The Impact of Basel III on Trade Finance

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Contents

Executive Summary

Implementation of Basel III has already had material impacts on the financial industry both positive and negative. In international banking, the capital and liquidity rules have resulted in notable increases in the cost of trade finance and thus banks are having to reassess their strategic position in the global markets so they can achieve the profitability objectives expected by their shareholders. Some of the rules have not yet rolled-out and new ones are in the pipeline. While the Basel Committee on Banking has paved the way in leveling the playing field through the issuance of uniform standards, there are still differences across countries as to how they are being applied. These trends pose challenges, but there are also opportunities for banks to grow their business through cost advantages, innovative products, and methodical risk management supported by more sophisticated IT.

This report examines some of the challenges and opportunities posed by Basel III in international trade finance. The analysis describes how the capital and liquidity rules are impacting the cost of trade finance. The conclusions of this study include the following:

- By requiring more capital, Basel III capital rules have significantly increased the cost of trade finance. The factors explaining the increase in the cost are: (i) the risk-weights applied to claims on foreign banks; and (ii) the higher capital ratios, including the conservation buffer, and for the advanced approaches banks the additional countercyclical buffer and for the G-SIB institutions, the capital surcharge.

- One of the more important changes to the capital charge associated with trade finance is the risk weight assigned to short-term trade finance assets which increased from a fixed 20% for all non-OECD countries to the OECD-established Country Risk Classifications (CRC) for sovereign risk; and for claims on foreign banks the weight would be one risk level higher than the sovereign risk. As a result the risk weight of trade finance assets would rise from 20% to as much as 150%! Even through trade finance was not a real problem during the recent financial crisis, it is now subject to punishing levels of capital.

- For banks affected by the standardized approach to capital, the impact of the Basel III rules can run as high as a 17.1% increase in total costs in 2015 up to 23.3% by 2019. The higher costs of trade finance will in turn result in a decrease in the volume of trade finance business and thus the volume of merchandise and services trade.

- For the advanced approaches banks, the capital charge as percent of the loan amount doubles from 2015 through 2019 as a result of the additional buffers and surcharges to capital.

- Because of their market share, the cost implications of the capital rules for the advanced approaches banks are detrimental to the growth of trade finance. The impact of the much higher capital charge, which is compounded by the new CRC risk ratings for exposure to

foreign banks, will logically divert banks' capital from trade finance to other domestic-oriented banking business. This will leave a gap in access to financing to many exporters and importers in emerging markets, which is likely to a boom to non-bank financial companies that are not affected by the Basel III and other banking rules. The maximum percentage increase in the cost of trade finance for advanced approaches banks occurs in 2019 at 42.6%.

- The maximum percentage difference between Basel III and Pre-Basel III cost of trade finance for the banks utilizing the standardized and the advanced approaches with the additional capital surcharge for Global – Systemically Important Banks (G-SIB), shows a wide gap between a 23.3% increase for banks subject to the standardized approach versus 42.6% for advanced approaches.

- The definition and measurement of country risk is at the center of the controversy of how the Basel III rules have impacted the cost of a trade finance transaction. Contrary to the spirit of the Dodd-Frank Act (DFA), the capital rules reaffirmed the use of credit ratings in the determination of the risk weights for country risk which are now those to be determined by the OECD country risk ratings (CRC). As a rating agency, OECD's record should be reviewed regularly. One of the troubling issues raised by their ratings methodology occurred during the 2008 global financial crisis, when the OECD ratings not only overlooked the risks inherent in sovereign Greek debt, but actually continued to rate the country "investment grade" or CRC "0"after it had defaulted on its debt.

- The impact of the liquidity rules on the cost of trade finance works through the requirement that for every dollar of trade finance, some amount of a bank's assets has to be segregated as a low-yield instrument (HQLA) to comply with the Liquidity Coverage Ratio (LCR). In effect, the LCR acts as a complex reserve requirement rate.

- The impact of the LCR on the cost of trade finance works through two channels: first, higher cost of funds; and second, the opportunity cost of funds invested in HQLA, which could have been loaned out and yielded a significantly higher interest income. For example, in 2015, the average yield on loans at nine advanced approaches banks was 3.93%, and the average interest rate on excess deposits at the Fed was 0.27%, which represents a wide margin of opportunity loss.

- ***Compliance:*** The increase in non-interest expense due to compliance could easily exceed those for other regulatory factors in terms of the cost of trade finance. While compliance costs have increased substantially, trade transaction fees have remained stable; so that banks have had to rely on closing small accounts due to the large fixed costs associated with maintaining each of those relationships. For example, Trade-Based Money Laundering (TBML) is a major issue for banks.

- ***Opportunities in trade finance for regional banks:*** As demonstrated in this report, the advanced approaches banks are experiencing significantly higher costs for trade finance

than banks subject to the standardized approach. These cost differences could present a competitive opportunity for smaller banks. As the very large banks reallocate their tightly stretched capital resources from trade finance to more profitable lines of business which have not been adversely impacted by the Basel III rules, their reduced presence could be an opportunity for smaller banks to grow their trade finance business.

- ***Growth of world trade:*** While Basel III has increased the overall cost of trade finance, there are other elements that will influence banks' opportunities / challenges and profitability from trade finance. Growth of world trade is a key factor in the final equation; as it impacts the growth in the volume of trade finance and thus contributes to volume-induced cost economies for banks which can partially offset the increased regulatory costs.

- ***Monetary Policy Elements of the Capital and Liquidity Rules*** The capital conservation buffer and the countercyclical buffer can be construed as monetary policy instruments in that an increase in either one would contribute to slower growth in lending by banks. The liquidity rule is another policy instrument which limits the growth of financing activity. Bank excess deposits at the Fed are counted as L1 HQLA, thus the LCR contributes to the stability of those funds at the Fed as long as the Fed pays an attractive interest rate on those deposits.

This report has three main parts. The first presents an overview of the regulations on capital, focusing on some of the important steps in calculating the capital charge, and then explains how Basel III standards have impacted the cost of trade finance based on an approximation of banks' total cost of trade finance. The next part explains the main components of the rules on liquidity, followed by an analysis of how higher liquidity requirements of Basel III impact the cost of trade finance. The third part discusses some of the challenges and opportunities for banks as a result of the Basel III rules on capital and liquidity. While the analysis contained in this report addresses some of the key areas of Basel III that materially impact the cost of a trade finance transaction; it is not meant to be a detailed / comprehensive analysis of all the rules contained in the Dodd-Frank Act (DFA).

These topics are highly relevant to both U.S. and non-U.S. banks involved in international trade finance. While the current capital and liquidity rules are impacting U.S. banks through the DFA; Basel III has been or is in the process of being rolled out in other countries. It is important to know what the rules of the game are not just in the U.S. financial system but in other countries where banks engage in trade finance as differences in capital and liquidity rules could affect the cost and thus the pricing of the different financing products across different markets.

Overview of Capital Regulations

This section presents a summary of the key elements of bank capital under the U.S. version of Basel III – Dodd Frank Act (DFA). The changes affect the definition of capital, the risk weights applied to assets, and the minimum capital ratios.

Applicability of Capital Regulations

The capital rules vary by type of financial institution and the two basic methods for calculating capital are referred to as the standardized approach and the advanced approaches. While there are two methods, all banks are required to use the standardized approach.

