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# Regulating cryptocurrency derivatives: A comparative analysis of approaches in the UK, the EU and Singapore

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# Regulating Cryptocurrency Derivatives: A Comparative Analysis of Approaches in the UK, the EU, and Singapore

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## Abstract

*Cryptocurrency derivatives have been attracting growing retail and institutional interest, raising the increasingly pertinent question of how such products should be regulated. This paper assesses different regulatory approaches in the United Kingdom, the European Union, and Singapore, and considers what insights these might provide for the regulation of cryptocurrency derivatives generally.*

## Introduction

The turbulent rise of cryptocurrencies has precipitated a corresponding rise of cryptocurrency derivatives – financial contracts that "derive" their value from underlying referenced cryptocurrencies. Formerly the domain of crypto-native firms at the periphery of the financial system, cryptocurrency derivatives are increasingly attracting wider interest, including from retail investors and traditional financial institutions. In June 2022, for example, the market volume of derivatives traded on nine exchanges reportedly totalled $2.75 trillion,[1] on top of cryptocurrency derivatives traded over-the-counter (OTC) or using decentralised finance (DeFi) derivatives protocols.

Sentiments about cryptocurrency derivatives, however, are mixed. Proponents argue that they fulfil beneficial economic functions, such as facilitating efficient distribution of risks; improving transparency and liquidity of spot cryptocurrency markets; and ultimately facilitating development of the underlying cryptocurrencies and their enabling technologies – technologies which crypto optimists believe may usher in a more efficient and inclusive financial system or even a new "crypto economy."[2] However, critics' concerns include, for example, the danger that retail investors may suffer extensive losses due to the features of cryptocurrency derivatives (such as product complexity and access to leverage) and their underlying cryptocurrencies (such as price volatility, valuation difficulties, informational asymmetries, market abuses, and fraud); the risk of financial contagion; and scepticism regarding the use cases of the underlying cryptocurrencies. The rapid growth and evolution of the cryptocurrency derivatives market hence confronts regulators with an increasingly pertinent and often perturbing question: how should cryptocurrency derivatives be regulated (if at all)?

This question is especially intriguing because different jurisdictions have so far taken vastly divergent approaches, spanning nearly the entire spectrum of potential regulatory responses. For example, on the issue of retail cryptocurrency derivatives trading, approaches

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[1] CryptoCompare, "Exchange Review: June 2022" (14 July 2022), p.12, *https://www.cryptocompare.com/media/40484726/exchange_review_june_vf-2.pdf* [Accessed 22 July 2022].

[2] See Iris H.-Y. Chiu, *Regulating the Crypto Economy* (Oxford: Hart Publishing, 2021) on regulating the "crypto economy" as an alternative economic space.

range from an outright ban on all cryptoassset derivatives (as in the United Kingdom (UK)), to temporary restrictions on cryptocurrency contracts for differences (CFDs) (as were imposed across the European Union (EU)), to regulation only of cryptocurrency derivatives traded on Approved Exchanges or offered by regulated financial institutions (as in Singapore), to permitting exchanges to "self-certify" and thereafter list new cryptocurrency derivatives without the need for specific regulatory approval (as in the United States[3]). Motivated by these differences, this paper undertakes a comparative analysis of three different regulatory approaches to cryptocurrency derivatives, to shed light on the question of how cryptocurrency derivatives should be regulated moving forwards.

To this end, Part I provides an overview of cryptocurrency derivatives, to contextualise the discussion. Part II then investigates the different approaches to cryptocurrency derivatives taken in the UK, the EU, and Singapore. It examines the applicable regulatory position, explores the underlying policy considerations, and critically assesses each approach. (Given the speed with which the market and regulatory landscapes change, it bears noting that this survey is current as of July 2022.) Finally, Part III is concerned with the future regulation of cryptocurrency derivatives. It presents a range of potential regulatory approaches and policy options, from outright prohibition, to wholesale application of the existing traditional derivatives regime, to other tailored or less coercive approaches. It also assesses the imperatives that have shaped, and should shape, regulatory choices – concluding by arguing that an effective regulatory approach to cryptocurrency derivatives should take into account such imperatives as the relevant distinctive features and risks of cryptocurrency derivatives; market realities; and regulators' particular mandates, philosophies, and policy priorities, chief among these, investor protection and financial stability concerns.

# I. Overview of Cryptocurrency Derivatives

At the outset, this Part I provides an overview of cryptocurrency derivatives, clarifying the subject matter of regulation as a prerequisite to determining the regulatory approach. It surveys various types of cryptocurrency derivatives, key market developments, and economic justifications proffered for such products. To do so, however, it is first necessary to make some preliminary notes on terminology and scope.

As a preliminary note, on terminology, derivatives on cryptocurrencies and other digital assets go by many names (including "cryptoasset derivative", "crypto-derivative", and "payment token derivative"). This paper uses the term "cryptocurrency derivative." However, some care must be taken to crystallise the terms used, for clarity, as the terminology is not universal, and also because nomenclature affects the conceptual positioning of the subject matter, thereby potentially influencing policy thinking.[4] "Derivative", here, refers to a financial contract that derives its value from an underlying asset (in this case, cryptocurrencies); derivatives purportedly allow for the fractioning, pricing, and efficient reallocation of risk.[5] The term "cryptocurrency", however, is more challenging to define, especially given the preponderance of terms that are related (such as "cryptoasset", "virtual asset", or "token") or used interchangeably (like "exchange token" or "payment token"). This paper takes "cryptocurrency" as referring to a unique unit of account in a digital payment system that

[3] See Sangita Gazi, "Reimagining a Centralised Cryptocurrency Regulation in the US: Looking through the Lens of Crypto-Derivatives" (2021) 6 Cambridge L. Rev. 97; Lindsay Sain Jones, "Beyond the Hype: A Practical Approach to CryptoReg" (2022) 25 Virginia J.L. & Technology 175, pp.232–233.
[4] Syren Johnstone, *Rethinking the Regulation of Cryptoassets* (UK: Edward Elgar, 2021), p.3.
[5] Raffaele Scalcione, *The Derivatives Revolution* (The Netherlands: Wolters Kluwer, 2011), pp.9, 125.

employs cryptographic techniques to control and verify transactions.[6] Unlike other digital assets, a cryptocurrency does not reference an underlying asset or right, such as a security or commodity. Bitcoin was the prototypical cryptocurrency, and Ether is another quintessential example. Classifying a given token as a cryptocurrency or as another cryptoasset, however, can be a challenging exercise, which typically must be undertaken on a case-by-case basis. At this juncture, it should be noted that "cryptocurrency" is not necessarily the most precise or widely favoured term (including because cryptocurrencies have controversially often failed to fulfil essential functions of "money" or a "currency", notably, those of serving as reliable medium of exchange or store of value[7]). Nevertheless, the term, as defined above, is used in this paper because it serves the present purposes of delineating the paper's scope and allowing for comparison across jurisdictions that use different terminologies.

Relatedly, as a second preliminary note, on scope, the focus of this paper is cryptocurrency derivatives – not derivatives referencing other digital assets. From a practical perspective, the market reality is that amongst digital asset derivative transactions, the majority relate to cryptocurrency derivatives.[8] From a conceptual perspective, there are differences in the key characteristics of cryptocurrencies and other digital assets. This is reflected in the taxonomies adopted by various regulators and industry bodies,[9] and correspondingly, depending on the type of the underlying digital asset in question, the applicable regulatory regimes and concerns may differ. To focus the discussion, therefore, this paper deals only with derivatives referencing cryptocurrencies, and not other digital assets (such as security tokens or asset-referenced tokens). Additionally, the scope of this paper excludes traditional derivatives in tokenised form. Generally, such products are in substance traditional derivatives, and raise the same concerns as a traditional derivative; the difference is simply in form, i.e., that they are digitally represented. The scope of this paper also excludes exchange-traded notes (ETNs), exchange-traded funds (ETFs), and other traditional investment products that reference or have exposure to cryptocurrencies. Such debentures, units in funds or collective investment schemes, and other traditional investment products generally tend to give rise to different regulatory concerns as compared with other derivatives, and so tend to be specifically or differently regulated. The foregoing products hence are excluded from the scope of this paper on account of these dissimilarities.

## *A. Types of Cryptocurrency Derivatives*

Having established the parameters of the discussion, this section now highlights two key distinctions that are pertinent to the subsequent analysis, and briefly describes selected specific types of cryptocurrency derivatives.

One key distinction is between exchange-traded and OTC cryptocurrency derivatives. In this context, an exchange-traded cryptocurrency derivative refers to a standardised cryptocurrency derivatives contract that is traded through an organised exchange[10] (such as Bitcoin futures traded on the Chicago Mercantile Exchange (CME)). In contrast, an OTC

[6] Adapted from Oxford University Press, "cryptocurrency, n." (March 2022), *OED Online, www.oed.com/view/Entry/79224404* [Accessed 27 May 2022].
[7] Bank for International Settlements (BIS), *Discussion Paper: Designing a Prudential Treatment for Crypto-assets* (Basel Committee on Banking Supervision, 12 December 2019), p.1.
[8] International Swaps and Derivatives Association (ISDA), "Contractual Standards for Digital Asset Derivatives" (December 2021), p.7, *https://www.isda.org/a/QVtgE/Contractual-Standards-for-Digital-Asset-Derivatives.pdf* [Accessed 27 May 2022].
[9] e.g., Proposal for a Regulation on Markets in Crypto-assets COM(2020) 593 final.
[10] Adapted from Erik Banks, *The Palgrave Macmillan Dictionary of Finance, Investment and Banking* (UK: Palgrave Macmillan, 2010), p.192.

derivative is a customised derivatives contract traded directly between two parties, instead of through an exchange.[11]

Another distinction is between "physical delivery" and cash settlement of cryptocurrency derivatives. With physical delivery, parties exchange cash for the underlying asset,[12] and so settle the derivatives contract by delivery of the underlying.[13] (Cryptocurrency, being intangible, is technically not capable of physical delivery in the literal tangible sense; nevertheless, by analogy, "physical delivery" here simply refers to delivery of the underlying cryptocurrency.) By contrast, with cash settlement or financial settlement, parties determine the cash equivalent of the underlying asset, and settle the derivatives contract by cash only, so that there is no need to arrange or accept delivery of the asset.[14] In the traditional derivatives context, this distinction is less relevant as cash settlement tends to be the norm,[15] and indeed, some hold that a derivative that allows or calls for physical settlement should not rightly be deemed a "derivative" at all, other than in narrowly circumscribed situations.[16] However, in the cryptocurrency derivatives context, a number of market participants – such as "crypto native firms" whose original and primary business is cryptocurrencies – instead prefer for trades to be settled in cryptocurrency. This gives "physical settlement" prominence in the cryptocurrency derivatives context that is atypical as compared with traditional derivatives, and attracts separate concerns associated with spot cryptocurrency holdings and transactions (such as custody, prudential treatment, tax, and anti-money laundering issues). Relatedly, and interestingly, a cryptocurrency derivative can also be structured to technically remove the possibility of cash settlement (such as a derivative that references two cryptocurrencies, without reference to any fiat currency).

