



Why European banks are less profitable than U.S. banks: A decomposition approach

Guohua Feng^{a,*}, Chuan Wang^b

^a Department of Economics, University of North Texas, 1155 Union Circle Box 311457, Denton, TX 76203, USA

^b Wenlan School of Business, Zhongnan University of Economics and Law, Wuhan, Hubei 430073, China

ARTICLE INFO

Article history:

Received 18 April 2016

Accepted 28 February 2018

Available online 7 March 2018

JEL classification:

D24

G21

C43

Keywords:

European and U.S. banks

Profitability

Productivity and efficiency

The Lowe index

Data envelopment analysis

ABSTRACT

The low profitability of European banks relative to their U.S. counterparts has recently raised concerns among policy makers and researchers. This paper attempts to shed light on this issue by using the O'Donnell (2012) decomposition approach. This approach enables us to decompose the relative profitability of European banks into an output–input price index and a total factor productivity index, with the former further decomposed into two price indexes and the latter further into four productivity and efficiency measures. Our results show that European banks' profitability was not only weak, but also deteriorated over time. Our further analysis shows that the decline in the output–input price index was due to declines in relative lending rate and relative return on securities and an increase in funding costs, while the decline in the productivity index was driven by declines in technical efficiency, scale efficiency, and residual mix efficiency.

© 2018 Elsevier B.V. All rights reserved.

1. Introduction

In the past decade, European banks have been consistently less profitable than their U.S. counterparts. Table 1.1 presents the average returns on equity (ROE) for European and U.S. banks respectively (including a breakdown for countries within Europe) over the period 2004–2014.¹ As shown in this table, the ROE for European banks as a whole was approximately 8.08% in 2004—about 56.7% that of their U.S. counterparts. It deteriorated quickly relative to that of U.S. banks in the post-global financial crisis period, especially after 2010. For example, the ROE for European banks as a whole was 0.71% in 2014—only one-thirteenth that of their U.S. peers. Table 1.2 presents the average returns on assets (ROA) for European and U.S. banks respectively over the same period. This latter table further confirms that compared with their U.S. counterparts, European banks have continuously suffered low profitability in the past decade.

The low profitability of European banks has raised major concerns among policy makers and researchers. For example, the European Central Bank (2015) warned that “the weak profitability among euro area banks is a key risk for euro area financial

stability”. The International Monetary Fund (2015a) also warned that low profitability “constrains European banks' ability to increase provisions and discourage the timely recognition of credit losses, which is another sign of instability of the financial environment in the euro area”. These concerns have stimulated an increasing amount of research attempting to identify the determinants of the weak profitability of European banks. Excellent works include, but are not limited to those of Demircuc-Kunt and Huizinga (2000), Goddard et al. (2004), and the European Central Bank (2015).

Methodologically, most early research into the determinants of the profitability of European banks was based on linear regression models. For example, Goddard et al. (2004) used three linear regression models (namely, linear cross-sectional, pooled cross-sectional time-series and dynamic panel models) to investigate the determinants of the profitability of European banks. Alessandri and Nelson (2015) used a linear dynamic panel-data model to analyze the impact of funding costs on bank profitability in the U.K. The European Central Bank (2015) also employed a linear dynamic panel-data model to investigate the effects of factors such as bank size, solvency position, credit risk, and income diversification on bank profitability in 19 European countries.

In this paper, we use a different approach: we decompose a profitability index that compares the profitability of European banks with that of U.S. banks in period t ($PROF_{EU,US,t}$)

* Corresponding author.

E-mail address: guohua.feng@unt.edu (G. Feng).

¹ Tables 1.1 and 1.2 are based on our sample data described in Section 4.

Table 1.1
ROE for European and U.S. banks.

	2004 (%)	2005 (%)	2006 (%)	2007 (%)	2008 (%)	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013 (%)	2014 (%)
The U.S.	14.25	13.20	13.34	13.00	6.98	4.11	5.36	6.42	7.99	9.66	9.57
Europe as a whole	8.08	10.32	10.03	9.34	2.81	1.09	2.00	0.41	0.02	1.40	0.71
Czech	6.09	7.27	6.99	5.00	3.17	3.58	4.78	4.29	5.04	4.02	4.50
Denmark	8.12	7.01	7.69	3.19	-1.92	-5.41	3.40	1.37	2.94	5.00	4.00
France	9.22	9.84	9.94	9.78	-1.95	3.43	3.10	1.37	2.65	3.53	3.41
Germany	-2.40	8.31	8.38	7.62	-1.17	-4.50	2.46	0.88	4.00	3.63	0.49
Greece	6.24	11.85	9.96	10.14	3.83	-2.24	-10.21	-2.49	-1.10	4.06	-7.20
Hungary	8.24	13.08	12.71	12.54	6.49	10.37	3.46	1.24	0.17	4.41	-6.61
Ireland	7.99	6.88	6.48	6.65	4.68	-2.30	-2.15	-2.66	-1.74	-4.89	5.01
Italy	11.07	7.47	7.27	9.70	0.51	2.48	3.08	-1.34	-0.75	-4.85	-6.31
Netherlands	11.04	12.67	12.08	11.63	-2.86	-6.03	4.85	5.13	5.21	6.06	6.02
Portugal	8.51	12.76	12.55	12.86	11.10	2.81	3.12	-4.80	-1.83	-8.67	-4.27
Spain	11.34	14.97	13.29	11.92	9.07	11.80	8.03	0.65	-8.21	1.97	3.90
The U.K.	11.46	12.83	11.92	10.56	2.43	-1.92	-0.56	1.13	-6.16	1.79	4.94

Table 1.2
ROA for European and U.S. banks.