There are three main categories of banks for which different capital rules apply: i) those subject to the standardized approach only; ii) those required to use both the standardized and the advanced approaches; and iii) the additional capital requirements for Global-Systemically Important Bank Holding Companies (G-SIB). The banks subject to the advanced approaches must calculate capital using both approaches, the standardized and the advanced approach, but use the lower of the two ratios, thus ensuring that advanced approaches banks are required to hold at least as much capital as the other banks.

The advanced approaches capital rules apply to banks that have "at least $250 billion in total consolidated assets or at least $10 billion in total on-balance sheet foreign exposure--and includes the depository institution subsidiaries of those firms."[1] Banks characterized as having G-SIB status are identified by a systemic risk profile developed by regulators. Currently there are eight financial institutions that belong to this category: Bank of America Corporation, The Bank of New York Mellon Corporation, Citigroup Inc., Goldman Sachs Group, Inc., JPMorgan Chase & Co., Morgan Stanley, State Street Corporation, and Wells Fargo & Company.

Market risk

Additional capital rules apply for banks that are exposed to market risk based on the volume of their securities trading activities, specifically those banks for which aggregate trading represents 10% or more of quarter-end total assets, or $1 billion or more. Both standardized- and advanced-approaches banks are subject to this rule if applicable. The methodology for calculating the market risk capital charge known as Value-At-Risk (VAR) asks the question: what is the worst that a bank could lose at a given confidence level. It estimates the worst loss over a given time horizon, usually a very short time of no more than a limited number of days. This statistical instrument was developed to value a financial institution's worst potential loss from its securities trading activities. If the confidence level is 99%, the VAR is used to calculate the amount of capital a bank would need to cover 99% of the potential losses incurred by the trading portfolio during a given time period. In this case a bank that is subject to the market risk capital would calculate the expected loss with only 1% probability that it would be greater than that amount, and then convert that dollar amount into an equivalent risk-asset amount based on the total

[1] See §3.100. A bank can also elect to apply the advanced approaches methodology.

capital ratio of 8%. The key driver of this risk metric is the assumed or estimated value of the bank portfolio's return volatility.

What is Capital?

The definition of capital was revised to emphasize the ability of a bank to have available sufficient capital to absorb losses during difficult times. Thus Tier 1 capital was redefined as comprised of two components: common equity Tier 1 and additional Tier 1 capital. In addition, most of the deductions and adjustments to capital are now made to common equity Tier 1 capital. The new rules also require that most of a bank's Accumulated Other Comprehensive Income (AOCI) be included in regulatory capital. The following formulas provide key elements of each component of capital:[2]

Common Equity Tier 1 Capital =	
	Common stock instruments
+	*Retained earnings*
+	*Accumulated Other Comprehensive Income (AOCI),* [subject to some exclusions related to fair market value of the instruments (banks not subject to the advanced approaches can make an opt-out election with respect to the capital treatment for AOCI)]
+	*common equity tier 1 minority interest,* [subject to the limitations]
+	*Common stock issued as part of an Employee Stock Ownership Plan (ESOP)*
–	*Goodwill and all other intangible assets* [other than MSAs]
–	*Deferred Tax Asses*
–	*Any gain-on-sale in connection with a securitization exposure*
–	*investments in the bank's own stock*
– / +	*Other adjustments,* [(including the 10% and 15% common equity tier 1 capital deduction thresholds, and investments in capital on unconsolidated financial institutions]

[2] The formulas for Common equity Tier 1, additional Tier 1, Tier 2, and total capital do not include all the allowable instruments; for greater details see the FDIC, Final Rule (2013)

Additional Tier 1 Capital =	
	Noncumulative perpetual preferred stock and related surplus, [subject to specified criteria]
+	*Tier 1 minority interests,* [subject to limitations]
+	*Non-qualifying capital instruments that Currently Quality as Tier 1,* [e.g. trust preferred securities and cumulative perpetual preferred stock]
+	*TARP instruments that currently qualify as tier 1 capital,* [TARP is the Troubled Asset Relief Program of the U.S. Government during the financial problems in 2008]
+	*Additional tier 1 capital instruments Issued as part of an ESOP*

Tier 2 Capital =	
	Subordinated debt and preferred stock
+	*Total capital minority interests,* [subject to limitations]
+	*Allowance for Loan & Lease Losses (ALLL),* [not exceeding 1.25% of the bank's standardized risk-weighted assets]
+	certain other instruments issued before 2010

Minimum Capital Ratios

The Basel III minimum capital ratios have significantly raised the bar for capital thresholds. Overall, the minimum capital ratios place greater emphasis on common equity tier 1 capital, which is subjected to capital-lowering deductions and adjustments in order to arrive at the common equity capital amount used as the numerator of the ratio, and a higher value of the denominator through the calculation methodology for exposed assets and conversion of off-balance sheet items. The common equity Tier 1 ratio is a new requirement of Basel III to ensure that banks hold sufficient high-quality capital to absorb losses. There is also an increase in the total capital ratio through the addition of buffers and surcharges.

Standardized Approach Capital Rules

All banks are required to meet the minimum ratios as shown in Table 1 below which also shows the roll-out of the capital ratios through 2019. The capital conservation buffer represents a capital reserve whose value reflects the experience of U.S. banks in previous cyclical downturns. Banks that do not meet the capital buffer requirements will be subject to restrictions on the amount of

capital distributions and some discretionary bonus payments to executives that a bank can pay out of retained income.

Table 1: U.S. Dodd-Frank Act - Capital Ratios – Standardized - Approach

	Pre-Basel III	Basel III				
	2014	2015	2016	2017	2018	2019
Leverage Ratio	3.0/4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Tier 1: Common Equity - RWA	NA	4.5%	4.5%	4.5%	4.5%	4.5%
Tier 1 Capital - RWA	4.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Total Capital - RWA	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Capital Conservation Buffer	NA	0.0%	0.625%	1.250%	1.875%	2.500%
Total Capital + Buffer	8.0%	8.0%	8.6%	9.3%	9.9%	10.5%

Notes: RWA is Risk-weighted assets. Totals have been rounded.
The Capital Conversation Buffer should effectively be comprised of common equity Tier 1.
Source: FDIC, Final Rule, (2013)

Standardized Approach for Risk Weighted Assets

The standard approach to risk-weighted assets basically applies a prescribed set of percentages to every type of asset on- and off- the balance sheet. In the case of off-balance sheet items such as commitments, guarantees, and derivative contracts, there are very precise methodologies to calculate the exposed amounts either through collateral valuations subject regulatory haircuts, unwinding of derivatives positions, and bank-developed internal systems to arrive at securitization exposures.[3]

Table 2 below shows the set risk-weight percentages applied to a number of asset types, after a bank has determined the amount of affected exposure in each case. The items shown in the table reflect a broad spectrum of asset types where most have remained the same as before Basel III; although the methodology for calculating the exposed amount in different categories may have been revised. The table also includes the risk-weights that are specific to trade finance transactions which will be used in the in the next section of this paper to calculate the impact on the cost of a trade finance transaction. While the risk weights for residential 1- 4 family homes are the same, under Basel III the underwriting conditions have become very restrictive, i.e. the verification of income among other items. High volatility Commercial Real Estate (CRE) has seen a notable increase in the risk weight in light of the real estate crisis experienced during the last recession in 2007 – 2009. Relative to almost all items subject to risk weights, the biggest relative increase in risk weights in Basel III are for claims on foreign banks, even though trade finance was not a real problem during the recent financial crisis.