In addition to these broad distinctions, this section briefly introduces selected specific types of cryptocurrency derivatives. As Warren Buffet observed in 2003, the range of derivatives is "limited only by the imagination of man (or sometimes, so it seems, madmen)."[17] Nearly two decades on, this rings even more true with the proliferation of cryptocurrency derivatives of all kinds. This section focuses on three principal types of derivatives – forwards, options, and swaps – as well as on other common or notable products in the market.

A forward refers to a bilateral OTC derivative contract under which one party agrees to buy, and the other party agrees to sell, an underlying asset at a predetermined future price and future time.[18] One product common in the cryptocurrency derivatives market is a non-deliverable forward (NDF), a forward contract under which settlement is in cash, instead of by delivery of the underlying asset.[19] Bitcoin NDFs offered by TeraExchange were one of the early forms of cryptocurrency derivatives.[20] Relatedly, another derivative that is a close cousin to a forward is a futures contract. Like a forward, parties to a futures contract agree to trade an underlying asset at a predetermined future price and future time; unlike OTC and customisable

[11] ibid., p.371.
[12] ibid., p.387.
[13] Jonathan Law, "physical delivery" in *A Dictionary of Finance and Banking*, 6th edn (OUP, 2018), *https://www.oxfordreference.com/view/10.1093/acref/9780198789741.001.0001/acref-9780198789741-e-5024* [Accessed 3 June 2022].
[14] Banks, *Dictionary* (2010), p.87.
[15] ISDA, "Contractual Standards", p.19.
[16] Scalcione, *Derivatives Revolution* (2011), pp.149–150.
[17] Warren Buffet, "Chairman's Letter" (Berkshire Hathaway, 21 February 2003), p.13, *https://www.berkshirehathaway.com/letters/2002pdf.pdf* [Accessed 27 May 2022].
[18] Banks, *Dictionary* (2010), p.322.
[19] ibid., p.345.
[20] Rosario Girasa, *Regulation of Cryptocurrencies and Blockchain Technologies* (Palgrave Macmillan, 2018), p.86.

forwards however, futures are exchange-traded and standardised.[21] Cryptocurrency futures, such as Bitcoin and Ether futures, are offered on several traditional derivatives exchanges, including CME, CBOE Futures Exchange (CFE), and ICE Futures Singapore.[22]

Next, a swap refers to a customisable OTC derivative contract under which parties periodically exchange payments for an agreed time.[23] One product innovation prominent in the cryptocurrency derivatives market is a perpetual swap, invented by BitMEX in 2016. Its effect is similar to a futures contract, but a perpetual swap has no expiration date. Additionally, whereas with futures contracts, the futures price may differ from the spot price of the underlying (such difference being termed basis), perpetual swaps were designed to trade close to the spot price and so minimise basis risk. In BitMEX's case, this is achieved through a funding mechanism where parties either make or receive payments at fixed daily intervals, depending on spot price relative to the position they have taken.[24] Additionally, another notable product is a cryptocurrency contract for differences, or CFD, under which one party agrees to pay the other the difference between the current value of the underlying cryptocurrency, and its value at the time the contract was made; the CFD issuer pays the buyer if the difference is positive, and the buyer pays the issuer if the difference is negative.[25]

Lastly, a cryptocurrency option refers to a contract that gives the buyer the right, but not the obligation, to purchase or sell the underlying cryptocurrency at a predetermined price.[26] Apart from these selected products described above, a wide range of cryptocurrency derivatives are available on regulated and unregulated exchanges, and the institutional OTC market also allows for a variety of bespoke products and structured solutions. Still, all such derivatives can generally be understood as some form or combination of forward, swap, or option.

## *B. Economic Justifiability*

The cryptocurrency derivatives examined above generally allow investors to gain exposure to, without needing to hold, the underlying cryptocurrencies. Yet, notwithstanding the creativity of financial engineering involved, a necessary question is whether there is any economic justification for such products. After all, if the answer is a clear no, and such products only create overall net welfare losses, then the appropriate regulatory response may well simply be an outright ban.

From the perspective of their proponents, cryptocurrency derivatives fulfil *beneficial* economic functions. Some of these arguments are similarly pertinent to derivatives generally, as to cryptocurrency derivatives specifically. One argument is that these products allow for the efficient transfer and distribution of risks from those wishing to protect against risk (hedgers) to those wishing to acquire risk (speculators). On one side of the transaction, cryptocurrency derivatives enable hedgers to guard against their exposure to cryptocurrencies, especially where price volatility and market risk are high. In the cryptocurrency derivatives context, specifically, a wide range of actors may conceivably be incentivised to hedge: merchants who

[21] Banks, *Dictionary* (2010), p.232.
[22] Intercontinental Exchange (ICE), "Bakkt® Bitcoin (USD) Cash-Settled Monthly Futures", *https://www.theice.com/products/79696475/Bakkt-Bitcoin-USD-Cash-Settled-Monthly-Futures* [Accessed 27 May 2022].
[23] Banks, *Dictionary* (2010), p.498.
[24] BitMEX, "Perpetual Contracts Guide" *https://www.bitmex.com/app/perpetualContractsGuide* [Accessed 27 May 2022]; Henri Arslanian, *The Book of Crypto* (Palgrave Macmillan, 2022), p.342.
[25] Law, "contract for differences" in *Finance and Banking* (2018), *https://www.oxfordreference.com/view/10.1093/acref/9780199229741.001.0001/acref-9780199229741-e-5349* [Accessed 3 June 2022].
[26] Adapted from Banks, *Dictionary* (2010), p.366.

accept cryptocurrencies as payment for goods or services;[27] miners and stakers; exchanges and market makers; DeFi treasuries and liquidity providers; and institutional investors and even (albeit uncommonly) retail investors.[28] On the other side of the transaction, derivatives enable speculators, who typically have excess risk-bearing capacity and a profit maximisation motive, to acquire risk. Cryptocurrency derivatives, it is argued, improve the efficiency of this risk distribution process. Additionally, a second argument is that cryptocurrency derivatives facilitate price discovery in spot cryptocurrency markets, although there are views both supportive[29] and sceptical[30] of this proposition. A third argument is that cryptocurrency derivatives improve liquidity and market access. Investment in cryptocurrency derivatives provides synthetic exposure to the underlying cryptocurrencies, yet with advantages as compared to spot cryptocurrency transactions, such as potentially greater liquidity; elimination of custody risks associated with spot transactions (like hacking, theft, or loss of private keys); access to leverage;[31] and avoiding regulatory uncertainty or restrictions (potentially including, for regulated firms, prudential requirements) associated with holding the underlying cryptocurrencies directly.

Yet another argument for cryptocurrency derivatives is unique to this context. Ultimately, and perhaps most importantly, cryptocurrency derivatives support the use and development of the underlying cryptocurrencies and their enabling technologies. The attractiveness of this argument of course depends on the extent to which one views *cryptocurrencies* as beneficial – itself an open question. Crypto optimists argue, for example, that cryptocurrencies can reduce costs and transaction times,[32] improve access to financial services, and potentially even transform the financial system; the use of cryptocurrency derivatives may be justified, then, to the extent that it supports the actualisation of these promised benefits. Conversely, critics doubt the viability of cryptocurrencies' use cases,[33] are critical of the enabling technology's inefficiencies and environmental costs, or regard cryptocurrencies as too volatile to serve as a standard of value,[34] among other criticisms. Volatility, notably, is a significant concern, with even so-called stablecoins – designed to maintain a stable value – recently seeing massive destabilisation.[35] Indeed, the very demand for cryptocurrency derivatives may even itself suggest that the underlying cryptocurrencies are too volatile. Insofar as the economic justifiability of the underlying cryptocurrencies is called into question, then, so too is doubt shed on the justifiability of utilising cryptocurrency derivatives.

Finally, it must also be noted that a key argument against cryptocurrency derivatives goes back to the heart of a derivative's essential purpose. While some cryptocurrency derivatives may efficiently price and distribute risks, many others may instead *create* additional economically inefficient risks. Derivatives can indeed be used to protect against risk (on one side of the transaction) or to acquire risk with the aim of profit maximisation (on the other side

[27] See, e.g., Rob Wile, "Bitcoin Is Experiencing its Longest Stretch of Price Stability in a While", *Business Insider* (29 January 2014), *https://www.businessinsider.com/bitcoin-volatility-slows-2014-1* [Accessed 3 June 2022].
[28] FCA, *Prohibiting the Sale to Retail Clients of Investment Products that Reference Cryptoassets* (6 October 2020), Policy Statement PS20/10, para.2.20.
[29] e.g., ISDA, "Contractual Standards", p.4.
[30] e.g., FCA, *PS20/10*, para.2.20.
[31] ibid., para.2.18.
[32] ibid., para.2.7.
[33] MAS, *Consultation Paper on Proposed Regulatory Approach for Derivatives Contracts on Payment Tokens* (20 November 2019), P015-2019, para.2.1.
[34] BIS, *Discussion Paper*, p.1.
[35] Adam Samson, Scott Chipolina, and Eva Szalay, "Crypto Industry Shaken as Tether's Dollar Peg Snaps" (12 May 2022), *Financial Times, https://on.ft.com/3l6hH0R* [Accessed 10 June 2022].

of the transaction). However, it appears the latter motive may be increasingly predominant. (The FCA's consumer research, for example, has found that price volatility has attracted much speculative interest in cryptocurrencies;[36] these conclusions may be relevant to cryptocurrency derivatives trading insofar as consumers trade to gain exposure to the underlying cryptocurrencies.) Where purely speculative trading disproportionately predominates over trading for hedging purposes, it may well be that cryptocurrency derivatives activity, overall, creates additional economically inefficient risks. Rather than transferring risks to those with high risk-bearing capacity, derivatives may also instead disproportionately transfer risks to those with low risk-bearing capacity, particularly, retail investors. Furthermore, the volatility of the underlying cryptocurrencies magnifies risks that are already attendant to traditional derivatives, sometimes exponentially. Regulation, then, must strike the difficult balance of allowing cryptocurrency derivatives to fulfil their economic functions, yet while mitigating the significant risks that may result in overall welfare losses.

