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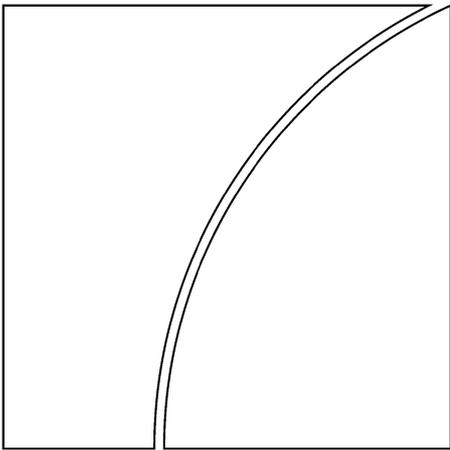
The macrofinancial implications of alternative configurations for access to central counterparties in OTC derivatives markets

Report submitted by a Study Group established by the Committee on
the Global Financial System

The Group was chaired by Timothy Lane, Bank of Canada

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Preface

Central counterparties (CCPs) will play an important role in the financial architecture emerging from the recent financial crisis. The G20 Leaders' commitment that all standardised over-the-counter (OTC) derivatives should be centrally cleared by the end of 2012 is intended to increase the safety and resilience of the global financial system. Achieving these objectives depends importantly on the arrangements through which market participants obtain access to central clearing. Such arrangements could include increased use of existing global CCPs, the establishment of domestic CCPs in a number of jurisdictions, and the possible construction of links between CCPs.

To analyse the potential implications for financial stability and efficiency of alternative access arrangements to CCPs, the Committee on the Global Financial System (CGFS) established a Study Group chaired by Timothy Lane of the Bank of Canada. The Group's report was presented to central bank Governors at the Global Economy Meeting in November 2011, where its publication was endorsed.

I hope this report will inform policy deliberations and assessments related to alternative CCP access configurations.

Mark Carney

Chairman, Committee on the Global Financial System
Governor, Bank of Canada

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Executive summary

The G20 commitment that all standardised OTC derivatives should be centrally cleared by the end of 2012 is intended to reduce counterparty risk and thus increase the safety and resilience of the global financial system. Achieving these objectives depends importantly on the arrangements through which market participants access central counterparties (CCPs). The configuration of access must take account of the globalised nature of the market, in which a significant proportion of OTC derivatives trading is undertaken across borders.

In this context, various alternative access arrangements are under consideration. Market participants could access existing global CCPs, either as direct clearing members or indirectly through direct clearing members. At the same time, market participants and authorities in several jurisdictions are exploring the establishment of local CCPs to help their domestic financial institutions meet the requirement for mandatory clearing of standardised OTC derivatives. The possible benefits of establishing links between CCPs are also being explored.

The conditions under which market participants can obtain access to central clearing could have important systemic implications. In particular, existing access criteria for some major OTC derivatives CCPs – developed in the era of voluntary clearing – led the direct access to CCPs to be dominated by the largest global dealers. Partly as a result, clearing of OTC derivatives is currently the preserve of a few large dealers, with around 5–15 institutions dominating turnover in all instruments within each derivative class. This raises the concern that the move to clear all OTC derivatives centrally could potentially further reinforce the concentration of risk in those global dealers. While the access policies of CCPs and new laws and regulations governing them are continuing to adjust to the new era of mandatory clearing, such concentration remains a relevant issue.

This report analyses the potential implications of these developments for financial stability and efficiency and provides an assessment of the trade-offs involved. Some of the main conclusions are as follows:

- Expanding direct access to CCPs may reduce the concentration of risk in the largest global dealers. It may also increase competition among direct clearers, with the potential to yield efficiency benefits through greater choice and lower fees for indirect clearers. As direct access is broadened, it is essential that CCPs' risk management procedures be adapted appropriately to ensure their continued effectiveness. This may entail more complex risk management procedures, possibly putting a greater burden on CCPs' management in maintaining safe risk control practices.
- Safe and efficient indirect clearing also broadens access to CCPs, making it an important complement to direct clearing. Enhancements to strengthen the safety and efficiency of indirect clearing that comply with international standards should be considered by CCPs and authorities where needed. Effective segregation as well as portability of positions and collateral belonging to a direct clearer's clients will be needed to realise the benefits of systemic risk reduction.
- The establishment of domestic CCPs for some types of OTC derivatives may become an important part of the global infrastructure for clearing standardised contracts. A domestic CCP could strengthen the ability of local authorities to exercise oversight and regulation of derivatives trading activity in their own jurisdictions, as well as to perform crisis management and resolution if needed. Domestic CCPs are more likely to have significant benefits in markets where local participants are prominent or where there are special market needs. At the same time, an international architecture with numerous domestic CCPs could lead to greater system-wide demand for collateral assets than if a global CCP were to centralise all clearing, as well as to the fragmentation of trading and financial positions across numerous CCPs.

- Both large global and smaller regional or domestic CCPs will probably play a role in meeting G20 commitments. In both cases, development and adoption of international standards will be essential to avoid regulatory arbitrage and promote effective cross-border monitoring of infrastructure and participants.
- Links among CCPs have the potential to preserve the network advantages of concentrating clearing activities through increased multilateral netting by providing direct and indirect clearers at a particular CCP with access to a larger pool of counterparties and collateral assets associated with other (linked) CCPs. But links between CCPs can create distinct risks, particularly in the form of operational and legal challenges as well as credit and liquidity risks associated with the connections between CCPs. Such links must be designed appropriately to avoid creating new channels for risk propagation. As links among CCPs clearing OTC derivatives remain a new and untested area for markets and policymakers, authorities should encourage industry participants to suggest solutions for the legal, financial and operational risks posed by links and cross-margining practices. Significant review by the appropriate authorities is likely to be required.
- The adequate mitigation of risks associated with the different access configurations will depend importantly on the completion of ongoing international work – notably in CPSS-IOSCO and related working groups – as well as the implementation of their recommendations. Timely monitoring of the system-wide effects of access configurations will help promote the safety and efficiency of these markets as G20 jurisdictions work towards expanded use of central clearing in OTC derivatives. Such monitoring could include the monitoring of changes in access arrangements as they occur and a review of the systemic implications once the work to fulfil the G20 mandate for central clearing of all standardised OTC derivatives has been completed.

1. Introduction

Central counterparties (CCPs) will play an important role in the financial architecture emerging from the recent financial crisis. Under the G20 reform agenda to strengthen the safety and resilience of financial markets, all standardised over-the-counter (OTC) derivative trades will have to be centrally cleared and reported to trade repositories by end-2012. The move to central clearing will reduce systemic risk arising from the interconnectedness of OTC derivatives market participants and enhance the transparency of exposures arising from derivatives trades.

Realising this reduction in systemic risk, however, depends critically on the arrangements through which market participants obtain access to CCPs. The G20 mandate is being met in part through increased use of existing global CCPs and in part through the establishment of new domestic CCPs in a number of jurisdictions.¹

Alternative CCP access configurations may have different implications for the financial system's efficiency and stability. For example, access rules for global CCPs until recently tended to admit only the major global dealers as direct clearing members, although these rules are continuing to develop in response to regulatory changes and market forces. Such rules tend to intensify the concentration of risk in those dealers, both directly by increasing the volume of transactions cleared through them and indirectly by increasing their ability to attract other financial activity. Conferring direct access to central clearing services on a larger number of players may alleviate this problem, but only if it is done with due regard to the CCP's safety. Establishing domestic CCPs, while possibly mitigating the concentration of risk associated with global CCPs, could also in some cases weaken the associated benefits of netting and risk mutualisation and result in greater market fragmentation. Establishing links between CCPs might reduce collateral requirements through enhanced multilateral netting, but could become a channel of transmission for systemic stress and would also require resolving cross-jurisdictional issues arising from collateral transfers among linked CCPs.

To assess the macrofinancial implications and trade-offs between the stability and cost of alternative CCP access configurations, the Committee on the Global Financial System (CGFS) established a study group chaired by Timothy Lane, Deputy Governor of the Bank of Canada. The group was also asked to identify particular aspects of emerging clearing solutions for derivatives markets that should be monitored as countries implement G20 commitments.

The report is organised as follows. Section 2 presents the evolving landscape of central clearing highlighting the key drivers contributing to the changes and the leading trends in central clearing services. Section 3 analyses the implications for financial stability and efficiency of increased direct access to CCPs, the creation of domestic CCPs and links among CCPs. Section 4 presents implications for policy, including issues and challenges, that arise from the alternative access models for central clearing of OTC derivatives trades.