	2004 (%)	2005 (%)	2006 (%)	2007 (%)	2008 (%)	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013 (%)	2014 (%)
The U.S.	1.08	1.12	1.07	0.91	0.33	0.09	0.35	0.65	0.86	0.95	1.00
Europe as a whole	0.61	0.70	0.68	0.64	0.03	-0.08	0.08	-0.16	-0.19	0.00	0.01
Czech	0.95	0.74	0.50	0.67	0.29	0.08	0.23	0.33	0.68	0.43	0.46
Denmark	0.79	0.86	0.94	0.71	-0.17	-0.24	0.16	0.07	0.16	0.31	0.26
France	0.51	0.43	0.67	0.17	-0.31	0.08	0.30	0.11	0.28	0.34	0.05
Germany	-0.07	0.31	0.29	0.18	-0.31	-0.12	0.08	0.03	0.13	0.14	0.02
Greece	0.44	0.50	0.86	0.90	0.22	-0.13	-0.68	-1.53	-0.08	0.64	-0.64
Hungary	1.01	0.57	0.53	0.33	0.27	0.17	0.34	0.12	0.02	0.56	-0.86
Ireland	0.67	0.71	0.89	0.94	0.38	-0.83	-0.45	-0.21	-1.15	-1.54	0.55
Italy	0.34	0.54	0.04	0.09	0.22	0.03	0.31	-1.07	-0.07	-1.30	-0.50
Netherlands	0.69	0.73	0.88	0.90	-0.55	-0.23	0.24	0.26	0.22	0.29	0.32
Portugal	0.43	0.80	0.82	0.87	0.10	0.07	0.17	-0.30	-0.80	-0.47	-0.26
Spain	0.88	1.32	0.96	1.03	0.08	0.07	0.19	0.05	-1.45	0.13	0.31
The U.K.	0.60	0.79	0.68	0.87	0.05	-0.05	-0.02	0.15	-0.30	0.39	0.27

into several multiplicative components (explanatory factors). As in O'Donnell (2012), "profitability" here is defined as the ratio of the value of outputs to the total cost of producing those outputs. Our decomposition proceeds in two stages. In the first stage, we decompose $PROFI_{EUt,USt}$ into two multiplicative components: an output-input price index between European and U.S. banks ($OIPI_{EUt,USt}$) and a total factor productivity (TFP) index between European and U.S. banks ($TFPI_{EUt,USt}$). In the second stage, we further decompose the output-input price index into two multiplicative price indexes: an output price index between European and U.S. banks ($PI_{EUt,USt}$) and the reciprocal of an input price index between European and U.S. banks ($1/WI_{EUt,USt}$). We also further decompose the TFP index into four multiplicative efficiency measures: a technical change index between European and U.S. banks ($TFPI_{EUt,USt}^*$); a technical efficiency index between European and U.S. banks ($OTEI_{EUt,USt}$); a scale efficiency index between European and U.S. banks ($OSEI_{EUt,USt}$); and a residual mix efficiency index between European and U.S. banks ($RMEI_{EUt,USt}$). Taken together, we decompose the relative profitability of European banks into six explanatory factors: $PROFI_{EUt,USt} = PI_{EUt,USt} \times \left(\frac{1}{WI_{EUt,USt}}\right) \times TFPI_{EUt,USt}^* \times OTEI_{EUt,USt} \times OSEI_{EUt,USt} \times RMEI_{EUt,USt}$.

This decomposition approach provides a novel analytical framework for investigating why European banks are less profitable than their U.S. counterparts. According to the decomposition, each explanatory factor compares the performance of European banks in a particular area in period t with the performance of U.S. banks in the same year. If the explanatory factor has a value less (greater) than one, it indicates that European banks underperform (outperform) their U.S. counterparts in the corresponding area. Thus, by estimating the values of these explanatory factors, we can identify areas in which European banks lag behind their U.S. counterparts. In addition, we can also identify drivers of the decline in European

banks' relative profitability in the post-crisis period, by examining the temporal pattern of each explanatory factor.

This decomposition approach has two major advantages. First, it is suitable for making multitemporal (i.e., many periods) or multilateral (i.e., many cross-sections) comparisons. This is because the price, productivity and efficiency measures used in the decomposition are based on the Lowe index, which has the desirable property of transitivity (i.e., suitable for multitemporal or multilateral comparisons) (Hill, 2010; O'Donnell, 2012, p. 197). This advantage means that in our case we can compare bank profitability and its components between Europe as a whole and the U.S., between each European country and the U.S., and among European countries. Second, the decomposition approach does not depend on restrictive assumptions concerning production technology, firm behavior, or market structure. This latter advantage means that the profitability, productivity and efficiency measures used in this study are correct even when we do not have a priori information about the market structures and returns to scale of the European and U.S. banking industries.

The aforementioned measures of productivity and efficiency are estimated using data envelopment analysis (DEA) (O'Donnell, 2012). This estimation technique has two advantages. First, it does not require any explicit assumptions about the functional form of the frontier or the distributions of random error terms. Second, there are no statistical issues (e.g., endogeneity) associated with estimating multiple-input multiple-output technologies. In order to assess if our findings obtained using DEA are sensitive to the type of estimation technique used, we also conduct a robustness check using a parametric stochastic frontier model to estimate the productivity and efficiency measures.

We apply the above framework to a large sample of large European and U.S. banks over the period 2004–2014. Our results show

Download English Version:

<https://daneshyari.com/en/article/7356562>

Download Persian Version:

<https://daneshyari.com/article/7356562>

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