## *C. The Cryptocurrency Derivatives Market*

Having provided an overview from a more conceptual perspective, this section will close Part I by providing a more concrete sense of the market. The cryptocurrency derivatives market spans exchange-traded derivatives markets, OTC derivatives markets (which are comparatively more opaque), and DeFi derivatives protocols (a more recent innovation). Of exchange-traded derivatives, for which data is most readily available, the monthly market volume for June 2022 was reportedly $2.75 trillion, with trading volumes exceeding those of spot cryptocurrencies.[37]

In tracing the development of the market, a natural starting point is the invention of Bitcoin, in the wake of the 2008 global financial crisis and a crisis of trust in the financial system. Sometimes described as the Big Bang of the Internet of money, it precipitated the development and proliferation of other cryptocurrencies, and with them, cryptocurrency derivatives. Notably, in 2014, TeraExchange launched the first Bitcoin NDF, and BitMEX launched the first Bitcoin perpetual swap; and in 2017, CME and CFE launched Bitcoin futures.[38] Since then, there has been significant growth of both retail[39] and institutional[40] offerings and participation in the cryptocurrency derivatives market. In tandem with increased demand, notable expansions are being made into the cryptocurrency derivatives market by both traditional financial institutions (such as CME) and crypto native firms (such as FTX and Coinbase[41]) – a convergence of crypto and traditional finance in the cryptocurrency derivatives sphere. Recent years have seen growth in DeFi derivatives protocols, with the daily perpetual swaps trade volume on three protocols ranging from $260.21 million to $11.7 billion over the first half of 2022.[42]

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[36] FCA, "Research Note: Cryptoasset Consumer Research 2021" (17 June 2021), Chart 17, *https://www.fca.org.uk/publications/research/research-note-cryptoasset-consumer-research-2021* [Accessed 8 June 2022].
[37] CryptoCompare, "June 2022", p.12.
[38] Girasa, *Regulation* (2018), p.86; Arslanian, *Book of Crypto* (2022), p.342.
[39] e.g., CME Group, "CME Group Announces Launch of Micro-Sized Bitcoin and Ether Options (27 March 2022), *https://www.cmegroup.com/media-room/press-releases/2022/3/28/cme_group_announceslaunchofmicro-sizedbitcoinandetheroptions.html* [Accessed 16 June 2022].
[40] e.g., Matthew Leising, "Goldman Offers New Bitcoin Derivatives to Wall Street Investors" (7 May 2021), *Bloomberg*, *https://www.bloomberg.com/news/articles/2021-05-06/goldman-offers-new-bitcoin-derivatives-to-wall-street-investors* [Accessed 13 June 2022].
[41] Philip Stafford, "Crypto Industry Makes Push into Regulated Derivatives Markets" (22 February 2022), *Financial Times*, *https://www.ft.com/content/364dee59-fb51-400b-acd2-808d4ec41ab3* [Accessed 13 June 2022].
[42] The Block, "DeFi Derivatives: Perpetual Swaps Trade Volume" (updated 22 July 2022), *https://www.theblock.co/data/decentralized-finance/derivatives* [Accessed 22 July 2022].

However, cryptocurrency derivatives have also attracted much controversy. Notably, derivatives investors are reportedly pursuing a claim against Binance, the dominant cryptocurrency derivatives exchange, for alleged losses suffered due to a 2021 platform outage.[43] The development of the cryptocurrency derivatives market, it seems, has been invariably accompanied by significant market failures, provoking the question: what is the role of regulatory intervention in the cryptocurrency derivatives market? As the next Part describes, various regulators have come up with different answers.

# II. Comparative Analysis of Regulatory Approaches

This Part II undertakes a comparative analysis of three different regulatory approaches to cryptocurrency derivatives, namely, those of the UK, the EU, and Singapore. These jurisdictions were chosen because they share certain relevant commonalities: they each host global financial centres, faced the common challenge of how to deal with cryptocurrency derivatives, and share legal influences and historical connections (for example, stemming from the UK's onshoring of EU legislation, and from Singapore's history as a British colony). Yet, their regulatory approaches to cryptocurrency derivatives land on very different points on the spectrum of regulatory responses, making for interesting and fruitful comparison and analysis.

## *A. United Kingdom: Retail Prohibition on Cryptoasset Derivatives*

Financial services in the UK are regulated under a "twin peaks" model, with the Financial Conduct Authority (FCA) generally acting as the conduct regulator, and the Bank of England's Prudential Regulation Authority (PRA) as the prudential regulator.[44] This section focuses primarily on the FCA's regulatory approach to cryptocurrency derivatives (rather than on matters such as the prudential treatment of cryptocurrency derivatives, which, while pressing, are outside the scope of this paper).

Generally, firms that carry on regulated activities in relation to cryptocurrency derivatives must be authorised by the FCA under the Financial Services and Markets Act 2000, as clarified by the FCA as early as 2018.[45] The authorisation requirement applies to activities such as dealing in, arranging deals in, or advising on cryptocurrency derivatives,[46] to the extent that such products constitute investments regulated under the Act. Generally, the existing regime applicable to traditional derivatives hence also applies to such entities.

More recently, however, the FCA took additional drastic measures against retail cryptocurrency derivatives trading. The UK's regulatory approach is currently distinctively characterised by a retail ban on cryptoasset derivatives. Specifically, since January 2021, firms have been prohibited from selling, distributing, or marketing cryptoasset derivatives in or from the UK to all retail clients.[47] In terms of the type of derivatives covered, the ban applies to all

[43] Joshua Oliver and Laurence Fletcher, "Binance Crypto Traders Line up $5m for Legal Challenge" (19 August 2021), *Financial Times, https://www.ft.com/content/d442936e-8805-4091-8276-130b403a3313* [Accessed 16 June 2022].
[44] PRA and FCA, *Memorandum of Understanding between the Financial Conduct Authority and the Prudential Regulation Authority* (1 April 2013, modified 12 September 2014), para.2.
[45] FCA, "Cryptocurrency Derivatives" (6 April 2018), *https://www.fca.org.uk/news/statements/cryptocurrency-derivatives* [Accessed 10 June 2022]. See also FCA, *PS20/10*, para.1.25.
[46] Financial Services and Markets Act s.22; Financial Services and Markets Act 2000 (Regulated Activities) Order 2001 (SI 2001/544).
[47] Conduct of Business (Cryptoasset Products) Instrument 2020 (FCA 2020/34) ("2020 Instrument"); Conduct of Business (Cryptoasset Products) (Amendment) and Associated Exiting the European Union Amendments Instrument 2020 (FCA 2020/46).

cryptoasset derivatives (including CFDs, futures, and options[48]), and also to cryptoasset ETNs. In terms of the type of underlying assets in question, the ban applies to derivatives referencing "unregulated transferable cryptoassets", which are "cryptographically secured digital representation[s] of value or contractual rights that [use] distributed ledger technology" and are tradeable or transferable through a platform or other forum.[49] This definition is intended to encompass cryptoassets that the FCA had previously referred to as unregulated "transferable exchange and utility tokens." However, the term is defined such that the retail ban excludes, among others, derivatives referencing security tokens, e-money tokens, tokens that are not widely transferable, and central bank digital currencies.[50]

The FCA's supervision efforts include focusing on firms' attempts to avoid the prohibition by inappropriately "opting up" retail clients to the status of elective professional clients, or transferring retail clients to related non-UK entities. As for the duration of the ban, the prohibition continues to be kept under review, taking into account whether relevant conditions continue to apply, including whether cryptoasset derivatives continue to raise significant investor protection concerns.[51] Cryptocurrency derivatives activity in the UK hence is presently generally confined to professional clients and institutional investors.

## Policy Concerns and Objectives

Foremost among the objectives advanced by the FCA's approach is that of consumer protection. In implementing the retail ban, the FCA's view was that retail customers may suffer harm from sudden and unexpected losses if they purchased cryptoasset derivatives. The FCA considered that retail consumers are unable to reliably assess the value and risks of cryptoasset derivatives due to: (i) the nature of the underlying cryptoassets, which the FCA assesses as having no inherent value; (ii) market abuse and financial crime in cryptoasset markets; (iii) extreme volatility in cryptoasset prices; (iv) consumers' inadequate understanding of cryptoassets; and (v) the lack of a "clear investment need" for such products. In its revised cost-benefit analysis, based on data on previous retail trading of cryptoasset CFDs, futures, and ETNs, the FCA estimated that the ban could reduce overall consumer losses by £19 million to £101 million per year (with the lower figure representing losses from fees paid by retail consumers, and the higher figure representing total losses experienced by consumers (including fees)).[52]

In addition to the primary consumer protection objective, another express objective is protecting and enhancing the integrity of the UK financial system.[53] It should also be noted that the FCA has reiterated (including recently and emphatically) its continued support for innovation in cryptoassets, both in the context of its policy statement on the retail ban and elsewhere.[54] However, regarding *derivatives* on such cryptoassets, the paramount policy consideration appears to remain that of consumer protection.

[48] FCA, *PS20/10*, para.2.38.
[49] 2020 Instrument, Annex A.
[50] FCA, *PS20/10*, paras 2.39–2.40, 2.42; 2020 Instrument, Annex A.
[51] FCA, *PS20/10*, paras 1.26–1.27.
[52] ibid., paras 1.8, 4.19.
[53] ibid., para.1.10.
[54] ibid., para.2.7; "Keynote Speech by John Glen, Economic Secretary to the Treasury, at the Innovate Finance Global Summit" (4 April 2022), *https://www.gov.uk/government/speeches/keynote-speech-by-john-glen-economic-secretary-to-the-treasury-at-the-innovate-finance-global-summit* [Accessed 26 August 2022]..

## Assessing the UK's Regulatory Approach

The UK's approach is the strictest of the three surveyed here, with the FCA itself recognising that its ban is "more restrictive than other [European Economic Area] and most third country jurisdictions."[55] Notably, the retail ban faced opposition from nearly all respondents to the FCA's consultation paper proposing this prohibition,[56] with an industry participant, for example, describing the ban as a "blunt instrument."[57]

The decision, then, to proceed with this approach appears overwhelmingly motivated by the key policy concern of investor protection, a position broadly consistent with the FCA's focus on consumer protection not only with cryptoasset derivatives, but also other derivatives and volatile or complex products generally (such as binary options).[58] Given this priority placed on investor protection, in assessing the approach, an important question is: to what extent is this approach, especially the retail ban, effective in addressing its purported objectives? In theory, a ban is perfectly protective of retail investors. Yet, respondents have voiced one key concern, which the FCA also recognises. If retail demand is inelastic and high, so that consumers are undeterred by the ban, then there is a risk retail investment may migrate out of the UK to less regulated or unregulated platforms. Such platforms generally accord investors fewer regulatory protections, may be less likely to engage with regulators, and may see more illicit activity.[59] If the ban does have such an impact, this would run contrary to the very objective that it was intended to achieve. It hence remains to be seen whether such migration has indeed resulted, and what impact it has had on retail investors.