¹ Whether a CCP is characterised as "global" or "domestic" depends on the cross-border scope of its activity. For instance, a CCP may be categorised as "global" if a significant proportion of its clearing members, its clearing currencies and the trading venues it serves belong to jurisdictions other than that of its incorporation.

2. The evolving landscape in central clearing

This section describes the current state and prospective evolution of central clearing arrangements, with a view to informing the sections on risk assessment and policy that follow.

2.1 What does the landscape look like today?

The notional principal amount of outstanding OTC derivatives was estimated to be \$600 trillion as at December 2010 (Table 1). This is an order of magnitude larger than the equivalent measure of global exchange-traded derivatives (futures and options), which was around \$70 trillion as at December 2010. By far the largest OTC derivatives class is interest rate instruments, with a total outstanding notional amount of \$465 trillion, mainly in interest rate swaps. Although all derivatives classes have seen growth in outstanding notional amounts over the past decade, the volume of interest rate derivatives has shown a particularly strong expansion, reflecting both the increased use of these instruments and the fact that many interest rate swaps are of long duration – years and decades in some cases – leading to an accumulation of gross outstanding positions.

Table 1
Global outstanding derivatives volumes

In billions of US dollars, December 2010

Product classes ¹	Gross notional amounts outstanding	Gross market values	Memo: Exchange-traded derivatives – gross notional outstanding
FX instruments	57,798	2,482	314
Outright forwards and swaps	28,434	886	
Currency swaps	19,271	1,235	
Options	10,092	362	
Single-currency interest rate derivatives	465,260	14,608	61,943
Forward rate agreements	51,587	206	
Interest rate swaps	364,378	13,001	
Options	49,295	1,401	
Equity-linked derivatives	5,635	648	5,689
Forwards and swaps	1,828	167	
Options	3,807	480	
Commodity derivatives	2,922	526	
Forwards and swaps	2,011	na	
Options	910	na	
Credit derivatives	29,898	1,351	
Single-name	18,145	884	
Multi-name	11,753	467	
Unallocated	39,536	1,532	
TOTAL	601,048	21,148	

¹ Note that it is not yet known which of these product classes and sub-classes will be clearable, nor which will be subject to a clearing mandate within or across jurisdictions.

Source: BIS.

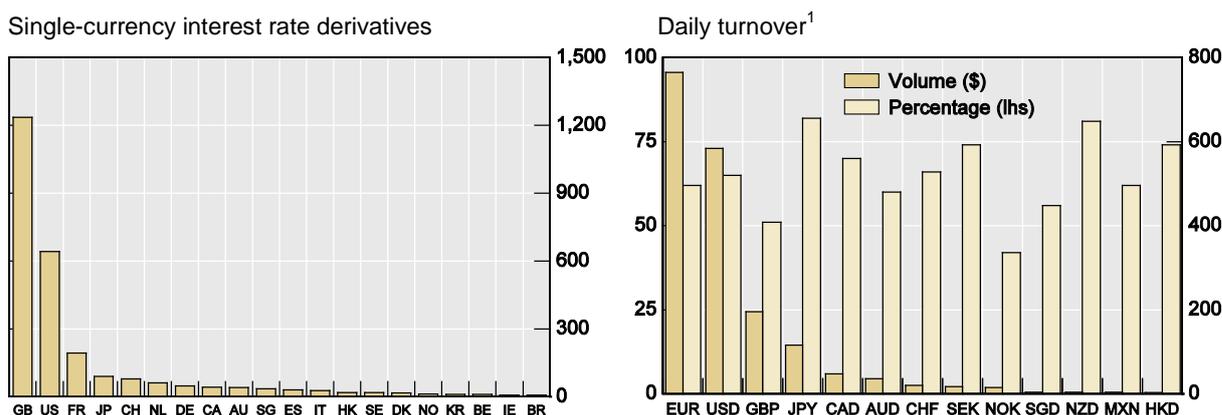
However, these gross notional figures tend to overstate the true risk exposures, because many outstanding positions are offsetting. For example, the estimated market replacement cost of outstanding positions as at December 2010 was around \$21 trillion – less than 5% of the gross notional amounts. Many of the positions that can be netted out are economically redundant, but they must still be appropriately risk-managed over the remainder of their lifecycle, adding to participants’ operational and counterparty risk management challenges. The efficient and robust risk management and multilateral netting opportunities that CCPs can provide in these circumstances are one of the key benefits of requiring that these derivatives be cleared centrally.

Trading in OTC derivatives takes place in a large number of countries (Graph 1, left-hand panel). Counterparties located in the United Kingdom represent by far the largest share of activity for interest rate derivatives, with the second most active country being the United States. Large continental European countries and Japan also have significant levels of trading, albeit substantially smaller than in the United Kingdom or the United States. Relatively small amounts of trading involve counterparties located in other countries in Europe, Asia-Pacific and the Americas. For many of these smaller markets, trading is dominated by local currency products, in contrast to the United Kingdom and the United States, where multiple currencies are actively traded.

Graph 1

Location of OTC interest rate derivatives turnover and cross-border activity

Daily average in billions of US dollars, April 2010



GB = United Kingdom; US = United States; FR = France; JP = Japan; CH = Switzerland; NL = the Netherlands; DE = Germany; CA = Canada; AU = Australia; SG = Singapore; ES = Spain; IT = Italy; HK = Hong Kong SAR; SE = Sweden; DK = Denmark; NO = Norway; KR = Korea; BE = Belgium; IE = Ireland; BR = Brazil; EUR = euro; USD = US dollar; GBP = pound sterling; JPY = Japanese yen; CAD = Canadian dollar; AUD = Australian dollar; CHF = Swiss franc; SEK = Swedish krona; NOK = Norwegian krona; SGD = Singapore dollar; NZD = New Zealand dollar; MXN = Mexican peso; HKD = Hong Kong dollar.

¹ Forward rate agreements and interest rate swaps.

Source: BIS.

Around 90% of interest rate derivatives contracts are denominated in one of a small number of currencies: the US dollar, the euro, sterling or the Japanese yen. A very high proportion of the trading in OTC derivatives markets is cross-border, and this trend is apparent across most currencies and counterparty types (Graph 1, right-hand panel). For example, almost 65% of transactions (by value) in OTC interest rate derivatives take place between counterparties resident in different countries.

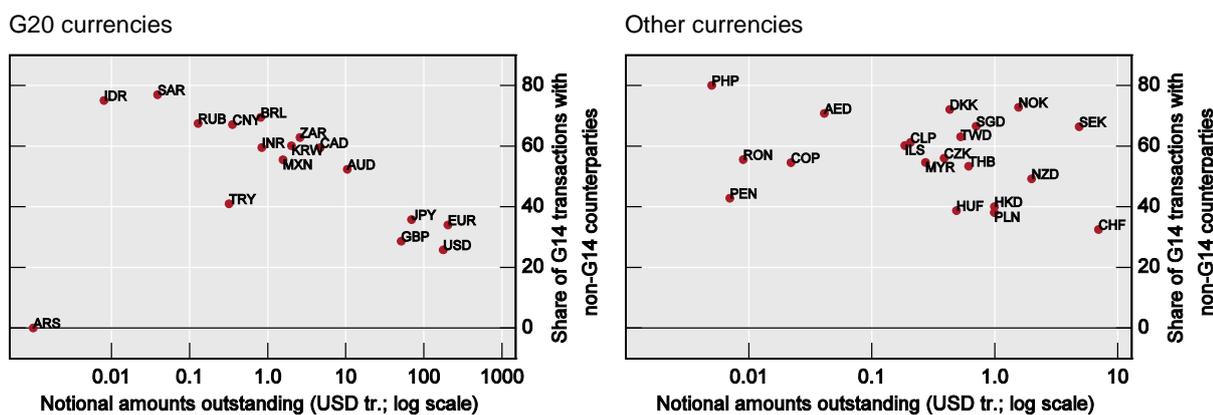
Among the major currencies, sterling accounts for a disproportionately small share of cross-border trading volumes. This is perhaps due to the fact that many of the dealers and other counterparties trading this currency have significant trading presences in London. A similar effect is also likely to be driving turnover in the Singapore dollar, whereas the low share of cross-border activity in the Norwegian krone could be attributed to this currency being predominantly used by domestic participants. In contrast, currencies with larger than average

cross-border activity include the Japanese yen and New Zealand dollar, each with around 80% of total turnover taking place between counterparties in different countries. Overall, the highly globalised nature of trading in many segments of this market is very evident. This in turn makes it difficult to define in which country's jurisdiction or financial system many transactions are taking place.

