FINANCIAL SECTOR ASSESSMENT PROGRAM

CHILE

ASSESSMENT OF OBSERVANCE OF THE CPSS-IOSCO PRINCIPLES FOR FINANCIAL MARKET INFRASTRUCTURES

DETAILED ASSESSMENT REPORT OF CCLV (CCP), CONTRAPARTE CENTRAL, S.A.

MAY 2016

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THE WORLD BANK GROUP
FINANCE & MARKETS GLOBAL PRACTICE

CONTENTS

GLOSSARY

BCP	Business Continuity Plan
BCCh	*Banco Central de Chile* (Central Bank of Chile)
BCS	*Bolsa de Comercio de Santiago* (Santiago stock Exchange)
BIA	Business Impact Analysis
CCP	Central Counterparty
CLP	Chilean Peso
CSD	Central Securities Depository
CPMI	Committee on Payments and Market Infrastructure
CPSS	Committee on Payment and Settlement Systems
DCV	*Depósito Central de Valores* (central securities depository)
DE	Derivatives
DNS	Deferred Net Settlement
DVP	Delivery versus Payment
EWMA	Exponentially Weighted Moving Average
FLI	*Facilidad de Liquidez Intradía* (intraday liquidity facility)
FMI	Financial Market Infrastructure
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commission
ISO	International Standards Organization
KC	Key Consideration
KPI	Key Performance Indicator
KRI	Key Risk Indicator
LBTR	*Liquidación Bruta en Tiempo Real* (real time gross settlement)
LMV	*Ley de Mercado de Valores* (securities market law)
MOF	Ministry of Finance
OLA	Operational Level Agreement
PFMI	Principles for Financial Market Infrastructures
PH	*Para Hoy* (clearinghouse with settlement on "T" or "today")
PM	*Para Mañana* (clearinghouse with settlement on "T+1" or "tomorrow")
PS	Payment System
QCCP	Qualifying Central Counterparty
RBI	*Red Bancaria Interconectada* (interconnected bank network)
RV	Equities
RTGS	Real time gross settlement
SBIF	*Superintendencia de Bancos e Instituciones Financieras* (superintendence of banks and financial institutions)
SCL	*Sistema de Compensación y Liquidación* (clearing and settlement system)
SGI	*Sistema de Gestión Integral* (comprehensive management system)
SLA	Service Level Agreement
SSS	Securities Settlement System
SVS	*Superintendencia de Valores y Seguros* (superintendence of securities and insurance)
SWIFT	Society for Worldwide Interbank Financial Telecommunication
UF	*Unidad de Fomento*
VAR	Value at Risk
WBG	World Bank Group

I. EXECUTIVE SUMMARY

1. **Chile has fairly developed payment, clearing, and settlement infrastructures.** Sistema LBTR is the Central-Bank operated real-time (interbank) gross settlement (RTGS) system, and the backbone of the national payments system, where final payments originating from the various markets are settled. Sistema LBTR is owned and operated by the Central Bank. The RTGS is not the only high-value funds transfers system in Chile: ComBanc S.A. operates as a net clearing system for participating banks (hereinafter ComBanc). *CCLV Contraparte Central S.A* – CCLV, a subsidiary of the Santiago Stock Exchange, clears and settles exchanged-traded debt securities, and also acts as a central counterparty for equities (cash market) and exchange-traded derivatives. More recently, ComDer, Contraparte Central S.A (hereinafter "ComDer") was established as a central counterparty for over-the-counter derivatives. As the only authorized central securities depository in Chile, *Deposito Central de Valores* (DCV) holds all securities that are object of public offering and facilitates the transfer of these securities between its depositors.

2. **Sistema LBTR is largely compliant with the Principles for Financial Market Infrastructures (PFMI), and is sound from an operations perspective.** It is subject to comprehensive risk management, including credit, liquidity, and operational. Clear and transparent risk-management policies, procedures, and systems allow measuring, mitigating, and managing the range of risks that arise in the system's operations and from its participants. All transactions settled in Sistema LBTR are deemed final and irrevocable.

3. **However, some areas of improvement for Sistema LBTR have been identified and are summarized below.** In particular, Sistema LBTR is exposed to some legal risk in that there is no explicit coverage of irrevocability and finality of payments at the level of statutory legislation. The urgency of this issue of concern is diminished in light of the special insolvency procedures of the Banking Law and the general normative powers of the BCCh in the field; however, these would not apply should non-banks be allowed to participate in the system. This issue impacts negatively settlement finality, and could have potential repercussions on credit and settlement risk. As for collateral in general and for the provision of liquidity into the Sistema LBTR in particular, the lack of express recognition of enforceability of repos might also jeopardize the soundness of system, although also this risk might be deemed to be reduced by the understanding of repos agreements under general principles of law. Sistema LBTR should establish mechanisms for the regular review of its efficiency and effectiveness vis-à-vis the needs of its participants. As the operator of the LBTR, the Central Bank could consider recommending that non-banks – provided that these comply with risk-based criteria – be allowed as participants in light of ensuring fair and open access to a critical infrastructure.

4. **ComBanc has been also assessed as sound from a (financial, operational) risk management perspective.** In providing real-time clearing services for twenty participating banks, ComBanc relies on bilateral and multilateral credit limits to manage its participants' credit risk vis-à-vis each other, combined with collateral requirements to cover 1.15 times each participant's maximum credit exposure. Payments are considered final and irrevocable once these are cleared in ComBanc. In case of failure of one or more members, ComBanc has set out two extraordinary settlement processes. Operational risk management is grounded in the General Risk Policy and the General Operational Risk Policy.

5. **Additional steps to improve compliance of ComBanc with the PFMI are warranted, especially with regard to governance arrangements and management of investments risk.** First, ComBanc is exposed to the same type of (potential) legal risk as the

Sistema LBTR. With regard to governance, comprehensive governance arrangements should include procedures to review the Board's performance, and clear policies for the recruitment and termination of senior management. Combanc could consider diversifying its investment portfolio – i.e. invest in securities other than those issued by its shareholder banks. Broader, yet still risk-based, participation criteria should be allowed. Finally, ComBanc should address gaps in transparency.

6. **DCV ensures the safekeeping and efficient transfer of securities.** The assessment has found that the relevant legal and regulatory framework minimizes custody risk. At the operational level, securities holdings of customers are held in segregated accounts, either omnibus or at the level of the final beneficial owner. More than 96% of securities (in terms of value) held at DCV are dematerialized and this percentage has been growing over the years as legacy paper-based securities mature.

7. **Nonetheless, DCV should improve compliance with the PFMI in a few areas.** The area of biggest concern for DCV is general business risk. To date, DCV has not developed a recovery plan in connection with general business losses, and was found to hold liquid net assets sufficient to cover less than three months of operating expenses (as opposed to a minimum of 6 months prescribed by the PFMI). Although for the most part the company incorporates international standards and best practices with regard to governance, there is no formal mechanism to review its board performance. DCV should take a comprehensive approach to defining and addressing the various types of risks it faces: currently, although all such risks are de facto managed, DCV general risk management policy is focused on operational risk.

8. **No serious issues of concerns were identified with regard to the operation of CCLV as a securities settlement system.** On the other hand, there are gaps in the company's governance arrangements that include: (i) the lack of a formal mechanism for reviewing the performance of the board, which it shares with the Santiago Stock Exchange as the holding company of CCLV, (ii) roles and responsibilities of senior management are not defined and documented at the level of the subsidiary (i.e. at the level of CCLV), and; (iii) no independent reporting line exists for the risk management function. The lack of a detailed plan for its financial recovery also raises concerns that could become serious if not addressed in a timely fashion.

9. **CCLV as a central counterparty incorporates international standards in its risk management practices; issues of concern only arise as a result of the lack of coverage of segregation and portability in the legal framework.** Although CCLV rules and contracts provide the mechanism for the segregation and portability of positions, and these arrangements are implemented in practice, in light of the gaps in the legal framework the relevant standards cannot be met. It is worth noting that FMIs in general – including CCLV – do not have access to central bank liquidity in the payments system (i.e. the intraday liquidity facility). As a result, CCLV must resort to other liquidity providers before first exhausting the collateral provided by the delayed/defaulted participant(s). Authorities should consider costs vs. benefits of providing FMIs with access to intraday liquidity facilities.

