



# Beyond Basel IV

## Incorporating crypto-assets into the Basel framework



## Introduction

Since the introduction of Basel I in 1988, the Basel framework has continued to evolve in both scope and coverage. Although the implementation of the final Basel III reforms ('Basel IV') remain in focus, the Basel Committee for Banking Supervision (BCBS) is already considering how the Basel framework should incorporate crypto-assets. Banks globally have limited exposure to crypto-assets, and their size relative to the global financial system is small. However, the growth and innovation in crypto-asset markets gives them the potential to be systemically important. The market capitalization for crypto-assets peaked in 2017 at US\$1 Trillion and was US\$191.8 Billion as of December 31, 2019<sup>1</sup>.














Approximately 70 percent of the market capitalization of the entire crypto-asset market can be attributed to Bitcoin alone, with a small number of other well-established assets comprising the remainder<sup>2</sup>.

In March 2019, the BCBS issued a [\*newsletter\*](#)<sup>3</sup> which outlines its minimum supervisory expectations for banks that acquire crypto-assets and/or provide related services. It subsequently published a [\*discussion paper\*](#)<sup>4</sup> on designing a prudential treatment for "high-risk" crypto-assets in December 2019. Interested stakeholders have been requested to provide their feedback on the discussion paper by March 13, 2020.

## Crypto-assets – economic functions and potential sources of value

As a starting point to formulate a prudential treatment for crypto-assets, the BCBS took into consideration the economic functions of crypto-assets, as well as their sources of value and features that may affect their risk profile.

**Table 1: Summary of crypto-assets' economic functions, potential sources of value, technological features, and other features**

<b>Economic functions</b>	<b>Payments and exchanges</b> 	<b>Investments/ Securities</b> 	<b>Utility access</b> 		
<b>Potential sources of value</b>	Perception of value to be exchanged 	Stabilization mechanisms linked to reference assets 	Current and future cash flows 	Current and future services accessible 	
<b>Technological Features</b>	<ul style="list-style-type: none"><li>– Capacity constraints</li><li>– Digital storage considerations/scalability</li><li>– Changes to terms and conditions (e.g. ‘forks’ that change underlying rules)</li></ul>				
<b>Other features that may affect value</b>	<b>Creation</b> <i>With/without issuer entity</i> 	<b>User base</b> <i>Breadth of ownership</i> 	<b>Validators</b> <i>Public or private</i> 	<b>Legal regime</b> <i>Compliance with rules</i> 	<b>Transparency of market data</b> 

Source: *Designing a prudential treatment for Crypto Assets*, BCBS, December 2019

<sup>1</sup> Cryptocurrencies by Market Cap Summary, Coin Dance, accessed January 2, 2019

<sup>2</sup> Ripple, Ethereum, Bitcoin Cash, and Litecoin (based on market capitalization figures from December 31, 2019)

<sup>3</sup> BCBS NL21: Statement on crypto-assets

<sup>4</sup> BCBS D490: Designing a prudential treatment for cryptocurrency

# Regulatory framework crypto-assets

This section outlines Basel's proposals for minimum expectations for banks with crypto-assets exposures and the potential prudential treatment of high-risk crypto-assets.

## Minimum expectations for banks with crypto-asset exposures or related services

The BCBS' March 2019 statement on crypto-assets articulates its minimum expectations for banks' exposures to crypto-assets and related services. These expectations apply to jurisdictions that do not prohibit such exposures and services, and may be further

augmented by additional country-specific requirements. At the time of publication, OSFI has not communicated any additional expectations to deposit-taking institutions (DTIs).