Separately, it also bears noting that one point of interest, moving forwards, is the treatment of derivatives referencing stablecoins. There are a few reasons for highlighting such stablecoin derivatives. First, from a practical perspective, there have been notable recent market developments involving these products. Following significant destabilisation in the value of stablecoins in May 2022, there has reportedly been increasing interest in shorting stablecoins, including through the use of derivatives (such as put options[60]). Such interest centres on Tether, the largest global stablecoin, and appears to be partly motivated by doubts about the quality and management of its reserves.[61] Second, from a policy perspective, stablecoin derivatives give rise to somewhat different considerations as compared with other cryptocurrency derivatives. For example, whereas volatility of the underlying cryptocurrencies is a key concern with respect to the latter, stablecoins, contrastingly, are designed to maintain a stable value, and concerns are focused on matters such as their reserve backing. Third, from a regulatory perspective, the UK government has been consulting on its regulatory approach to stablecoins, which may carry some consequential considerations for stablecoin derivatives. Presently, depending on their features, stablecoins are likely to be either unregulated exchange tokens or

[55] FCA, *PS20/10*, para.2.34.
[56] FCA, *PS20/10*, paras 2.2–2.3.
[57] Natasha Teja, "UK Ban on Cryptocurrency Derivatives May Stifle Innovation" (13 January 2021) *International Financial Law Review*.
[58] ibid.; FCA, "FCA Confirms Permanent Ban on the Sale of Binary Options to Retail Consumers" (29 March 2019), *https://www.fca.org.uk/news/statements/fca-confirms-permanent-ban-sale-binary-options-retail-consumers* [Accessed 10 June 2022].
[59] FCA, *PS20/10*, para.2.27; Teja, "UK Ban".
[60] Katherine Burton, "Hedge Fund Fir Tree Bets Big with Short of Stablecoin Tether" (12 March 2022), *Bloomberg, https://www.bloomberg.com/news/articles/2022-03-11/hedge-fund-fir-tree-bets-big-with-short-of-stablecoin-tether* [Accessed 28 July 2022].
[61] Vicky Ge Huang, "More Hedge Funds Are Betting Against Tether as Crypto Melts Down" (27 June 2022) *Wall Street Journal (Online), https://www.wsj.com/articles/more-hedge-funds-are-betting-against-tether-as-crypto-melts-down-11656322200* [Accessed 28 July 2022].

e-money tokens;[62] derivatives referencing the former are likely within the scope of the retail ban, while those referencing the latter fall outside of it. However, the government is proposing a new regulated category of "stable tokens" that may be linked to a single fiat currency or other asset, and which will be subject to various requirements.[63] It will be interesting therefore to observe whether such proposals, if implemented, will also result in consequential clarifications or changes to the treatment of stablecoin derivatives, especially given relevant market developments and the different applicable policy considerations.

## *B. European Union: Temporary Restrictions on Cryptocurrency CFDs*

In comparison, the EU's approach is in some respects mirrored by the UK, and in some respects less strict. This section will focus on EU-wide directives, regulations, and interventions, to give a sense of the general approach spearheaded by the European Securities and Markets Authority (ESMA) across the wider EU. It will not attempt to describe the approaches taken in each EU nation, as these vary greatly depending on the national laws implementing EU legislation, and such is too ambitious an undertaking for this present paper.

Generally, the existing regulatory regime – under the second Markets in Financial Instruments Directive (MiFID II)[64] and the Markets in Financial Instruments Regulation (MiFIR)[65] – applies to cryptocurrency derivatives that constitute "financial instruments", a term defined in MiFID II by reference to a list of specified products.[66] National regulators, such as France's Autorité des marchés financiers (AMF), have taken the view that cryptocurrency derivatives falling within certain listed categories are financial instruments to which the regime applies.[67] Cryptocurrency derivatives that fall within existing categories of regulated products hence are subject to these laws designed for traditional financial instruments and derivatives, which also includes European market infrastructure regulation (EMIR)[68] (in relation to which ESMA recently consulted on draft guidelines that address, among others, reporting of derivatives on crypto assets[69]).

Additionally and notably, from July 2018 to July 2019, ESMA imposed temporary restrictions on retail cryptocurrency CFDs, in exercise of its product intervention powers under MiFID II.[70] Leverage limits were imposed on retail CFDs generally, and the strictest limits were reserved for cryptocurrency CFDs, at a ratio of 2:1, that is, an initial margin requirement of 50% of the CFD's notional value.[71] These restrictions also included measures relating to retail CFDs generally (including cryptocurrency CFDs), namely, margin close-out protection;

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[62] HM Treasury, *UK Regulatory Approach to Cryptoassets and Stablecoins: Consultation and Call for Evidence* (7 January 2021), para.1.15.
[63] ibid, paras 1.19–1.21, 3.19, and Ch.3.
[64] Directive 2014/65 [2014] OJ L173/349.
[65] Regulation 600/2014 [2014] OJ L173/84.
[66] MiFID II, art.4(15) and Annex 1, s.C.
[67] AMF, *Analysis of the Legal Qualification of Cryptocurrency Derivatives* (23 March 2018), *https://www.amf-france.org/sites/default/files/resource/Analysis%20of%20the%20legal%20qualification%20of%20cryptocurrency%20derivatives.pdf* [Accessed 11 June 2022].
[68] Regulation 648/2012 on OTC derivatives, central counterparties and trade repositories [2012] OJ L201/1, as amended by "EMIR Refit" and "EMIR 2.2" (i.e., Regulation 2019/834 [2019] OJ L141/42 and Regulation 2019/2099 [2019] OJ L322/1).
[69] ESMA, *Consultation Paper: Draft Guidelines for Reporting under EMIR* (8 July 2021), ESMA74-362-1893, pp.15–16, 90–91.
[70] ESMA Decision 2018/796 [2018] OJ L136/50; ESMA Decision 2018/1636 [2018] OJ L272/62; ESMA Decision 2019/155 [2019] OJ L27/36; and ESMA Decision 2019/679 [2019] OJ L114/22 (the "ESMA Decisions").
[71] Art.2(a); Annex 1, para.(d) of each ESMA Decision.

negative balance protection to provide an overall guaranteed loss limit; risk warning requirements; and restrictions on incentives to trade CFDs.[72]

The restrictions were renewed each quarter for a year, until they were discontinued because the majority of national competent authorities had implemented permanent measures at least as stringent as ESMA's.[73] Although these restrictions were temporary, they are still notable because they provide some insight into ESMA's concerns respecting cryptocurrency derivatives generally (for example, through its comments regarding cryptocurrencies as an asset class[74]). They also give a sense of ESMA's priorities, as these CFD restrictions, together with a temporary ban on binary options, were introduced in the very first exercise of its fairly intrusive product intervention powers under MiFID II. Moreover, it has been argued that the exercise of these powers signalled ESMA's policy preferences for future EU legislation and national competent authorities' product intervention measures.[75]

## Policy Concerns and Objectives

Like the UK, investor protection was a key concern motivating ESMA's previous intervention. In the first instance, one of ESMA's express purposes is enhancing investor protection,[76] and its product intervention powers were introduced as part of the strengthening of investor protection under the new MiFID II regime.[77] While ESMA determined that retail CFDs, generally, raised investor protection concerns, it also considered that cryptocurrency CFDs, specifically, raised "separate and significant" concerns. These concerns relate to the characteristics of cryptocurrencies as an asset class, and therefore are presumably applicable to cryptocurrency derivatives generally. Specifically, ESMA viewed cryptocurrencies as a highly volatile and relatively immature asset class, and had concerns regarding the integrity of the price formation process in the spot cryptocurrency market. Cryptocurrencies were therefore regarded as posing valuation difficulties, and considerable risks not typically understood by retail investors. These risks are exacerbated by access to leverage, which require investors to react to margin calls within a very short period.[78] There hence are strong investor protection concerns associated with the EU's approach to cryptocurrency derivatives.

## Assessing the EU's Regulatory Approach

In assessing the EU's approach, it must be acknowledged that EU regulation is of course not directly comparable with national regulation, and raises different issues.[79] Nonetheless, it can still provide interesting points of comparison. ESMA's temporary restrictions, for example, differ from the UK's and Singapore's regulations in that they targeted a category of derivatives (namely, retail CFDs) regardless of their underlying assets, singling out cryptocurrency derivatives only with respect to calibration of leverage limits. They were also introduced the

[72] Art.2, paras (b)–(e) of each ESMA Decision.
[73] ESMA, "ESMA Ceases Renewal of Product Intervention Measures Relating to Contracts for Differences" (31 July 2019), *https://www.esma.europa.eu/press-news/esma-news/esma-ceases-renewal-product-intervention-measures-relating-contracts* [Accessed 10 June 2022].
[74] ESMA Decision 2018/796, preamble, para.19.
[75] Pablo Iglesias-Rodríguez, "ESMA as a Residual Lawmaker: The Political Economy and Constitutionality of ESMA's Product Intervention Measures on Complex Financial Products" (2021) 22 European Business Organization L. Rev. 627, pp.646–647.
[76] Regulation 1095/2010 establishing a European Supervisory Authority (ESMA) [2010] OJ L331/84 reg.5(f).
[77] ESMA, "Product Intervention", *https://www.esma.europa.eu/policy-activities/mifid-ii-and-investor-protection/product-intervention* [Accessed 11 June 2022].
[78] ESMA Decision 2018/796, preamble, paras 19–20; ESMA, *Additional Information on the Agreed Product Intervention Measures Relating to Contracts for Differences and Binary Options* (27 March 2018), ESMA35-43-1000, para.2.2.2.
[79] See Iglesias-Rodríguez, "ESMA as a Residual Lawmaker".

earliest, in 2018, when the landscape was different from what it would become even two or three years later. Still, even then, cryptocurrency CFDs were notably identified as posing separate and significant investor protection concerns, and subject to the strictest leverage limits. Evidently, a strong common motivating concern among the regulators surveyed is the protection of retail investors.

One key question, then, is the extent to which the temporary restrictions addressed investor protection concerns. In theory, these should have reduced retail investors' losses. The UK had implemented these CFD restrictions prior to its withdrawal from the EU, and the FCA's impact assessment of the period when the restrictions were in force indeed found a reduction in losses arising from crypto CFDs. However, the FCA concluded that such losses were nonetheless still widespread and significant, and its view hence is that retail leverage limits do not adequately mitigate harm to consumers.[80] This was one reason for the UK taking the even stricter approach of a retail ban. In this respect, the UK's approach mirrored and developed out of the "baseline" set by the EU, and by contrast, the EU's approach might, then, appear to have provided inadequate protection for consumers. Yet, considering that EU regulation cannot be assessed in the same way as national regulation, the EU's approach may well have been effective insofar as it set out the baseline for regulation and signalled ESMA's policy preferences for national authorities' domestic intervention.

As for how the EU's approach might be further refined, one consideration is the challenges of interpreting and applying the existing rules, which were intended for traditional financial instruments, to cryptocurrency derivatives. ESMA has previously commented (albeit regarding cryptoassets) about the challenges of interpreting these requirements that are "not adapted to the specific characteristics of crypto-assets."[81] Guidance hence may be helpful on general issues such as what cryptocurrency derivatives constitute "financial instruments" (on which some national regulators, such as AMF, have commented), and on specific issues such as what types of cryptocurrency derivatives are reportable under MiFIR and EMIR and how requisite details should be reported (as considered in ESMA's draft guidelines[82]). These comments are similarly also relevant to the UK's and Singapore's application of existing regulation to cryptocurrency derivatives.

## *C. Singapore: "Calibrated Approach" to Payment Token Derivatives*

Finally, this section considers Singapore's approach to cryptocurrency derivatives. As a starting point, traditional derivatives contracts (such as those referencing securities, currencies, and commodities) are generally regulated under the Securities and Futures Act 2001 (Singapore). Singapore also regulates services involving cryptocurrencies that constitute "digital payment tokens", with dealing in or facilitating the exchange of digital payment tokens being licensable payment services under the Payment Services Act 2019 (Singapore). Both the derivatives and the payment services regulatory regimes are administered by the integrated financial regulator, the Monetary Authority of Singapore (MAS).