10. **ComDer was established as a response of the banking system to the exponential growth of the over-the-counter (OTC) derivatives market and to achieve compliance with international standards and G20 expectations.** In practice, ComDer was designed to abide by international best practices and observes most of the Principles. ComDer risk management practices are robust in general terms. In particular, ComDer uses good and conservative

practices with regard to collateral, e.g. it accepts only cash and debt securities issued by the Central Bank or the National Treasury as collateral, marks collateral and participant positions to market daily, and applies conservative haircuts that also incorporate crisis scenarios thus reducing the need for pro-cyclical adjustments.

11. **However, ComDer has yet to fine-tune some aspects of its operations, namely its stress test programme.** In addition, as noted above for CCLV, ComDer does not have access to routine Central Bank credit either; as a result, it must resort to its liquidity providers before first exhausting the collateral provided by the delayed/defaulted participant(s). Collateral in securities – although highly liquid – may not be readily available (within one or two hours), at least in part because ComDer uses a model of electronic pledge. Also, the same considerations that were made above with regard to the lack of legal underpinning of segregation and portability of positions and collateral apply to ComDer too, however, in this case and for the time being, the risk is not very material as long as ComDer only clear positions from direct participants.

12. **Authorities' powers are clearly defined with no overlap. However, when assessed at the jurisdictional level, there are a few gaps in the observance of the Responsibilities of Authorities**. Observance is affected mainly by the following elements: i) with regard to payment systems, the Central Bank, though it has the necessary powers and the resources / processes in place, has not defined a comprehensive oversight policy for systemically important payment systems, while the *Superintendencia de Bancos e Instituciones Financieras* (SBIF) as the supervisor of ComBanc relies on the supervision framework set out for *Sociedades de Apoyo al Giro* which does not take into consideration the specific features and risk profile of ComBanc as a FMI; ii) although numerous steps are being taken in the direction of adopting the PFMI, there is no uniform recognition of the PFMI across authorities in Chile, and; iii) cooperation among authorities is efficient, but there are no effective procedures to ensure timely access to BBCh data on foreign exchange derivatives by other authorities.

13. **In the context of this PFMI assessment, it is worth noting that there is no recognized trade repository (TR) in Chile, nor the legal and regulatory framework to cover TRs exist; therefore a formal assessment of TRs was not undertaken.** At the international level, concerns about systemic risks in OTC derivatives markets have led to important changes in international standards and a G20 reform agenda to improve transparency that contemplates – among other things – mandatory reporting to TRs of all OTC derivatives contracts. The Central Bank operates a database (*Base de Datos de Derivados Cambiarios*, BDDC) where foreign exchange derivatives transactions are reported by banks, other financial institutions and certain non-financial entities, and publishes aggregate-level data. However, this infrastructure does not currently qualify as a TR. A plan of action to remove the existing barriers – legal and technological – to developing a TR function will enable Chilean authorities to meet international expectations and best practices in the global derivatives markets.

II. INTRODUCTION

14. The Central Bank of Chile (*Banco Central de Chile*, BCCh) and Chile's Ministry of Finance, in their letter of January 9th, 2015, requested the World Bank to undertake a stand-alone Review of Standards and Codes (ROSC) module of the Principles for Financial Market Infrastructures (PFMI) of the Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commission (IOSCO).

15. A World Bank Group (WBG) team consisting of Jose Antonio Garcia (Senior Payment System Advisor and Team Leader), Corina Arteche (Senior Payment System Specialist), Maria Chiara Malaguti (Senior Legal Advisor) – supported remotely by Maria Teresa Chimienti (Payment System Specialist) - visited Chile from August 3-7 and from September 21-October 2, 2015 to assess Chile's FMIs.[1] On the side of local authorities, the team included Catherine Tornel (Senior Economist) and Maria Jose Meléndez (Economist) from the BCCh, and Bernardita Palacios (Capital Markets Advisor) from the Ministry of Finance.

16. A total of five financial market infrastructures (FMIs) were assessed as part of this ROSC, although one of these operates both as a central counterparty (CCP) and as a securities settlement system (SSS) for different segments of the exchange-traded securities market, and as a result a total of six FMI assessments were produced by the team. In addition, the Responsibilities of Authorities for FMIs were assessed.

17. The main tool used by the assessment was the CPSS-IOSCO Assessment Methodology for the Principles for Financial Market Infrastructure and the Responsibilities of Authorities". Each of the FMIs and Chilean authorities – the *Banco Central de Chile* (BCCh), the *Superintendencia de Valores y Seguros* (SVS) and the *Superintendencia de Bancos e Instituciones Financieras* (SBIF) – completed a self-assessment for the PFMI and the Responsibilities of Authorities, respectively. On this basis, the WBG team and the local team conducted detailed interviews with senior and mid-level managers of all the respective institutions, and prepared the assessment reports.

18. In addition to the self-assessments, other sources of information included the applicable laws and regulations, as well as each FMI's main policies and internal documents (e.g. detailed policies, and processes and procedures for certain key areas) which were shared by the FMIs with the assessors, and other information available at each FMI's website (e.g. statistics). The WBG and local teams also met with a number of users of these FMIs, including two large commercial banks and two brokers-dealers that are not part of local bank-lead conglomerates.

III. OVERVIEW OF THE PAYMENT, CLEARING AND SETTLEMENT LANDSCAPE

19. Chile has a fairly developed payment, clearing and settlement infrastructure comprising:

- Two systemically important payment systems – a Central Bank-operated real-time gross settlement system (*Sistema LBTR*), and a privately-owned clearinghouse for high-value interbank payments (ComBanc)
- A central securities depository (CSD) for government and corporate securities (*Depósito Central de Valores S.A.* – DCV)
- A securities settlement system (SSS) for debt securities and money market instruments, that also acts as a central counterparty (CCP) for corporate equities (*CCLV Contraparte Central S.A* - CCLV). Starting July 30th, 2015 CCLV also acts as a CCP for certain exchange-traded derivatives.
- A CCP for over-the counter (OTC) derivatives (ComDer).

[1] T. Khiaonarong and F. Wendt (IMF), and D. Delort and G. Srinivas (WBG) acted as peer-reviewers.

20. In addition, the BCCh operates a database (*Base de Datos de Derivados Cambiarios*, BDDC) in which foreign exchange (FX) derivatives transactions are reported by banks and other financial institutions, and certain non-financial institutions.

21. This assessment report covers CCLV in its role as a CCP.

a. CCLV

22. CCLV Contraparte Central S.A. was formed in February 2010 following a revision of the bylaws of the then Santiago Derivatives Clearinghouse. The original rulebook of CCLV was approved by the SVS in August 2010, and has had three sets of changes of so far.

23. CCLV acts as a CCP for equities (cash market) and exchange-traded derivatives, and also acts as a SSS for exchanged-traded debt securities. CCLV is a subsidiary of the Santiago Stock Exchange (*Bolsa de Comercio de Santiago*, BCS), which has a 97.27% stake, while the remaining 2.73% is owned by brokers-dealers. None of the individual shareholders of BCS holds more than 10% of the shares of the organization.

24. At present there are 35 direct settlement members and 3 indirect settlement members. Only 2 of the direct settlement members are banks, while all others are brokers-dealers. Of the indirect settlement members, two are brokers-dealers and the remaining one is a mutual funds management company.

25. In its role as a CCP CCLV clears and settles equities with a value date of T+2. Starting August 2015 it began offering clearing and settlement services for futures on the stock exchange index (i.e. IPSA), futures on the US dollar, and interest rate futures. Only the IPSA futures have been operated so far. In the case of derivatives, profits/losses of each contract are calculated daily and are settled on the following morning.

26. In the six months from April to September 2015, CCLV cleared and settled a monthly average of nearly 574,000 transactions, of which 76.8% were equities, 18.2% the PH clearinghouse and 5.1% the PM clearinghouse.[2] In August 2015 there were 15 derivatives contracts cleared, and none in September. Table 1 presents data on the total number of transactions settled at CCLV, by clearinghouse.

Number of transactions		CCP		SSS		Total
Mes	Año	RV	DE	PM	PH + SM	
April	2015	427,418		30,988	103,906	562,312
May	2015	445,968		24,332	96,362	566,662
June	2015	543,182		28,880	101,402	673,464
July	2015	405,380		30,788	110,896	547,064
August	2015	418,612	14	32,676	114,480	565,782
September	2015	404,428	-	26,442	99,562	530,432
TOTAL		2,644,988	14	174,106	626,608	3,445,716

Source: CCLV.

