structured as follows. Section 2 presents characteristics of demand deposits. Section 3 explains the procedure called replicating portfolio that can be used to estimate duration of demand deposits in banks in detail and Section 4 concludes.

2. Characteristics of demand deposits

Demand deposits are deposits redeemable on notice. In the Czech Republic, main portion of demand deposits are current accounts, even though lately, volumes on savings accounts increased rapidly, which is mainly driven by low-rates environment and the entrance of small banks that bid for client deposits (and client information) by offering a relatively high yield bearing savings accounts. Fig. 1 shows dynamics of current and savings accounts in the Czech Republic in the 1993-2014 period.



Source: CNB (2015) and Authors' own calculations. In 6/2010 CNB reclassified app. CZK 90 bn of savings accounts from current accounts to savings accounts and other deposits redeemable on notice. Another reclassification took place also in 1/2013.

Fig. 1. Dynamics and volumes of CZK demand deposits in the Czech Republic