**Table 2: Minimum expectations of the BCBS for banks with crypto-asset exposures or related services**

Due diligence	Governance and risk management	Disclosures	Supervisory dialogue
<ul style="list-style-type: none"> <li>– Conduct comprehensive analyses of financial and non-financial risks that crypto-assets present (e.g. liquidity, credit, market operational, money laundering, terrorist financing, legal and reputational risks);</li> <li>– Ensure relevant and requisite technical expertise to adequately assess crypto-asset risks.</li> </ul>	<ul style="list-style-type: none"> <li>– Have a clear, robust risk management framework that is appropriate for the risks for crypto-assets that is fully integrated into the overall risk management process;</li> <li>– Incorporate risk assessment into the internal capital and liquidity adequacy assessment processes.</li> </ul>	<ul style="list-style-type: none"> <li>– Publicly disclose material crypto-asset exposures or related services in regular financial disclosures and specify the accounting treatment for these exposures.</li> </ul>	<ul style="list-style-type: none"> <li>– Inform supervisory authority of actual and planned crypto-asset exposures and activity in a timely manner;</li> <li>– Provide assurance that due diligence has been completed and explain how risks have been mitigated.</li> </ul>

Source: *Statement on crypto-assets, BCBS, March 2019*

## Potential prudential capital and liquidity treatment of high-risk crypto-assets

### General principles

The BCBS' consideration of how to specify a prudential capital and liquidity treatment for crypto-assets was guided by the following three principles:

**Table 3: Three general principles for specifying a prudential treatment for crypto-assets**

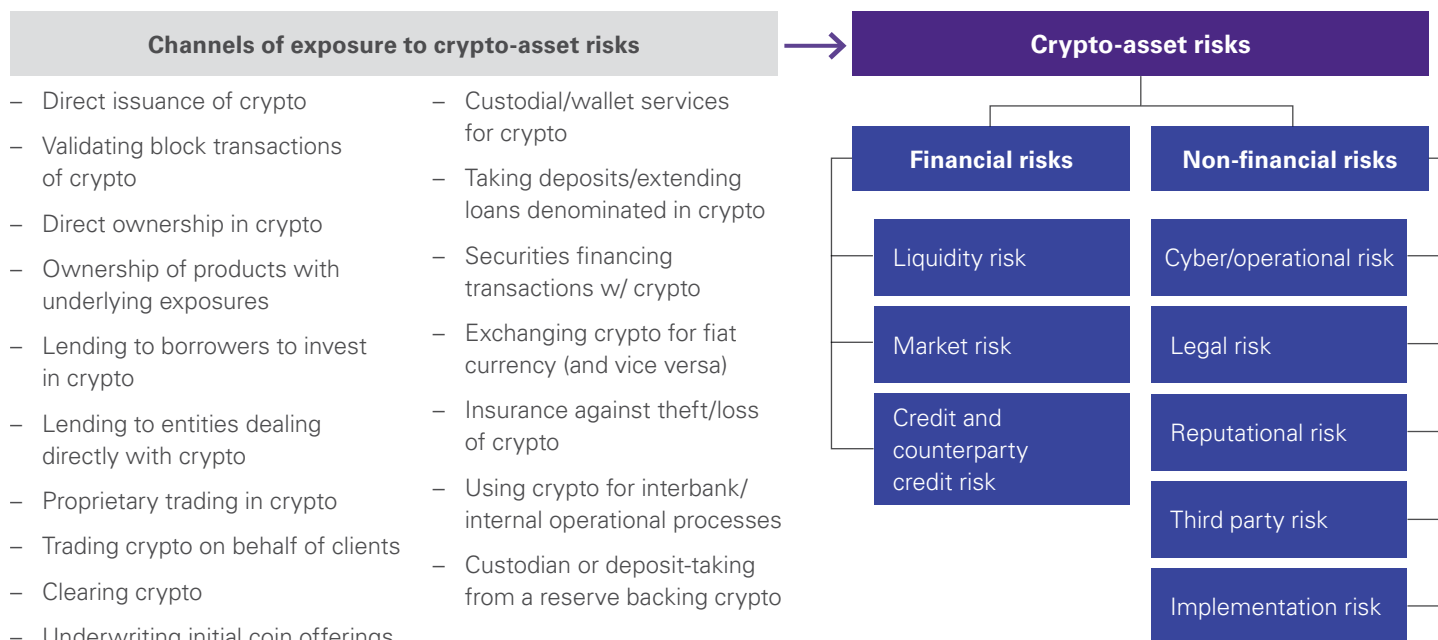
<b>Same risk, same activity, same treatment</b>	Crypto-assets and 'traditional' assets that are equivalent in their economic functions should be treated the same for prudential purposes.
<b>Simplicity</b>	<p>Prudential requirements should be simple and flexible, and the calculation of regulatory requirements should not rely on internally-modelled approaches.</p> <p>There may be merit in starting with 'high risk' crypto-assets first and considering the appropriate treatment for other types of crypto-assets later.</p>
<b>Minimum standards</b>	The BCBS' specified prudential treatment for crypto-assets constitute a minimum standard upon which individual jurisdictions would be free to apply more conservative measures if warranted, including prohibiting exposures.