27. Monthly average of net amounts settled was CLP 4,927 billion (approximately USD 7 billion). Out of these total, 65.9% belonged to the PH clearinghouse, 29.6% to the PM clearinghouse and 4.5 to equities. Total amount cleared in derivatives during August was

[2] As a SSS, settlement is organized in two different clearinghouses: "value date today" ("*Pagadero Hoy*" or PH) and "value date tomorrow" ("*Pagadero Mañana*" or PM). CCLV uses DVP model 3 in both cases.

approximately USD 700,000. Table 2 presents data on the total net amounts settled at CCLV, by clearinghouse.

Net cash amounts (CLP Billion)		CCP		SSS		Total
Mes	Año	RV	DE	PM	PH+SM	
April	2015	231		1,323	3,076	4,630
May	2015	191		978	3,028	4,197
June	2015	336		1,515	2,775	4,626
July	2015	175		1,527	4,097	5,799
August	2015	175	0	1,955	3,202	5,332
September	2015	217	0	1,464	3,297	4,979
TOTAL		1,325	0	8,762	19,475	29,562

Source: CCLV.

b. Regulatory, supervisory and oversight framework

28. The BCCh is the regulator of payment and settlement systems in Chile. BCCh's regulatory and oversight powers are grounded in its Organic Law (art. 3) and the Compendium of Financial Norms (CFN, chapters III.H III.J). The BCCh is also the regulator of the foreign exchange market. The BCCh is the overseer (and operator) of the Sistema LBTR.

29. Supervision of ComBanc and other privately-owned retail payment infrastructures is delegated to the banking supervisory agency (*Superintendencia de Bancos e Instituciones Financieras*, SBIF), based on article 82 of the BCCh Organic Law, and articles 12 and 75 of the Banking Law.

30. The securities regulator, *Superintendencia de Valores y Seguros* (SVS), is the regulator and supervisor of CSDs, SSSs, and CCPs. The objectives, functions, powers, and organization of the SVS are spelled out in its Organic Law (Law 3.583 of 1980). The legal basis for the operation of CSDs and SSSs in Chile are provided under Law 18.876 and Law 20.345, respectively. Consistently with its statutory powers and the laws mentioned above, the SVS supervises DCV, CCLV, and ComDer. However, Law 20.345 requires that any changes to the rulebooks of CCLV and ComDer be approved by the SVS also with the binding opinion of the BCCh and after hearing the opinion of the SBIF.

31. In addition to the applicable laws, the SBIF and SVS issue general rules (*Normas de carácter general*, NCG) to the FMIs under their regulatory purview. In a few cases, NCGs have been issued jointly to reflect the fact that in some of the FMIs supervised by the SVS some of the participants are banks.

32. The main instance of domestic cooperation among financial sector authorities is provided by the Financial Stability Council (*Comité de Estabilidad Financiera* – CEF). In addition, bilateral cooperation domestically and internationally is facilitated through memoranda of understanding (MoU).

c. Summary of major changes and reforms

33. The most relevant changes and reforms in recent years derive from the enactment of Law 20.345. Recent changes, partly in response to this law and to international trends and developments, included the creation of ComDer, and CCLV becoming a CCP for equities and more recently for exchange-traded derivatives.

34. Chilean financial sector authorities expect to undertake further reforms based on the outcomes of this CPSS-IOSCO PFMI ROSC.

IV. SUMMARY ASSESSMENT

a. Summary assessment of observance of the principles

35. In general terms, CCLV is a robust and sound FMI. It has adopted international best practices and standards with regard to corporate governance, risk management, efficiency and transparency, and fully observes many of the PFMIs.

36. There are five principles that are assessed as "broadly observed" and two are assessed as "partly observed". These principles and the reasons for assigning the correspondent rating are mentioned below:

- Principle 1 (legal – partly observed): While the CCLV rulebook and settlement member contracts provide the mechanism for the segregation and portability of positions, the legal framework applicable to securities clearing and settlement systems does not provide a legal underpinning to segregation and portability of positions and collateral. Hence, although segregation of positions and collateral is achieved in practice, there is no legal certainty that these arrangements will be upheld in a court of law if contested. On the other hand, as the provisions for FMI recovery and resolution contained in Law 20.345 date back to 2009, it is also recommended to ensure that these provisions remain aligned with best international practice, in particular with recent work of the FSB and CPMI-IOSCO.

- Principle 2 (governance – broadly observed): CCLV and its parent, the BCS, share their Board of Directors and senior and middle management. CCLV has independent board committees though, including, among others, a risk management committee and an audit committee. At the level of the board, lines of responsibility and accountability are clear in general, although there is no mechanism to assess performance of board members, neither as a group, nor individually. The roles and responsibilities of senior management are documented for what regards the Santiago Stock Exchange, but there is practically no reference to their roles and responsibilities in CCLV. While a number of policy documents (e.g. business continuity, information security) assign roles and responsibilities for certain specific issues, there is no documented comprehensive view (i.e. for the organization as a whole) of such roles and responsibilities of management. As of November 2015, it was noted that there was no independent reporting of the Head of the risk management department to the board or its risk management committee, or even to the CEO. [3]

- Principle 3 (framework for the comprehensive management of risks – broadly observed): The general framework through which CCLV manages the risks it is exposed to in its role as a CCP is robust for the most part. However, its business continuity plan is focused on recovery from disruptions originated from the materialization of operational risks. Hence, current business continuity and recovery planning do not cover extreme scenarios that may affect settlement (including the

[3] Subsequently, CCLV reported that the board established that the Head of the Risk Management Department would report to the board and the risk management committee.

CCP's own financial resources), nor does it cover the potential of experiencing losses due to general business risk.

- Principle 7 (liquidity risk - broadly observed): CCLV incorporates best practices in its management of liquidity risks. CCLV does not have access to central bank liquidity in the payments system (i.e. the intraday liquidity facility "FLI"). This situation forces CCLV to rely on its liquidity providers before first exhausting all collateral already provided by a participant that is delayed in covering its margin calls and/ other obligations with CCLV. On a separate matter, liquidity stress tests performed by CCLV include historical price volatilities scenarios and other extreme scenarios, but do not include failure to perform by one or more of its liquidity providers.

- Principle 14 (segregation and portability – partly observed): The CCLV rulebook and settlement member contracts provide the mechanism for the segregation and portability of positions, and these arrangements have been implemented in practice. However, the legal framework applicable to securities clearing and settlement systems does not provide a legal underpinning to segregation and portability of positions and collateral.

- Principle 15 (general business risk – broadly observed): While according to its financial statements CCLV has the necessary financial resources that would allow it to operate without any new revenues for more than 6 months, it has not made specific calculations of the amount of liquid net assets it would need to cover general business risks. Nor has it developed a detailed plan for its financial recovery were it to experience general business losses that reduce its capital below the regulatory minimum.

- Principle 23 (disclosure – broadly observed): Although CCLV prepared a recent self-assessment based on the CPSS-IOSCO assessment methodology (not available to the public), it has not yet completed the CPSS-IOSCO Disclosure Framework for FMIs.

