

Regulatory Reform and De-Risking in Global Banking: The Case of Barbadian Banks

Michael Brei, Lisa Brathwaite, Lauren Cato and DeLisle Worrell¹

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Abstract

This paper investigates the effects of the recent changes in the global banking environment and the de-risking phenomenon on banks' cost and income structure. Using quarterly information on five banks that operated in Barbados over the period 1996-2016, we examine how different components of income and expenses have been affected by a number of events linked to the de-risking phenomenon (such as FACTA, bank regulatory reform, and court announcements). Our panel regression analysis, which allows to control for bank-specific and macroeconomic determinants, suggests that bank profitability has been negatively affected by the events that have taken place in the advanced economies since 2010. The results show evidence that higher non-interest expenses explain a good part of the reduction in profitability, particularly, in the form of higher expenses on wages, professional services, and other non-interest expenses. Moreover, it appears that banks have partly counteracted the cost increases with higher interest margins.

JEL classification: C53, E43, E52, G21.

Keywords: De-risking, bank profitability, global shocks.

¹ The opinions expressed in this paper are those of the authors and do not necessarily reflect those of the Central Bank of Barbados.

Introduction

The regulatory environment has always been a key determinant for establishing the role of banks within the financial system (Spong, 2000). Following the financial crisis, banks have experienced more than a dozen new or significantly enhanced rules and regulations. The major changes are associated with the revised Anti Money Laundering (AML)/Combating the Financing of Terrorism (CFT) regulations, the tax transparency provisions under the Foreign Account Tax Compliance Act (FATCA) and OECD's Common Reporting Standard (CRS) and the reformed capital and liquidity requirements under Basel III (Haley, 2017). There has also been an increase in the legal and reputational risks associated with non-compliance in the form of court judgements against some major international banks. Banks now have to optimize across various constraints related to exposures to high-risk clients or geographies, the Basel III leverage ratio, liquidity coverage ratio or the capital surcharge applied to global systemically important banks (GSIBs) while simultaneously achieving a sufficiently high level of profit.

Banks have responded to the changing landscape in global banking and the new macroeconomic environment in several ways (see Artingstall et al (2016); Cosimano and Hakura (2011)). There seems to be a common approach in coping with the new environment, one of which is the de-risking phenomenon. As defined by the Financial Action Task Force (2014), de-risking refers to "the phenomenon of financial institutions terminating or restricting business relationships with clients or categories of clients to avoid, rather than manage, risk." Preceding the current environment, correspondent banks benefitted from profitable relationships from the services they provided to respondent banks (De Souza, 2017). However, a noted recent decrease in the risk appetites of banks in addition to the aforementioned changes in regulations have resulted in these correspondent banks realigning their business models by reducing their exposure to those businesses and products that require a larger capital or liquidity backup² and exiting particular business lines³ to discontinue businesses with high-risk clients (see AFI (2016); Bauer (2017); IMF (2017)). To this end, JP Morgan Chase noted in its 2015 annual report that it exited or restricted close to 500 foreign correspondent banking relationships and more than 150,000 client relationships to simplify their business and to reduce AML risk. The decline in the number of correspondent banking relationships (CBRs) leads to greater potential risk as banks and countries have to rely on fewer CBRs (FSB, 2017).

Apart from reducing certain exposures, banks have been investing in the enhancement of existing and the establishment of new permanent organizational systems to shield them from the existing and emerging legal, regulatory and reputational risks. The improvements have been focused on operating businesses such as risk, finance, compliance, legal and audit. Many banks now have new AML monitoring platforms for local and global transactions that help them to identify suspicious activity. In addition, perceived pressure from regulators has contributed to increasing uncertainty regarding the level of due

² Level 3 assets, notional derivative amounts, or short-term wholesale funding

³ Private equity or broker-dealer services

diligence required for Know-Your-Customer (KYC) and Know-Your-Customer's-Customer (KYCC) standards (Financial Integrity Network, 2017). These factors have led to data collection and processing becoming far more intense and also implies that banks are likely to increase staff numbers in certain areas. Thus, it can be inferred that the new environment in global banking is not only associated with de-risking but also with higher operational costs, particularly in the build-up phase but most likely with permanent effects. This increase in cost was further underscored in an earlier survey on Barbados' International Business and Financial Services (IBFS) sector by Sharman and Mistry (2008) who noted that firms had incurred approximately US\$150,000 per annum in additional compliance related resources over the period 2002 to 2005 to address the increases in the AML and CFT requirements.