[3] As per section 939A of the Dodd-Frank Act, banks are not to rely on credit ratings to determine risk weights, rather their own internal methodology which can include references to rating agencies.

Table 2: Standardized Approach to Risk Weighted Assets – Selected Categories*		
Claims on:	**Pre-Basel III**	**Basel III**
U.S. Government, its agencies & the Fed	**0%**	**0%**
Gov. sponsored enterprises	**20%**	**20%**
Qualifying securities firms	**20%**	**100%**
1-4 family homes	**50% / 100%** depends on underwriting conditions & whether owner occupied	**50 / 100%** depends on underwriting conditions & whether owner occupied
Corporate	**100%**	**100%**
High volatility CRE	**100%**	**150%**
Consumer loans	**100%**	**100%**
Past due	Weight does not change; however for 1-4 family loans PD > 90 days **100%**	**150%** Portion not guaranteed or secured
Foreign governments & their central banks	**0%** OECD governments **20%** conditional claims on OECD governments **100%** non-OECD with	**0 – 150%**Dependent on OECD Country Risk Classification (CRC) **0%** for OECD members with no CRC **100%** sovereigns with no CRC **150%** if sovereign defaulted
Foreign banks**	**20%** in OECD countries **20%** short-term claims on banks in non-OECD countries	**20 – 150%** depending on OECD status or CRC **100%** if country does not have a CRC grade **150%** if sovereign defaulted
Off-balance sheet CCF	**0%** commitment w maturity ≤ 1yr. & unconditionally cancellable **20%** self-liquidating trade-related contingent items **50%** commitment w maturity > 1yr. not unconditionally cancellable **100%** includes guarantees, REPOS, and standby L/Cs	**0%** commitment w maturity ≤ 1yr. & unconditionally cancellable **20%** commitment w maturity ≤ 1yr. & not unconditionally cancellable **20%** self-liquidating trade-related contingent items **50%** commitment w maturity > 1yr. not unconditionally cancellable **100%** includes guarantees, REPOS, and standby L/Cs plus credit-enhancing representations
(*) the items listed in this table do not represent a comprehensive list of all items subject to risk-weights; the selection covers a broad base of asset categories including those associated with trade finance transactions. (**) in the case of claims on foreign banks the risk weights are one level higher than those corresponding to the sovereign. CRE is Commercial Real Estate, and CCF is Credit Conversion Factor		
Source: FDIC (2014)		

Advanced Approaches Capital Rules

In addition to the standardized approach, Banks subject to the advanced approaches are also required to determine their capital requirements using internal statistical models to arrive at the risk-weighted assets. With this method banks use their own risk-measurement models to determine their capital charge subject to their own statistical models and other calculations prescribed by regulators. The total capital ratio and the capital conservation buffer are the same as with the standardized approach; the additional capital for the advanced approaches banks consist of the countercyclical buffer and the G-SIB surcharge for those institutions that have the elements of systemic risk.

Table 3: U.S. Dodd-Frank Act - Capital Ratios - Advanced Approaches & G - SIBs

	Pre-Basel III	Basel III				
	2014	2015	2016	2017	2018	2019
Leverage Ratio	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Supplemental Leverage Ratio	NA	3.0%	3.0%	3.0%	3.0%	3.0%
Tier 1: Common Equity - RWA	4.0%	4.5%	4.5%	4.5%	4.5%	4.5%
Tier 1 Capital - RWA	4.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Total Capital - RWA	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Capital Conservation Buffer (CET1)	-	0.0%	0.625%	1.250%	1.875%	2.500%
Countercyclical buffer (CET1) (*)			0.625%	1.250%	1.875%	2.500%
G-SIB Capital Surcharge (CET1) (*)			1.875%	2.250%	2.625%	3.000%
Total Capital + Buffers	8.0%	8.0%	11.1%	12.8%	14.4%	16.0%

Note: CET1 is Common Equity Tier 1 Capital. The totals have been rounded
G-SIB is Global-Systemically Important Bank Holding Companies.
(*) the percentage varies for individual banks depending on specified indicators and other considerations by regulators. Totals have been rounded.
Source: FDIC, Final Rule, (2013).

The Impact of Basel III Capital Rules on the Cost of Trade Finance

By requiring more capital, Basel III capital rules have significantly increased the cost of trade finance. The factors explaining the increase in the cost are: (i) the risk-weights applied to claims on foreign banks; and (ii) the higher capital ratios, including the conservation buffer, and for the advanced approaches banks the additional countercyclical buffer and for the G-SIB institutions, the capital surcharge. This section presents an estimate of the impact of the new capital rules on the cost of trade finance by comparing the costs before- and after- Basel III.

The cost components considered for this analysis are the banks' cost of funds, the charge for credit risk, the banks' overhead, and the capital charge. There may be other direct costs which have not been included in these calculations. The cost estimates are derived from the Call-Reports for all U.S. commercial banks and compiled in the FDIC – SDI data base, excluding the nine banks that fall under the advanced approaches calculations.[4] Bank cost data is not available in sufficient detail to extract those expenses directly linked to trade finance, thus the calculations rely on bank-wide cost percentages, although many of a bank's resources are indeed utilized in trade finance, directly and indirectly, so that the use of adjusted non-interest expenses is a good approximation.[5] Thus the figures used in this analysis represent industry averages, not just those actively involved in international trade finance. At the same time, these estimates do not include a separate category for the cost of compliance since it is not included in the banks' publicly available information; but is included in overhead expenses.

The potential contribution from the Basel III liquidity rules to the cost of trade finance, through the Liquidity Coverage Ratio, is discussed separately in the next section of this report.

The Calculations

One of the more important changes to the capital charge associated with trade finance is the risk weight assigned to short-term trade finance assets which increased from a fixed 20% for all non-OECD countries to the OECD-established Country Risk Classifications (CRC) for sovereign risk; and for claims on foreign banks the weight would be one risk level higher than the underlying sovereign risk (see Table 4).

Table 4: OECD Country Risk Classifications for Claims on Foreign Banks

	CRC Rating	Risk Weight (%)
Sovereign CRC	0 – 1	20
	2	50
	3	100
	4 – 7	150
OECD Member with No CRC		20
Non OECD Member		100
Sovereign Default		150
Note: based on the OECD description of the CRCs, a rating of 0 would be lowest and a 7 the highest risk categories.		

[4] See FDIC's Statistics on Depository Institutions (SDI).

[5] The calculations in this report use adjusted non-interest expenses, which are non-interest expenses minus total amortization expense and goodwill impairment losses.

Tables 5 – 7 show a comparison of the cost of a trade finance transaction between the Pre-Basel III and the current Basel III capital rules through the rolling out-period 2015 – 2019. Table 5 below shows the estimated cost of a trade finance transaction based on industry averages for all commercial banks excluding those subject to the advanced approaches. In order to focus on the cost implications of Basel III due to the capital rules, the non-capital cost components are assumed to remain constant as a percent of the loan amount during the roll-out period of the capital rules through 2019. As explained above, these figures do not show the explicit cost of compliance, although it is already included in the total overhead expense. Since the cost of compliance for a bank that is actively involved in trade finance is notably higher than for other banks that are not active in international banking, the overhead expense figure in the table under-estimates the total costs associated with a trade finance transaction. The sub-total non-capital costs thus represents the estimated cost of a trade finance transaction, with the above-mentioned exclusions, before a bank applies the capital charge for a short-term trade finance asset.