Table 3
Ratings Summary of the Principles

Assessment category	Principle
Observed	Principles 4, 5, 6, 8, 9, 13, 16, 17, 18, 19, 20, 21 and 22
Broadly observed	Principles 2, 3, 7, 15 and 23
Partly observed	Principles 1 and 14
Not observed	Principles
Not applicable	Principles 10, 11, 12 and 24

b. Recommendations for CCLV (in its role as a CCP)

Table 4 **Prioritized list of recommendations**			
Principle	**Issue of concern or other gap or shortcoming**	**Recommended action and comments**	**Time frame for addressing recommended action**
1 and 14	Although segregation and portability of positions and collateral is achieved in practice, there is no legal certainty that these arrangements will be upheld in a court of law if contested.	Provisions on segregation and portability of positions and collateral (covering explicitly both indirect settlement members and customers) to be included in the relevant laws.	High priority (authorities should start discussing the legal necessary changes with high priority, i.e. in the next 3-6 months)
1	The provisions for FMI recovery and resolution contained in Law 20.345 date from 2009, and may therefore need to be reviewed in light of best international practice developed in recent years	Authorities to analyze how to better align the provisions for FMI recovery and resolution contained in law with best international practice, in particular with recent work of the FSB and CPMI-IOSCO.	In a defined timeline (<1 year).
2	No mechanism to review board performance in place	CCLV should develop a mechanism for reviewing the performance of board members, both as a group and individually.	In a defined timeline (1 year)
	Roles of senior management not clear in CCLV vis-à-vis its parent organization	CCLV should develop a document that clearly states the main roles and responsibilities of the CEO and other senior and mid-level managers with regard to CCLV, with an integral view of the organization	In a defined timeline (1 year)
	Lack of transparency in handling changes in senior management	CCLV should also develop a document specifying the potential reasons and the process for the removal of the CEO and other members of the management team	In a defined timeline (1 year)
	The Head of the risk management department reports directly to the Senior Manager for	The Head of the risk management department (i.e. *Subgerente de Riesgos*) should have a separate	In a defined timeline (<1 year). *This*

Table 4 Prioritized list of recommendations			
Principle	**Issue of concern or other gap or shortcoming**	**Recommended action and comments**	**Time frame for addressing recommended action**
	Operations. Hence, there is no independent reporting of the risk management function to the board or its risk management committee, or even to the CEO	reporting line to the risk management committee of the board.	*recommendation is addressed as of April 2016*.
3	Recovery planning focuses almost exclusively on the materialization of operational risks	Recovery planning should be developed in accordance with CPMI-IOSCO Guidance on Recovery of FMIs and extent beyond operational risks. Among other issues that are especially relevant for CCPs, recovery planning should include extreme scenarios (e.g. the drying up of liquidity which makes it impossible to liquidate securities for cash) and usage of loss sharing arrangements. Recovery planning should be tested regularly.	In a defined timeline (<1 year)
3 and 15	Business continuity at CCLV focuses on recovery from disruptions originated from the materialization of operational risks, and does not refer to potential losses due to general business risk.	CCLV to develop a specific plan for its financial recovery in the event it were to incur general business losses and its capital be reduced below the regulatory minimum.	In a defined timeline (<1 year)
		As part of the enhanced recovery plan, CCLV should determine the amount of liquid net assets funded by equity it will need to continue operations and services as a going concern. Beyond lack of revenue, potential costs related to operational losses, fraud, claims and investment	In a defined timeline (<1 year)

Table 4 Prioritized list of recommendations			
Principle	**Issue of concern or other gap or shortcoming**	**Recommended action and comments**	**Time frame for addressing recommended action**
		losses should also be estimated, along with the length of time and administrative costs for achieving a recovery.	
7	CCLV does not have access to the FLI used as part of the Sistema LBTR	Access to the FLI could give CCLV an additional line of defense to deal with a settlement member delay/default before using the funds from its own credit lines. In other words, CCLV could automatically repo the securities it holds as collateral of the delayed/defaulting member to obtain liquid funds on a timely basis before using its own lines of credit. Or, following its current procedures, through the FLI CCLV could have a reliable and expedite means to replenish its liquid resources. The BCCh granting liquidity to CCLV or other FMIs is currently not permitted by the legal framework. Hence, the BCCh and other financial authorities in Chile should discuss the desirability, in terms of benefits and costs, of CCLV (and other relevant FMIs) gaining access to the FLI.	In a defined timeline (1 year – for BCCh and other authorities to make an analysis of FMIs gaining access to the FLI. Actual legal and regulatory changes are likely to take more time to materialize.)
	Liquidity stress tests performed by CCLV include historical price volatilities scenarios and other extreme scenarios, but do not include failure to perform by liquidity providers.	Liquidity stress tests should also include failure to perform by one or more liquidity providers.	In a defined timeline (1 year)

Table 4 Prioritized list of recommendations			
Principle	**Issue of concern or other gap or shortcoming**	**Recommended action and comments**	**Time frame for addressing recommended action**
23	CCLV has not completed the CPMI-IOSCO Disclosures Framework for FMIs	CCLV to complete the CPMI-IOSCO Disclosure Framework for FMIs and make it available to the general public through its website or other proper means. This should be updated at a minimum every two years.	In a defined timeline (1 year)
2	CCLV and the BCS share the same board of directors, which may give rise to tensions between the overall strategy of CCLV (which should prioritize effective risk management) and that of the BCS (which may place stronger emphasis on profitability)	CCLV and the BCS should consider each having its own board of directors to reduce any potential conflicts of interest between the two organizations	In the normal course of business
17	Contracts, SLAs and OLAs with critical external service providers (e.g. Also Suite) need to be reviewed in light of best international practice.	Even if CCLV has a contract with BCS covering all its IT requirements, both entities must make sure that contracts, SLAs and OLAs signed by BCS with critical external service providers are consistent with best international practice. For this purpose CCLV and BCS may take as a basis the CPMI-IOSCO Assessment Methodology for the Oversight Expectations Applicable to Critical Service Providers.	In the normal course of business

V. DETAILED ASSESSMENT

<table>
<tr><td colspan="2">Principle 1: Legal basis
An FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.</td></tr>
<tr><td>Key consideration 1</td><td>The legal basis should provide a high degree of certainty for each material aspect of an FMI’s activities in all relevant jurisdictions.</td></tr>
<tr><td>Description</td><td>Material aspects and relevant jurisdictions

Principles on finality and protection against insolvency, on novation, as well as of segregation and portability of positions and posted collateral are all material aspects for CCLV as a CCP. As a CCP for equities, transfer of securities through book entries is another material aspect.

Law 20.345, in addition to regulating clearing and settlement, also imposes that the administrator of a clearing and/or settlement system for securities be authorized as a Sociedad Administradora, and, as such, be subject to specific requirements as a Sociedad Administradora. In this context, CCLV needs to comply both with the requirements established as a CCP (as the operator of the system) and as a settlement system.

Legal basis for each material aspect

Law 20.345 on clearing and settlement systems for financial instruments clearly regulates all relevant aspects as for finality, recognition of novation, and protection against insolvency.

Law 20.345 contains a satisfactory description of “novation” (final bilateral compensation by the CCP against any participant and with effects against third parties) although this is not expressly mentioned as such. Specific rules are established in Chapter II of Law 20.345 for a CCP to sufficiently manage the risk connected with its activities as the sole legal counterparty to all participants in the securities settlement system.

Law 18.045 of 1985 (Ley de Mercado de Valores or LMV) provides the basis for securities transfers made by means of book entries in the event of dematerialization of securities, and the enforceability of such provisions.

Regarding default arrangements, the minimum features of the measures CCPs must include in their rulebook are described in section VI of SVS regulation 258 (NCG 258 “Minimum elements of credit and liquidity risk management for entities clearing and settling financial instruments”).

Articles 16-19 of Law 20.345 describe the processes for the recovery of CCPs, while section V describes the resolution process for all types of “entities that clear and settle financial instruments” (articles 33-37).</td></tr>
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	The Law does not contain any provision on segregation and portability. Although these are covered by agreement, no statutory provision exists to that extent.
Key consideration 2	**An FMI should have rules, procedures, and contracts that are clear, understandable, and consistent with relevant laws and regulations.**
Description	CCLV rules, procedures and contracts are clear and understandable, and have not been contested in any significant aspect by CCLV participants or by the customers of such participants. The main set of rules, the rulebook, was approved by the SVS (also with the binding opinion of the BCCh and after hearing the opinion of SBIF). This provides an acceptable level of assurance to CCLV and its participants that the rules and procedures are consistent with applicable laws and regulations. Any changes to the rules and procedures also require the approval of the SVS and the BCCh. Laws and regulations and the rulebook itself specify the minimum aspects of the contracts between CCLV and its participants, between direct settlement members and indirect settlement members, and between members and their customers (the latter is applicable for the derivatives clearinghouse only).
Key consideration 3	**An FMI should be able to articulate the legal basis for its activities to relevant authorities, participants, and, where relevant, participants' customers, in a clear and understandable way.**
Description	The rules and procedures are contained in the CCLV rulebook and other documents (e.g. Risk Methodologies Manual) that are disclosed to stakeholders. These documents include all relevant topics for the operation of the CCLV as a CCP (and as a SSS), including access and exclusion criteria, the various membership types, the rights and obligations of the CCLV as operator, the rights and obligations of settlement members and their customers, a detailed explanation of the operational model, including the use of margin/collateral, limits, definition of a participant default and its consequences. These provisions are further developed in the contracts signed with participants and other agents. In addition, detailed procedures for very specific issues are developed as appropriate. The rulebook and other documents are provided to all direct and indirect participants upon joining CCLV and are considered part of the contract, and therefore are binding for all participants. Updates are communicated to all participants through emails, newsletters and through CCLV's website.
Key consideration 4	**An FMI should have rules, procedures, and contracts that are enforceable in all relevant jurisdictions. There should be a high degree of certainty that actions taken by the FMI under such rules and procedures will not be voided, reversed, or subject to stays.**

