International Review of Economics and Finance 39 (2015) 57–75

Contents lists available at ScienceDirect

International Review of Economics and Finance

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

Diversification and determinants of international credit portfolios: Evidence from German banks☆

Benjamin Böninghausen [a,*,1], Matthias Köhler [b,2]

[a] European Central Bank, Sonnemannstraße 20, 60314 Frankfurt am Main, Germany
[b] Deutsche Bundesbank, Wilhelm-Epstein-Straße 14, 60431 Frankfurt am Main, Germany

ARTICLE INFO

Article history:
Received 3 April 2014
Received in revised form 30 May 2015
Accepted 8 June 2015
Available online 24 June 2015

Jel classification:
G21
G11
F36
F21

Keywords:
International banking
International financial integration
Portfolio choice

ABSTRACT

Bank credit portfolios are concentrated on relatively few countries despite potential gains from diversifying internationally. Based on unique data for German banks, we examine whether this concentration is due to country-specific frictions that increase the attractiveness of some destinations relative to others. We therefore compare banks' actual portfolios to mean-variance benchmark portfolios that might be observed in the absence of such frictions. Our results show that banks overweight countries with more developed institutions and sound banking regulations. This suggests that improvements and global convergence of institutional frameworks could contribute to more internationally integrated banking markets and more diversified credit portfolios.

1. Introduction

The global financial crisis and the ongoing debt crisis have brought to centre stage the activities of large, globally oriented banks and their importance in studying international financial integration. In fact, when the first signs of financial turmoil began to show in 2007, the foreign claims of banks reporting to the Bank for International Settlements stood at $34 trn at the end of the year as compared to only $11 trn in 2000, and just $1 trn in 1990. Banks from Germany, which hold a substantial portion of these claims, have likewise increased their international exposure through both cross-border lending and the establishment of branches and subsidiaries abroad. At the end of 2007, foreign activities already accounted for between 50 and 70% of the total assets of major German banks.

In particular, the expansion into foreign markets creates the potential for banks to diversify across countries by exploiting the less-than-perfect co-movement of credit developments around the world. That is, by seeking exposure to a country where loan

☆ We are grateful for valuable comments and suggestions by Claudia Buch, Heinz Herrmann, Christoph Memmel, Klaus Schaeck, Monika Schnitzer, and an anonymous referee. We would also like to thank seminar participants at LMU Munich and the Deutsche Bundesbank, the 1st Banking and Financial Markets Workshop at the University of Augsburg, the 10th INFINITI Conference on International Finance at Trinity College Dublin, the GSEFM Summer Workshop 2012, the 27th Annual Congress of the European Economic Association in Málaga, the Annual Congress 2012 of the Verein für Socialpolitik in Göttingen, and the Conference on Intra-European Imbalances, Global Imbalances, International Banking, and International Financial Stability in Berlin. Benjamin Böninghausen gratefully acknowledges financial support from the Deutsche Forschungsgemeinschaft through GRK 801.

* Corresponding author.
E-mail addresses: benjamin.boninghausen@ecb.europa.eu (B. Böninghausen), matthias.koehler@bundesbank.de (M. Köhler).

[1] The paper represents the author's personal opinions and does not necessarily reflect the views of the European Central Bank or the Eurosystem.
[2] The paper represents the author's personal opinions and does not necessarily reflect the views of the Deutsche Bundesbank or its staff.

http://dx.doi.org/10.1016/j.iref.2015.06.003
1059-0560/

repayments are generally high whenever they are low in other countries, or vice versa, banks can in principle improve the risk-return profile of their credit portfolios. Research on business cycles, which constitute a key driver of credit quality, also points into this direction. For instance, Kose, Otrok, and Prasad (2008) document notable business cycle asynchronicity between industrial countries on the one hand, and emerging market economies and developing countries on the other. This suggests that, potentially, major diversification gains can be realised by lending to the latter. However, international capital flows continue to be primarily concentrated on developed markets (Milesi-Ferretti & Tille, 2011). Large, globally oriented German banks also focus strongly on developed countries and concentrate about 90% of their foreign private-sector lending on only 10 countries.

In this paper, we examine the seeming inconsistency of these observations. We hypothesise that German banks hold such relatively concentrated portfolios because of the existence of country-specific frictions such as institutions, regulations, and other factors. These frictions might drive a wedge between the potential and the effective risk and return in foreign lending, thus shaping the bank portfolios that we observe.