It can be reasonably argued that the costs of coping with the new rules will be passed to some extent to banks' clients. Banks will adjust the pricing of their products with the objective being to counterbalance the increase in operational costs. In this regard, the IMF's 2016 survey noted that jurisdictions which experienced increases in charges by correspondent banks for accessing CBRs generally reported significant increases in fees charged to bank customers for wire transfers and foreign currency drafts. Small businesses are likely to suffer most, as it is harder for them to switch banks in response to price increases or to shift to other non-bank products, such as bond financing. In an attempt to restore margins and profitability, banks will tend to increase loan rates and fees for services and/or decrease deposit rates. The particular adjustment depends on the degree of competition in the banking sector and the level of financial market development in a given country. This also includes banks' foreign correspondent banking relationships for transactional services.

Similar transmission channels are likely to affect banks in Barbados. While the island has not been hampered by the termination of correspondent banking relationships, de-risking has had a significant impact on the nature of the domestic banking system. In response to the AML regulations, banks have discontinued relationships with particular types of clients who are presumed to be risky and have increased scrutiny on prospective customers. The repercussions of these actions have extended to the country's IBFS sector where banks are more discerning when establishing relationships with firms. In this regard, Wright and Kellman (2017) noted the unprecedented requirement of one Barbadian commercial bank with a Canadian parent bank requiring potential clients in the sector to have a relationship with its head office or another major branch worldwide.

Unsurprisingly, banks' operating costs will increase as a result of higher legal, AML and reputational risks. The regulatory risk component in the Caribbean should be weaker compared to large banks from the advanced economies as there is no GSIB, Basel III is not yet implemented and banks hold important liquidity and capital buffers. The threat and burden posed by the increased unwillingness of major banks to provide correspondent banking relationships in the region will have a stronger impact on local banks compared to banks from the advanced economies. Banks are likely to be charged higher service fees for foreign CBRs. Consideration should also be given to the small size of the banks. In other

words, if there are economies of scale (at least up to a certain threshold) in the instalment of new monitoring platforms and other operational systems, then the burden will be relatively larger for small banks given that the platform cannot be distributed across a large number of clients.

Empirical analysis

Data

For this study, we use quarterly bank-level data from the Central Bank of Barbados that relates to the five banks operating in Barbados over the period 1996-2016. The total assets of the banks sum to 13.3 billion Barbados dollars (or 150 percent of GDP) in 2016. Of this figure, 57 percent represents the banks on the books of two foreign-owned branches and the remainder constitutes the entities managed by three foreign subsidiaries.⁴

The size of Barbados' banking system has increased substantially over the past twenty years (Figure 1). This evolution is linked to the financial development and deepening experienced during the considered period. An exception is the period 2008-11 during which total assets contracted. This is attributed to the repercussions of the global financial crisis and its aftermath which have led to a prolonged period of low growth in Barbados.

The majority of bank's assets are invested in loans to the private sector (49 percent on average), while the remaining funds have been invested in relatively equal parts among interbank lending, treasury bills, balances held at head office and other investments (Figure 1). The loan-to-asset ratio measures the percentage of total funds (mainly deposits and equity) that banks lend out to their customers. When compared to the region's average of 57 percent or the advanced economies' average of 55 percent (Table 3, Birchwood et al., 2016), banks' lending activity is a bit lower in Barbados.

Bank profitability as measured by the return on assets has been relatively high in Barbados prior to 2010 (Figure 2(a), top left panel). More specifically, net income as a ratio of total assets averaged 1.6 over the period 1996-2009, which is as high as the region's average and much higher compared to the average of 0.6 percent in the advanced economies (Table 3, Birchwood et al., 2016). However, since 2010 the return on assets dropped persistently to an average of 0.9 percent even though profitability has returned to higher levels in the most recent years. As previously mentioned, this lower profitability is likely to be linked to a number of factors, including the prolonged period of low growth in conjunction with increased legal and regulatory risks associated with the AML/CTF initiatives, FACTA and higher risk aversion of global banks in conducting businesses in small markets.

There are good reasons to believe that increased risk aversion and higher legal and reputational risks will in some form affect banks' operating costs. Bank managers and

⁴ Overall, there operate five deposit-taking commercial banks in Barbados. It should be noted that we do not consider credit unions in our analysis.

owners will have incentives to spend more resources in the development and refinement of the compliance, legal and audit procedures. Clearly, this will create additional expenses of which some will eventually be passed on to clients, even though banks will also make efforts to streamline, simplify and automate certain businesses. This pattern can roughly be observed in Figure 2 which shows the major components of bank profits. As can be seen, bank expenses on salaries, professional services, and other operational procedures have increased substantially after the advent of FATCA with a concurrent increase in the net interest margin.