Description	*Enforceability of rules, procedures and contracts* The CCLV rulebook was approved by the SVS, BCCh and SBIF and its provisions are therefore deemed fully enforceable in Chile. *Degree of certainty for rules and procedures* All key rules and provisions in the rulebook are based on laws (especially Law 20.345) and on NCGs issued by the SVS (some issued jointly with SBIF). The only relevant jurisdiction for CCLV is Chile (see KC 1.5). There is no precedence of a CCLV rule, procedure or action being revoked by any other competent authority.
Key consideration 5	**An FMI conducting business in multiple jurisdictions should identify and mitigate the risks arising from any potential conflict of laws across jurisdictions.**
Description	CCLV only operates in local markets and with local participants, i.e. locally licensed financial institutions. Participation of foreign entities (i.e. not licensed as financial entities in Chile) in CCLV is not explicitly allowed nor forbidden in laws or regulations. It is the opinion of CCLV that only those entities licensed in Chile may become direct participants. Although provided for as a possibility in its rulebook, for the time being CCLV does not accept cross-border collateral. Nevertheless, the CCLV has already articulated some specific provisions in connection with this possibility (see KC 5.5)
Key conclusions	The legal framework applicable to securities clearing and settlement systems provides a legal underpinning for most of the material aspects for the operation of a CCP, such as novation, settlement finality, protection against insolvency, transfer of securities through book entries, and regulation and oversight. However, it does not provide a legal underpinning to segregation and portability of positions and collateral.
Assessment of Principle 1	**Partly observed.**
Recommendations and comments	Although segregation and portability of positions and collateral of indirect participants and customers is achieved in practice – as the CCLV rulebook and settlement member contracts acknowledge the relevant mechanisms and these have been implemented in practice - there is no legal certainty that these arrangements will be upheld in a court of law if contested. Provisions on segregation and portability of positions and collateral (covering explicitly both indirect settlement members and customers) should therefore be included with high priority in the relevant law(s).

	It is also recommended to ensure that the provisions for FMI recovery and resolution contained in Law 20.345 remain aligned with best international practice, in particular with recent work of the FSB and CPMI-IOSCO.

Principle 2: Governance An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.	
Key consideration 1	**An FMI should have objectives that place a high priority on the safety and efficiency of the FMI and explicitly support financial stability and other relevant public interest considerations**
Description	In its 2014 Annual Report, CCLV states that its mission is "to provide the best securities clearing and settlement services, contributing to financial stability and the soundness of capital markets". Moreover, Law 20.345 states that clearing and settlement entities must have objectives that assign priority to safety and efficiency, and specifies that settlement must be organized on the basis of international standards and best practices. CCLV's rulebook has been designed on this basis, detailing the safety and efficiency mechanisms to be applied in its clearing and settlement and overall risk management activities. The above-mentioned documents are all public and are available at CCLV's website. CCLV assesses its overall performance with regard to its stated objectives on the basis of metrics associated with the level of successful fulfillment of its clearing and settlement activities (e.g. percentage of clearing and settlement orders that were settled in the ordinary, complementary and extraordinary settlement time period). During the last three years, successful fulfillment of equities settlement orders during the ordinary settlement period is 99.98% for the cash leg and 99.70% for the securities leg, both in terms of total value settled. For the derivatives clearinghouse which started operations only in August 2015, both indicators are 100%. This report is presented to regulators, the board and senior management.
Key consideration 2	**An FMI should have documented governance arrangements that provide clear and direct lines of responsibility and accountability. These arrangements should be disclosed to owners, relevant authorities, participants, and, at a more general level, the public.**
Description	*Governance arrangements* CCLV's governance arrangements take as a basis a number of legal and regulatory requirements, mainly those specified in law 18.046 ("Joint stock companies law"), Law 20.345, as well as SVS Circular N° 1.939. The by-laws of CCLV (Section IV) state that the company's top authority is the board of directors ("Directorio"), which comprises 11 members that may or may not be shareholders. The board of directors designates a CEO ("Gerente General") and is also entitled to designate other senior management team members, although this responsibility is normally delegated to the CEO.

	CCLV has three independent committees reporting directly to the board on the following matters: risk management, disciplinary actions, and audit. The Audit Senior Manager ("Gerente de Auditoría y Control") which is a member of CCLV's management team, has a direct reporting line to the audit committee. Some of the key documents in which CCLV's governance arrangements are documented are the following: • CCLV by-laws • CCLV rulebook • CCLV corporate governance policy • CCLV risk management policy framework Regarding accountability, each year the CCLV must prepare a report to its shareholders detailing the performance of the company, including financial statements. CCLV also holds an annual meeting with its users/participants where it presents a number of quantitative and qualitative reports. Moreover, the board committees prepare and present monthly reports to the board. *Disclosure of governance arrangements* The rulebook is publicly available at CCLV's website. All other documents are accessible to CCLV participants through other means.
Key consideration 3	**The roles and responsibilities of an FMI's board of directors (or equivalent) should be clearly specified, and there should be documented procedures for its functioning, including procedures to identify, address, and manage member conflicts of interest. The board should review both its overall performance and the performance of its individual board members regularly.**
Description	*Roles and responsibilities of the board* The roles and responsibilities of the board are clearly specified in CCLV by-laws (article 16). Among others, these include designation of the CEO and other top executives, setting CCLV's risk management framework, provide accountability to shareholders, and make decisions on any issues that may not be provided for specifically in the legal framework or in CCLV's rulebook and other internal documents. Board procedures are detailed in the document "Corporate governance practices of the Santiago Stock Exchange and subsidiaries" issued on December 2014. At present, CCLV shares the board of directors with that of the Santiago Stock Exchange (each entity has its own board committees, however). The board meets on a monthly basis and discusses matters related to the Exchange and the CCLV. Separate meeting agendas and minutes are prepared and signed. There is a "Code of Conduct for board members of the Santiago Stock Exchange and subsidiaries". The code clearly defines what constitutes a

	conflict of interest, specifies six broad situations that constitute a conflict of interest, the recognition of a conflict of interest by individual board members – and where applicable by the board as a whole-, and the procedure to deal with a conflict of interest once it is recognized. Among other consequences, the board member involved in a conflict of interest should inform the board of this situation – this is depicted in the minutes of the board meeting, together with background information and the board's decision - and abstain from voting on the corresponding matter. With regard to board committees, these are specified in article 25 of CCLV's by-laws: risk management committee, disciplinary committee, and audit committee. The roles and functions of each of these committees are detailed in CCLV's rulebook (Section I). Some of the main functions of each of the committees are as follows: • <u>Audit Committee:</u> supervise observance of the rulebook and other internal rules, procedures and processes. • <u>Disciplinary Committee</u>: propose sanctions to users/participants in connection with violations to the provisions contained in CCLV's rulebook. • <u>Risk Management Committee</u>: assess and propose improvements to risks management and control policies and practices. Board committees are made-up of at least 3 members. The rulebook specifies the requirements for committee members, which include independence, suitability and professional experience. In general, committee members are designated by the board, with the exception of the risk management committee in which two of the three members are elected/designated by users/participants. The other member is designated by the board, and cannot be an executive of CCLV. *Review of performance* In CCLV's policies and procedures regarding the board there are no provisions for the review of the performance of board members, neither as a group nor individually.
Key consideration 4	**The board should contain suitable members with the appropriate skills and incentives to fulfill its multiple roles. This typically requires the inclusion of non-executive board member(s).**
Description	Article 14 of CCLV by-laws states that "*The personal characteristics of each candidate shall prevail in the designation of board members, specifically with regard to professional background and suitability for the position*". CCLV is also observant of the provisions established in Law 18.046 (article 35), regarding the minimum requirements (e.g. appropriate skills, experience, integrity) and the impediments for an individual to become a board member. Law 20.345 also contains provisions on the designation of board members of securities clearing and settlement entities.