The MAS uses the term "payment token derivative" (abbreviated "PTD"), and this section uses the same term; unless otherwise indicated, PTDs are essentially synonymous with

[80] FCA, *PS20/10*, para.2.27.
[81] ESMA, "Crypto-assets Need Common EU-wide Approach to Ensure Investor Protection" (9 January 2019), *https://www.esma.europa.eu/press-news/esma-news/crypto-assets-need-common-eu-wide-approach-ensure-investor-protection* [Accessed 15 June 2022].
[82] ESMA, *Draft Guidelines*, pp.15–16, 90–91.

cryptocurrency derivatives. PTDs refer to derivatives – including CFDs and futures[83] – that reference "payment tokens" as underlying assets. Here, a "payment token" refers to a digital representation of value with the following features: (i) it is expressed as a unit; (ii) its value is determined otherwise than by its issuer fixing its value to one or more currencies; (iii) it is (or is intended to be) a medium of exchange accepted by the public (or a section of the public) as payment for goods or services, or the discharge of a debt; and (iv) it can be electronically transferred, stored or traded.[84] PTDs, therefore, do not include derivatives referencing either utility tokens or stablecoins pegged to a fiat currency.[85]

Singapore's approach to PTDs has gradually taken shape since 2020, and continued to evolve through 2022. The MAS has described it as a "calibrated approach",[86] with the applicable regulations generally differing depending on the type of PTD in question:

(i) PTDs traded on Approved Exchanges (AE PTDs) – to which the traditional derivatives regime applies;
(ii) PTDs offered by regulated financial institutions – which are subject to tailored regulations; and
(iii) all other PTDs that fall into neither of the above categories – which are entirely unregulated.

The MAS generally regulates only AE PTDs, that is, PTDs traded on Approved Exchanges, which operate systemically important markets. AE PTDs are subject to the traditional Securities and Futures Act regime that governs derivatives generally[87] (analogous to how certain cryptocurrency derivatives are subject to the UK Financial Services and Markets Act and EU MiFID regimes). Only one Approved Exchange, ICE Futures Singapore, currently offers AE PTDs.[88] Interestingly, the MAS made an intentional choice to restrict its regulatory scope here. Previously, a wider range of cryptocurrency derivatives was subject to Securities and Futures Act regulation, including certain AE PTDs and cryptocurrency derivatives offered on *non*-systemically important markets.[89] However, the MAS amended its regulations in 2020 so that only AE PTDs would be so regulated under the traditional derivatives regime. While operators of other non-systemically important markets may still offer PTDs, these are no longer subject to such regulation.[90]

Additionally, the MAS has also imposed tailored requirements on regulated financial institutions under its purview, such as banks and capital markets intermediaries. These apply when such institutions offer PTDs to retail investors, and were imposed via circulars issued to financial institutions. The requirements include advertisement restrictions, the mandatory inclusion of warnings tailored to the risks of transacting in crypto products, and additional margin requirements (such as requiring financial institutions to collect from retail investors

[83] MAS, *Guidelines on Provision of Digital Payment Token Services to the Public* (17 January 2022), PS-G02, para.4.1.
[84] Securities and Futures (Prescribed Underlying Things) Regulations 2020 (GN S381/2020) reg.2(2).
[85] MAS, *P015-2019*, fn.1; MAS, *Response to Feedback Received on Proposed Regulatory Approach for Derivatives Contracts on Payment Tokens* (15 May 2020) ("*Response*"), paras 4.5–4.6
[86] MAS, *Response*, para.2.6.
[87] See the definitions of "futures contract" and "derivatives contract": Securities and Futures Act s.2(1); 2020 Regulations reg.2(1)(b)-(c). See also MAS, *PS-G02*, para.4.1; MAS, *Response*, para.2.11.
[88] ICE, "Bitcoin Futures".
[89] Securities and Futures (Prescribed Futures Contracts) Regulations 2005 (GN S368/2005) (revoked).
[90] MAS, *Response*, para.2.10.

minimum margin of at least 1.5 times the standard margin required by Approved Exchanges for comparable contracts).[91]

However, for all other PTDs – namely, PTDs neither traded on Approved Exchanges nor offered by regulated financial institutions – the above requirements do not apply, and these inhabit a "no man's land" outside of the MAS's regulatory oversight. In fact, the MAS not only limited its oversight of PTDs in the traditional derivatives sphere, but also in the payment services sphere. In 2022, the MAS stated that payment service providers, which provide services relating to the *underlying* payment tokens, must not offer services relating to PTDs; rather, PTD services may only be offered by entities *not* licensed under the Payment Services Act (i.e., either entirely unregulated entities, or entities regulated under the separate capital markets services or financial advisory services regimes).[92] The MAS has made clear, through various non-coercive measures, that it views cryptocurrency derivatives as unsuitable for retail investors, advising against transacting with such unregulated entities or entities on its Investor Alert list, and increasing consumer education efforts.[93] Nevertheless, the MAS has stopped short of prohibiting PTDs altogether, and retail investors may legally transact in PTDs, even with unregulated entities (albeit without the protections that regulated financial institutions are required to provide).

Looking to the future, the MAS has indicated it is considering additional consumer protection safeguards in the context of (spot) cryptocurrency trading.[94] It thus remains to be seen whether accompanying changes to cryptocurrency derivatives regulation might be forthcoming in the latter half of 2022 and beyond.

## Policy Concerns and Objectives

One of the MAS's key objectives is consumer protection and ensuring that consumers are well-informed and empowered.[95] The "basic consideration" is that cryptocurrency derivatives are unsuitable for most retail investors, because they lack intrinsic value and are subject to drastic speculation-driven price swings.[96] The approach hence was intended to give institutional investors – not retail investors – a regulated alternative for gaining exposure to the underlying payment tokens, in the form of AE PTDs.[97] Counter-intuitively, consumer protection concerns also motivated the decision to restrict the regulatory scope to AE PTDs: the MAS's concern was that regulating a wider range of PTDs under the traditional derivatives regime would legitimise these products and confer on them "misplaced confidence", which may in turn lead to a wider retail offering.[98] For this reason, it intentionally limited its regulatory scope. The consumer protection objective is otherwise also apparent in investor education efforts and the imposition of additional tailored measures where financial institutions deal with retail investors. The MAS described additional margin requirements as necessary to protect retail

[91] ibid., paras 3.2, 3.5; *Singapore Parliamentary Debates, Official Report* (6 January 2020) vol.94, Appendix, Written Answer to Question No.62 ("Parliamentary Question 62"); MAS, *Frequently Asked Questions on Licensing and Business Conduct (Other than for Fund Management Companies)* (27 February 2020, revised 28 September 2021), Q71C and Q71D.
[92] MAS, *PS-G02*, para.4.3.
[93] MAS, *P015-2019*, paras 4.1, 4.5; MAS, *Response*, para.3.4; Parliamentary Question 62.
[94] *Singapore Parliamentary Debates, Official Report* (4 July 2021) vol.95, Appendix, Written Answer to Question No.2; MAS, "Remarks by Mr Ravi Menon, Managing Director, MAS at the MAS Annual Report 2021/2022 Media Conference on 19 July 2022" (19 July 2022), *https://www.mas.gov.sg/news/speeches/2022/remarks-by-mr-ravi-menon-managing-director-mas-at-the-mas-annual-report-2021-2022-media-conference-on-19-july-2022* [Accessed 26 July 2022].
[95] MAS, *Objectives and Principles of Financial Sector Oversight in Singapore* (1 April 2004, revised September 2015), pp.10–11.
[96] Parliamentary Question 62.
[97] MAS, *Response*, para.2.6.
[98] ibid., para.2.5; MAS, *P015-2019*, para.3.9; Parliamentary Question 62.

investors, especially, from being overly leveraged, because they are likely to have less financial capacity to withstand losses. Although the MAS did consider disallowing retail PTD trading altogether, it described this as "more heavy-handed", and regarded the present approach as commensurate with risks posed to retail investors at the time.[99]

Other policy objectives are the stability of the financial system, and the safety and soundness of financial intermediaries.[100] AE PTDs are regulated also for system integrity reasons; the MAS viewed effective oversight over products offered on Approved Exchanges as important because of the contagion risk for the wider financial system. Additionally, another reason for imposing margin requirements was to instil reasonable risk management in financial institutions offering PTDs.[101]

## Assessing Singapore's Regulatory Approach

Having considered the features and underlying policy concerns of Singapore's approach, this section will now assess the approach from three perspectives: comparing with the UK and the EU; assessing whether policy objectives are achieved; and considering how the approach might be further refined.

### Comparison with the UK and the EU

The MAS's approach presents sharp points of contrast as compared with those of the FCA and ESMA. First, Singapore's "calibrated" approach is the most nuanced, but also the most complicated and unwieldly. Several factors may account for this. For one, Singapore faces unusual market realities. On one hand, it is a financial centre that sees innovation and development in its cryptocurrency derivatives market – including, for example, expansion of product offerings (such as listed Bitcoin futures), and innovation in services offered to market participants (such as an intended offering of central counterparty clearing services for OTC dealers[102]). On the other hand, retail participation in the cryptocurrency derivatives market was reportedly relatively low. Regulation has needed to account for both these realities. Moreover, as a small jurisdiction with a single integrated financial regulator, Singapore can be fairly nimble and experimental in its approach. The "calibrated" approach, additionally, may be an attempt to strike a balance between policy priorities that pull in different directions, from consumer protection and financial system integrity, to encouraging a progressive and competitive financial system.

Second, of the approaches surveyed, Singapore's appears the least protective of consumers. This might, however, be justified by MAS's assessment in 2020 that retail participation was "relatively low,"[103] thus not necessitating greater regulatory intervention. It may also be attributable to a difference in how the MAS frames its regulatory objective, articulating this not in terms of consumer protection per se (like the UK and the EU), but in terms of ensuring that consumers are "well-informed, and empowered."[104]

[99] MAS, *Response*, paras 3.5, 3.9.
[100] MAS, *Objectives*, pp.4–8.
[101] MAS, *Response*, paras 2.4, 3.5.
[102] Liquidity Offset Network, "Institutional Digital Asset Platform", *https://www.lon.exchange* [Accessed 11 June 2022]; Alastair Marsh, "Crypto's Long Road to Acceptance May Have Started Here" (25 April 2019), *Bloomberg*, *https://www.bloomberg.com/news/articles/2019-04-25/crypto-s-long-road-to-acceptance-may-have-started-here* [Accessed 13 June 2022].
[103] MAS, *Response*, para.2.5; Parliamentary Question 62.
[104] MAS, *Objectives*, pp.10–11.

Third, Singapore imposes the least regulatory oversight on cryptocurrency derivatives activities. UK and EU entities engaging in such businesses generally require traditional authorisation under the existing regimes, if the cryptocurrency derivatives in question are regulated financial instruments under the applicable laws; Singapore, however, allows entirely unlicensed entities to offer PTD services. This choice may be justified by lower retail investment in PTDs, and a desire not to legitimise PTDs through regulation. Nevertheless, it does seem to evince an apparently substantively more risk-tolerant approach. In comparison with the UK and EU, then, Singapore's approach demonstrates notable differences, despite some shared policy objectives.