Source: *Designing a prudential treatment for Crypto Assets, BCBS, December 2019*

## Risks arising from banks' crypto-asset exposures

The December 2019 discussion paper identifies the following financial and non-financial risks originating from various channels of exposure to crypto-asset risks:

**Figure 1: The channels of exposure to crypto-assets and a hierarchy of crypto-asset risks**



Source: *Designing a prudential treatment for Crypto Assets*, BCBS, December 2019

## Financial risks

### Liquidity risk

The possibility of not being able to sell crypto-assets at little or no loss of value creates an exposure to market liquidity risk. Banks that engage in financial intermediation through the issuance of crypto-assets and/or taking crypto-asset deposits may also be exposed to funding liquidity risk in times of stress.

### Market risk

The BCBS observes that crypto-assets exhibit a high degree of volatility in valuation and pricing, and that price discovery may be impeded due to disjointed trading platforms. KPMG notes that the price volatility of Bitcoin has given rise to standardized, market-traded derivatives. The Chicago Mercantile Exchange (CME) began listing Bitcoin futures contracts in December 2017, and it plans to launch Bitcoin options beginning in January 2020<sup>5</sup>.

### Credit & counterparty credit risk

Crypto-assets that constitute a legal obligation between an issuer and asset-holder create an exposure to credit and counterparty credit risk, much like other traditional assets. The BCBS notes that banks may find it difficult to price the risk of borrowers that invest in crypto-assets or form part of the crypto-asset eco-system (e.g. providing a loan to Ethereum Switzerland GmbH) because of limited historical data on crypto-assets.



<sup>5</sup> <https://www.cmegroup.com/cme-group-futures-exchange/options-bitcoin-futures.html>



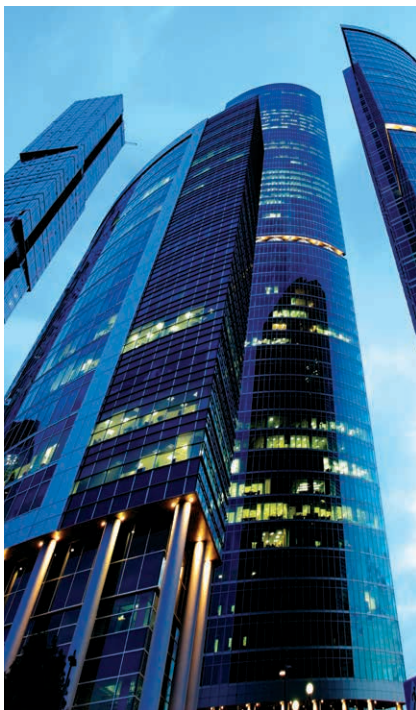
## Non-financial risks

Basel's December 2019 discussion paper outlines a list of five non-financial risks resulting from crypto-asset exposures:

**Table 4: Non-financial risks outlined in Basel's 2019 discussion paper**

Risk	Application to crypto-assets
<b>Cyber &amp; operational</b>	Being digital and generally not backed by physical collateral, cyber and operational risks are an obvious concern with crypto-assets. Both from a cybersecurity and governance perspective, the technologies underlying crypto-assets open financial institutions to a new set of vulnerabilities from cyber threats and to internal governance issues.
<b>Legal &amp; regulatory</b>	Without a robust regulatory framework for crypto-assets domestically and globally, firms are open to new types of legal and regulatory risks. The lack of a central regulatory body for crypto-assets may result in regulatory arbitrage. In addition, as blockchain technologies increase the ease of value transfer, financial institutions will need to come up with innovative solutions to meet KYC, AML, and terrorist financing regulations.
<b>Reputational</b>	The use of new and distributed technologies introduces a set of potential reputational risks. While the risk of traditional asset classes can be managed internally, the distributed nature of crypto-assets means any negative sentiment of the network or the actions of a single party may result in network wide reputational damage.
<b>Third-party</b>	The software that most crypto-assets is run on is commonly community driven by unregulated external parties. Additionally, in the pursuit of innovation and product offerings, financial institutions may seek the expertise of third-party developers, partners, or solution providers. All of these factors increase a financial institution's third third-party.
<b>Implementation</b>	Both at onset and throughout a crypto-asset's lifecycle, internal policies and procedures surrounding crypto-asset use need to be developed. Before adoption of a crypto-asset, frameworks surrounding the operational procedures, accounting treatment, and other areas need to be implemented.