Table 5: Standardized Approach Banks – Assumptions for Non-capital Costs

Foreign Trade Transaction: Short-term Exposure		
Loan amount	$1,000,000	
Bank's cost of equity capital	7.50%	
	Pre-Basel III	**Basel III**
	2014	**2015 - 2019**
Cost of funds	0.46%	0.46%
Credit risk (*expected Loss*)	1.20%	1.20%
Overhead	2.77%	2.77%
Sub-total non-capital costs	4.43%	4.43%

Note: these numbers are estimates based on the FDIC SDI data data for all commercial banks excluding the banks subject to advanced approaches.
Individual banks may have different cost structures.

Table 6 shows the estimated capital charge for a representative short-term trade finance loan based on the different CRCs applied by OECD and compared to the Pre-Basel III charge which applied a risk weight of 20% to any non-OECD country. In order to calculate the capital charge as a cost factor, the average return on equity for the standardized approach banks as shown in Table 5 at 7.50%.[6]

[6] A more rigorous approach would be to estimate the equity cost of capital using financial models of return on equity.

Table 6: Capital Charge for Foreign Trade Transaction (% of loan) – Standardized Approaches Banks						
	Pre-Basel III	Basel III				
	2014	2015	2016	2017	2018	2019
Claims on foreign bank	0.12%					
OECD CRC Ratings:						
0 - 1		0.12%	0.13%	0.14%	0.15%	0.16%
2		0.30%	0.32%	0.35%	0.37%	0.39%
3		0.60%	0.65%	0.69%	0.74%	0.79%
4 - 7		0.90%	0.97%	1.04%	1.11%	1.18%
Note: this table shows the impact of OECD CRC ratings on a bank's capital charge.						

The final step of the calculations is shown on Table 7, the top part of the table shows the estimated total cost of a trade finance transaction, which is simply the sum of the capital and non-capital cost percentages from the previous tables, and the bottom half of the table shows the percent difference in the total cost of a trade finance transaction for each of the CRC ratings and for the years 2015 – 2019 with respect to the estimated cost in 2014 which represents the Pre-Basel III cost.

Significantly higher costs are associated with trade finance in countries rated in the CRC range of 3 – 7. For the CRC rating of 0 – 1 the percent increase in cost reflects solely the impact of the increase in the minimum capital ratio. For banks affected by the standardized approach to capital, the impact of the Basel III rules can run as high as a 17.1% increase in total costs in 2015 up to 23.3% by 2019. The higher costs of trade finance will in turn result in a decrease in the volume of trade finance business and thus the volume of merchandise and services trade.

Table 7: Total costs for trade transaction (capital & non-capital) - Standardized Approaches Banks						
	Pre-Basel III	Basel III				
	2014	2015	2016	2017	2018	2019
I. Claims on foreign bank	4.55%					
OECD CRC Ratings:						
0 - 1		4.55%	4.56%	4.57%	4.58%	4.59%
2		4.73%	4.75%	4.78%	4.80%	4.82%
3		5.03%	5.08%	5.12%	5.17%	5.22%
4 - 7		5.33%	5.40%	5.47%	5.54%	5.61%
II. Post- vs Pre-Basel III total costs (% difference)						
Claims on foreign bank	0.0%					
OECD CRC Ratings:						
0 - 1		0.0%	0.2%	0.4%	0.6%	0.8%
2		4.0%	4.5%	5.0%	5.5%	6.0%
3		10.5%	11.6%	12.6%	13.6%	14.7%
4 - 7		17.1%	18.7%	20.2%	21.8%	23.3%

The impact of Basel III on the cost of trade finance for advanced approaches banks is substantially higher than for the standardized approach banks. The difference is due to the countercyclical buffer and the G-SIB surcharge. The non-capital cost calculations as percent of total assets shown in Table 8 are derived from FDIC – SDI data for the nine banks for which total consolidated assets were $250 billion and higher as of December 2015, which is moderately lower than for the standardized approach banks (see Table 5).

Table 8: Advanced Approaches Banks – Assumptions for Non-capital Costs		
Foreign Trade Transaction: Short-term Exposure		
Loan amount	$1,000,000	
Bank's cost of equity capital	8.00%	
	Pre-Basel III	Basel III
	2014	2015 - 2019
Cost of funds	0.35%	0.35%
Credit risk (*expected Loss*)	1.30%	1.30%
Overhead	2.43%	2.43%
Sub-total non-capital costs	4.08%	4.08%
Note: these numbers are estimates based on the FDIC SDI data for all commercial banks subject to advanced approaches. Individual banks may have different cost structures.		

Tables 9 and 10 show the same calculations as in the previous case for the standardized approaches banks. In table 9, the capital charge as percent of the loan amount doubles from 2015 through 2019 as a result of the additional buffers and surcharges to capital; whereas the increases for the standardized approaches banks is much less pronounced.

Table 9: Capital Charge for Foreign Trade Transaction (% of loan) – Advanced Approaches Banks

	Pre-Basel III	Basel III				
	2014	2015	2016	2017	2018	2019
Claims on foreign bank	0.13%					
OECD CRC Ratings:						
0 - 1		0.13%	0.18%	0.20%	0.23%	0.26%
2		0.32%	0.45%	0.51%	0.58%	0.64%
3		0.64%	0.89%	1.02%	1.15%	1.28%
4 - 7		0.96%	1.34%	1.53%	1.73%	1.92%

Table 10: Total costs (capital & non-capital) – Advanced Approaches Banks

	Pre-Basel III	Basel III				
	2014	2015	2016	2017	2018	2019
I. Claims on foreign bank	4.21%					
OECD CRC Ratings:						
0 - 1		4.21%	4.26%	4.28%	4.31%	4.34%
2		4.40%	4.53%	4.59%	4.66%	4.72%
3		4.72%	4.97%	5.10%	5.23%	5.36%
4 - 7		5.04%	5.42%	5.61%	5.81%	6.00%
II. Post- vs Pre-Basel III total costs (% difference)						
Claims on foreign bank	0.0%					
OECD CRC Ratings:						
0 - 1		0.0%	1.2%	1.8%	2.4%	3.0%
2		4.6%	7.5%	9.1%	10.6%	12.2%
3		12.2%	18.1%	21.2%	24.3%	27.4%
4 - 7		19.8%	28.7%	33.3%	38.0%	42.6%

Because of their market share, the cost implications of the capital rules for the advanced approaches banks are detrimental to the growth of trade finance. The impact of the much higher capital charge, which is compounded by the new CRC risk ratings for exposure to foreign banks,

will logically divert banks' capital from trade finance to other domestic-oriented banking business. This will leave a gap in access to financing to many exporters and importers in emerging markets, which is likely to a boom to non-bank financial companies that are not affected by the Basel III and other banking rules. The maximum percentage increase in the cost of trade finance for advanced approaches banks occurs in 2019 at 42.6%.

The maximum percentage difference between Basel III and Pre-Basel III cost of trade finance for the banks utilizing the standardized and the advanced approaches with G-SIB surcharge, shows a wide gap between a 23.3% increase for banks subject to the standardized approach versus 42.6% for advanced approaches.