The evolution of income and costs over time does not allow us to make causal inferences about particular events. Rather other developments that are correlated with a particular event might be driving the changes in the income and cost structure of banks. The observed adjustment might be linked to changing (internal and external) macroeconomic conditions or to changes in the business orientation on the bank-level. We therefore have to conduct an econometric investigation that allows us to control for such determinants.

Econometric framework

Indexing individual banks with i and years with t , we carry out the econometric analysis using the following set of regressions:

$$y_{it} = \alpha_0 + \beta \cdot D_t + \Phi M_t + \Psi X_{it-4} + \vartheta_i + \varepsilon_{it}$$

where y refers to our measures on banks' income and cost structure (shown in Figure 2), D is our measure of de-risking, and M and X are macroeconomic and bank-specific control variables. We estimate separate regressions for the following dependent variables: return on assets (ROA), net interest margin, non-interest expense, salaries, professional services, head office fees, and other non-interest operating costs (all as a percentage of operating income except for the return on assets).⁵ Given that quarterly data is possibly subject to seasonality and that costs and earnings are flow variables, which we scale in the case of ROA with total assets (a stock variable), we annualize quarterly income figures by accumulating quarterly flows over the last four quarters, i.e. $y_{it} = y_{it}^q + y_{it-1}^q + y_{it-2}^q + y_{it-3}^q$.

We use several control variables. The macroeconomic indicators in vector M include the growth rate of real GDP, inflation, short-term interest rate (measured by the 3-month treasury bill), and cross-border bank liabilities vis-à-vis banks from the BIS reporting countries. All these indicators characterize banks' domestic and external macroeconomic environment, and as such they are likely to affect banks' cost and income structure. Omitting these variables could result in an estimation bias of the relationship between the post-2010 events and bank profits. For example, if GDP growth was omitted, even though it is a positive determinant of profits, one would tend to overestimate the impact of the events if GDP growth slowed down in the post-2010 period.

⁵ The exact definitions of the variables are provided in Table 1.

In order to take into account bank characteristics, we include a set of bank-fixed effects (ϑ) and a vector of bank-specific indicators taken from the balance sheets (X). Our modelling strategy relies on the hypothesis that banks with different characteristics, such as different degrees of retail orientation or liquidity holdings, might respond differently compared to the other banks. Broadly speaking, we account for the possibility that banks differ in their ability to shield themselves from shocks. For instance, they differ in the extent to which, following changes in the macroeconomic environment, they can adjust their net interest margin. Banks with lower liquidity holdings or higher exposure to short-term funding might face a higher cost in raising non-secured deposits and may therefore react to changes in the macroeconomic environment more substantially. Larger banks, on the other hand, might find it easier to access funds from the capital market and cushion the effects (Borio et al., 2016). However, they might just as well take advantage of their market power and transfer the higher burden of low growth to bank borrowers and/or depositors. Taking into account these considerations, our vector X contains bank size (measured by the logarithm of assets) and a number of balance sheet indicators (all as a percentage of total assets): loans, cash holdings, treasury bills, inter-bank lending, other investments, and paid up capital.

One possible identification problem is endogeneity. For example, banks' lending decisions are likely to have an impact on bank profitability or the net interest margin. On the other hand, banks with higher profits may retain earnings and increase lending. We address this potential problem of reverse causality by lagging all bank-specific characteristics by four quarters.

It is challenging to identify the effects of the de-risking phenomenon separately from those related to changes in AML requirements or bank regulation, because they are all interrelated. As mentioned before, banks from the advanced economies have been de-risking in response to higher legal, regulatory, and reputational costs. Amongst other things, banks have had to deal with the introduction of new AML/CTF measures (FACTA and CRS), increased risks of being fined for non-compliance, and the GSIB capital surcharge embedded in Basel III. Collectively, these events are expected to increase banks' operating costs given the higher costs of monitoring, data collection and inference, or the introduction of more sophisticated reporting systems. While some of these measures may temporarily increase operating costs, others may have a more permanent effect. Apart from the GSIB capital surcharge, banks in Barbados will be subject to the same type of shocks as the banks from the advanced economies.

Given the aforementioned, we experimented with different measures that take into account the events that are linked to de-risking. We used individual dummies indicating particular events or event windows, and a cumulative dummy which changes each time a potentially important event, announcement, or change in rules took place. While individual event dummies allow for the inference of a direct effect of an event, the cumulative dummy allow us to identify permanent and overall effects of the changes in the global banking

environment. The following events that occurred in the period 1996-2015 have been considered:⁶

1. Publication of the OECD-FATF blacklist (June 2000)
2. Enactment of FACTA in the United States (March 2010)
3. Major legal fines associated with AML issues (March 2010 – August 2014)⁷
4. Basel III announcement (December 2010)
5. Legal authorization of a John Doe Summons Act concerning the identification of US accounts at a Caribbean based Canadian subsidiary (April 2013)⁸
6. OECD agreement on using the Common Reporting Standards on tax information exchange (May 2014).