Within each derivative class, around 5–15 dealers dominate turnover in all instruments. In less actively traded currencies and instruments, dealer concentrations tend to be somewhat higher. For interest rate derivatives, there is significant variation in the composition of dealers across currency denominations (Graph 2). The largest global dealers – who have come to be labelled as the “G14” (see Annex 1) – clearly dominate trading in the major currencies (US dollar, euro, sterling and Japanese yen). Only about 40% of G14 dealers' positions in these currencies involve a counterparty that is not another dealer in this group, indicating that a large amount of trading in these currencies is intra-G14. But, moving away from these currencies, the share of G14 dealers' transactions undertaken with non-G14 dealers increases to 50% or more, and for particularly small regional currencies the share is around 75%. This suggests that the composition of the inter-dealer market in these currencies is quite different from that of the largest markets.

Graph 2

Interest rate derivatives counterparties¹



AED = UAE dirham; AUD = Australian dollar; BRL = Brazilian real; CAD = Canadian dollar; CHF = Swiss franc; CLP = Chilean peso; CNY = Chinese renminbi; COP = Colombian peso; CZK = Czech koruna; DKK = Danish krone; EUR = euro; GBP = pound sterling; HKD = Hong Kong dollar; HUF = Hungarian forint; IDR = Indonesian rupiah; ILS = Israeli new shekel; INR = Indian rupee; JPY = Japanese yen; MXN = Mexican peso; MYR = Malaysian ringgit; NOK = Norwegian krone; NZD = New Zealand dollar; PEN = Peruvian new sol; PHP = Philippine peso; PLN = Polish zloty; RON = Romanian leu; RUB = Russian rouble; SAR = Saudi riyal; SEK = Swedish krona; SGD = Singapore dollar; THB = Thai baht; TRY = Turkish lira; TWD = New Taiwan dollar; USD = US dollar; ZAR = South African rand.

¹ In trillions of US dollars; x-axis on log scale. Based on trades registered by G14 dealers as at 29 July 2011. See Annex 1 for a list of G14 dealers.

Source: TriOptima.

In some OTC derivatives markets, CCPs are available to support participants' activity. For the most part, these CCPs are located in the largest markets – the United Kingdom, the United States and mainland Europe. Only a small number of the existing CCPs have developed a significant market share to date. LCH.Clearnet's SwapClear facility, located in London, clears a significant share of US dollar, euro, sterling, Swiss franc and Japanese yen interest rate swaps.² ICE Clear, also located in London, has the largest share of European

² SwapClear also provides clearing services for interest rate swaps denominated in other currencies. Members pay a fixed annual clearing fee to participate in the SwapClear service.

credit default swaps (CDS), while its US affiliate ICE Clear Credit (formerly ICE Trust) has the largest share of US CDS.

2.2 What are the drivers for change?

Alongside the expansion in OTC derivatives market activity, the clearing industry has undergone significant changes over the past decade.³ These changes include, in some cases, the consolidation of existing CCPs to form large, multi-product CCPs (horizontal integration) and, in others, the formation of groups that include exchanges and trading platforms, and in certain instances central securities depositories (vertical integration). Both forms of integration bring benefits. Horizontal integration allows a combination of central clearing and other post-trade functions to service a range of trading venues or market participants, possibly in different jurisdictions. Vertical integration can facilitate harmonised trading and post-trade activity, potentially resulting in efficiencies for both participants and infrastructure providers.

To date, clearing of OTC derivatives remains concentrated in a handful of large CCPs but a number of new CCPs are being proposed to serve smaller or nascent markets. Present indications are that, within the next few years, the central clearing landscape for OTC derivatives could consist of around 20 CCPs (see Annex 2). Competition between CCPs clearing similar OTC derivatives has developed only recently, inhibited in part by the significant technical expertise (including sophisticated risk management models and appropriate default management processes) required to clear these complex products, as well as the economies of scale associated with this activity.

The factors that are bringing about these changes include growing globalisation of financial services and new regulatory initiatives. In the context of OTC derivatives, key regulatory drivers have been the G20 commitment to central clearing for standardised OTC derivatives, related regulatory efforts to increase standardisation of contractual terms for derivatives contracts and the use of standardised operational processes that in turn facilitate central clearing.⁴ Technological improvements allowing greater use of electronic trading and post-trade processes, such as trade confirmation systems and portfolio reconciliation, have enabled the development of central clearing in this market and lowered barriers to entry in an industry that was once widely viewed as a natural monopoly. Market participants themselves have also sought to increase their use of CCPs, having developed a greater awareness of counterparty credit risks over the course of the recent financial crisis.

2.3 Leading trends

Developments in the OTC derivatives market described in the earlier sections suggest that, with increasing regulatory and commercial pressures for the expansion of central clearing of OTC derivatives, market participants will either have to join CCPs as direct members (if this is possible) or rely on the clearing services offered by direct members of CCPs (most likely global dealers). If a large share of the dealer community has to follow the latter option, this would lead to increased tiering in the clearing space, potentially reinforcing the role of global dealers as providers of critical financial services. The risks arising from such increased tiering in the central clearing of OTC derivatives transactions would then need to be balanced against the costs of expanding direct CCP access.

³ See CPSS, "Market structure developments in the clearing industry: implications for financial stability", *CPSS Publications*, no 92, November 2010.

⁴ See Leaders' statement at the September 2009 G20 Pittsburgh Summit; Financial Stability Board report on *Implementing OTC derivatives market reforms*, 25 October 2010.

Against the backdrop of regulatory initiatives in the OTC derivatives market, new entrants are developing central clearing services. So far, global CCPs continue to predominate, and it is unclear a priori whether the new entrants will be able to establish a significant market share in an industry characterised by strong network effects. At the same time, there is evidence that OTC derivatives dealers are willing to connect to more than one CCP, and, moreover, there may be some advantages to multiple CCPs serving different markets and market participants, as discussed later in this report.

Competition in the clearing industry brings with it the risk of fragmentation, chiefly in the form of reduced or limited netting benefits and increased operational complexity. In European equity markets, CCPs have responded to this challenge and have started to develop links – “interoperability” – that will allow market participants to use the services of more than one CCP without having to become full members of all of them. However, linking arrangements do not yet exist in the OTC derivatives market. Section 3.3 examines the advantages and disadvantages of this solution, including its implications for the risks to the linked CCPs that clear OTC derivatives trades.

CCPs themselves are likely to face a number of challenges, including those arising from clearing new products and from facing an expanded membership base including participants outside the dealer community. Section 3.1 summarises the main risks resulting from this latter development, highlighting the potential trade-off between increased access and CCP robustness.

Changes in market structure have in some cases led to changes in CCP ownership. In many markets, ownership has moved away from the traditional user-owned model to a non-user-owned model with a profit motive. Ownership and governance requirements may have an impact on a CCP’s access policy for the markets it will clear, particularly where owners and users have different incentives. But these issues are beyond the scope of this report.

3. Alternative CCP access configurations

The implementation of mandatory clearing for standardised OTC derivatives trades makes it particularly critical to assess alternative CCP access configurations for market participants. These involve choices regarding the scope of direct and indirect access to CCPs and, consequently, the degree of tiering; the use of global or domestic CCPs to serve regional and national markets; and the possible establishment of links between CCPs.

This section examines three sets of interrelated implications for the financial system resulting from different models of access to CCPs in the OTC derivatives markets. First, access to CCPs has implications for the financial system’s efficiency, including the real resource and financial costs associated with the provision of clearing services. Second, access affects CCPs’ ability to manage the risks they face, including those associated with the failure of financial institutions making use of central clearing services. Third, alternative CCP access configurations may have different implications for systemic risk.

3.1 Direct versus indirect access to CCPs

To meet mandatory clearing requirements, market participants will need to access CCPs either as direct clearing members or indirectly through direct clearing members.⁵ Both means

⁵ Clearing members that clear their own trades through a CCP and also offer access to the CCP to their own clients are referred to as general clearing members, whereas clearing members that only clear their own trades are referred to as direct clearing members. This report does not make a distinction between the two.

of access will be used to meet the G20 commitments for the central clearing of standardised OTC derivatives contracts.

The scope for participation as a direct clearer in a CCP is typically governed by access criteria set out in the CCP's rules.⁶ These criteria, which aim to protect the CCP's financial integrity, may include minimum requirements relating to capital and operational capacity, as well as requirements that direct clearing members be able to fully participate in default procedures and loss mutualisation when a clearing member defaults (see Box 1 for procedures for handling default of a direct clearing member).

Box 1

Procedures for handling default of a clearing member

As in other markets, a CCP in the OTC derivatives market interposes itself between two parties to a bilateral trade to become the legal counterparty to the original trade. Since this shifts the counterparty risk in the transaction to the CCP, an essential function of the CCP is to manage this risk.