Overview of Liquidity Regulations

Prior to Basel III and the Dodd-Frank Act (DFA) liquidity rules consisted basically of banks' reserve requirements, limits on daylight overdrafts at the Fed – the payments system, and bank-designed stress tests on liquidity. Basel III liquidity rules were influenced by the financial problems encountered during the recession in 2008 which many felt were caused by market illiquidity, so the pendulum swung in the other direction – requiring banks to hold much greater liquidity. The centerpiece of the liquidity rules is the Liquidity Coverage Ratio (LCR) to cover liquidity risk during the next 30 days; and the Net Stable Funding Ratio (NSFR) to assess funding management out to a one year horizon, although it has not yet been fully implemented.

The LCR is supposed to harness a bank's cash-flows during a 30-day period backed by a solid base of High Quality Liquid Assets (HQLA). Basically no on- and off-balance sheet item has been spared by the new rules.

The LCR rules are applicable at two levels: the first, a comprehensive approach for those banks that are subject to the advanced approaches capital rules, which have at least $250 billion in total consolidated assets or at least $10 billion in total on-balance sheet foreign exposure--and includes the depository institution subsidiaries of those firms; and second, a modified approach for U.S. holding companies with more than $50 billion in consolidated assets.[7] The major difference between the two approaches to liquidity is that under the comprehensive approach banks are required to comply with the LCR on a daily basis, thus having to compute their available HQLA and net cash flows every day; while those affected by the modified version only have to go through the process once a month. Also, with respect to the denominator of the LCR, the modified approach lowers the outflow rates to 70% of those applicable to the comprehensive approach and does not apply the Add-on component, which is explained below.

[7] As of December 2015, there were nine U.S. banks that had consolidated assets greater than $250 billion, which represented 54.2% of total assets of U.S. commercial banks; and 26 banks with total assets between $50 and $250 billion, representing 20.3% of total U.S. banks' assets; combined, the top 35 banks in assets represented 74.5% of total U.S. commercial banking assets.

The LCR ratio rule is as follows:

$$LCR = \frac{HQLA}{Net\ cash\ outflow\ (30\ days)} \geq 1.0$$

Thus a bank has to hold in HQLA an amount that at least covers the cumulative net cash outflows during a 30-day period.

The LCR numerator

HQLA, which is supposed to be calculated at market or fair value, is comprised of three categories of highly liquid assets: Level 1; Level 2A, which receive a 15% value haircut/discount before including the value in the formula; and Level 2B, which receive a 50% value haircut.

- Level 1 HQLA (L1) include Reserve Bank balances (excluding reserve requirements), U.S. Government securities, certain sovereign and multilateral organization securities, and certain foreign sovereign debt securities;

- Level 2A HQLA (L2A) include U.S. Government Sponsored Enterprise securities and certain sovereign and multilateral organization securities; and

- Level 2B HQLA (L2B) include "investment grade" corporate debt securities, publicly traded shares of common stock, and assets securing a transaction.

While the definitions appear to be straightforward, there are very strict and extensive rules on how a security qualifies as HQLA. The liquidity rules emphasize the use of L1 assets, so there is a limit on total L2 assets (L2A + L2B), which cannot exceed 40% of total HQLA; and a sub-limit on L2B assets, which cannot exceed 15% of total HQLA. In removing the excess HQLA a bank has to go through a two-step calculation: first the excess L2 amount (excessL2) and then the L2B excess amount (excessL2B).[8] The calculation of total excess HQLA assets is determined as follows: excessHQLA = excessL2 + exccessL2B

In performing the LCR calculations a bank has to derive two types of HQLA amounts, the unadjusted and the adjusted; where the unadjusted HQLA is simply referred to in this report as HQLA and the other AdjHQLA. The calculation of the adjHQLA involves the unwinding of all secured funding transactions, secured lending transactions, asset exchanges, and collateralized derivatives transactions that mature within 30 calendar days of the calculation date. The unwinding of secured transactions releases / draws down HQLA collateral which results in the adjustedHQLA amount. These secured transactions may include HQLA which should not be counted as part of the numerator. Thus there are two sets of calculations for the excess HQLA amounts using a two-step process: first, the excessHQLA; and second, excess-AdjHQLA

[8] The calculation for excessL2 and excessL2B is done in sequence. Some algebra is needed to derive the formula for the excess amounts. The first step is the excess L2: for L2, the excessL2 = [(L2A + L2B) – (0.6667 * L1), or 0 if negative]; and in the second step, the excessL2 amount is subtracted from L2B: excessL2B = [(L2B – excessL2) – (0.1765*(L1 + L2A)), or 0 if negative]. Then the excessHQLA = excessL2 + excessL2B.

amounts. Deriving two sets of excess HQLA amounts provides a more rigorous process of scrubbing the HQLA in arriving at the final number in the numerator.

Finally, the amount of high-quality liquid assets that goes in the numerator of the LCR is as follows: HQLA = [(L1 + L2A + L2B) – (maximum of: excessHQLA or ExcessAdjHQLA)].

The LCR Denominator

The LCR denominator, net cash outflows, is based on a standardized approach to the determination of the outflows and inflows during the 30 days immediately after the date of calculation for **all** on- and off-balance sheet items, or their aggregation in homogenous items, where all values have to be expressed at market prices or fair value as of the date of the calculation. All contractual cash-flows due within the 30 day period will be spread over the corresponding day 1 through 30. In the case of contractual payments with optionality, the required assumption is to place the outflow at the earliest contractually-allowed day and the inflows at the latest day. Some contractual payments that a bank is to receive are also prescribed by the rules to have an inflow rate less than 100% of the payable amount; for example, when a percentage of the amount is prescribed to be rolled-over.

The most prescriptive part of the calculation is the identification of the outflows for non-maturity items. The rules establish fixed outflow and inflow rates as shown by the selected examples in Tables 11 – 14 below. These cash flows are to be reported in one of two columns (see the appendix to this report for a sample table from the FDIC – Rule document that explains this process): one column if to enter the cumulative amount on day 30 of the non-maturity items, so days 1 – 29 are blank; and the second column is for the daily contractual cash flows (see the appendix to this report for a sample table from the FDIC – Final Rule document). In some cases, items such as certain transaction accounts which are non-maturity deposits are prescribed to occur on day 1, and thus posted in the column with daily cash flows. On the other hand, the amount of a liquidity facility extended to a bank is required to have a zero inflow. Another column is added to each of the daily cash-flow columns which shows the cumulative cash flows: one for the cumulative daily outflows and the other for the cumulative daily inflows. To the right of the above six columns of cash flows is added the seventh column for the Net cumulative daily maturity outflows (see the appendix table).

Table 11: Bank Deposit Outflows

Retail Deposits	Outflows
Stable	3%
Other	10%
Placed by 3rd party On behalf of retail customer & 100% FDIC insured	40%
Note: a stable deposit is a retail deposit with 100% FDIC insurance.	