To explore our hypothesis, we proceed in steps. In the first step, we ask whether banks' international credit portfolios are consistent with an explicit, frictionless benchmark scenario. To this end, we compare their actual portfolios to mean-variance portfolios that we could expect to observe in the absence of country-specific frictions.

In the second step, we investigate which country-specific frictions cause German banks to overweight some countries while underweighting others relative to the frictionless benchmark. We do so by regressing the differences between banks' actual credit portfolios and our benchmark portfolios on a set of geographical, institutional, and regulatory variables.

In short, we find that German banks' international credit portfolios deviate substantially from our benchmark portfolios, indicating that the concentration is indeed due to frictions. Our results show that institutions and banking regulations are important determinants of the international credit portfolios of German banks as countries with more developed institutions and a sound regulatory environment tend to be overweighted by German banks. The same applies to countries with larger and more developed banking markets. Countries that exhibit a higher level of economic integration with Germany in the real sector are overweighted as well.

Overall, the evidence suggests that German banks' international credit portfolios are largely determined by factors within the hands of policymakers. Accordingly, improvements and convergence of institutional and regulatory frameworks around the world might reduce the overweighting or underweighting of countries in the portfolios of German banks. Hence, even though such changes would certainly take time, there is reason to believe that they could contribute to banking markets in general becoming more internationally integrated in the future.

Our analysis is based on the Deutsche Bundesbank's *External Position Reports of German Banks*. This dataset contains detailed information on the foreign exposure of all German banks, including their foreign branches and subsidiaries. We construct from it a bank-country panel for the period between 2003 and 2007 for large, internationally oriented German banks and a representative set of 35 countries from all regions of the world that comprehensively reflects the investment opportunity set of German banks.

For this set of countries, we compute mean-variance portfolios à la Markowitz (1952, 1959) that we could expect to observe in the absence of country-specific frictions. These serve as the benchmark throughout our analysis. They are based on the potential, as opposed to the effective, risk and return of lending to a given country. Crucially, those not only reflect the risk and return of a country in isolation but also the potential diversification gains that German banks could achieve by exploiting the asynchronicity of credit developments around the world.

Our approach builds upon the work by Buch, Driscoll, and Ostergaard (2010). They use aggregate, locational data on the cross-border assets of banks from France, Germany, Italy, the United Kingdom and the United States in 23 countries between 1995 and 2003 to identify barriers to international financial integration. The authors find that the probability of a country's being overweighted against a Markowitz-type benchmark decreases with the severity of capital controls, and increases with a survey measure of trust among residents in the destination country.[3]

We improve on this paper by considering a much larger set of 35 countries that more comprehensively reflects the investment opportunity set of banks. This is relevant as the gains from portfolio diversification tend to increase in the asynchronicity of credit developments across countries. In order to adequately reflect these gains and to properly identify the relevant frictions in international banking, it is important to consider a wide range of potential lending destinations that are sufficiently heterogeneous in terms of both geography and economic development.

Our paper also improves on Buch et al. (2010) in two other important aspects. First, whereas Buch et al. (2010) concentrate on cross-border exposure only, we examine the consolidated foreign credit exposure of banks. This comprises both cross-border and affiliate claims. The latter have become particularly important over the past two decades, to the point that the average bank in our sample relies on branches and subsidiaries for about 40 to 50% of its foreign credit exposure. Moreover, solely focusing on cross-border lending might give a distorted view of the relevance of frictions due to potential substitution effects between cross-border and affiliate lending (García-Herrero & Martínez Pería, 2007; García-Herrero & Vázquez, 2013). For instance, informational frictions when lending across borders might be overcome or alleviated by a local presence in the form of a branch or subsidiary.[4]

Second, the micro nature of our data makes it possible to focus only on those large, globally oriented banks that can be assumed to incorporate diversification considerations into their lending decisions. Therefore, deviations from the benchmark can be interpreted

[3] Our paper is also conceptually related to García-Herrero and Vázquez (2013) in that the authors calibrate explicit mean–variance portfolios as well. They use those as a benchmark to evaluate how large banks from eight major industrial countries allocate assets to their foreign subsidiaries. Banks are found to leave opportunities for international diversification largely unexploited.

[4] Also see Pontines and Siregar (2014), for instance, who document differences between cross-border lending on the one hand, and local lending by foreign banks on the other, for six East Asian economies during the global financial crisis.