The default of a CCP clearing member is triggered by events such as the non-payment of margins or the opening of an insolvency procedure. In such a case, the CCP has to take the open positions of the defaulting member onto its own book. As it is not allowed to be exposed to market risks, the CCP would attempt to hedge and close out these positions. Typically, CCPs handle the defaulting member's proprietary and client positions differently. In particular, they try to transfer the client's positions and underlying collateral to other clearing members. If this is not achieved (for instance, due to lack of available collateral), they close these positions in addition to the defaulting member's proprietary ones.

Several different closeout mechanisms are possible. CCPs may enter the market to hedge the open positions, possibly with the assistance of the trading staff of surviving members. The defaulted positions may be auctioned by requiring remaining clearing members to submit bids. Alternatively, the CCP may split up and allocate the defaulted portfolio to the remaining members.

To cover potential losses that could result from this process, the CCP can take recourse to the various collateral contributions it received from the defaulting member, including initial and variation margins, as well as the defaulting member's contribution to the CCP's default fund. If these funds are insufficient, default fund contributions from surviving members as well as the CCP's own resources would be used. In some cases, further loss-sharing arrangements exist, for example, assessing clearing members for additional clearing fund contributions.

Access criteria for major CCPs developed in the era of voluntary clearing had the effect of excluding market participants such as mid-tier financial institutions and buy-side firms from direct access to CCPs. Requirements for direct clearing membership and the regulations that govern them are continuing to evolve as the markets adjust from voluntary to mandatory clearing for standardised products.

Whether or not specific market players will opt to participate directly in CCPs will depend on their business models. Large dealers and brokers conducting significant numbers of trades for themselves and clients will probably desire to participate directly in major CCPs around the world. Mid-sized dealers and brokers, as well as smaller dealers and other financial firms, will need to weigh the costs of direct participation against the costs of alternatives in order to keep costs as low as possible for themselves and their clients. Many asset management

⁶ CPSS-IOSCO recommend in their *Principles for financial market infrastructures* that participation requirements for direct clearers be based on safety and efficiency to the system and the broader financial markets. They also caution that requirements based solely on a participant's size are typically insufficiently related to risk and deserve careful scrutiny.

firms, hedge funds and institutional investors may prefer to clear indirectly in order to avoid the significant back office and infrastructure costs of direct clearing. The CCPs' access criteria, in turn, will clearly influence the various costs to firms of direct participation as well as its feasibility.

This section examines the trade-offs between market efficiency and the risks that may arise as a result of restrictions on direct access (membership) to CCPs, and the prospective implications of conferring direct CCP access on a broader set of market participants. Since access requirements and the regulations governing them continue to evolve, the analysis is based, in part, on observed practices from the era of voluntary clearing.

3.1.1 Market efficiency

The degree of tiering in clearing arrangements may influence the financial system's efficiency by affecting real resource and financial costs as well as the competitiveness of the market for OTC derivatives trading.

From the standpoint of an individual participant, direct and indirect participation entail different cost structures, which are important in explaining the tiering arrangements observed in the industry. Participating as a direct clearer generally involves higher fixed costs that include participation fees and often substantial investments to meet the CCP's operational requirements. In addition, a direct clearing member must contribute to the default fund, with the amount depending on the CCP's risk management model.⁷ Finally, the risk mutualisation and loss-sharing arrangements of a CCP might involve further costs that a direct clearing member may have to bear.

An indirect clearer can avoid many of those fixed costs, but it may face higher marginal costs for central clearing. For example, an indirect clearer may face higher initial margin requirements or clearing fees imposed by its direct clearer than the direct clearer itself faces from a CCP. This extra margin requirement usually serves to protect the direct clearing member against the liquidity and default risk inherent in its intermediary role.

The economic implications of tiering in clearing services depend importantly on the competitiveness of the market for these services. If the market for providing indirect clearing services were competitive, the benefits of scale economies in clearing would tend to be passed on to indirect clearers and others in the market. On the other hand, the access rules established by CCPs – even if fully consistent with risk management requirements – by definition restrict entry to the market for clearing services.⁸ The implications of access rules for the competitiveness of this market would depend on a number of factors, but in principle could result in higher costs for indirect clearing and also limit the ability of dealers that clear indirectly to compete in other market activities.⁹ Further, if the market for clearing services is insufficiently competitive in certain areas, a dealer whose access is controlled by a direct clearing member may see that access constrained at the discretion of its clearing member. This might happen, for example, if credit is constrained or perhaps even if the direct clearing

⁷ Default fund contributions will also be subject to capital requirements. However, under the current BCBS proposals, direct participants with banking status will tend to face lower capital charges on trade exposures to the CCP than indirect clearers will.

⁸ According to market commentaries, the largest global dealers may have significant influence over the access rules at some CCPs as they dominate their risk committees. Given their exposure to risks from the CCP, these dealers are justified in seeking strong risk management practices. But it is difficult to differentiate risk management motives from other motives in the configuration of access controls.

⁹ At current OTC derivatives CCPs, indirect clearers are restricted from clearing for their own clients. A dealer clearing indirectly may therefore lose clients who seek a complete clearing and trading solution from a single provider.

member sees a commercial advantage in limiting access to clearing. These considerations make it particularly important to ensure that governance arrangements and transparency at CCPs are designed to give appropriate weight to access as well as risk management.¹⁰

The implications of existing access rules for market competition may vary across different market segments, and these implications may also change in the context of mandated central clearing. In very active and liquid OTC derivatives markets (for example, the standardised interest rate swap markets in the four major currencies), it is likely that an indirect clearer will have a choice of general clearing members.¹¹ This choice will be enhanced if portability of trading positions and of collateral is available not only when default occurs but also in normal times, and if costs involved in switching trades from one general clearing member to another are not excessive. In general, such operational capabilities, when backed by a proper legal and technical foundation, are likely to support more competitive markets for clearing services in the long run. Further monitoring and analysis is needed to assess to what extent the markets for indirect clearing are competitive, including those for less liquid contracts, as new clearing models and services evolve.

In sum, based on the costs and issues noted above, many market participants, particularly those clearing lower volumes in liquid markets and those who do not have a major role as dealers or brokers, are likely to clear indirectly; other market participants, particularly those with an important market-making role and those clearing larger volumes, might prefer to clear directly. While regulations and market practices are continuing to evolve, existing access rules generally constrain that choice. Constraints that are not necessary to protect CCPs' safety and efficiency or are otherwise excessive may harm the efficiency of the market for clearing OTC derivatives.

3.1.2 Implications of broader direct access for CCP robustness

Establishing risk-based and prudent membership criteria for granting access as a direct participant allows a CCP to protect itself in two ways. First, the probability of a direct member default is reduced by restricting access to a smaller number of institutions with high credit quality and overall financial strength.¹² Enforcing strict direct membership requirements can be seen as reinforcing the monitoring and management of credit risk. This is because the direct clearing member is responsible for covering any shortfalls in collateral if an indirect clearer defaults.¹³ To the extent that direct clearing members have expertise in monitoring risks in particular markets or regions, they may provide monitoring services that complement those of the CCP. Second, the impact of a member default on the CCP may be reduced if a set of members with robust capabilities for managing a default are responsible under the clearing rules for assisting the CCP in default management.¹⁴

¹⁰ CPSS-IOSCO recommend in their principles that governance arrangements for a CCP should give due consideration to the interests of different types of participants, and an OTC derivatives CCP should contribute to market transparency by making market data available to relevant authorities and the public in line with their respective information needs.

¹¹ In this regard, it is important to note that the landscape for providing clearing services to clients is evolving and competition in this space may increase.

¹² While the effort required on the part of the CCP to monitor the financial soundness of its participants may be reduced with a smaller number of direct participants, the CCP may still have an obligation to monitor indirect participants.

¹³ This underscores the importance of sound regulation and oversight by the relevant prudential and market regulators of general clearing members.

¹⁴ The set of participants must nonetheless be large enough to effectively mutualise risk.

A broad, deep and diversified membership base, however, can also help support a robust default management framework for the CCP. Members that meet the creditworthiness criteria but have smaller or less diversified books than the large global dealers, as well as brokers with broad client bases, could help to reduce the market impact resulting from the default of other direct clearing members. For example, if a CCP used auctions as part of closeout arrangements, certain members could bid on the positions of a defaulting member for which they have special expertise. In fact, some mid-tier market participants could bring such specialised expertise about local products and markets to the auction in a way that could be important in managing a default.