Table 12: Bank Commitment outflows*	
For Amounts that can be drawn up to 30 days:	**Outflow**
Undrawn credit & liquidity facilities to:	
Affiliated bank	0%
Retail customer	5%
Credit facility to wholesale non-financial customer	10%
Liquidity facility to wholesale non-financial customer	30%
Credit & liquidity facilities to depository institution & foreign banks	50%

* there are some exclusions such as mortgage commitments

Table 13: Bank Funding	Outflows
Unsecured wholesale funding	
Operational Deposits	
with deposit insurance	5%
all other operational deposits	25%
All other unsecured wholesale funding	100%

Table 14: Bank Claims	Inflows
Unsecured Wholesale funding Inflows:	
from financial institutions	100%
from corporate clients	50%

The separation of the contractual and non- maturity cash flows is done in order to calculate a further adjustment to the net cash flows called the Add-on.[9] The Add-on amount is supposed to measure the peak day for cumulative net outflows during the 30-day period and calculates the difference with respect to the cumulative net outflow for day 30. The Add-on is supposed to capture maturity mismatches that occur during the 30 day period. A bank could encounter a "bunching" of payments (outflows) during one of the 30 days so that its cumulative net outflow as of that day could be very high; and yet show a very "calm" day 30 in terms of a more moderate amount of cumulative net outflows. For example, if the peak day for cumulative net outflows occurs on day 11 for a cumulative net outflow amount up to that day of $250 million

[9] The full name is the Maturity mismatch add-on.

and the cumulative net outflow on day 30 was $100 million, then the Add-on amount would be $250 - $100 = $150 million (see the Appendix table for a more detailed example).

The standard / prescribed approach to outflows and inflows which are used in determining the denominator of the LCR, may result in a misspecification of cash flows when there is a significant increase in market volatility that disrupts the cumulative net cash outflow amounts. Since the outflow and inflow rates are "locked-in" as part of the regulations, not only will individual banks have very different structures of outflows / inflows, but if there is a cyclical period of increased market volatility affecting different items in diverse ways, the "fixed" outflow / inflow rates may not be appropriate. Greater flexibility on these rules may be advisable.

Thus, in determining the adjusted amount of the LCR denominator, which represents the net cash outflows, the following formula is applied:

Net Cash Outflow = Outflows – Inflows (restricted) + Maturity mismatch add-on

Or in greater detail:

= (Non-maturity outflows + cumulative adjusted maturity outflows) – {minimum of: [(75% of total cumulative outflows at day 30), or (inflows that are not assigned a specific maturity date + cumulative maturity inflows)}[10]

The amount of cumulative inflows during the 30 day period that is allowed in the Net Cash Outflow formula is limited to either 70% of total cumulative outflows at day 30 or total cumulative inflows, whichever is a smaller amount. This condition establishes a floor on how much HQLA a bank is supposed to carry on its books.

How Liquidity Rules Impact the Cost of Trade Finance

The impact of the liquidity rules on the cost of trade finance works through the requirement that for every dollar of trade finance, some amount of a bank's assets has to be segregated as a low-yield instrument (HQLA) to comply with the LCR. Prior to Basel III, other than reserve requirements and a very minor liquidity buffer to maintain the bank's daylight over-draft position at the Fed, there were no explicit liquidity costs associated with a trade finance transaction. The calculation of this cost can be determined in the same way as the cost of reserve requirements in determining the all-in cost of funds, except that the HQLA provides a modest yield.

[10] This formula shows how the net cash flow amount is determined; however, there may be specific adjustments to selected items of the balance sheet, which have not been spelled out in this overview, for which the inflows and outflows appear to belong in one column but the rules have assigned them to another.

As an example of the impact of the LCR on a trade finance transaction, if a U.S. bank has a committed line to a foreign bank, the undrawn balance has a prescribed outflow rate of 50%. Thus the bank has to invest in an HQLA an amount equal to 50% of the amount of the unused commitment. Under Basel III, a bank commitment now has an explicit cost in the form of a relatively low-yield HQLA which has to be funded at the bank's cost of funds.

$$i_{Net\ Cost\ of\ funds} = \frac{i_{cost\ of\ funds} - (i_{yield\ on\ HQLA} \times CORate)}{1 - CORate}$$

Where :

$i_{\text{net cost of funds}}$ is the bank's net cost of funds;

$i_{\text{cost of funds}}$ is the bank's cost of funds rate;

$i_{\text{yield on HQLA}}$ is the bank's average yield on HQLA; and

CORate is the specific cash outflow rate assigned to this item for which the bank has to segregate that percentage of the value of the commitment in the form of a HQLA.

In the example of the committed line of credit, a bank's net cost of funds, assuming that the commitment is backed by L1 HQLA would depend on the bank's particular choice of HQLA. As shown in table 15 below, whether the bank uses excess deposits at the Fed or a 3-month U.S. Treasury Bill as the HQLA, makes a notable difference in the net cost of funds to support an existing bank commitment: 0.30% using the Fed rate versus 0.51% with U.S. Treasury Bills. This could explain the Fed's tactic of paying banks a significantly high interest rate on their excess deposits, which would incentivize banks to keep their excess liquidity at the Fed.

Table 15: Impact of HQLA on Net Cost of Funds

	Fed Rate	3mTB
$i_{\text{net cost of funds}}$	0.30%	0.51%
$i_{\text{cost of funds}}$	0.40%	0.40%
$i_{\text{yield on HQLA}}$	0.50%	0.29%
CORate	50.00%	50.00%

Note:
the Fed Rate is the interest rate the Fed pays banks on their excess deposits at the Fed and coincides with the top end of the Fed Funds band; and
the 3mTB is the three-month U.S. Treasury Bill

The impact of the LCR thus works through two channels: first, the cost of funds, which as shown in Table 15 would increase the cost of a trade finance transaction; and second, the opportunity cost of funds invested in HQLA, which could have been loaned out and yielded a significantly higher interest income. For example, in 2015 the average yield on loans at nine advanced

approaches banks was 3.93%, and the average interest rate on excess deposits at the Fed was 0.27%, which represents a wide margin of opportunity loss.[11]

Challenges and Opportunities Raised by the Capital and Liquidity Rules and their Impact on Trade Finance

Compliance: The Other Major Regulatory Impact on the Cost of Trade Finance

In trade finance numerous regulatory agencies have created a complex web of rules, which vary by country, involving numerous financial, legal, and political factors. One of the biggest cost components in compliance is the penalty of non-compliance, and many times the penalty is not for doing something wrong but for not doing enough. For example, Trade-Based Money Laundering (TBML) is a major issue for banks. Banks have to monitor their trade transactions for any instance of under-invoicing of imports and over-invoicing of exports. The movement of cargo must be subjected to an exhaustive surveillance of both the paper- the funds- and the physical-trail involved in the movement of the goods and documents from the supplier to the end-buyer.

The increase in non-interest expense due to compliance could easily exceed those for other regulatory factors in terms of the cost of trade finance. While compliance costs have increased substantially, trade transaction fees have remained stable; so that banks have had to rely on closing small accounts due to the large fixed costs associated with maintaining each of those relationships.

Unfortunately, there is no uniform accounting by banks of compliance-related costs. The only way to measure the magnitude of the compliance burden would be to establish a uniform reporting of compliance costs. Clearly such an initiative would entail additional IT expenses, but the benefits in terms of revealing the true cost of compliance, and thus enabling banks to manage these expenses more effectively and to determine the profitability of their client relationships more accurately; and empowering numerous regulatory agencies with the information needed to assess the costs and benefits of various regulatory programs, could significantly outweigh the costs.

Rating Agencies and Country Risk Classifications

The definition and measurement of country risk is at the center of the controversy of how the Basel III rules have impacted the cost of a trade finance transaction. According to the OCC, country risk is the risk that economic, social, and political conditions and events in a foreign country will affect the current or projected financial inflows and outflows of a bank and thus impact the bank's resilience. From the perspective of trade finance, it measures the likelihood of

[11] This example uses the average yield on the banks' loan portfolio during 2015 as an approximation to the yield on short-term trade finance loans.

a country's inability or unwillingness to meet its external obligations; thus the probability of a sovereign default.