	At present, CCLV shares the board of directors with that of the Santiago Stock Exchange. Board members are remunerated, and are entitled to an additional stipend for their participation as members of any of the board committees. Board members are elected by the shareholders assembly for a three-year period. Every three years there is a new election of all 11 board positions. Current board members may be re-elected indefinitely. The by-laws allow for the designation of independent directors - defined as those individuals that do not have a contractual relationship with any of the brokers-dealers that are shareholders of the Santiago Stock Exchange. There is no minimum or maximum number of independent directors. At present, there are two such members in the board. In its annual report, CCLV discloses the names and curricula of its board members. Although the report does not explicitly qualify any of the board members as "independent", that condition may be inferred from the curricula which specifies the member's past and current professional activities.
Key consideration 5	**The roles and responsibilities of management should be clearly specified. An FMI's management should have the appropriate experience, a mix of skills, and the integrity necessary to discharge their responsibilities for the operation and risk management of the FMI.**
Description	*Roles and responsibilities of management* The Santiago Stock Exchange and CCLV share the same CEO and other Senior Managers. With regard to roles and responsibilities of management of the CCLV, the by-laws only state that the CEO shall perform those functions that are delegated to him/her by the board. There is also one document issued by the Santiago Stock Exchange that describes the roles and responsibilities of the CEO and other senior managers. However, this document refers almost exclusively to the functions of the CEO and other senior managers with regard to the Santiago Stock Exchange and is almost silent with regard to roles and responsibilities in connection with CCLV. In addition, the various high-level policies and other internal documents, including some procedures, specify the roles and responsibilities of the CEO and other senior managers with regard to specific topics (e.g. business continuity, approval of exceptions to risk limits, etc.). Some of the roles and responsibilities are also specified in board minutes and in the power of attorney given to each senior manager. *Experience, skills and integrity*

	Senior management at the CCLV consists of seasoned individuals, highly experienced in the securities markets industry, both on front office and back-office aspects including risk management, as the Santiago Stock Exchange had been performing clearing and settlement functions for many years before it was transformed into a CCP for equities and derivatives. The procedures to remove management are not documented. There is a document approved by the board called “Policy for the replacement of the CEO and other senior managers”, which specifies procedures for the substitution of the CEO in case of temporary absence only. This document also outlines very general procedures for the hiring of a CEO and other top executives.
Key consideration 6	**The board should establish a clear, documented risk-management framework) that includes the FMI’s risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and emergencies. Governance arrangements should ensure that the risk-management and internal control functions have sufficient authority, independence, resources, and access to the board.**
Description	*Risk management framework* The risk management framework is approved by the board of directors on the basis of the provisions of article 9 of Law 20.345 and SVS Rule 258. The high-level risk management framework is reflected in the “Risk Management Policy” (July 2014), and is articulated in detail in CCLV’s rulebook. The “Risk Management Policy” is an overarching document that provides general guidelines to manage risks from an integral perspective, on the basis of the legal and regulatory framework, and more generally on the basis of international standards and best practices. Section D of this document assigns responsibilities and accountability for risk decisions and risk managements as follows (from high-level to process-level): 1. *Board of directors* 2. *Risk management committee* 3. *CEO/General Manager* 4. *Managers and Deputy Managers* 5. *Risk management department* 6. *Process owners* 7. *Internal audit* Decision-making responsibilities in crises and emergencies is specified in the “Crisis Response Plan” (Section 20) and the “Business Continuity Manual”. The “Risk Management Policy” states that board of directors is responsible for issuing the first version of this policy, and thereafter it must

	ensure that the policy remains updated and is effective. At least on an annual basis the board must reflect is position in this regard in the board minutes, or whenever it receives a proposal of changes from the Risk Management Committee. *Authority and independence of risk management and audit functions* Regarding the audit function, the Audit and Control Senior Manager, which is shared with the Santiago Stock Exchange, has a direct reporting line to the Audit Committee. Currently, a total of 9 individuals work full-time on the audit function. The Risk Management Manager ("*Subgerente de Riesgos*") reports to the CEO and to the Risk Management Committee of the board. The Risk Management Department comprises 7 full-time staff, including the Manager, a Financial Risk Officer and an Operational Risk Officer. Each of the latter two are supported by two professionals (analysts). According to the CCLV rulebook, the risk management committee of the board is entitled to request all relevant information from management to assess the risk management model as well as the mechanisms and procedures for the management of operational and financial risks to which CCLV is exposed. The first quarter of each year the risk management committee must present a report to the board with its opinions regarding the effectiveness of risk management policies. This report is further communicated to the shareholders during the general assembly.
Key consideration 7	**The board should ensure that the FMI's design, rules, overall strategy, and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders. Major decisions should be clearly disclosed to relevant stakeholders and, where there is a broad market impact, the public.**
Description	*Identification and consideration of stakeholder interests* Two of the three members of the risk management committee are designated by CCLV users/participants. This arrangement was designed to ensure that user views are considered in the design of the overall risk management model of CCLV. The other member is designated by the board, and cannot be an executive of CCLV. Further, the Santiago Stock Exchange has a Committee of Operations Senior Managers which in turn has a permanent sub-committee on clearing and settlement issues. The committee and sub-committees meet on a monthly basis and provide feedback to the Santiago Stock Exchange and CCLV. Moreover, relevant changes to policies and procedures are submitted to consultations with users/participants, while changes to the rulebook must be approved by the SVS and the BCCh. *Disclosure*

	Major decisions by the board are reflected in the Annual Report, which is fairly detailed and is publicly available at the CCLV website. Major decisions need also to be reported to the SVS, which discloses the same to the overall public through its website under the "*Hechos Relevantes*" microsite.
Key conclusions	CCLV has clear objectives with regard to preserving financial stability and promoting safety and efficiency, and in general incorporates best practices in its governance arrangements. The associated mechanisms are transparent for the most part and so far have proved effective. Lines of responsibility and accountability are clear in general, although there is no mechanism to assess performance of board members. The Santiago Stock Exchange and CCLV share the same board members and senior management team. Risk management and audit are given an important role through independent committees that report directly to the board. These committees, as well as the disciplinary committee, are exclusive to CCLV. However, there is no independent reporting line of the risk management function (i.e. of the *Subgerente de Riesgos*) to the board or the risk management committee, or even to the CEO. The roles and responsibilities of the Board are clearly defined. However, the roles and responsibilities of senior management are documented for what regards the Santiago Stock Exchange, but there is practically no reference to their roles and responsibilities in CCLV except for specific risk management issues: a number of policy documents (e.g. business continuity, information security) assign roles and responsibilities for certain specific issues. In other words, there is no documented comprehensive view of such roles and responsibilities. There is a clearly documented risk management framework. The interest of participants and other stakeholders are duly taken into account. As of November 2015, it had been identified that the Head of the Risk Management Department (i.e. *Subgerente de Riesgos*) only had reporting line to the Senior Manager for Operations, which did not constitute best practice.[4]
Assessment of Principle 2	**Broadly observed.**
Recommendations and comments	CCLV should develop a mechanism for reviewing the performance of board members, both as a group and individually. CCLV should develop a document that clearly states the main roles and responsibilities of the CEO and other senior and mid-level managers with

[4] Subsequently, CCLV reported that this shortfall had been fixed. CCLV's board established that the Head of the Risk Management Department would report to the board and the Risk Management Committee.

	regard to CCLV, with an integral view of the organization. This is even more important considering that the senior management team is shared by the Santiago Stock Exchange and CCLV. CCLV should also develop a document specifying the potential reasons and the process for the removal of the CEO and other members of the management team. In the normal course of business, CCLV and the BCS should also consider each having its own board of directors to reduce any potential conflicts of interest between CCLV's overall strategy (which should have a clear priority for risk management) and the strategy of the BCS (which may have a greater emphasis on profitability).