Another consideration here is that broadening direct access would tend to reduce the concentration of risk in any individual direct clearing member. While this would have wider systemic implications (as discussed in the next subsection), it would also tend to reduce the impact on the CCP of the failure of any individual institution. In principle, the concentration of risk is taken into consideration in CCPs' risk controls – which are designed to withstand the failure of the largest direct clearing members – but it is possible that greater concentration could complicate default management in unforeseen ways.

Increasing direct participation would require appropriate modifications in the default management process to ensure that risks to the CCP are appropriately managed. Such modifications could well increase the complexity of the process. The coordination of default management may appear more straightforward when the CCP membership is small and members have similar capabilities. Further, members without the operational capabilities to price and bid on portfolios may be tempted to free-ride on the benefits of direct membership without contributing to the handling of defaults. If this challenge only becomes apparent in a default situation, the management of the default may become more difficult. As one way to address such issues, an expanded membership base may require the CCP to take on greater responsibility for conducting as well as coordinating default management.

In this context, it is important to consider ways to increase access without increasing risk to the CCP. One possible avenue being explored is the use of different access criteria that could depend on the nature of the clearer's business. For instance, access rules could be made proportional to the risk the clearer would bring to the CCP, or it could be limited to particular products or currencies.¹⁵ Each of these avenues poses its own set of risks that would need to be suitably mitigated as well as weighed against the benefits of broader direct membership. Devising an appropriate solution must start with a careful analysis of the elements of default management for particular CCPs, markets and products, and an exploration of techniques to address these different elements.

3.1.3 Implications of broader direct access for systemic risk

While direct access to CCPs must be appropriately managed in order to safeguard the CCP and, ultimately, the financial system, overly restrictive access could also potentially increase systemic risk. If most CCP access is through indirect clearing arrangements, large amounts of credit and operational risk could be concentrated in major market participants acting as direct clearing members. This concentration of risk would affect both the CCP itself and the indirect clearing members.

¹⁵ The term "proportional" as used in market discussions does not typically mean a mathematically linear relationship between risk positions and contributions to risk management resources. In particular, some risk relationships may be mathematically non-linear. However, the concept of proportionality does convey the idea, which needs exploration in particular contexts, that the risk a direct participant brings to a CCP might be commensurate, or vary in a reasonable manner, with the required contributions to risk management resources for a CCP.

If segregation of collateral and portability of client positions and collateral to other direct clearing members are less than fully effective, then clients may face significant counterparty risk vis-à-vis the direct clearing member. There is also considerable risk that recourse to the clients' collateral if a direct clearer defaults could become a lengthy legal negotiation process with adverse systemic implications. Such legal risks are compounded when direct and indirect clearers are located in different jurisdictions. Given that indirect clearing will also be a key feature of the new market arrangements, it is important that evolving market infrastructure standards support segregation of collateral and portability of client positions – consistent with FSB recommendations.¹⁶ Draft CPSS-IOSCO principles for financial market infrastructures provide guidance on how these objectives can be met.¹⁷

Another aspect to be considered when analysing the benefits of broadening direct clearing is how market liquidity might be affected by this access configuration. For example, if clearing and trading are highly concentrated among larger dealers, the sudden loss of one or more of these dealers could impact both clearing and trading, including through feedback effects between these activities. Such a concentration of activity could become an important channel of contagion if one or more of these institutions came under significant stress, even if an actual default did not occur. Moreover, there are possible disproportionate effects on smaller markets, depending on the particular dealers affected and the behaviour of those that continue to provide clearing and trading services. A particular concern is that if direct access to CCPs is limited, the concentration of clearing will be reinforced. This may increase the risk of a substantial loss of liquidity in these markets in the event that a major dealer suddenly cannot continue providing services, with potential spillover effects in other financial markets.

3.1.4 Summary points

Implementing the G20 commitments on central clearing will require expanded use of both direct and indirect clearing. The relative share of direct versus indirect central clearing and the models for segregation and portability arrangements will have implications for how counterparty risk is distributed in the financial system. Segregation and portability of both positions and collateral assets may increase measured clearing costs, but will have benefits for indirect clearers in terms of lower counterparty risk. Expanding direct access to CCPs can increase competition among direct clearers, which has the potential to yield efficiency benefits through greater choice and lower fees for indirect clearers. Increased direct access membership may also increase the diversification of loss-sharing, providing greater loss absorption capacity for a CCP.

But if direct access to central clearing is to be broadened, effective risk controls must be maintained to ensure CCPs' robustness; otherwise the overall benefits of central clearing could be compromised. This would require modifications to the CCP's risk management procedures, which could increase their complexity. The objective should be to capture the benefits of greater direct access to CCPs while continuing to maintain effective risk controls for CCPs.

¹⁶ Among the FSB recommendations published in October 2010 was that "authorities should require that CCPs and direct participants have effective arrangements in place that provide for the segregation and portability of customer positions and assets". See FSB, *Implementing OTC derivatives market reforms*, October 2010. This recommendation has been endorsed by G20 leaders.

¹⁷ See CPSS-IOSCO, *Principles for financial market infrastructures, consultative report*, March 2011.

3.2 Access via domestic versus global CCPs

Many OTC derivatives markets are global in nature, with extensive trading taking place across jurisdictional boundaries. It is important that any future clearing configuration support the liquidity of these markets by facilitating cross-border trading and clearing.

In several jurisdictions, market participants and authorities are promoting the establishment of local CCPs to help their domestic financial institutions meet the requirements of mandatory clearing of standardised OTC derivatives (see Annex 2 for examples of CCPs under development). The emergence of domestic CCPs reflects a range of concerns, including those related to constraints on access to global CCPs, as discussed above, as well as the interest of local authorities in retaining control over the oversight and crisis management of systemically important financial market infrastructures. This interest may be particularly strong in jurisdictions and markets where a large part of the trading volume is provided by local institutions rather than global dealers. However, even a decentralised clearing configuration would still require international cooperation to prevent domestic CCPs from competing on the basis of lower risk management standards and to avoid the propagation of systemic risk.

This section examines the trade-offs that arise between a clearing infrastructure configuration dominated by domestic or regionally focused CCPs and one dominated by a smaller set of global CCPs.

3.2.1 Market efficiency

The establishment of local CCPs that clear for the domestic market has the potential to improve efficiency by providing tailored clearing services for the local market (although competitive forces could push global CCPs to offer similar services). Domestic CCPs may also allow greater competition in the provision of clearing services to clients if they are structured in a way that enables broader direct access for local market participants. For example, if requirements for direct access are set on the basis of the liquidity that the participant contributes to a particular product type, then access may not have to be limited to the largest global dealers.

But domestic CCPs could also have some disadvantages with regard to efficiency. They may not enjoy economies of scale in operations or risk management to the same degree as global CCPs do. In addition, multiple CCPs that clear the same product type could result in the fragmentation of positions along with the collateral posted to cover credit exposures across several CCPs. As a consequence, opportunities to net exposures and gain efficiencies in posting collateral may be reduced. By contrast, CCPs with greater scale and scope have the potential to achieve increased multilateral netting of exposures and the resulting risk reduction benefits, including cross-product netting. Greater netting efficiency has the potential to lower margin requirements for the same amount of risk. Larger scale may also allow operational benefits in the posting and management of collateral.

Overall, an international architecture with numerous domestic CCPs could lead to greater demand for collateral assets at a system-wide level relative to what would be needed when a global CCP centralises the clearing services in one or several product types. Although difficult to measure without specific data, increased collateral demand would generally have the potential to raise liquidity costs for market participants.

3.2.2 Impact on CCP robustness

The strength of a CCP's risk control framework will depend in part on how well it is able to assess the counterparty risk of its clearing members. For direct participants that are well known in the local market, domestic CCPs may be able to obtain better information about the risks they bring to the CCP, including through the CCP's relationships with other local financial institutions and market infrastructures. Better information on counterparty risks of local players might allow the domestic CCP to react pre-emptively to limit risk from members. However, the more limited resources that a domestic CCP could employ for monitoring

activities compared to a global CCP with larger trading volumes could potentially put it at a disadvantage in controlling counterparty risks when direct access is not limited to local players. For example, if large global dealers become direct clearers of a domestic CCP, this CCP may find it challenging to assess the financial strength of these members.

Domestic CCPs may also have greater access to domestic liquidity suppliers so that, if a clearing member defaults, the collateral can be liquidated in an orderly way. A domestic CCP may therefore be able to respond more effectively to liquidity shortfalls. Domestic CCPs may be better placed to manage settlement risk, as they generally have broader access to settlement in central bank money in their respective jurisdictions, compared to global CCPs that conduct business in several currencies.