A complication that arises is that certain events overlap or even occur in the same time period. Moreover, there is a lag between the occurrence of these events and banks' reactions. We have experimented with different specifications and decided, based on the explanatory power of the regressions, to work with an individual dummy for the date at which the OECD-FATF blacklist has been published (equal to one during a one-year window starting in June 2000), and a cumulative dummy variable for the more recent events (including events (2), (4), and (5)). The cumulative dummy can be thought of as a step function that is equal to zero prior to the first event and one thereafter (March 2010), increasing to two at the date of the second event (December 2010) and then increasing to three at the date of the final event (April 2013). The other specifications tended to yield similar but somewhat weaker results.⁹

Results

The summary statistics of the regression variables are shown in Table 2 and the regression results are provided in Table 3. Each column shows a separate regression, starting in columns I-III with the return on assets, net interest income and non-interest expense. The remaining columns provide the regression results when non-interest expense is decomposed into its main components (salaries, professional services, head office fees, and any other non-interest expense).

⁶ We were not able to include the Panama Papers in April 2016, because we lagged the bank-specific variables by one year which means that our final year (2016) drops in the regressions.

⁷ The banks and dates are Wachovia (March 2010), HSBC (December 2012), Credit Suisse (May 2014), BNP Paribas (July 2014), and Standard Chartered (August 2014).

⁸ Even though the Act did not prove any responsibility of the two banks, there were reputational costs involved (Worrell et al., 2016).

⁹ We tried but decided not to include in the cumulative dummy the OECD agreement on the Common Reporting Standards in 2014, because this decreased the explanatory power of the regressions. This could be due to the fact that, at the same time, Barbados committed and signed with the United States the Model 1 Intergovernmental Agreement. Also, we did not find that including the individual fines in our regressions have improved the results.

The explanatory power of the regressions varies depending on which type of income or cost indicator is considered. For example, the overall R-squared is highest in the regression for total non-interest expense, i.e. the model explains 56.3 percent of the variation in non-interest expense (column III), while it is lowest in the case of head office fees (column vi) where only 0.4 percent of its variation are explained by the model. The latter result indicates that there are other factors not included in our model that determine banks' demand for services or similar from the parent bank.

The control variables are in many cases significant. For sake of brevity, we briefly discuss some results before turning to our main variable of interest. While higher GDP growth is not associated with a significantly higher return on assets, banks' net interest margin, expenses on professional services and other non-interest expenses decrease, other things being equal. It could thus be that banks maintained profitability in the wake of lower interest margins by reducing non-interest expenses.¹⁰ Higher inflation reduces the return on assets and increases expenditures on salaries and benefits. The short-term interest rate does not appear to have any significant effect on the variables of interest. Concerning the bank-specific variables, we find among other things that banks with higher loan-to-asset ratios operated with significantly higher non-interest expenses and head office fees. Or, for large banks professional fees represented a higher fraction of operating income, after controlling for the business cycle and other bank-specific characteristics.

The cumulative dummy variable for the post-2010 events is statistically significant in most cases, whereas the dummy for the OECD-FATF announcement in 2000 is not. Overall, banks' return on assets dropped in response to the post-2010 events by -0.28 percent of assets (equivalent to 1/5 of the average return on assets, see Table 2). Importantly, this result holds after controlling for macroeconomic factors and other bank-specific determinants of profits. The results suggest that the drop in profitability is explained by an increase in non-interest expenses by 4.58 percent of operating profits, which banks partly passed on to clients as evidenced by an increase in net interest income of 1.65 percent of operating profits. In terms of the average ratio of non-interest expenses to operating income (which is 61.29, see Table 2), this represents an economically important effect equivalent to 7.5 percent. The increase in net interest income is a bit less important as it amounts to 2.5 percent of the average (which is 66.45, see Table 2). Banks thus partly price the negative cost effects into their margins by increasing loan rates, decreasing deposit rates, or both. This cushions to some extent the negative impact on profitability.