<table>
<tr><td colspan="2">Principle 3: Framework for the comprehensive management of risks
An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.</td></tr>
<tr><td>Key consideration 1</td><td>An FMI should have risk-management policies, procedures, and systems that enable it to identify, measure, monitor, and manage the range of risks that arise in or are borne by the FMI. Risk-management frameworks should be subject to periodic review.</td></tr>
<tr><td>Description</td><td>Risks that arise in or are borne by the FMI

Section F of the “Risk Management Policy” states the following relevant risks for the operation of CCLV: systemic, legal, credit, liquidity, general business, investment and custody, reputational and operational

Risk management policies, procedures and systems

Risk management policies and high-level control mechanisms and procedures are specified in the “Risk Management Policy”. This policy states that each year, the board of directors must specify the maximum levels of risks that the organization will accept for the various risks identified.

The detailed methods and procedures are specified in the “Risk Methodologies Manual”. In this context, risk management at the CCLV is modelled according to ISO 31.000.

For the monitoring at a high-level of the risks faced by CCLV it uses the PAWS software solution. PAWS provides an aggregate view of inherent and residual risks faced by the organization, of progress achieved on risk mitigation plans, and serves as a coordination mechanism with Internal Audit, among other features.

To monitor in detail credit and liquidity risks it uses the Algo Suite software. This system allows for the intraday calculation of the risks of the positions of direct participants, indirect participants and their respective customers (customer positions (i.e. “comitentes”) are accepted in the derivatives clearinghouse only), the exposure of CCLV with regard to these positions (i.e. in terms of the adequacy of guarantees), etc.

The possibility of cyberattacks is mentioned in the document “General Policy for Information Security (“Política General de Seguridad de la Información”). That same document provides details on how this potential risk as well as other threats to information security are to be addressed within the organization.

Review of risk management policies, procedures, systems

The first risk management framework was approved by the board. In general, risk management policies, procedures and systems are reviewed on an annual basis. Proposals for improvement come from a number of feedback mechanisms, like internal audit, interactions with users (see KC</td></tr>
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	2.7) or requests from regulators. Such proposals are collected and assessed in a first instance by the Risk Management Department which presents them to the Risk Management Committee. This committee assesses the proposals and where applicable forwards them the board, which makes the final decision on the proposed changes. The overall effectiveness of policies, procedures and systems is evaluated on a day-to-day basis by Internal Audit on the basis of a number of Key Performance Indicators (KPIs), one of the most important of these being the percentage of clearing orders that was settled on time (i.e. during the ordinary settlement window). The Audit and Risk Management Committees also review this and other KPIs on a regular basis in their meetings.
Key consideration 2	**An FMI should provide incentives to participants and, where relevant, their customers to manage and contain the risks they pose to the FMI.**
Description	Section C.1 of the CCLV rulebook states that CCLV must provide direct and indirect settlement members with the necessary tools for them to monitor in an online basis all relevant processes, including registration of clearing orders, calculation of net positions in cash and securities, acceptance of clearing orders, adequacy of margin/guarantees, and settlement, among others. All this information is made available to settlement members through the SEBRA technological platform. All such information is updated every hour. Incentives for settlement members (direct and indirect) include of sanctions and fines in case of violation of any of the provisions of the rulebook, including in connection with the management of the risks they pose to CCLV. Moreover, margin requirements and individual contributions to the settlement guarantee fund are proportional to the risks participants pose to CCLV. The key provisions contained in the CCLV rulebook with regard to the risks posed by settlement members are embedded in CCLV's clearing and settlement engine "SCL". Therefore, this system provides information, alerts, makes automatic margin calls, forbids further acceptance of new clearing orders unless existing positions satisfy the specified risk management criteria (e.g. certain limits, adequacy of margin/guarantees), and has other features that allow for the effective management and containment of risks (see principles 4-7, 13).
Key consideration 3	**An FMI should regularly review the material risks it bears from and poses to other entities (such as other FMIs, settlement banks, liquidity providers, and service providers) as a result of interdependencies and develop appropriate risk-management tools to address these risks.**

Description	*Material risks* The Risk Management Policy, jointly with the Business Continuity Policy and the Information Security Policy and other relevant documents specify the events that may pose a risk to the operation of CCLV as a result of interdependencies. The main risks identified are the disruption of custodian and securities transfer services provided by the central securities depository (i.e. CSD), cash settlement services provided by the Sistema LBTR of the central bank, and non-performance of liquidity providers. CCLV does not pose risks to the DCV or the Sistema LBTR as it is merely a user of such services and uses the applications and communications means provided by those FMIs. Risks of interdependencies are measured and monitored through flow charts, risk matrices, heatmaps, business impact analysis, etc. These risks are reviewed on a monthly basis. *Risk management tools* The evaluation criteria is based on the impact the event could have and the probability of occurrence of such events. Based on this evaluation, CCLV identifies how it shall deal with such an event. The potential disruption of services form DCV and/or Sistema LBTR is considered in the business continuity plan of the organization, and mitigation plans have been developed to this end. Moreover, a series of continuity tests involving all FMIs in Chile is being performed on a quarterly basis since mid-2014. The risk of non-performance of liquidity providers is dealt by means of diversification of such providers (see principle 7). The effectiveness of these risk management tools is assessed through key risk indicators (KRI), adequacy of service level agreements (SLAs), integral risk panel, etc. These tools are reviewed monthly by the Risk Management Committee.
Key consideration 4	**An FMI should identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down. An FMI should prepare appropriate plans for its recovery or orderly wind-down based on the results of that assessment. Where applicable, an FMI should also provide relevant authorities with the information needed for purposes of resolution planning.**
Description	*Scenarios that may prevent an FMI from providing critical operations and services* The business continuity policy provides the framework for identifying risk scenarios that may affect the operation of CCLV as a going concern.

	Scenarios identified include total damage to the headquarters building, major or total damage to the main datacenter, long lasting lack of access to headquarters, long lasting unavailability of key staff or massive unavailability of staff, unavailability of Algo Suite (i.e. the risk management technological platform), unavailability of the SWIFT network and damage or generalized failure of telecommunications. General business risk has not been considered in these scenarios (see principle 15). CCLV action plan with regard to the scenarios identified in the business continuity policy consider the relationships between the various risks CCLV is exposed to. *Recovery or orderly wind-down plans* The business continuity plan created by CCLV has defined strategies in order for it to recover its critical business units within a defined time set, which is set so as to minimize impact in the capital market. The sole focus of this plan is on recovery from disruptions originated from the materialization of operational risks. CCLV has not developed an orderly wind-down plan. However, Law 20.345 (articles 16-19) specifies the procedures to be followed in case the regulatory capital of a clearing and settlement entity falls below a minimum threshold.
Key conclusions	CCLV has a robust framework for the comprehensive management of risks, including legal, credit, liquidity and operational, among others. CLV has a comprehensive Risk Management Policy, based on ISO 31.000, that describes the procedures and controls to identify, measure, manage and oversee risks faced by the organization. CCLV has also identified risks of interdependencies through its business continuity and information security policies. Recovery planning focuses almost exclusively on the materialization of operational risks. Risks, associated measures, scenarios and recovery plans are reviewed regularly, at least on an annual basis.
Assessment of Principle 3	**Broadly observed.**
Recommendations and comments	Recovery planning should be developed in accordance with CPMI-IOSCO Guidance on Recovery of FMIs and extent beyond operational risks. Among other issues that are especially relevant for CCPs, recovery planning should include extreme scenarios (e.g. the drying up of liquidity which makes it impossible to liquidate securities for cash) and usage of loss sharing arrangements. Recovery planning should be tested regularly.

	In addition, CCLV should develop a specific plan for its financial recovery in the event it were to incur significant general business losses. See details in principle 15.[5]

[5] Subsequently to this assessment, CCLV has notified that it has incorporated this recommendation in its working program for 2016.