On the other hand, domestic CCPs could have a lower potential for risk mutualisation and loss-sharing compared to global CCPs if the membership base were smaller and less diversified. In particular, large global dealers may have expertise and resources that would prove useful in managing a member default, including the relevant operational, business and legal risks. A domestic CCP's capacity to deal with such a default could thus be more limited if global dealers found it uneconomical to be direct clearers there.

Depending on the size and scope of the domestic CCP, many of these risks could be mitigated by adhering to international standards and maintaining appropriate risk controls.¹⁸

3.2.3 Implications for systemic risk

In determining the implications of domestic CCPs for systemic risk, a key question is how far they may limit the transmission of stress across different jurisdictions, currencies and products. The ability to insulate domestic markets from global shocks will be greater when there is limited overlap among participants, instruments and trades that clear through domestic and global CCPs. (Correspondingly, under these conditions, a domestic CCP would tend to concentrate the impact of any idiosyncratic shock in the market where it occurs.) However, for a number of domestic CCPs there is likely to be a significant overlap, particularly where large global dealers have direct access.¹⁹

In principle, the failure of a smaller domestic CCP is likely to have a less severe effect on the global financial system than would the failure of a larger global CCP. Further, if domestic CCPs increase the scope for local market participants to obtain direct access to clearing services, they may also reduce counterparty and operational risks concentrated in large global dealers. This can lower the systemic risk of these entities by spreading the clearing services more broadly across the dealer community.

Domestic CCPs with a comparative advantage in monitoring local market conditions may be able to increase the use of central clearing services. For example, they could clear derivatives products that are not handled by global CCPs and thereby reduce bilaterally settled derivatives trading. They could also potentially offer direct access that is somewhat better configured to the needs of local market participants. Moreover, a domestic CCP might be preferred by participants that transact in only a small number of products or currencies and do not want to be exposed to the risk of other currencies or jurisdictions. These factors have the potential to increase centrally cleared derivatives trades that will then attenuate the counterparty risk that would otherwise arise from bilaterally settled transactions.

¹⁸ See CPSS-IOSCO, *Guidance on the application of the 2004 CPSS-IOSCO recommendations for central counterparties to OTC derivatives CCPs – consultative report*, May 2010.

¹⁹ As mentioned in Section 2.1, even in smaller regional currencies, G14 dealers contribute to a large share of the OTC derivatives trading activity.

3.2.4 Summary points

Domestic CCPs may become an important part of the global infrastructure for conducting mandatory clearing of standardised contracts, especially in markets where local participants play a dominant role or there are special market needs. Some local authorities may also see domestic clearing as desirable in fulfilling their responsibility to exercise oversight and regulation of derivatives trading activity within their own jurisdictions, as well as in undertaking effective crisis management when needed.

At the same time, a configuration of multiple domestic CCPs could lead to less multilateral netting and risk reduction. In addition, to mitigate this increased risk, CCPs as a group may generate a greater demand for collateral assets to meet margin requirements than would a CCP configuration with a smaller number of global CCPs.²⁰ This could result in more fragmented clearing, and thus an increase in system-wide counterparty risk, reduced market liquidity and higher costs for central clearing as more collateral is concentrated at CCPs. Clearing costs could also be increased by the need for global dealers to participate in multiple CCPs in order to support trading in markets globally.

Given the prevalence of cross-border activity in OTC derivatives, effective oversight is likely to require information on the derivatives positions of local players, regardless of whether clearing is on domestic or global CCPs. This requirement highlights the importance of trade repositories that provide relevant authorities with access to necessary trade information.

3.3 Links between CCPs

As highlighted in the previous section, the demand for collateral assets may be higher when multiple domestic CCPs offer a material share of clearing services than when a smaller number of global CCPs offer similar services. Some of the benefits of a global CCP, however, can be brought to a configuration that includes domestic CCPs through cross-border links between CCPs.

But links can contribute to financial stability and improve market efficiency only if they are safely configured (see Box 2 for examples of linking arrangements). In practice, while a few CCP links exist (for cash markets in particular), there is as yet no generally accepted model that could be used for establishing links among CCPs clearing OTC derivative trades. Such links would, by their nature, pose legal, credit and liquidity risks that would need careful examination before they became operational.

This section discusses the potential market efficiency and financial stability implications of establishing links between CCPs to reduce the demand for collateral arising from a configuration including multiple domestic CCPs.

²⁰ In some cases a domestic CCP could result in reduced collateral requirements for some participants, depending on the products offered and the cross-margining opportunities.

Box 2

Links between CCPs and cross-margining agreements

This box gives examples of linking and cross-margining arrangements between CCPs that give CCPs scope for expanding their clearing services and offering participants multilateral netting benefits. Although linking arrangements in OTC derivatives markets do not yet exist, they could conceivably be configured in a wide variety of ways:

Peer-to-peer links allow CCPs to interoperate on an equal footing. Risk management between the CCPs is based on a bilaterally approved framework that ensures adequate coverage of cross-CCP exposures of all interoperating CCPs. In existing interoperability frameworks, CCPs exchange margin on a reciprocal basis, based on their individual margin models. Other frameworks are possible that may require greater harmonisation.

Participant links allow a CCP to maintain a link with another CCP in a manner similar to that of a direct participant that acts as a general clearing member. Some harmonisation of risk management and operational requirements will be necessary to effectively manage the risks of trades cleared across the link. In contrast to a peer-to-peer link, cross-CCP risk management is not equal among CCPs since the participant CCP does not receive any financial resources to cover cross-CCP exposures.

Both peer-to-peer and participant links enable clearing members to join only one CCP rather than having to join multiple CCPs to clear the same product. Usually, these links allow multilateral netting across commonly cleared products and participants of both CCPs.

Cross-margining agreements are arrangements among two or more CCPs to consider positions and supporting collateral at their respective organisations as a common portfolio for participants that are clearing members of both or all CCPs. Although cross-margining agreements are not considered as links in a narrow definition, they allow for the joint margining of transactions in designated products. Clearing members will be able to net exposures with offsetting risk characteristics across CCPs, but have to be members of all CCPs so that there is no need for the CCPs to exchange collateral.

3.3.1 Market efficiency

Links between CCPs give greater scope for multilateral netting than unlinked CCPs do by providing direct and indirect clearers at a particular CCP with access to a larger pool of counterparties and collateral assets associated with other (linked) CCPs. When the linked CCPs clear different product types, scope for margin offsets may be further enhanced. As a result, demand for collateral assets to meet margin requirements can be lowered either by allowing a participant to focus all of its clearing activity with a single CCP (when links exist) or by allowing CCPs to share collateral (through cross-margining). Reduced demand for collateral assets would improve market liquidity conditions, and more multilateral netting would lower the level of counterparty risk in the financial system.

That said, overall collateral requirements would probably still be larger than those arising from a single global CCP, due to the extra risk protections that would likely be needed for the link. In particular, the initial margins that could be demanded from direct clearers would be higher to mitigate the risk of a linked CCP defaulting. The amount of collateral needed to fully cover the risk of a linked CCP will depend on the type of transactions that are cleared across the link and the nature of the link itself.

Connection costs for participants accessing linked CCPs would also affect market efficiency. Links would be associated with lower costs than cross-margining agreements or standalone local CCPs. This is because links allow participants in one CCP to trade with participants in other CCPs through their existing clearing arrangements, thus avoiding the cost of multiple memberships. By contrast, both counterparties in a cross-margining arrangement must clear their transaction at the same CCP. Given that links may help reduce the lock-in of clearers to individual CCPs, competition between CCPs serving the same markets would be increased, providing scope for reduced clearing fees.

For the prospective benefits of links to be realised, CCPs would need to develop procedures for handling link requests that would rigorously address all relevant risks. The necessary coordination of risk-management practices would be eased in cases where each CCP had a clear business interest in the linking arrangement.

3.3.2 *Potential effects of links on CCP robustness*

Links between CCPs create distinct risks, particularly in the form of operational and legal challenges, as well as the credit and liquidity risks associated with the connection between CCPs. While experience gained in managing operational risks created by links between cash CCPs could be relevant in assessing the possible establishment of links among CCPs clearing OTC derivatives transactions,²¹ the design of such links would pose a new set of challenges.

Given the central role of collateral in a CCP's risk management, one precondition for a link to be safe is that each CCP be confident of accessing collateral in the event of a linked CCP's default. Providing such confidence poses significant legal issues, especially where a link is established across jurisdictional boundaries and conflicts in law can arise. Potential delays in accessing collateral due to operational and legal challenges would, in turn, create a need for extra liquidity buffers when clearing over a link. And finally, in the case where a member default causes the failure of a linked CCP, surviving CCPs may need to use their own financial resources to replace contracts.

