



The asymmetric effect of international swap lines on banks in emerging markets[☆]



Alin Marius Andrieș^{a,*}, Andreas M. Fischer^b, Pinar Yeşin^c

^aFaculty of Economics and Business Administration, Alexandru Ioan Cuza University of Iasi, 22th Carol I Blvd, 700505, Iasi, Romania

^bSwiss National Bank and CEPR, Postfach, 8022 Zurich, Switzerland

^cSwiss National Bank, Postfach, 8022 Zurich, Switzerland

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ABSTRACT

This paper investigates the effect of international swap lines on stock returns using data from banks in emerging markets. The analysis first shows that swap lines by the Swiss National Bank (SNB) had a positive impact on bank stocks in Central and Eastern Europe. It then highlights the importance of individual bank characteristics in identifying the asymmetric effect of swap lines on bank stocks. Bank-level evidence suggests that stock prices of local and less-well capitalized banks as well as banks with high foreign currency exposures and high reliance on short-term funding responded more strongly to SNB swap lines. This new evidence is consistent with the view that swap lines not only enhanced market liquidity but also reduced risks associated with micro-prudential issues.

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1. Introduction

In response to the global financial crisis, international swap lines between central banks of advanced economies and their

counterparts in emerging market economies were introduced as a coordinated policy initiative. Empirical studies by [Aizenman and Pasricha \(2010\)](#), [Moessner and Allen \(2013\)](#), and [Baba and Shim \(2010\)](#) show supportive evidence that these international swap lines (hereafter, swap lines) were coincident with reductions in Covered Interest Parity (CIP) or Credit Default Swap (CDS) spreads. The country-level studies argue that swap lines prevented systemic risk and limited contagion during periods of market stress.

Although empirical studies suggest being able to identify macroprudential effects arising from swap lines, a shortcoming of the literature is its narrow focus on country-level responses to swap lines. Country-level data do not shed light on the channels through which swap lines impact banks, i.e., the beneficiaries of the foreign liquidity provision. The country-level studies assume banks are homogenous.¹ Banks however are heterogeneous in their characteristics and if specific bank characteristics matter then the response to swap lines is not expected to be uniform. In particular, it may arise that banks with high levels of foreign currency exposure benefit more from swap lines than do banks with low levels of foreign currency exposure. Alternative bank characteristics, such as banks with a weak capital structure or with a higher

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* Corresponding author.

E-mail addresses: alin.andries@uaic.ro (A.M. Andrieș), andreas.fischer@snb.ch (A.M. Fischer), pinar.yesin@snb.ch (P. Yeşin).

¹ For example, [Goldberg et al. \(2011\)](#) and [Bruno and Shin \(2014\)](#) acknowledge that European and Korean banks did not make equal use of liquidity provisions provided by swap lines.

dependence on short-term funding may also matter. The literature until now has not studied whether the financial market response to swap lines observed at the country level stems from a single or a set of bank characteristics.

The objective of this paper is to examine how banks from emerging markets with different bank characteristics responded to swap lines in a period of financial market stress. The identification strategy estimates the difference-in-difference of stock prices of Hungarian and Polish banks relative to other Central and Eastern European (CEE) countries conditioning on swap lines. In particular, we focus on Swiss National Bank (SNB) swap lines with the National Bank of Poland (NBP) and the Central Bank of Hungary (MNB).² To identify the bank-specific response to swap lines, we examine the importance of bank characteristics. These characteristics include the level of foreign currency exposure, the funding structure, the ownership type, and the capital structure. Our hypothesis is that banks with a higher foreign currency exposure, a weaker capital structure, a local ownership structure without immediate access to foreign capital, and a financial structure based on interbank funding were frozen out from interbank markets in foreign currency during the financial crisis and thus benefited the most from the coordination of international swap lines. As such, we would expect the share price of banks with these characteristics to respond the strongest to swap lines.

The analysis considers the effect of swap lines for its entire duration from introduction to termination. Because the interbank, the foreign currency swap market, and secured money markets necessitated massive crisis intervention, cross-border coordination, and adjustments to central bank liquidity operations to stabilize the financial system and restore orderly market conditions (IMF, 2010), we argue access to the market facility of the swap line is more important than simply examining the announcement effect. Hence, we study the asymmetric response of stock prices to the period's entire duration and not simply the announcement effect of bank stocks to the swap line's introduction.

The empirical findings suggest that the effectiveness of swap lines is dependent on the structure of a country's banking system. Stock prices of local and less-well capitalized banks, as well as banks with a higher foreign currency exposure and higher reliance of short-term funding responded the strongest to the SNB swap line. This new bank-level evidence is consistent with the view that swap lines were not only important in providing liquidity but also took on micro-prudential functions.