**Addressing Policy Objectives**

Next, assessing Singapore's approach with reference to the MAS's policy objectives, to what extent are these achieved? One key objective is ensuring consumers are well-informed and empowered. Singapore has in place some such measures, but these are limited and comparatively less protective than in the EU and the UK. This is because when this approach was inaugurated in 2020, the MAS's assessment was that retail participation was relatively low; legislating protective and consumer-empowering measures hence was balanced against the risk of legitimising PTDs and so encouraging wider retail participation. However, does this balance still hold? A crucial question is whether retail participation has increased since early 2020, so that the need for protective measures exceeds the risk of such regulation conferring misplaced legitimacy on PTDs. Although only a relatively short period of two years has since elapsed, this period coincided, significantly, with extraordinary events, including the onset of the global Covid-19 pandemic, governments utilising monetary and fiscal policy to mitigate the pandemic's economic effects, and a flood of money into various markets[105] – and more recently, the Russian invasion of Ukraine and surging inflation in 2022.[106] There is now a question of whether retail participation in the cryptocurrency derivatives market has since increased in Singapore, driven by various extraordinary developments, to the extent of warranting a *re*-calibrated regulatory response. Some recent surveys, for example, reveal high rates of retail investment in cryptocurrencies[107] (though the reliability of these is unclear, due to factors such as the survey methodology not being readily apparent, inconsistency with the MAS's assessment of retail investment,[108] and the survey commissioner being a licensed digital payment token service provider that presumably has an interest in promoting cryptocurrency adoption). Still, if retail interest in cryptocurrencies, and relatedly, cryptocurrency derivatives, has indeed increased since 2020, then it may well be that the MAS might need to adjust its approach to achieve its objective of ensuring consumers are well-informed and empowered.

Separately, another consideration is maintaining financial system stability. Measures like the regulation of AE PTDs purportedly promote this objective. However, in this regard, commentators in other jurisdictions have raised concerns (discussed further in Part III below) about the risk of contagion where – as is the case in Singapore with ICE Clear Singapore[109] –

[105] See, e.g., Thyagaraju Adinarayan and John McCrank, "A Casino or Stock Market? Retail Buying Frenzy Goes Wild" (11 June 2020), *Reuters, https://www.reuters.com/article/us-health-coronavirus-retail-trading-ana-idUSKBN23H2QM* [Accessed 11 June 2022].
[106] World Bank, *Global Economic Prospects, June 2022* (2022) pp.11, 81.
[107] e.g., Independent Reserve, *Independent Reserve Cryptocurrency Index (IRCI): Singapore 2022* (2022), p.8, *https://www.independentreserve.com/blog/wp-content/uploads/2022/04/independent-reserve-cryptocurrency-index-irci-singapore-2022.pdf* [Accessed 17 May 2022].
[108] *Singapore Parliamentary Debates, Official Report* (5 April 2021) vol.95, Appendix, Written Answer to Question No.44 ("Parliamentary Question 44").
[109] ICE, "Bitcoin Futures".

cryptocurrency derivatives are cleared through the same systemically important clearing organisations as other traditional derivatives. This risk appears relatively low so far in Singapore, as cryptocurrency derivatives traded through financial institutions amounted to under 1% of the derivatives trading activity on Singapore's primary exchange, as reported in April 2021.[110] Nevertheless, it is a consideration that bears monitoring.

**Refining the Approach**

Finally, the survey above throws up some issues regarding Singapore's approach, which potentially can be worked out and refined in the future. One is the financial supervisor's current lack of enforcement powers over unregulated entities that offer PTDs. For example, the MAS has issued guidance to licensed entities that they should not promote PTDs to the public as a "convenient unregulated alternative" to trading in payment tokens;[111] yet, if *unlicensed* entities so promote PTDs, it appears that the MAS technically has no enforcement powers over such entities, and recourse is limited to that available under general consumer protection and fair trading laws. One open question, then, is whether the MAS may wish to assert some form of enforcement authority over (non-AE) PTD trading, even if only to a limited degree.

Another issue is that the current approach gives rise to an apparent regulatory gap with respect to physically-settled PTDs. (For clarity, these comments relate only to *non*-AE PTDs, as AE PTDs are subject to existing derivatives regulation and typically cash-settled.) As discussed above, licensing is generally required if one provides a service of dealing in or facilitating the exchange of underlying digital payment tokens. However, activities involving physically-settled PTDs do not attract licensing, and may be undertaken by entities *not* licensed under the Payment Services Act. Hence, instead of offering (regulated) services relating to the underlying payment tokens, a person wishing to avoid licensing could conceivably do so simply by offering physically-settled PTDs that have the same economic effect as trading in the underlying payment tokens directly. Structuring one's business in such a manner might not be at odds with the current policy intent if the MAS's concern is solely anti-money laundering and countering the financing of terrorism (AML/CFT),[112] insofar as delivery of the underlying payment tokens, upon settlement of the PTD, still requires the involvement of a licensed payments services provider subject to AML/CFT obligations. Still, if the policy intent changes in the future to include additional considerations such as user protection and combating market abuses in the spot cryptocurrency market (as seems likely to be the case[113]), then this regulatory gap may need to be closed.

Finally, another point of interest is the regulation of certain stablecoin derivatives, particularly, derivatives referencing stablecoins that have their value permanently fixed to one or more fiat currencies. The MAS observed, in 2020, that it regards such derivatives as (traditional) currency derivatives;[114] if this characterisation holds, such stablecoin derivatives are subject to Securities and Futures Act regulation on that basis. It is possible to arrive at this conclusion if one regards the value of a stablecoin derivative as technically "derived from" the value of a currency (as the statutory definition requires[115]). However, it is unclear whether this is necessarily the most appropriate characterisation. As recent destabilisation of stablecoins has

[110] Parliamentary Question 44.
[111] MAS, *PS-G02*, para.4.2.
[112] MAS, *Response to Feedback Received on the Proposed Payment Services Bill* (19 November 2018), para.3.19.
[113] MAS, "Remarks".
[114] MAS, *Response*, para.4.5.
[115] See the definitions of "derivatives contract", "underlying thing", and "financial instrument": Securities and Futures Act s.2(1).

shown,[116] the value of a stablecoin derivative is affected by factors other than the value of the fiat currency to which the underlying stablecoin is pegged. For instance, as the MAS has more recently observed, the exchange rate of stablecoins for currency may vary when stablecoins are traded on exchanges or offered by third-party service providers. Given the MAS's recent clarifications that it expects stablecoins generally to constitute a form of digital payment token (rather than e-money),[117] one open question, then, is whether the MAS's views on stablecoin *derivatives* have since similarly shifted, so as to regard stablecoin derivatives as PTDs (or another type of derivative), rather than as traditional currency derivatives.

# III. Determining the Regulation of Cryptocurrency Derivatives Moving Forwards

Having examined and assessed these three different regulatory approaches in Part II, what insights might they provide for determining the regulation of cryptocurrency derivatives moving forwards?

## *A. The Range of Potential Regulatory Approaches and Policy Options*

To address this question, this section first presents and analyses a (non-exhaustive) range of potential regulatory approaches and policy options. It is based primarily on the approaches considered in Part II, and suggestions considered but not implemented by those regulators. The aim is to present range of practical options available in relation to this specific question; it is not to engage with theories of regulation (such as, for example, evaluating the application in this context of command and control as opposed to responsive regulation), although that is itself a valuable and important exercise. The options are presented on a sliding scale from restrictiveness to permissiveness: (i) imposing an outright prohibition; (ii) applying the existing traditional derivatives regulatory framework; (iii) introducing tailored regulation; (iv) using non-coercive strategies; and (v) supporting private ordering and self-regulation.

### Prohibition on Cryptocurrency Derivatives

On the most restrictive end of the spectrum, regulation could take the form of an outright ban on cryptocurrency derivatives. This could comprise a complete prohibition on all cryptocurrency derivatives activities, or a limited prohibition based on distinctions such as investor classification (for instance, a ban applicable only to retail investors, as in the UK), type of underlying cryptocurrency (for example, exempting derivatives referencing a selection of specified cryptocurrencies) or purpose of trading (such as a ban targeted at speculative trades, with a hedging exemption[118]).

A ban may be justified if the assessment is that cryptocurrency derivatives pose overall net welfare losses. However, one key issue (as discussed above) is that if investor demand is inelastically high, then a ban risks simply driving the migration of retail investment to unregulated platforms – potentially undermining the very consumer protection objective it was intended to promote. This risk is especially germane to cryptocurrency derivatives, given that transactions and platforms are predominantly Internet-based and borderless, with technology

[116] Samson, "Tether's Dollar Peg Snaps".
[117] MAS, *Frequently Asked Questions on the Payment Services Act* (7 March 2022), paras 23.4–23.6.
[118] FCA, *PS20/10*, para.2.28.

allowing traders to mask or spoof their locations.[119] A prohibition alone hence may not achieve the intended outcome. Moreover, even if a prohibition is nuanced by exceptions, there may be issues of administrative workability (for instance, in implementing and supervising a hedging exception) or arbitrariness (for example, in exempting derivatives on a selected few cryptocurrencies, as the valuation difficulties and other considerations motivating a ban would likely apply equally to all cryptocurrency derivatives).[120]

## Existing Derivatives Regulatory Regime

Another approach would be to simply bring cryptocurrency derivatives within the existing regulatory framework applicable to traditional derivatives (such as MiFID in the EU, or the Securities and Futures Act in Singapore). This could involve adapting and applying certain existing requirements to cryptocurrency derivatives (such as advertising restrictions, suitability assessments, disclosure requirements, and leverage limits), as discussed in the next section on tailored requirements. The traditional derivatives regulatory framework is applied, for example, to AE PTDs in Singapore, and to cryptocurrency derivatives that constitute regulated financial instruments in the UK and the EU. This option has the advantage of not needing to drastically reinvent the regulatory wheel, as it were, but rather, simply applying existing regulation.