One of the goals of the Dodd-Frank Act (DFA) was to weaken the "oligopoly of government-sponsored rating agencies" which in legislators' views had overlooked the risks of sub-prime lending and the oncoming of the real estate market crash in 2008 culminating in October 2008 when the LIBOR – Fed Funds spread reached 310 bps.

According to section 939A of Dodd-Frank Act, in the assessment of what constitutes a creditworthy or an "Investment Grade" issuer, regulatory agencies are required to "to remove any reference to or requirement of reliance on credit ratings and to substitute in such regulations such standard of credit-worthiness as each respective agency shall determine as appropriate for such regulations."

Unfortunately, the capital rules reaffirmed the use of external credit ratings in the determination of the risk weights for country risk which are now determined by the OECD Country Risk Classifications (CRC). Banks are required to use a single sovereign rating without differentiation as to the type of transaction nor the actual payment experience as is the methodology utilized by banks under the advanced approaches. Prior to Basel III, U.S. banks based their assessment of country risk used in determining the capital charge on their own analysis and many institutions developed an effective data-driven dual-rating scheme that separated short-term trade-related from medium- to long-term country risk.

As a rating agency, OECD's record should be reviewed regularly. One of the troubling issues raised by their ratings methodology occurred during the 2008 global financial crisis, when the OECD ratings not only overlooked the risks inherent in sovereign Greek debt, but actually continued to rate the country "investment grade" or CRC "0"after it had defaulted on its debt. A sovereign default is defined by the regulatory Agencies' final rules for capital as "noncompliance by a sovereign with its external debt service obligations or the inability or unwillingness of a sovereign government to service an existing loan according to its original terms."[12]

[12] FDIC (2013)

Table 15: Country Risk Rating and OECD CRCs: The Case of Greece								
	2006	2007	2008	2009	2010	2011	2012	2013
OECD CRC	0	0	0	0	0	0	0	U
Credit Events				1, 2	3	4	5	

1: In October 2009, Greek Government disclosed that the budget deficit had been substantially higher than initial estimates (15.6% of GDP).

2: S&P & Moody's downgraded Greece one notch in December 2009.
3: in April 2010 S&P downgraded Greek debt to junk status.
4a: in July, 2011 a debt "restructuring" with private sector involvement was negotiated by Euro-Governments. Agreement reached Regarding a 21% reduction in the net present value of Greek debt service.
4b: in October 2011 the debt "haircut" was increased to 50%.
5: March 2013 the International Swaps and Derivatives Association (ISDA) Ruled that a restructuring credit event had occurred.
U: high income Euro area country not reviewed as of 2013.

Source: OECD Historical CRCs, and M Xafa (2014)

The methodology of the OECD rating agency needs to be made more transparent, including individual country reports substantiating the basis for their ratings. It would appear that political considerations were made in deciding not to downgrade the CRC for Greece, despite the fact that the other rating agencies had already done so starting in 2009. Banks now have to apply a double standard on country rating: their own credit risk analysis, which is based on an extensive methodology established in the latest regulatory Handbook, and the risk weight factor for capital charge which is based on the OECD rating agency.[13] If the OECD rates a country "0" but a bank rates the country's credit as "value-impaired," or vice versa, which one should be used? The goal of Basel III is to achieve uniformity in methodology, not different standards.

Opportunities for Regional Banks in Trade Finance

As demonstrated in this report, the advanced approaches banks are experiencing significantly higher costs for trade finance than banks subject to the standardized approach. The additional cyclical buffer and G-SIB Surcharge widen the cost differentials. The LCR also places a higher cost burden on advanced approaches banks as well as the other banks subject to the modified LCR which does not apply to smaller banks.

These cost differences could present a competitive opportunity for smaller banks. As the very large banks reallocate their tightly stretched capital resources from trade finance to more profitable lines of business which have not been adversely impacted by the Basel III rules, their reduced presence could be an opportunity for smaller banks to grow their trade finance business.

[13] OCC (2016)

Growth of world trade will determine banks' volume-induced cost economies in trade finance
While Basel III has increased the overall cost of trade finance, there are other elements that will influence banks' opportunities / challenges and profitability from trade finance. Growth of world trade is a key factor in the final equation; as it impacts the growth in the volume of trade finance and thus contributes to volume-induced cost economies for banks.[14]

The IMF's April 2016 World Outlook is projecting a slowdown in the growth of the world economy, the growth in the volume of trade, and a weakening trend in commodity prices. Of course the latter trend is good news for consumer markets. Nevertheless, the outlook for global trade is an important factor in a bank's design of its trade finance strategies.

World trade is very cyclical, as shown in table 16 below. Over the past 35 years the world economy has averaged 3.5% growth per year; while the volume of trade expanded at a brisk 5.4% rate. The period 2002 – 2007 was particularly strong led by emerging markets, particularly China and India, and a surge in commodity prices; thus the strong showing for the growth in the volume of trade. In the view of the IMF, the global economy will revert back to the trend growth with a smaller multiplier effect on the growth in the volume of trade. Commodity prices are also expected to remain weak during 2016 – 2021.

Table 16: IMF World Outlook - April 2016

(average annual growth rates)	1980-2015	2002-2007	2007-2009	2010-2015	2015-2021
World					
Real GDP Growth	3.5	5.7	1.5	4.6	3.6
Volume of trade Growth	5.4	9.2	-4.0	6.3	4.0
Commodity Prices:					
Foodstuff	0.3	9.5	2.7	1.0	-1.2
Agricultural raw materials	1.5	3.7	-9.3	5.0	-1.7
Metals	1.5	26.6	-13.7	-1.6	-1.7
Crude Oil	1.0	23.9	-6.8	-3.8	-0.1
Emerging and developing Asia					
Real GDP Growth	7.4	10.9	7.4	9.0	6.3
Volume of Exports Growth	9.3	20.1	-1.5	9.8	3.9
Latin America & Caribbean					
Real GDP Growth	2.7	5.0	1.3	3.6	1.9
Volume of Exports Growth	NA	6.8	-5.1	5.0	5.4
Source: IMF					

[14] Growth in the volume of trade refers to the growth in the physical movement of merchandise and in the delivery of services.

The growth in the volume of trade finance transactions can yield cost economies for banks which can partially offset the increase in regulatory costs. Based on a reasonable assessment of potential growth of international trade in those markets / regions / countries where a bank has focused its international book of business, a bank should aim for a realistic target in terms of its volume of trade transactions. Which economies have the potential for sustainable growth? This is only one part of the analysis, since a bank also needs to look at the profitability of the whole relationship with its client in terms of other services it can provide. Nevertheless, the analysis should start with a view of the outlook for growth in the volume of international trade and a focus on those regions / countries with the best opportunities to grow the bank's trade finance business.

Other risks: Interest rate and Operational

The DFA was very much influenced by what the regulations refer to as the recent financial crisis. Both the capital and liquidity rules were tightened in response to the events of the last recession and downturn in financial markets. Many changes in the rules were needed; but they do not represent a fail-safe shield against future cyclical events. Every business cycle is unique in terms of its causes and consequences. Interest rate risk is not actively monitored on many banks' dashboards although they do keep a very short duration since interest rates are already so low that the only way they could realistically move is up.