Source: *Designing a prudential treatment for Crypto Assets, BCBS, December 2019*



### The prudential treatment of high-risk crypto-assets

The BCBS provides an illustrative example of a potential capital and liquidity treatment for direct and indirect exposures (e.g. derivatives) to high-risk crypto-assets. We first differentiate between high-risk and 'other' crypto-assets, and then provide a summary illustration of the BCBS' proposed prudential treatment for high-risk crypto-assets.

#### High-risk crypto assets

The following key features characterize high-risk crypto-assets:

- Secured cryptographically and recorded on a distributed ledger;
- Not issued by a jurisdictional authority (i.e. central bank) or another identified issuer;
- Has no intrinsic value, and is neither explicitly and directly linked to, or backed by, assets with intrinsic value;
- Does not give rise to a contract between the holder and another identified issuer.

#### Other crypto-assets

Crypto-assets used for intra/inter bank settlements, and so-called 'stablecoins' (that employ stabilization tools to reduce price volatility) are referred to as 'other Crypto-assets' by the BCBS, and their prudential treatment will be considered based on feedback obtained from stakeholders during the public consultation process.

The following diagram depicts the BCBS' illustrative example of capital and liquidity requirements for high-risk crypto-assets:

**Figure 2: Illustrative example of capital requirements for high-risk crypto-assets**



Source: *Designing a prudential treatment for Crypto Assets, BCBS*

The above treatment reflects the BCBS' concerns about the volatility of crypto-assets; they are fully deducted from CET1 capital, not eligible as financial collateral and subject to conservative approaches for determining Pillar 1 capital requirements.

**Figure 3: Illustrative example of liquidity requirements for high-risk crypto-assets**



Source: *Designing a prudential treatment for Crypto Assets, BCBS*

Similarly, volatility and immaturity considerations are factored into the above example for crypto-assets' liquidity treatment. It reflects the BCBS' view that crypto-assets are not equivalent to fiat currencies, and are not considered high-quality liquid assets.

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## Financial and non-financial risks

The BCBS' principle of 'same risk, same activity, same treatment' for crypto-assets reflects that the financial risks facing crypto-assets are not unlike other asset classes and they can be treated in a similar manner. Additional considerations should also be taken into account on an asset-by-asset basis based on specific attributes of the individual crypto-asset. For example, the following table shows the average daily trading volumes for the five largest crypto-assets in 2019:

**Table 5: Trading volumes of the five largest crypto-assets**

	Bitcoin	XRP	Ethereum	Bitcoin Cash	Litecoin
Average Volume (tokens)	328,025.29	983,882.47	665,293.46	39,453.96	25,714.38
Average Volume (USD)	\$2,429,098,712.79	\$284,008.25	\$125,143,507.25	\$11,606,912.65	\$1,874,415.61

Source: Data Files, CoinMetrics, accessed January 2, 2020 with calculations completed by KPMG

While these volumes may be high for crypto-assets like Bitcoin, the volumes can be misleading, as large block trades create the possibility of market manipulation (e.g. churning), and the lack of market transparency regarding orders can be misleading.

For crypto-assets, which are more volatile than assets that reference other physical assets, the measure of value-at-risk (VaR) can be relatively high. This can be seen in the component VaR (cVaR) estimates for the five largest crypto-assets shown below.