The regressions for the major components of non-interest expense, shown in columns IV-VII of Table 3, provide us more detailed evidence on which factors are driving the increase in

¹⁰ Bernanke and Gertler (1989) and Kashyap et al. (1993) argue that better economic conditions increase the expected net present value of investment projects, improve the creditworthiness of borrowers and drive credit demand. While the first two effects may result in lower loan rates, increased loan demand might have the opposite effect of increasing loan rates. Further, improving economic conditions tend to be associated with increased deposit supply and possibly lower deposit rates. Hence, the overall effect of real GDP growth on the interest margin is undetermined.

banks' non-interest expense. It appears that it is a combination of higher wage costs, expenditures associated with professional fees, and other non-interest expense. This result seems intuitive since banks cope with the new rules and the associated de-risking by expanding control and audit departments using internal and external resources, technology and knowledge. The increase is particularly important in the case of other non-interest expense and salaries. To be more precise, after controlling for other factors, the post-2010 events have been associated with increase in other expenses of 3.01 percent of operating profit (which is 20 percent of the average of 15.66, see Table 2). The increase in salaries amounted to 1.61 percent of operating income (or close to 6 percent of the average of 28.56, see Table 2).

References

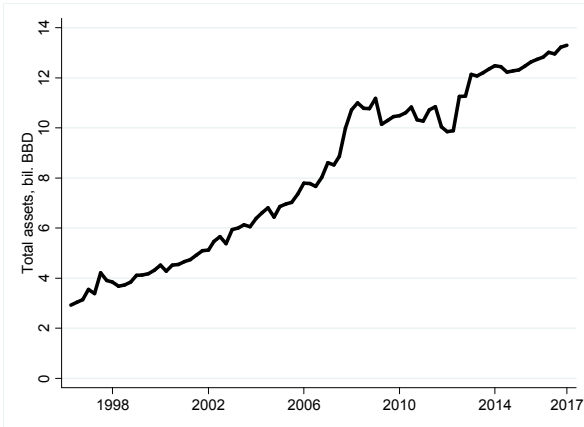
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Tables and figures

Figure 1: Total assets and components, 1996-2016

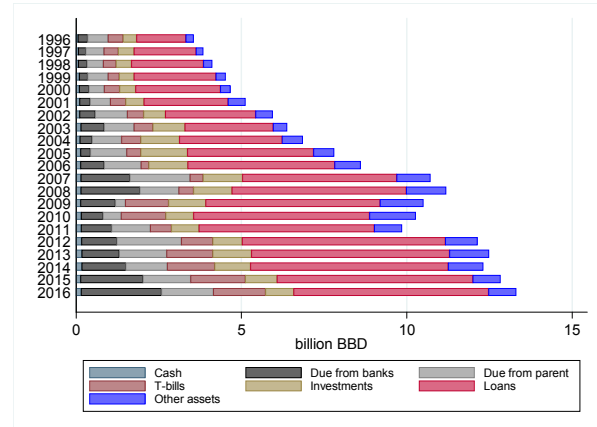
(I) Total assets of banks

Billion BBD



(II) Composition of assets

Billion BBD



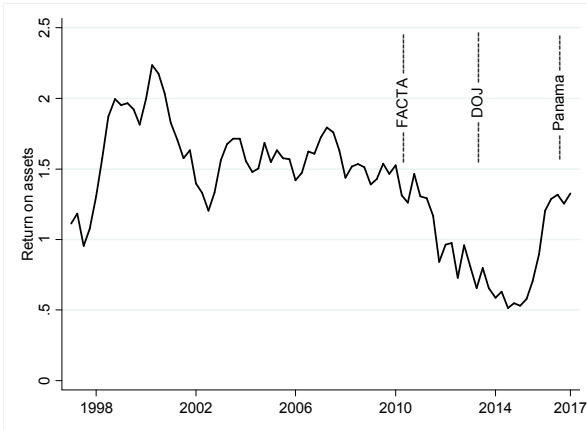
Note: The graphs show the sum of total assets and other balance sheet positions for the five commercial banks in Barbados.

Source: National central banks; Araujo et al. (2014); Federico et al. (2014). Authors' calculations.