Managing the risks of a link will be particularly challenging as the number of links grows if each linked CCP uses substantially different risk management frameworks. While adherence to CPSS-IOSCO principles should reduce the risk of linking to a less robust CCP, differences in margining practices, valuation methodology, membership rules and default management procedures could complicate the handling of a member default. For example, if linked CCPs have different rules for declaring a member to be in default, the result could be that a CCP would need to replace a contract without having access to the necessary collateral held at another CCP. Any linking arrangement would need to be either configured in a way that addresses such differences or predicated on a harmonisation of risk management frameworks.

While the risks highlighted above are common to both cash and derivatives CCPs, the design of a link arrangement for OTC derivatives represents a new challenge. Significant effort is warranted in addressing it, given that linking arrangements could help deal with the problem of collateral fragmentation arising from decentralised derivatives clearing through a configuration of domestic CCPs.

3.3.3 *Links and systemic risk*

Links among CCPs could reduce counterparty risk in the financial system through increased multilateral netting. However, links among CCPs create financial exposures between CCPs and thus change the way the remaining counterparty risk is distributed and managed across multiple CCPs.

To the extent that links facilitate the creation of a decentralised clearing infrastructure with enhanced netting opportunities and access by a wider range of market participants, they may increase market liquidity and reduce counterparty risks in the financial system. Compared to a clearing configuration consisting of a small number of global CCPs, a linked network of CCPs may reduce the effects of large financial shocks by eliminating a single point of failure,

²¹ For example, links have existed between trading platforms, securities settlement systems and securities repositories.

provided that risk controls are adequate. On the other hand, links create new channels for risk propagation, particularly if CCPs can transmit the effects of a participant failure between themselves. Such transmission could occur, for instance, if CCPs contributed to each other's default funds, so that the failure of a participant in one CCP would oblige the linked CCPs to bear the loss through the use of the default fund contributions made by the linked CCPs.²²

By increasing complexity, links among CCPs may also reduce the transparency of the clearing system. Direct participants of a linked CCP would need to monitor not only their clearing CCP and its members, but also all the linked CCPs and their members. Such monitoring might be even more difficult if these linked CCPs were themselves linked to other CCPs. As a result, a linked network of CCPs could recreate some of the interconnection risks that central clearing is intended to mitigate.

3.3.4 Summary points

Access to central clearing through links preserves the network advantages of concentrating clearing activities. At the same time, it can attenuate the risks of highly tiered clearing structures and broaden direct access to multiple domestic CCPs. Competition between CCPs serving the same markets offers scope for reduced clearing fees, and these benefits can be passed on to indirect clearers. For jurisdictions outside the domicile of the global CCPs, a linked domestic CCP may give domestic authorities greater scope for managing episodes of financial stress than would a global offshore CCP.

But links would need to be designed so as to not create new channels for risk propagation. If links were not designed appropriately, CCPs could transmit the effects of participant failures between themselves. Potential delays in accessing collateral of failed clearing members across links could create a need for extra liquidity buffers when clearing over a link. A cross-border link is likely to require cooperative arrangements for oversight, resolution and other regulatory matters. These arrangements could be quite complex, and would depend on some degree of harmonisation of risk management techniques both across links and across CCPs.

To date, no practical experience exists on how links among CCPs clearing OTC derivatives trades should be configured and operational risks monitored and managed. Considerable effort will therefore be needed to design safe arrangements for establishing links among CCPs that clear OTC derivatives trades, and any proposed design should be evaluated with due care.

4. Considerations for policy on access configurations

The G20 commitment to increased central clearing of OTC derivatives aims to reduce systemic risk on a global level. The channels through which financial institutions access CCPs have important implications for CCPs' safety, for systemic risk and for financial system efficiency. All three should be taken into consideration in evaluating alternative access arrangements.

In practice, the G20 commitment will probably be met through a combination of direct and indirect access to global CCPs and through the establishment of domestic or regional CCPs in some countries and currency areas. Links may also, over time, come to play a role in improving the safety and efficiency of the clearing system. The stability of the global financial

²² CPSS-IOSCO recommend in their principles for financial market infrastructures that CCPs should not contribute to each other's default funds but should maintain risk management arrangements that may involve a separate default fund to cover risk from a link.

system requires that the prospective benefits of these access configurations be successfully captured while the associated risks are prudently managed.

The assessment of the trade-offs in choosing alternative access configurations for central clearing, as explored in Section 3, suggests that a balanced approach will be important. The current section summarises the issues that will need to be addressed in striking an appropriate balance.

4.1 Direct access to CCPs

Policy consideration

Broadening access to CCPs, particularly by expanding direct access, can reduce systemic risk as well as strengthen competition among dealers, provided that it is done in a manner consistent with the maintenance of strong risk management standards at the CCPs.

Issues and challenges

As discussed in the previous section, broader access to CCPs will facilitate central clearing of derivatives trades, and thus contribute to reducing some of the risks arising from OTC derivatives market activities. Broadening direct access would tend to lower the concentration of clearing and related activities, mitigating the concern that dependence on larger players could further increase as central clearing becomes mandatory. This would reduce the concentration of risk in the largest dealers and could improve competition, liquidity and pricing efficiency, especially in markets outside the most active OTC derivatives markets. Furthermore, the benefit of lower capital charges could be realised by a broader group of regulated entities.

These considerations underscore the importance of implementing the proposed CPSS-IOSCO principles that require fair and open (direct) access to CCPs and other financial market infrastructures. In particular, these requirements relate access criteria to necessary risk control measures, and provide that, if reasonable risk control measures are available that have a less restrictive impact on access, such measures should be actively explored and employed as appropriate to a specific CCP's circumstances. Moreover, participation requirements based solely on a participant's size may be insufficiently related to risk and deserve careful scrutiny.

Broadening direct access is likely to require innovations in the design of risk control procedures for CCPs to ensure their continued effectiveness for a membership that is wider and more heterogeneous in size, financial strength and internal control functions. Under such conditions, criteria for determining the size of the default fund contribution, the nature of participation in the bidding process for the defaulted member's outstanding trades, and the loss-sharing arrangements in case of member defaults may need to be adapted to accommodate the different profiles of participants. Such risk management processes may be more complex than existing ones, both for the CCPs to manage and for regulatory authorities to evaluate. Regulatory authorities will need to be ready to evaluate proposals for such risk control procedures as they are developed by the industry.

4.2 Indirect access to CCPs

Policy consideration

Safe and efficient indirect clearing is an important complement to direct clearing that broadens access to CCPs. Enhancements to strengthen the safety and efficiency of indirect clearing that are consistent with international standards should be considered by CCPs and authorities where needed.

Issues and challenges

To achieve the systemic risk reduction benefits of central clearing, it will be essential to manage the concentration of credit and operational risks with the major dealers who act as

direct clearers. These risks may increase as central clearing becomes mandatory. The proposed CPSS-IOSCO principles explicitly reflect the risks and challenges associated with indirect clearing by requiring CCPs to identify, understand and manage the risks arising from tiered participation arrangements and to establish governance arrangements to ensure that the interests of relevant stakeholders are fairly reflected. Moreover, effective segregation and portability of collateral posted by indirect clearers are crucial to realising the benefits of systemic risk reduction. Reflecting this, the proposed CPSS-IOSCO principles require that CCPs have rules and procedures that enable the segregation and portability of positions and collateral belonging to clients of a direct clearer. Achieving the full benefits of central clearing will depend on how well this requirement is met.

The discussion in the previous section also noted the possibility that highly tiered clearing arrangements could reinforce the market power of direct participants in CCPs, affecting pricing and liquidity in the derivatives market. Such effects could be mitigated, in part, through greater transparency of rules governing direct and indirect clearing arrangements. Assured portability, both in normal times and in default situations, could also help bolster competition for clearing services.²³ The relative costs of direct versus indirect clearing will be influenced by the standards currently being developed by the CPSS, IOSCO and the BCBS, as well as by the market response to those standards and their implementation by national regulators. Continued monitoring by these groups through the implementation period will be important to achieving the best outcome.

4.3 Managing the risks of cross-border clearing

Policy consideration

Both large global and smaller regional or local CCPs will probably play a role in meeting G20 commitments. In both cases, international standards will need to be adopted to prevent regulatory arbitrage and promote effective cross-border monitoring of infrastructure and participants.

Issues and challenges

Global and domestic (national or regional) CCPs are likely to coexist, as their relative advantages and disadvantages depend on the nature of the underlying markets and various cross-border prudential considerations. In many instances, global CCPs could potentially offer more complete netting and risk mutualisation, in view of the global nature of many OTC derivatives markets.