**Table 6: cVaR of the 5 largest crypto-assets**

	Bitcoin	XRP	Ethereum	Bitcoin Cash	Litecoin
Component 1 day 99% VaR (%)	-0.55%	-0.25%	-0.41%	-0.56%	-0.55%
Component 10 day 99% VaR (%)	-1.74%	-0.80%	-1.31%	-1.77%	-1.73%

Source: Data Files, CoinMetrics, accessed January 2, 2020 with calculations completed by KPMG

As with other asset classes in their infancy, price volatilities will likely remain high for crypto-assets in the short term. Assuming increasing adoption of crypto-assets in the financial sector, these volatilities may reduce over time to levels typical of other asset types such as precious metals.

The impact of non-financial risks resulting from crypto-asset exposures are less clear. With the lack of historical operational risk experience worldwide and a low familiarity with the underlying technologies, financial institutions will likely face challenges in implementing internal policies and conducting regulatory requirements such as stress testing.

## Crypto-asset stabilization mechanisms

Crypto-assets have characteristics which make them distinct from other asset classes. In contrast to equities, bonds, and commodities whose value is derived from a promise of future payment or link to a physical good, crypto-asset characteristics can be attributed to the underlying technology, extent of adoption as a value store, or other features such as a stabilization mechanism.

Stablecoin crypto-assets for example, may present a hybrid value representing both the digital asset value and the underlying stabilization medium. In a similar manner to commodity derivatives, stablecoins backed by a physical good, service, or fiat currency may not warrant the same regulatory treatment as those without a stabilization mechanism.

Despite features which may reduce individual exposure risk, a good starting point is a uniform regulatory framework for crypto-assets. Special treatment on a feature by feature or characteristic by characteristic basis may then be introduced.

## Substantially similar crypto-assets

Specific sub types of crypto-assets, such as those backed by fiat currency or another physical asset, may have a higher correlation to the reference asset than other crypto-assets.

Case study: PAX GOLD (PAXG) is a digital asset in which each token is backed on a 1:1 basis to one troy ounce (t oz)

of gold. Gold is held in vaults by a custodian (Brinks) and is easily verifiable through regular audit.<sup>6</sup> This asset's price mimics the underlying asset's market price at any given time. The crypto-asset characteristic traits for PAX Gold simply allow a more frictionless exchange medium with low transaction fees and rapid settlement.

A regulatory exemption would be prudent for assets that are "substantially similar" to their reference asset.

## Canadian market considerations

To date, OSFI has not issued any specific guidance that addresses the permissibility of crypto-asset ownership and activities. However, Canadian DTIs are already exploring the possibility of offering crypto-asset related services to their customers.

Consultation on the prudential treatment of crypto-assets is still underway, however the BCBS appears to be leaning towards a conservative approach. The BCBS' minimum expectations with respect to due diligence, risk management and governance, disclosure, and supervisory dialogue have already been established, and can be used as a starting point for designing an internal control framework. Canadian DTIs should keep in mind that Basel's minimum expectations may be augmented by additional, expectations from OSFI which take into account specific characteristics of the Canadian marketplace.

# Conclusion

DTIs that are exploring the possibility of offering crypto-asset related services should consider the impact of the Basel Committee's minimum expectations and proposed prudential treatment of crypto-assets. Once these regulations are finalized, local regulators including OSFI will implement these rules domestically, and DTIs will have to accommodate these new standards into their overall risk management framework.

KPMG will continue to track the evolution of prudential standards for crypto-assets from their finalization BCBS level to their incorporation into domestic rules. We're pleased to discuss how these new regulations will impact your organization.

# Glossary

<b>ASF</b>	Available Stable Funding
<b>BCBS</b>	Basel Committee for Banking Supervision
<b>CET1</b>	Common Equity Tier 1 Capital
<b>CME</b>	Chicago Mercantile Exchange
<b>CVA</b>	Credit Valuation Adjustment
<b>cVaR</b>	Component VaR
<b>DTI</b>	Deposit-Taking Institutions

<b>EAD</b>	Exposure-at-default
<b>HQLA</b>	High Quality Liquid Assets
<b>LCR</b>	Liquidity Coverage Ratio
<b>NSFR</b>	Net Stable Funding Ratio
<b>OSFI</b>	Office of the Superintendent of Financial Institutions
<b>RSF</b>	Required Stable Funding
<b>VaR</b>	Value-at-Risk

<sup>6</sup> <https://www.paxos.com/paxgold/>

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