However, there are some aspects in which existing derivatives regulation, designed for traditional derivatives, may not be an appropriate fit for cryptocurrency derivatives. First, it may have an unintended and undesired legitimising effect, conferring misplaced confidence on cryptocurrency derivatives (this being, for example, the MAS's concern), especially if these products are particularly risky and fundamentally distinct from traditional derivatives. Second, the extreme volatility of the underlying cryptocurrencies may potentially shock clearing organisations through which cryptocurrency derivatives are cleared, with high volatility potentially having an outsized impact even if the overall proportion of cryptocurrency derivatives is relatively small. If such derivatives are cleared through a systemically important clearing organisation, there may be a potential risk of contagion even to entities that do not trade cryptocurrency derivatives or to the wider financial system. (Such concerns were raised in the United States when CME and CFE introduced Bitcoin futures.[121]) To mitigate this contagion risk, one option may be to require segregation of the cryptocurrency derivatives margin and default funds from a clearing organisation's other business. Third, a growth in DeFi cryptocurrency derivatives protocols may necessitate a shift away from entity-based or intermediary-focused regulation to activity-based regulation supplemented by the use of technology (as discussed further in the next section). Insofar as traditional derivatives regulation tends to rely on oversight of intermediaries, it may not be the most appropriate or effective for regulating disintermediated derivatives protocols (an issue for DeFi as a whole, and not only for cryptocurrency derivatives protocols). Fourth, there may be administrative workability issues in imposing existing regimes without tailoring or guidance (as has been encountered, for example, in derivatives reporting). These are all examples of factors that may

[119] Inca Digital, "Geotagging Crypto Derivatives Traders with NLP" (30 July 2021), *https://inca.digital/intelligence/geotagging-crypto-traders/* [Accessed 13 June 2022].
[120] FCA, *PS20/10*, para.2.34.
[121] Walt Lukken, "Open Letter to CFTC Chairman Giancarlo Regarding the Listing of Cryptocurrency Derivatives" (7 December 2017), *Futures Industry Association*, *https://www.fia.org/resources/open-letter-cftc-chairman-giancarlo-regarding-listing-cryptocurrency-derivatives* [Accessed 6 April 2022]; "Blooming Futures?" (16 December 2017), *The Economist*, p.69; Girasa, *Regulation* (2018), p.88.

favour tailored regulation for cryptocurrency derivatives, rather than wholesale application of the existing regulatory framework.

## Tailored Cryptocurrency Derivatives Regulation

Another approach, then, is to implement regulation tailored to cryptocurrency derivatives, of which, aspects may either draw on or depart from existing derivatives regulation. The state of the cryptocurrency derivatives market might not yet (if ever) warrant an entire standalone tailored regime (with, for example, specific permissions for dealing in or operating markets or clearing facilities for cryptocurrency derivatives). Yet, even so, tailored regulations may be appropriate in select aspects (like the imposition of specific leverage limits).

Tailored regulation could draw on and adapt existing regulation applicable to traditional derivatives. For example, cryptocurrency derivatives activities could be restricted only to licensed entities (as is generally the case in the UK and EU, for cryptocurrency derivatives that constitute regulated financial instruments). Specific offering and business conduct requirements could also be implemented, especially for retail customers, to address consumer protection concerns by mitigating losses and ensuring consumers are sufficiently informed and knowledgeable about these products. Such measures may include marketing and advertising restrictions; leverage limits (like those imposed temporarily by ESMA, or by the MAS on regulated financial institutions); a suitability assessment or requirement for investors to demonstrate knowledge and understanding of these products and their underlying cryptocurrencies; or enhanced disclosure requirements or tailored risk warnings. Bolstering investor protection in these ways, and especially from a disclosure perspective, may well be the way forward, if retail trading in cryptocurrency derivatives is not to be prohibited.

As another example, in relation to OTC cryptocurrency derivatives, one option may be to consider reporting, trading, and clearing requirements that parallel existing OTC derivatives regulation (as how some cryptocurrency derivatives are reportable under existing MiFIR and EMIR requirements) – to address concerns about transparency, market abuse, counterparty risk, and systemic risk. Even if such existing requirements are applied, they may need to be clarified (for example, regarding the precise types of products covered) or otherwise tailored (as for instance, with DeFi cryptocurrency derivatives, if parties are required to post full collateral because their identities are unknown, then counterparty risk may be obviated, so that traditional clearing requirements may not be as essential).

Other forms of tailored regulation may need to depart further from traditional derivatives regulation. For example, with DeFi, though regulators may attempt to apply traditional intermediary-focused regulation by exercising oversight over protocol creators, this may be difficult or impossible on occasion (for instance, where the protocol creator has ceased to be involved yet the protocol is still in use). DeFi derivatives protocols hence may necessitate a radical shift in perspective away from entity-based or intermediary-focused regulation. One possibility may be to develop and utilise new technologies for supervisory and regulatory purposes (i.e., SupTech). This may include using tools like pattern recognition and big data analysis to monitor for illicit activity like fraud and market abuse, and once such is identified, working backwards to identify the pseudonymous perpetrator.[122]

[122] See, e.g., J. Christopher Giancarlo, *CryptoDad: The Fight for the Future of Money* (New Jersey: Wiley, 2022), p.263.

Regulators could also consider clarifying legal issues that impact cryptocurrency derivatives activities. Although there is some consensus for instance in English[123] and Singaporean case law[124] that cryptocurrencies are property, there is scope for further clarity on theoretical issues such as the exact nature of the property right, and on practical implications, such as how that specifically impacts the development of effective collateral arrangements for cryptocurrency derivatives. Notably, in this regard, in July 2022, the UK Law Commission provisionally proposed the recognition of "data objects" as a new and distinct third category of personal property, into which it anticipated most crypto-tokens would likely fall.[125] The Commission also consulted on law reform proposals relating to matters such as transfers and custody of crypto-tokens, and crypto-token collateral arrangements[126] – focusing on matters of private law, rather than of regulation.[127] It is anticipated that by potentially bringing a great deal more clarity to the private property law of digital assets, this groundbreaking process may help develop a foundation of greater legal certainty that will be facilitative for the cryptocurrency derivatives market, as well as provide a model for similar legal reform efforts in other jurisdictions.

## Non-coercive Measures

Briefly, yet another form of intervention is measures that stop short of coercion. Measures that address the demand side include regulators issuing cautions against investing in cryptocurrency derivatives,[128] maintaining a list of unregulated entities for investors' reference (such as the FCA Warning List and MAS Investor Alert List[129]) and stepping up consumer education efforts (such as the FCA's ScamSmart campaign and Singapore's national financial education programme, MoneySense[130]). Measures addressing the supply side may include "soft law" industry codes to which cryptocurrency derivatives providers and platforms voluntarily agree to commit. While these efforts lack teeth, they are an essential part of any regulatory response.

## Private Ordering and Self-regulation

Finally, one option is to leave governance to private ordering and self-regulation, refraining from regulatory intervention. Instances of such industry-led efforts can be seen especially in the OTC cryptocurrency derivatives market. For example, regarding standardisation of contractual documentation, the International Swaps and Derivatives Association recently published a paper on contractual standards for digital asset derivatives, which explained how the organisation intends to develop templates and definitions for such products.[131] As another example, regarding the issue of mitigating counterparty risk, a private Singapore company has

[123] *Vorotyntseva v Money-4 Ltd* [2018] EWHC 2596 (Ch) at [13]; *Robertson v Persons Unknown* Unreported 15 July 2019 EWHC; *AA v Persons Unknown* [2019] EWHC 3556 (Comm); [2020] 4 W.L.R. 35 at [55]–[61]. See also UK Jurisdiction Task Force, *Legal Statement on Cryptoassets and Smart Contracts* (The LawTech Delivery Panel, 1 May 2021), p.7.
[124] *Quoine Pte Ltd v B2C2 Ltd* [2020] 2 SLR 20 at [144]; *CLM v CLN* [2022] SGHC 46 at [46]. See also K. Low and E. Teo, "Bitcoins and Other Cryptocurrencies as Property?" (2017) 9(2) Law, Innovation and Technology 235.
[125] Law Commission, *Digital Assets Consultation Paper* (28 July 2022), Law Com. No.256, Ch.4, fn.698.
[126] ibid., Chs 12–13, 16–18.
[127] ibid., paras 1.12, 1.26.
[128] e.g., European Supervisory Authorities, *EU Financial Regulators Warn Consumers on the Risks of Crypto-assets* (17 March 2022), ESA 2022 15, p.3.
[129] FCA, "Unauthorised firms and individuals", *https://www.fca.org.uk/consumers/unauthorised-firms-individuals* [Accessed 11 June 2022]; MAS, "Investor Alert List" *https://www.mas.gov.sg/investor-alert-list* [Accessed 11 June 2022].
[130] FCA, "ScamSmart", *https://www.fca.org.uk/scamsmart* [Accessed 13 June 2022]; MoneySense, "The Risks You are Exposed to When Trading in Cryptocurrencies and Their Derivatives" (9 November 2021), *https://www.moneysense.gov.sg/articles/2021/11/the-risks-you-are-exposed-to-when-trading-in-cryptocurrencies-and-their-derivatives* [Accessed 11 June 2022].
[131] ISDA, "Contractual Standards", p.3.

previously indicated that it intends to provide central counterparty services for OTC crypto derivatives dealers.[132]

As the foregoing examples suggest, this approach may be more appropriate in the institutional OTC market, where parties are more likely to have comparable bargaining power. An advantage, generally, is that such self-regulation may permit more organic development, which can then guide regulators' oversight. Nevertheless, where reliance is on the market to police itself, the dangers of market failure loom large, and especially so in the cryptocurrency derivatives market, given the spectre of catastrophic failure in the wider derivatives market that precipitated 2008's global financial crisis.

The range of reasonable policy responses, intriguingly, hence ranges widely from outright prohibition to relying on private ordering, each with its own issues and advantages.

## *B. Imperatives Guiding Regulatory Choices*

As the previous section evinces, there is a broad range of potential policy options. Indeed, different jurisdictions have taken divergent regulatory approaches and employed different policy tools, in various combinations. What, then, are some key considerations and imperatives that have guided past regulatory choices, and that may or should guide future regulatory choices?

### Distinctive Features and Risks

One key imperative is the relevant distinctive features and risks of cryptocurrency derivatives. Such features and risks may relate to (i) the derivatives contracts themselves (for example, product complexity and access to leverage); (ii) the associated technological infrastructure (such as DeFi derivatives protocols); (iii) the underlying cryptocurrencies (for instance, volatility and lack of inherent value); or (iv) their enabling technologies (such as distributed ledger technologies). While some characteristics and risks of cryptocurrency derivatives are indeed common to other types of derivatives products, others are novel or distinct, and rather than being strictly "technology neutral" or "product neutral", effective regulation must account for these relevant characteristics.

The first aspect to consider is the underlying cryptocurrencies, as several principal distinctive features of cryptocurrency derivatives are traceable to the nature of these underlying assets. Indeed, there is debate in financial research as to whether cryptocurrencies and other digital assets should be regarded as an asset class of their own.[133] A key characteristic, raised by all three regulators considered above, is that the underlying cryptocurrencies have no inherent value. This commonly accepted claim has on occasion been disputed, but even if one accepts that certain cryptocurrencies have a determinable "fair" value,[134] it remains that another key characteristic of many cryptocurrencies is their extreme price volatility, which is often speculation-driven. The annualised volatilities for leading cryptocurrencies are reportedly up to 254%,[135] and this high volatility magnifies losses. Relatedly, concerns also surround the integrity of cryptocurrencies' price formation process. Spot cryptocurrency markets are not

[132] Liquidity Offset Network, "Institutional Digital Asset Platform"; Marsh, "Crypto's Long Road".
[133] Steffen Günther, Tobias Glas, Thorsten Poddig, "Asset Pricing in Digital Assets" (May 2022) (Diginomics Working Paper No.0015), p.9, *Universität Bremen*, *https://www.uni-bremen.de/graduiertengruppe-diginomics/forschung/diginomics-working-paper* [Accessed 2 June 2022], p.7.
[134] See, e.g., ibid., p.3.
[135] ibid., p.9.

subject to market abuse regulation in many jurisdictions, making these markets especially vulnerable to market abuse and fraud. All these factors make cryptocurrencies difficult (if not impossible) to value, and difficult for retail investors to understand. These contribute to the distinctively heightened riskiness of cryptocurrency derivatives, especially for retail investors – a factor that effective regulation must consider. Additionally, the legal characterisation and regulatory status of cryptocurrencies is currently often unclear, so that investment in cryptocurrency derivatives may pose greater legal risks (for example, if underlying cryptocurrencies become prohibited in a particular jurisdiction, or if the regulatory characterisation of a cryptocurrency, such as a stablecoin, changes).