Operational risk is now appearing on the regulatory radar-screen. The Basel proposal involves the analysis of business indicators, where a bank looks at different categories of businesses and determines a coefficient of risk which is then counted as part of capital requirements.

Monetary Policy Elements of the Capital and Liquidity Rules

The new capital and liquidity rules have clear elements of monetary policy tools which could be of use to Central Banks. Until October 2008, the Federal Reserve's primary tool for managing the money supply was the use of Open Market Operations – the sale and purchase of U.S. Government securities, to increase or to drain liquidity from the money markets. Since then, the Fed instituted a new administered system consisting of an interest-rate band for the Fed Funds rate. The Fed sets the floor and the ceiling of the band; where the ceiling is the rate that it pays commercial banks for their excess deposits at the Fed.[15] The so-called effective Fed Funds rate is somewhere in the middle; however, relative to the bank deposits at the Fed, it is not clear what is the volume of trading in the effective Fed Funds market.

As of December 2015, the Federal Reserve had $2.7 trillion in deposits by depository institutions. In normal times, prior to 2007, the corresponding deposit figure was about $20 billion, which was mostly reserve requirements. With such a bloated balance sheet the Fed does need as many instruments as it can feasibly use in managing the potential risks of excess liquidity.

[15] Excess deposits are the deposit amounts over and above a bank's reserve requirement amount.

The capital conservation buffer and the countercyclical buffer can be construed as monetary policy instruments in that an increase in either one would contribute to slower growth in lending by banks. The countercyclical buffer appears to have greater potential as a monetary policy rule since it is supposed to be revised from time-to-time according to the rate of growth of bank lending. This is in some ways comparable to the reserve requirement rate which is used in a number of countries as an active monetary policy instrument.

The liquidity rule is another policy with dual functionality: regulating liquidity of banks; and limiting the growth of financing activity in line with monetary policy goals. Bank excess deposits at the Fed are counted as L1 HQLA, thus the LCR contributes to the stability of those funds at the Fed as long as the Fed pays an attractive interest rate on those deposits as shown on Table 15 in a previous section. There is an incentive for banks to hold HQLA in the form of excess deposits at the Fed when the rate is higher than other HQLAs.

Capital and Liquidity Rules May Eventually Converge to the Advanced Approaches

Basel III has underscored the importance of analytics in managing risks. This means that Basel IV and beyond will be introducing more rigorous methodologies that rely on more sophisticated IT systems.

Risk management has to be based on a uniform methodology across all areas of banking. Basel III has made much headway in that direction; but there is still more to do in both the types of models and the integration of those models within the banks' operating systems. Many bank financial models are what can be described as definitional, such as interest income = (effective interest rate) x (loan balance); combined with some financial functions, such as the valuation of a fixed income security with embedded optionality. In the advanced approaches Basel III establishes a more rigorous approach to the analytics; but a key challenge is to integrate the models into the banks' IT systems so that the data input occurs seamlessly without manual intervention.

Some of the existing methodologies are not well-synchronized. For example, in calculating the LCR a bank has to use a prescribed outflow rate for non-maturity deposits which is very different than the rate that banks may be using for the same types of deposits but in their interest rate risk model in order to demonstrate their compliance with their interest rate risk policies. Credit, liquidity, interest rate, market, and operational risks should all be housed analytically within one model using uniform assumptions and a consistent methodology. The benefit of this approach is that management will be able to make more profitable decisions by running alternative scenarios using a model based on a consistent framework linking all of the business lines of a bank.

For example, of how a model could be used in analyzing a 200 basis points increase in interest rates would calculate the impact through the outflow of non-maturity deposits, the credit risk of the loan portfolio, the bank's LCR, and thus the economic value of equity. One example of how the model would handle a 200 bps increase in rates would be to increase the decay rate of non-maturity deposits as customers would be transferring their funds to higher yielding deposits, or the rates the bank pays could be adjusted at a faster pace. The importance of the model is that it

does not “forget” to make these adjustments which are then shown on the output of the model for management’s review so that it can effectively design alternative strategies to address such an event. Management discussions about these issues utilizing analytical models to quantify the outcomes would provide greater insights into the effectiveness of their strategies. Methodical investments in IT systems that allow the seamless input of a bank’s data into an integrated analytical platform will strengthen the design and implementation of a bank’s competitive strategies.

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Appendix

Appendix Table 1: Determination of Total Net Cash Outflow Using the Add-On Approach

Day	Non-Maturity Outflows (A)	Contractual outflows (B)	Cumulative Outflows (C)	Inflows w/o maturity date (D)	Inflows w maturity date (E)	Cumulative Inflows (F)	Net Cum. maturity Outflows (G)
0							
1	…….	$100	$100	…….	$90	$90	$10
2	…….	$20	$120	…….	$5	$95	$25
3	…….	$10	$130	…….	$5	$100	$30
4	…….	$15	$145	…….	$20	$120	$25
5	…….	$20	$165	…….	$15	$135	$30
6	…….	$0	$165	…….	$0	$135	$30
7	…….	$0	$165	…….	$0	$135	$30
8	…….	$10	$175	…….	$8	$143	$32
9	…….	$15	$190	…….	$7	$150	$40
10	…….	$25	$215	…….	$20	$170	$45
11	…….	$35	$250	…….	$5	$175	$75
12	…….	$10	$260	…….	$15	$190	$70
13	…….	$0	$260	…….	$0	$190	$70
14	…….	$0	$260	…….	$0	$190	$70
15	…….	$5	$265	…….	$5	$195	$70
16	…….	$15	$280	…….	$5	$200	$80
17	…….	$5	$285	…….	$5	$205	$80
18	…….	$10	$295	…….	$5	$210	$85
19	…….	$15	$310	…….	$20	$230	$80
20	…….	$0	$310	…….	$0	$230	$80
21	…….	$0	$310	…….	$0	$230	$80
22	…….	$20	$330	…….	$45	$275	$55
23	…….	$20	$350	…….	$40	$315	$35
24	…….	$5	$355	…….	$20	$335	$20
25	…….	$40	$395	…….	$5	$340	$55
26	…….	$8	$403	…….	$125	$465	-$62
27	…….	$0	$403	…….	$0	$465	-$62
28	…….	$0	$403	…….	$0	$465	-$62
29	…….	$5	$408	…….	$10	$475	-$67
30	…….	$2	$410	…….	$5	$480	-$70
Total	$300	$410	…….	$100	$480	…….	…….

Note: Day 0 is the date of calculation.

Source: OCC, Final Rule, Liquidity, (2014)

Based on the information shown in Appendix Table 1, Total Net Cash Outflows (NCO) can be determined as follows:

NCO = Aggregated Outflows (totals for col. (A) + (B))
– Minimum of [(0.75 *Aggregated outflows (totals for col. (A) + (B)), or Aggregated Inflows (totals for col. (D) + (E))] + Add-On.

NCO = ($300 + $410) – Minimum of [0.75 * ($300 + $410), or ($100 + $480)]
+ {Maximum of [0, or (Peak Day Net Cumulative Outflow)] – Maximum of [0, or Net Cumulative Outflow on day 30)]}

NCO = ($300 + $410) – Minimum of [0.75 * ($300 + $410), or ($100 + $480)]
+ {Maximum of [0, $85] – Maximum of [0, -$70]}

= $710 - $532.5 + ($85 - $0) = $262.5