Figure 2 (a): Selected indicators from the income statement

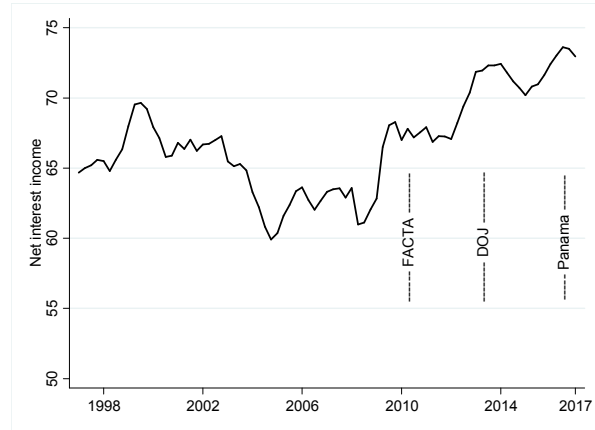
(I) Return on assets

Percent of assets



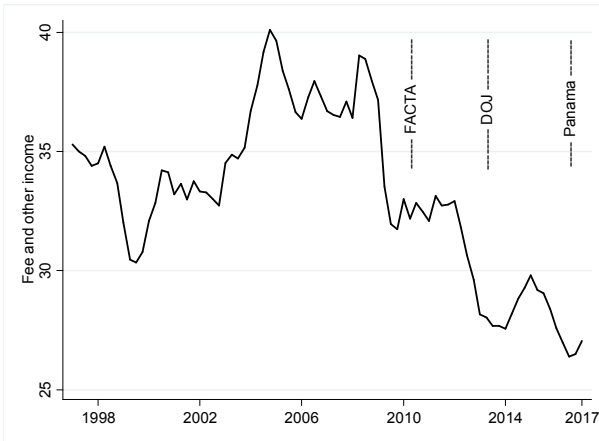
(II) Net interest income

Percent of operating income



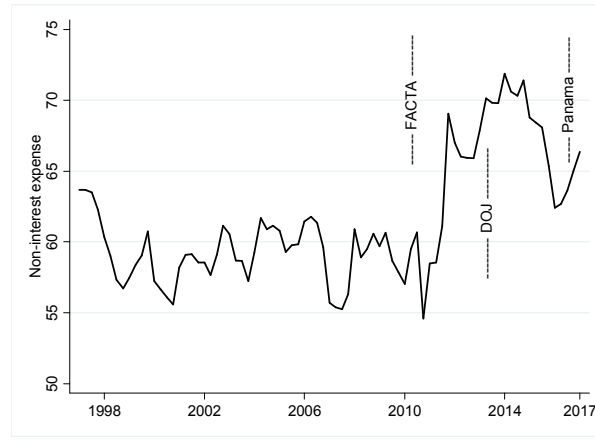
(III) Fee and other non-interest income

Percent of operating income



(IV) Non-interest expenses

Percent of operating income



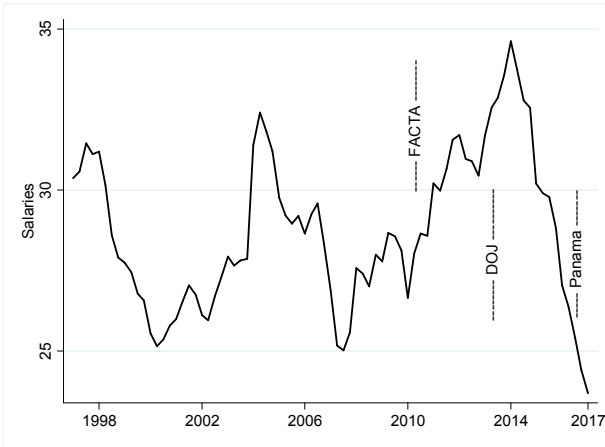
Note: Unweighted averages across banks. FACTA indicates the date of announcement and implementation of the FACTA regulation in the United States, DOJ the Internal Revenue Service issue of a John Doe Summons act, seeking the identities of US taxpayers with offshore accounts at Canadian Imperial Bank of Commerce's First Caribbean International Bank, and Panama the date at which the Panama papers have been published.

Source: Central Bank of Barbados. Authors' calculations.