To realise these benefits more fully and strengthen international standards, it will be essential to resolve issues involving international cooperative oversight arrangements, crisis management, recovery and resolution mechanisms, protection of client monies and other regulatory matters. This underscores the importance of ongoing work by the CPSS and IOSCO as well as other groups addressing these issues.

4.4 Establishing links among CCPs

Policy consideration

When properly and safely designed, links between CCPs that clear similar products may allow for increased multilateral netting and improved market liquidity.

²³ To fully achieve the benefits of segregation and portability, the CCP's legal framework should support its arrangements to protect the positions and collateral of a participant's customers.

Issues and challenges

Establishing links among CCPs, either within or across borders, could offer a number of benefits to market participants. Compared with standalone domestic CCPs, links could increase the scope for multilateral netting and reduce collateral demand for variation margin payments, as well as reduce the costs of multiple memberships. Thus, by bringing down the cost of clearing, they could promote greater use of central clearing and improve market liquidity.

But, as discussed in Section 3, links among CCPs would need to be designed in a way that avoids contributing to increased risks in the financial system. If not appropriately designed and monitored, a linked network of CCPs might recreate some of the interconnection risks that central clearing is intended to address – including through credit exposures as well as legal and operational risks. Managing these risks may require greater harmonisation in risk management procedures across linked CCPs. It may also require higher initial margin requirements, which may offset the benefit of lower variation margin payments resulting from increased multilateral netting.

Links among CCPs clearing OTC derivatives remain a new and untested area for markets and policymakers. Cross-border linking arrangements will require international coordination and dialogue among authorities. In order to mitigate the risks created by links, linking arrangements should be transparent to the greatest extent possible. Authorities should encourage industry participants to propose how they intend to find solutions for the legal, financial and operational risks that can arise from links and cross-margining practices. In practice, the design of links that satisfy prudential requirements will need to address all relevant risks and will involve significant reviews by the authorities.

4.5 Monitoring of access issues

Policy consideration

Timely monitoring of the system-wide effects of access configurations will help promote the safety and efficiency of these markets as G20 jurisdictions work towards expanded use of central clearing in OTC derivatives.

Issues and challenges

As has already been noted, the adequate mitigation of risks associated with the different access configurations will depend importantly on the completion of ongoing work in a number of international committees and working groups as well as on the implementation of their recommendations. As this work proceeds, it will be important that the relevant groups continue to consider the implications of their work for the safety and efficiency of the global financial system, as elaborated in this report. To this end, it would be very useful, on an ongoing basis, to compile data related to access arrangements – including access criteria, changes in the set of products cleared by existing CCPs, the establishment of new CCPs, and any proposals to establish links. It would also be desirable to conduct a stocktaking exercise once work to fulfil the G20 mandate for central clearing of all standardised OTC derivatives has been completed.

Annex 1
Group of 14 dealers

Firm	Headquarters
Barclays Capital	United Kingdom
BNP Paribas	France
Bank of America-Merrill Lynch	United States
Citi	United States
Credit Suisse	Switzerland
Deutsche Bank	Germany
Goldman Sachs	United States
HSBC Group	United Kingdom
JPMorgan	United States
Morgan Stanley	United States
Royal Bank of Scotland	United Kingdom
Société Générale	France
UBS	Switzerland
Wells Fargo Bank	United States

Annex 2
Current and prospective CCPs clearing OTC derivatives

Domicile	Clearing service	Products	Status
Brazil	BM&F Bovespa	Equity index and currency options	Active
Canada	CDCC	Equity options	Active
China	Shanghai Clearing House	Not yet specified	Proposed
France	LCH.Clearnet SA	Credit default swaps	Active
Germany	Eurex Clearing	Credit default swaps	Frozen
		Equity derivatives	Proposed
		Interest rate swaps	Proposed
Hong Kong SAR	HKEx	Interest rate derivatives and non-deliverable forwards	Proposed
India	Clearing Corporation of India	FX swaps	Active
Japan	JSCC	Credit default swaps	Active
		Interest rate swaps	Proposed
Poland	KDPW_CCP	Interest rate derivatives	Proposed
Singapore	AsiaClear	Commodity, energy and interest rate derivatives	Active
Sweden	Nasdaq OMX Stockholm AB	Commodities	Active
Sweden	Nasdaq OMX Swap Clear Nordic	Interest rate swaps	Proposed
United Kingdom	CME Clearing Europe	Energy and commodity derivatives	Active
		Interest rate swaps	Proposed
	ICE Clear Europe	Credit default swaps and energy derivatives	Active
	LCH.Clearnet Ltd	Interest rate swaps and commodity derivatives	Active
		Equity derivatives	Proposed
NYSE Liffe	Equity and commodity derivatives	Active	
United States	CME Group	Interest rate swaps, credit default swaps, and commodity and energy derivatives	Active
		FX	Proposed
	ICE Clear Credit	Credit default swaps	Active
	IDCG	Interest rate swaps	Active
	NYPC	Interest rate swaps	Proposed
Options Clearing Corporation	Equity derivatives	Proposed	

Annex 3

Mandate of the Study Group

Central counterparties (CCPs) will play an important role in the financial architecture emerging from the recent financial crisis. At their Pittsburgh Summit in 2009, the G20 leaders decided that all standardised over-the-counter (OTC) derivatives contracts should be cleared through CCPs by the end of 2012. Promoting the use of CCPs is driven by the desire to reduce systemic risk in the financial system by increasing the transparency and consistency of counterparty risk management and by facilitating multilateral netting and risk mutualisation.

Difficulties in obtaining fair and open access to central clearing services may, however, undo some of the systemic risk reduction benefits from central clearing of OTC derivatives. While the market structures for CCPs to clear OTC derivatives are still developing, current criteria for direct CCP access tend to admit as clearing members only the major dealers with large, cross-product derivative books. Regionally focused dealers and other market participants might be required to access CCPs indirectly as customers of clearing members, possibly putting them at a competitive disadvantage. As the range of centrally cleared products expands, the position of systemically important financial institutions (SIFIs) that currently own or control the main CCPs could become further entrenched, and that dominance might be extended to other markets. This would have adverse implications for financial stability and efficiency.

A number of jurisdictions are responding to these access difficulties and the challenges of overseeing systemically important financial infrastructure beyond their borders by establishing domestic CCPs. Standalone domestic CCPs may, however, fragment the management of counterparty risk and reduce the risk-reduction and efficiency benefits of netting. Establishing links among CCPs would be one way to address this drawback. Yet, such links, if not appropriately designed, could themselves introduce additional risks to individual CCPs and contribute to risk to the broader financial system.

While alternative access models and CCP links are being considered and developed by the industry, the CGFS has established a study group to assess the broader macrofinancial implications of different CCP access configurations, including direct access, indirect access and links between domestic and global CCPs. This work is intended to complement and be informed by the work of CPSS-IOSCO on CCP access issues. The study group will articulate why these issues are important from a system-wide perspective, assess the financial stability and efficiency implications of alternative access configurations, and suggest ways to monitor the configuration of CCP access as markets evolve. In particular, the study group will:

- Discuss factors that determine how the structure of global OTC derivatives markets is likely to evolve.
 - How important is the requirement for CCP-based clearing relative to other public and private sector influences (eg broader regulatory framework for derivatives markets, changing business models)?
- Identify how different CCP configurations (direct clearing at global CCPs based either on limited or wider access models; indirect clearing at global CCPs; standalone domestic CCPs; linked domestic CCPs; access criteria and fee schedules) are likely to affect financial stability. In particular:
 - How would they affect the risk-absorbing and risk-containment capabilities of CCPs in times of stress?
 - How would they affect the liquidity and efficiency of OTC derivatives markets, as well as other financial markets, both within and outside major financial centres?

- How do different CCP access models affect the importance of and risks posed by SIFIs? How do they affect the behaviour of derivatives market participants?
- Consider at a high level the system-wide effects of possible mechanisms to support the efficiency and stability objectives of the centrally cleared OTC derivatives market. Such mechanisms could include:
 - Access arrangements that are proportional to the risk profile and the risk-bearing capacity of participants.
 - Linking arrangements that are robust and aligned with the commercial interests of CCPs and market participants.
 - Transparency in access rules and fees for indirect and direct CCP access.
 - Identify particular aspects of emerging clearing solutions that should be monitored as countries implement G20 commitments.

Chaired by Timothy Lane (Bank of Canada), the study group is expected to report to the CGFS at its meeting in September 2011.

Annex 4
Members of the Study Group

Chairman, Bank of Canada	Timothy Lane
Bank of Canada	Carolyn Wilkins Joshua Slive
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European Central Bank	Andreas Schoenenberger
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Reserve Bank of Australia	Mark Chambers
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