The empirical results are presented for two levels of aggregation at the country and bank levels. We first show the country-level finding that stock returns of banks increased with SNB swap lines. This empirical result is consistent with the view that swap lines with the SNB improved liquidity conditions in CEE between 2008 and 2010. In a second stage of the analysis, the importance of bank characteristics is examined. We show that the country-level approach masks a richer set of bank-level findings.

The paper makes three contributions to the literature on unconventional measures and their impact on banks.³ To our knowledge this is the first study to examine the impact of swap lines on banks. The new evidence on liquidity provision in emerging mar-

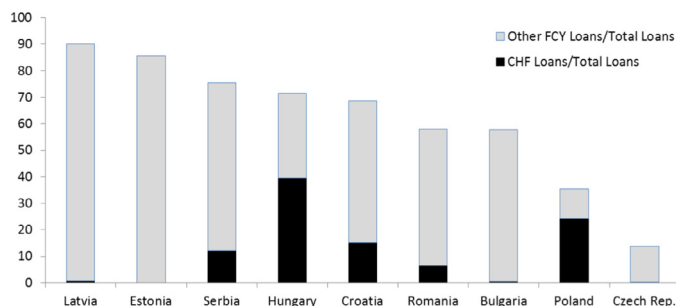


Fig. 1. Share of foreign currency loans as a percentage of total loans in the non banking sector in Eastern Europe as of 2009:Q1. Note: CHF, Swiss francs; FCY, foreign currency. Source: Swiss National Bank.

kets shows that stock prices of domestic and less-well capitalized banks respond strongly to SNB swap lines.⁴

A second contribution is to show that the asymmetric response of swap lines is not dependent on currency choice. Swap lines are normally defined for exchange rates between the home currency and a major reserve currency (i.e., in U.S. dollar, euro, or yen). This, however, was not the case for swap lines between the SNB and CEE central banks. These swap line agreements were between the euro and the Swiss franc.

A third contribution shows that gains from swap lines beyond national jurisdictions were limited and/or only temporary. Only Hungarian and Polish banks benefited from swap lines between the SNB and the NBP and between the SNB and the MNB during the whole period of the swap line. The transmission of liquidity provision through swap lines does not follow the same cross border channels as liquidity shocks generated by other unconventional measures (i.e., quantitative easing).⁵

The paper is organized as follows. Section 2 reviews the motivation for SNB swap lines with the MNB and the NBP. Section 3 presents the empirical methodology. Section 4 discusses the data. Section 5 presents the empirical results. Section 6 concludes.

2. SNB swap lines and CEE banks

Swiss franc and other foreign currency loans to the non-banking sector were extremely popular in CEE before the financial crisis.⁶ Households and small firms increasingly borrowed in a lower-yielding foreign currency to finance their mortgages or business investments. The shaded columns in Fig. 1 show the share of foreign currency loans as a percentage of total loans to the non-banking sector in select CEE countries for 2009:Q1.⁷ Fig. 1 shows that at the height of the financial crisis, the majority of the outstanding loans to the non-banking sector in several CEE countries was denominated in foreign currency. The same figure also illustrates that Swiss franc loans were particularly popular in Hungary, Poland, Croatia, Serbia, and Romania. In the remaining countries, euro loans probably comprised the vast share of foreign currency loans.

⁴ For the literature on swap lines and emerging markets see, Aizenman and Pasricha (2010), Baba and Shim (2010), and Bruno and Shin (2014).

⁵ For example, studies by Fratzscher et al. (2013) and Bauer and Neely (2014) show that liquidity shocks arising from asset purchases in advanced countries have spillover effects for emerging market economies.

⁶ Auer and Kraenzlin (2011), Beer et al. (2010), and Yesin (2013) discuss in detail Swiss franc lending in CEE. Brown and de Haas (2012), Brown et al. (2011), and Brown et al. (2014) study the determinants of FX lending in CEE.

⁷ The date 2009:Q1 is the first available observation from the CHF Lending Monitor, an ongoing project of the Swiss National Bank with the aim to understand the scope of Swiss franc lending in Europe.

² The experience in CEE before the financial crisis, particularly in Hungary and Poland, is overshadowed by the rapid growth of residential mortgage loans denominated in Swiss francs. The problem of currency mismatches became acute after the Swiss franc appreciated strongly during the financial crisis and many CEE banks were excluded from the interbank market for Swiss francs.

³ Our paper is closest in spirit to Chodorow-Reich (2014) and Alfaro et al. (2014). The study by Chodorow-Reich (2014) investigates the impact of FOMC announcements on CDS spreads, bond yields and equity prices of financial institutions. Similarly, the paper by Alfaro et al. (2014) examines the impact of Brazilian capital controls on stock prices of Brazilian firms.

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