Figure 2 (b): Selected indicators from the income statement

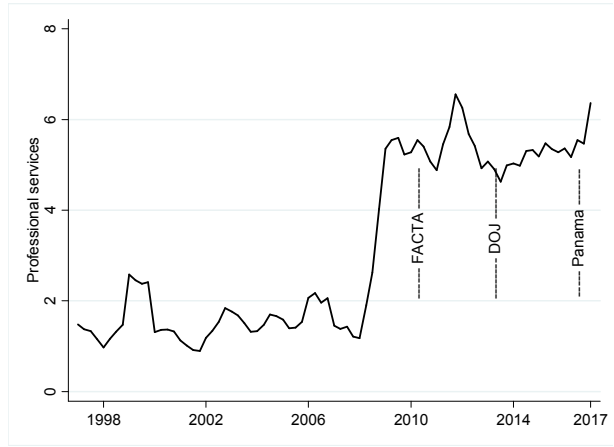
(V) Salaries and employee benefits

Percent of operating income



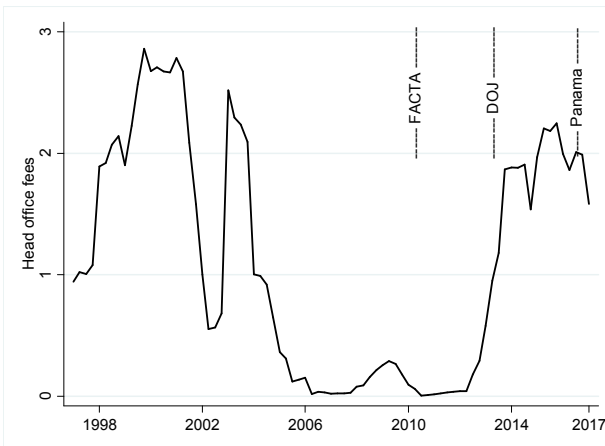
(VI) Fee expenses for professional services

Percent of operating income



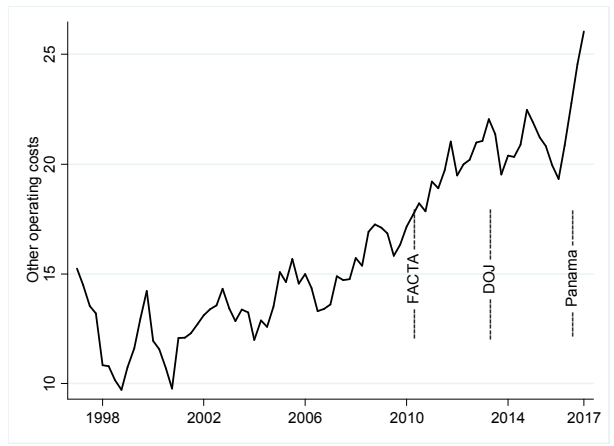
(VII) Head office management fees and services charges

Percent of operating income



(VIII) Other operating costs

Percent of operating income



Note: Unweighted averages across banks. FACTA indicates the date of announcement and implementation of the FACTA regulation in the United States, DOJ the IRS issue of a John Doe Summons act, seeking the identities of US taxpayers with offshore accounts at Canadian Imperial Bank of Commerce's First Caribbean International Bank, and Panama the date at which the Panama papers have been published.

Source: Central Bank of Barbados. Authors' calculations.

Table 1: Definition of the variables

Variable	Definition
Dependent variables	
ROA	Net income / total assets
Net interest income	Net interest income / total operating income
Non-interest expense	Non-interest expenses / total operating income
Salaries and benefits	Salaries and benefits / total operating income
Professional services	Professional services / total operating income
Head office fees	Head office management fees / total operating income
Other non-interest expenses	Other non-interest operating income / total operating income
Explanatory variables	
De-risking, dummy	Cumulative dummy for FACTA, Basel III and DoJ
OECD-FATF, dummy	Dummy indicating the publication of the blacklist (1-year window)
Loans/total assets	Total loans and overdrafts / total assets
Cash/total assets	Cash in hand / total assets
Size	Logarithm of total assets
Due from banks/total assets	Due from local and other banks / total assets
Treasury bills/total assets	Treasury bills (domestic and foreign) / total assets
Investments/total assets	Investments (government and private) / total assets
Capital/total assets	Capital paid up / total assets
GDP growth	Annualized GDP growth
Inflation	Annualized inflation
3-month T-bill rate	3-month Barbados treasury bills rate
BIS liabilities growth	Annualized growth rate of cross-border flows vis-à-vis BIS reporting countries

Note: The indicators taken from the quarterly income statement are annualized, i.e. quarterly income flows are accumulated over four quarters (t, t-1, t-2, t-3). Total operating income is defined as net interest income plus fee and other income. The cumulative de-risking dummy is the cumulative sum of individual dummies that are equal to one once the following events took place: (i) the enactment of the FACTA regulation (March 2010), (ii) the Basel III announcement (December 2011), and (iii) the IRS court authorization of the John Doe Summons Act (April 2013) seeking the identification of US tax payers at Canadian Imperial Bank of Commerce's subsidiary First Caribbean International Bank.