The second aspect to consider is the underlying cryptocurrencies' enabling technologies, and how these may impact cryptocurrency derivatives. For example, if a controversial hard "fork" in the blockchain arises due to a protocol change, resulting in two different classes of what was once a single cryptocurrency, then for a derivative referencing the original cryptocurrency, there would need, for instance, to be clear identification of what is the referenced underlying cryptocurrency post-fork. Other examples of technological issues that may impact cryptocurrency derivatives include airdrops, cyberattacks,[136] and hacking of indices from which the spot cryptocurrency price is derived. Technological issues have several implications for the regulatory approach. First, the underlying technologies may contribute to the complexity and risk of cryptocurrency derivatives, making them less easily understood by investors. This may, affect, for example, disclosure and risk warning requirements (if implemented). Second, the novelty of these technologies may give rise to consequences unaccounted for in existing contractual documentation, necessitating care in identification and allocation of relevant risks that arise. Though this may not warrant regulators' intervention, it nonetheless is a factor, for example, in the industry's development of contractual standards for OTC cryptocurrency derivatives, which can arguably be understood as a form of "regulation through contract" or the creation of a private regulatory regime through contract.[137] These are but some ways in which enabling technologies of the underlying cryptocurrencies may impact cryptocurrency derivatives and their regulation.

The third aspect to consider relates to the derivatives contracts themselves. In this respect, cryptocurrency derivatives share many relevant features and risks with traditional derivatives. These include access to leverage that magnifies losses and risk, and product complexity that make these products more difficult for consumers to understand. Regulation should and has accounted for how these features make cryptocurrency derivatives inherently risky for investors. Yet other issues are not new, but are magnified by the unregulated status of cryptocurrency derivatives and the platforms on which they are traded in many jurisdictions (including in Singapore with respect to non-AE PTDs). These include the opacity of trading activity especially on OTC markets, market abuses, and platform outages, which have caused actual harm, and pose potential harm, to consumers. Additionally, as an ancillary but still important point, cryptocurrency derivatives are themselves potentially potent instruments of market abuse or sources of price volatility in the *spot* cryptocurrency markets. For example, spot markets are potentially vulnerable to drastic price swings in the event of the liquidation of large derivatives transactions – especially since cryptocurrency derivatives trading volumes exceed spot cryptocurrency trading volumes.[138] This is of especial concern because unlike traditional markets, cryptocurrency spot and derivatives markets are often not subject to as rigorous regulation and organisation, and spot cryptocurrency markets are (as yet) typically not

[136] See ISDA, "Contractual Standards", p.11.
[137] M. Konrad Borowicz, "Contracts as Regulation: The ISDA Master Agreement" (2021) 16(1) Capital Markets L.J. 72.
[138] CryptoCompare, "June 2022", p.12.

subject to market abuse regulation.[139] Cryptocurrency derivatives hence have the potential to exacerbate harms to investors in the spot cryptocurrency market, and undermine the integrity of these markets.

Additionally, a fourth aspect to consider is the technological infrastructure associated with cryptocurrency derivatives. The Internet-based nature of trading greatly expands the availability of access to overseas unregulated platforms. This is an important consideration in determining the regulatory approach, from assessing the efficacy of a national ban, to shaping consumer education efforts. The growth of DeFi derivatives protocols also affects the regulatory approach. The inherent disintermediation, for example, makes it difficult to implement intermediary-focused regulation.

Cryptocurrency derivatives hence have several distinctive features and risks, which must be accounted for if regulation is to be effective.

## Market Realities

Furthermore, regulatory choices should be informed by and responsive to market realities, including product innovation, the evolution of the cryptocurrency derivatives market over time, and institutional and retail demand. Product innovation has featured prominently in the cryptocurrency derivatives market, from the introduction of perpetual swaps and futures to the adoption of DeFi derivatives protocols. Regulation must respond to the risks product innovation poses (for example, in Singapore, following the introduction of cryptocurrency futures, adjustments were made to the scope of PTDs that are subject to traditional derivatives regulation). Different regulation may also be appropriate depending on the evolution of the market over time. For instance, while the market is still nascent, it may be appropriate to restrain regulatory intervention and rely on private ordering; introducing a tailored regulatory regime may only be appropriate at a stage of greater market maturity (if at all).

Regulation must also be responsive to the realities of institutional and retail demand, which respectively raise separate yet significant concerns. Institutional participation, especially by traditional systemically important financial institutions, raises concerns such as the risk of contagion and the appropriate prudential treatment of cryptocurrency derivatives. As for retail participation, to the extent that retail interest in cryptocurrency derivatives is high or growing, regulatory intervention may be unavoidable. For example, the level of retail investment in cryptocurrency derivatives appears crucial in accounting for the difference in approaches in the UK and Singapore. In Singapore, the MAS previously found that retail participation was relatively low, driving the approach of limiting regulation of PTDs, to avoid legitimising and encouraging wider retail offering of such products. In the UK, however, the FCA estimated notable retail losses, which from its perspective, justified the different regulatory response of a retail ban.[140] Market realities hence have shaped and should shape regulatory responses.

Relatedly, it is also valuable to gain an understanding of investors' concerns and motivations. On a "micro" level, this is helpful for shaping policy on cryptocurrency derivatives specifically. For example, FCA consumer research found that the most popular reason for respondents' purchase of cryptoasssets was "as a gamble that could make or lose money."[141] To the extent that similar motivations drive demand for cryptocurrency derivatives,

[139] Günther, "Asset Pricing", p.10.
[140] FCA, *PS20/10*, para.4.19.
[141] FCA, "Cryptoasset Consumer Research".

this can help justify a decision to clamp down on excessive speculation. On a "macro" level, understanding investors' motivations and concerns may also be needful for shaping wider economic and social policy, especially if demand for cryptocurrencies and cryptocurrency derivatives is driven not just by the desire to "make a quick buck", but also by deeper economic anxieties or even loss of trust in the traditional and centralised financial system – issues that cannot be addressed by financial regulation of cryptocurrency derivatives alone.

## Regulators' Mandates, Philosophies, and Policy Priorities

Finally, cryptocurrency derivatives raise several broad policy considerations that recur across jurisdictions. Yet, regulators have differed in their responses, even in pursuit of the same objective. Despite shared policy concerns, the preferred approach hence will of course also differ depending on each regulator's particular mandate, philosophy, and policy priorities.

The foremost shared policy consideration, which emerges in the three approaches considered here, is that of investor protection. Many features of cryptocurrency derivatives make these especially risky products, such that retail investors, especially, risk suffering sudden, substantial losses. Still, even this priority can be framed differently by different regulators, resulting in distinct responses. In the UK, the first of the FCA's three statutory operational objectives is consumer protection.[142] Likewise, in the EU, enhancing customer and investor protection is one of ESMA's purposes, as expressed in its founding regulation.[143] In Singapore, however, investor protection is not listed among the principal statutory objects of the MAS.[144] Rather, in a non-binding monograph expanding on the supervisory aspect of its mandate, the MAS frames its objective somewhat differently, as being that of "well-informed and empowered consumers" – where consumers have the principal responsibility for protecting their own interests, and the MAS's role is to help ensure consumers can assume that responsibility.[145] This difference in framing of a similar policy consideration may partly explain the different approaches of a retail prohibition in the UK, as opposed to discouraging but not prohibiting retail participation in Singapore. Still, investor protection evidently has been, and must generally be, a key objective of any regulatory approach, though the specific policy responses (for example, a product ban, or loss-mitigating measures, or efforts to bolster consumer knowledge and disclosures) may well differ.

The other key policy concern is maintaining the integrity and stability of the financial system, by addressing the risk of contagion arising from cryptocurrency derivatives activities, especially those involving systemically important financial institutions. This is another concern that generally militates in favour of protective and restrictive measures, together with other concerns such as safeguarding the jurisdiction's reputation as a financial centre (a concern particularly in Singapore).

Still, these must also be balanced against other considerations that favour a degree of openness to cryptocurrency derivatives, including facilitating financial innovation and maintaining competitiveness vis-à-vis other jurisdictions. In this, each regulator has arrived at a different balance. In the UK, though circumscribed by the retail ban on cryptocurrency derivatives, space remains for innovation through non-retail cryptocurrency derivatives activities and in the underlying cryptoassets. In Singapore, the more permissive regulatory

[142] Financial Services and Markets Act s.1C.
[143] Regulation 1095/2010 reg.5(f).
[144] Monetary Authority of Singapore Act 1970 (Singapore) s.4(1).
[145] MAS, *Objectives*, pp.10–11.

environment is facilitative of innovation through even unlicensed and unregulated cryptocurrency derivatives activities, though with the trade-off of overall reduced protections for investors. Despite broad commonalities in key policy concerns, then, the regulatory approach will still necessarily differ based on each regulator's particular mandate, philosophy, and balancing of various policy priorities.

## Conclusion

There is evidently a wide range of potential regulatory approaches to cryptocurrency derivatives – ranging from blanket prohibitions, to tailored regulation, to a more laissez-faire approach – each with their own issues and advantages. The three regulators considered here have taken extremely different approaches, suggesting that there is hardly a "one size fits all" solution that can be applied in every context. What, then, has shaped, and should shape regulatory choices? This paper draws three broad conclusions to this question. First, an effective regulatory approach to cryptocurrency derivatives should account for the relevant distinctive features and risks of these products, rather than being strictly "technology neutral" or "product neutral". Second, regulation should be informed by and responsive to market realities, including product innovation, market evolution, and institutional and retail participation. Third, cryptocurrency derivatives raise common policy considerations across different jurisdictions, investor protection chief among these; yet, regulation is still shaped by the regulator's particular policy priorities, regulatory mandate, and philosophy, which will differ from jurisdiction to jurisdiction.

This paper has covered but a small part of a rapidly shifting landscape. There remain important issues and open questions pertaining to the regulation of cryptocurrency derivatives (such as the prudential treatment of cryptocurrency derivatives), and relatedly, the regulation of derivatives on other cryptoassets (such as security tokens). More broadly, the phenomenon of interest in cryptocurrency derivatives also poses wider questions, beyond the specific issue of the appropriate financial regulatory response – questions about the ideological convictions, speculative ethos, and economic and social anxieties driving this demand; and even potentially about broader trends of financialisation. As the cryptocurrency derivatives market continues to grow and evolve, these are questions we must grapple with not only from a financial regulatory perspective, but also as a society.