Sources: Central Bank of Barbados

Table 2: Summary statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Dependent variables					
ROA	385	1.38	0.84	-0.34	4.05
Net interest income	385	66.45	6.98	44.52	86.25
Non-interest expense	385	61.29	16.28	23.54	97.40
Salaries and benefits	385	28.95	6.91	14.80	54.67
Professional services	385	3.01	2.76	0.08	12.99
Head office fees	385	1.08	2.39	-0.17	11.24
Other non-interest expenses	385	15.66	6.91	1.57	38.73
Explanatory variables					
De-risking, cumulative dummy	385	0.70	1.14	0.00	3.00
OECD-FATF, dummy	385	0.05	0.22	0.00	1.00
Loans/total assets	385	51.14	14.41	22.37	76.46
Cash/total assets	385	1.32	0.51	0.30	4.38
Size	385	13.98	0.79	11.93	15.36
Due from banks/total assets	385	8.84	4.79	1.44	36.69
Treasury bills/total assets	385	9.06	6.25	0.00	40.54
Investments/total assets	385	11.56	8.09	1.13	50.76
Capital/total assets	385	4.69	6.94	0.00	30.55
GDP growth	385	1.36	2.66	-5.17	7.23
Inflation	385	3.63	2.75	-1.27	9.43
3-month T-bill rate	385	3.80	1.54	0.28	6.56
BIS liabilities growth	385	0.57	2.44	-5.98	14.42

Note: The definitions of the variables are provided in Table 1.

Table 2: Regression results

Explanatory variables:	Dependent variables:						
	(I) ROA	(II) Net interest income	(III) Non- interest expenses	(IV) Salaries and benefits	(V) Profession al services	(VI) Head office fees	(VII) Other non- interest expenses
De-risking, dummy (t)	-0.285* (0.105)	1.649* (0.660)	4.578* (2.075)	1.613* (0.708)	0.747* (0.326)	0.089 (0.321)	3.013** (0.848)
OECD-FATF, dummy (t)	0.227 (0.253)	0.097 (1.822)	-2.454 (1.189)	-2.007 (1.073)	-0.761 (0.470)	0.416 (0.978)	-1.509 (2.314)
Loans/total assets (t-4)	-0.015 (0.008)	0.123 (0.080)	0.293* (0.117)	0.159 (0.097)	0.021 (0.027)	0.135** (0.030)	-0.056 (0.058)
Cash/total assets (t-4)	0.048 (0.102)	0.832 (1.824)	2.169 (2.584)	2.286** (0.823)	0.622 (0.294)	0.525 (0.325)	-1.131 (1.440)
Size (t-4)	0.129 (0.166)	1.798 (2.179)	-4.923 (3.439)	-0.451 (1.357)	1.755* (0.817)	-0.633 (0.652)	-2.095 (2.137)
Due banks/total assets (t-4)	-0.018** (0.004)	-0.041 (0.061)	0.329* (0.128)	0.190 (0.137)	0.046 (0.044)	0.137** (0.031)	0.087 (0.074)
Treasury bills/total assets (t-4)	-0.022* (0.009)	0.119** (0.043)	0.177 (0.108)	0.184** (0.066)	-0.002 (0.016)	0.038 (0.040)	-0.112 (0.085)
Investments/total assets (t-4)	-0.015 (0.007)	0.346* (0.145)	0.378*** (0.037)	0.473** (0.124)	0.040 (0.043)	0.023 (0.022)	-0.217 (0.116)
Capital/total assets (t-4)	-0.008 (0.005)	-0.618*** (0.113)	0.598*** (0.022)	0.026 (0.085)	-0.048 (0.028)	-0.050 (0.056)	0.564*** (0.099)
GDP growth (t)	0.006 (0.017)	-0.383** (0.117)	-0.168 (0.281)	0.033 (0.145)	-0.147*** (0.029)	0.096 (0.049)	-0.254* (0.101)
Inflation (t)	-0.045* (0.018)	-0.248 (0.172)	0.268 (0.188)	0.227** (0.054)	0.123 (0.072)	-0.196 (0.106)	0.319 (0.233)
3-month T-bill rate (t)	0.076 (0.044)	0.371 (0.325)	-0.498 (0.602)	-0.611 (0.501)	0.039 (0.137)	0.081 (0.118)	-0.088 (0.266)
BIS liabilities growth (t)	-0.005 (0.011)	0.133 (0.101)	0.176** (0.062)	0.052 (0.070)	-0.004 (0.019)	-0.006 (0.017)	0.058 (0.058)
No. of banks and observations	5/325	5/325	5/325	5/325	5/325	5/325	5/325
R-squared	0.292	0.317	0.563	0.399	0.113	0.004	0.495

Note: The sample goes from 1996Q4 to 2015Q4. All estimations are based on the fixed effects estimator. Robust standard errors are reported in brackets. (***, **, *) indicate significance at the 1%, 5%, 10% level. The R-squared reports the overall coefficient of determination. The regressions include a constant term and quarter dummies (not reported).