Principle 4. Credit risk An FMI should effectively measure, monitor, and manage its credit exposure to participants and those arising from its payment, clearing, and settlement processes. An FMI should maintain sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two largest participants and their affiliates that would potentially cause the largest aggregate credit exposures to the CCP in extreme but plausible market conditions. All other CCPs should maintain, at a minimum, total financial resources sufficient to cover the default of the one participant and its affiliates that would potentially cause the largest aggregate credit exposures to the CCP in extreme but plausible market conditions.	
Key consideration 1	**An FMI should establish a robust framework to manage its credit exposures to its participants and the credit risks arising from its payment, clearing, and settlement processes. Credit exposure may arise from current exposures, potential future exposures, or both.**
Description	The Risk Management Policy contains the general guidelines and practices to be followed for risk management purposes, including credit risk, and describes the accepted approaches in dealing with the identified risks. The CCLV rulebook details the risk management framework, including for credit risk, in observance of legal and regulatory requirements. The Risk Methodologies Manual specifies the methods for calculating the various "lines of defense" of CCLV against credit risk (i.e. participation requirements, pre-acceptance and certain post-acceptance transaction limits, collateral requirements, additional collateral requirements, etc.). The framework is reviewed at least annually, or more frequently in the event an extraordinary need arises.
Key consideration 2	**An FMI should identify sources of credit risk, routinely measure and monitor credit exposures, and use appropriate risk-management tools to control these risks.**
Description	The specific sources of credit risk are identified in the Risk Methodologies Manual, and their recognition and treatment are reflected in the CCLV rulebook. The latter specifies lack of payment of a net debit cash position of a settlement member, and/or lack of delivery of securities in connection with a net selling position in securities within the specified time frame (see principle 13) as the key sources of credit risk for CCLV in its role as a CCP. The rulebook specifies that sources of credit risk must be assessed analyzing current and potential future fluctuation in market prices, up until the moment in which open positions of the defaulting party are closed out. Settlement orders are entered into CCLV's systems automatically via file transfers from the Santiago Stock Exchange. CCLV calculates in real time the aggregate net position in both cash and securities for each direct and indirect settlement member (though calculations are made separately for the equities and the derivatives clearinghouses). CCLV then calculates every hour the market value of settlement member positions and the

	adequacy of the collateral posted in connection with those positions. The calculation of adequacy of collateral considers the time horizon for the close out of positions (see principle 6). More frequent calculations of adequacy of collateral may be performed in the event higher volatilities and/or abnormal trading volumes are observed. CCLV is entitled to make intraday margin calls as needed. To control the identified sources of credit risk, CCLV has established a system of "lines of defense". The first line of defense is represented by the participation criteria, which includes a minimum capital requirement for entities aiming at participating as direct settlement members. Then, the CCLV specifies certain limits that are applied ex ante, before member orders are accepted for settlement (the latter occurs every hour if the calculation of adequacy of collateral was successful). For example, in the case of equities a settlement order is not accepted for settlement by CCLV if the corresponding stock has fluctuated more than 5% from its previous closing. Section C.2.6.4 of the rulebook also specifies several other limits for the acceptance of derivatives settlement orders, including concentration limits, open contracts limits, intraday limits, and price fluctuation limits, etc. The rulebook specifies that CCLV must hold at any time sufficient financial resources, in the form of collateral posted by direct and indirect settlement members, including additional financial resources, to cover credit exposures vis-à-vis each of such participants with a high-level of confidence that considers a wide range of stress scenarios. The rulebook includes details on the obligations of settlement members to post collateral to meet minimum collateral requirements ("*garantía minima*"), margin requirements ("*garantía corriente*"), additional collateral requirements ("*garantía adicional*"), and contributions to the settlement guarantee fund. The rulebook also specifies participant default procedures (see Principle 13), where the sequencing of financial resources to cover losses is clearly specified, including CCLV's own funds (i.e. the Reserve Fund created *ex profeso* for its clearing and settlement activities, and eventually its paid-in capital). Direct settlement members are responsible for any shortage of funds or securities stemming from a default of any of the indirect settlement members linked to them. During the normal settlement window, CCLV does not advance any funds, i.e. it only pays those participants with a net credit cash position or net credit position in securities once it has received the corresponding funds/securities from participants with net debit positions. In case of a default of a settlement member, different procedures apply (see principle 13), which in any case aim at minimizing the exposure for CCLV and the system as a whole. At least on an annual basis, the Risk Management Committee requires from CCLV management all relevant information to assess the overall

	effectiveness of the risk management model and associated tools. Results are informed to the board of directors.
Key consideration 3	**A payment system or SSS should cover its current and, where they exist, potential future exposures to each participant fully with a high degree of confidence using collateral and other equivalent financial resources (see Principle 5 on collateral). In the case of a DNS payment system or DNS SSS in which there is no settlement guarantee but where its participants face credit exposures arising from its payment, clearing, and settlement processes, such an FMI should maintain, at a minimum, sufficient resources to cover the exposures of the two participants and their affiliates that would create the largest aggregate credit exposure in the system.**
Description	*Coverage of exposures to each participant* Not applicable to CCLV in its role as a CCP. *For DNS payment systems and DNS SSSs in which there is no settlement guarantee* Not applicable to CCLV in its role as a CCP.
Key consideration 4	**A CCP should cover its current and potential future exposures to each participant fully with a high degree of confidence using margin and other prefunded financial resources (see Principle 5 on collateral and Principle 6 on margin). In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. In all cases, a CCP should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount of total financial resources it maintains.**
Description	*Coverage of current and potential future exposures to each participant* Current and potential future exposures to each participant are covered through a system of collateral requirements which delivers a specific measure of required collateral (i.e. "*garantía exigida*"). Collateral for the two products/clearinghouses in which CCLV acts as a CCP is calculated and accounted for separately.

	Hence, for the equities clearinghouse the required collateral is the following: Required collateral = MAX (Minimum collateral requirement; Current collateral requirement) + Additional collateral requirement where, • the minimum collateral requirement = MAX (Average of current collateral requirements of the latest 90 calendar days; Average of current collateral requirement of the latest 500 business days). This is informed to participants the first working day of each month and remains applicable for the whole month • the current collateral requirement is the margin system, it is informed at the beginning of the operational day and is updated on an hourly basis • an additional collateral requirement may be determined by the CCLV on the basis of the volume of operations of a settlement member vis-à-vis its capital For the derivatives clearinghouse, the required collateral is the following: Required collateral = MAX (Minimum collateral requirement; Current collateral requirement) + Additional collateral requirement + Additional collateral requirement for exceeding concentration limits + Margin call for customer positions (if applicable) The definition of each of the components is the same as for the equities clearinghouse, although the current collateral requirement is calculated over own open contracts as well as over open contracts not yet assigned to customers of the relevant settlement member. Financial resources used to cover these exposures are cash in Chilean pesos and short-term government securities (see principle 5), and are readily available to CCLV: cash is transferred to the CCLV account at the BCCh, while securities are transferred irrevocably to CCLV account with the DCV. The current collateral requirement – i.e. the margin system – is calculated using VAR at 99% single tail confidence level, covering the latest 500 business days (see principle 6 for additional details). The required collateral is calculated/updated on an hourly basis. On an intraday basis, CCLV has defined a maximum exposure to its settlement members consisting of a 30% collateral deficit or UF 20,000 (approximately USD 750,000). CCLV activates intraday margin calls in case any such maximum levels are surpassed. In any case, any collateral deficit must be covered before the end of the operating day. *Risk profile and systemic importance in multiple jurisdictions*

	Not applicable. *Additional financial resources* Additional financial resources available to CCLV consist of the following: • A settlement guarantee fund made-up of contributions from direct settlement members, and which is designed to cover at least the sum of the two largest losses (i.e. that were not fully covered with the required collateral) that could have occurred under extreme but plausible market conditions in the last 500 working days • A Reserve Fund made-up with CCLV own resources. For the equities clearinghouse this fund is at least 0.2% of the sum of the two largest net debit daily positions registered in the last 500 working days. For the derivatives clearinghouse it is at least 0.4% of the same concept. Both funds are accounted for separately. The settlement guarantee fund and the reserve fund are recalculated on a monthly basis. In the case of the settlement guarantee fund, however, the sufficiency is assessed on a daily basis, and CCLV is entitled to require settlement member contributions to this fund in conditions of high volatility of market prices or abnormal trading volumes. The specific scenarios for the latter are described in the rulebook, sections C.1.6.4 and C.2.6.5. CCLV is not involved in activities with a more complex risk profile and it is not important in multiple jurisdictions. *Supporting rationale and governance arrangements* The rationale of the holdings of total financial resources is documented in the rulebook and the Risk Methodologies Manual. All risk models for the mark-to-market of derivatives, calculation of margins, contributions to the settlement guarantee funds, etc. are documented and are approved by the risk management committee of the board. CCLV risk management department reports monthly to the committee on the sufficiency of the total holdings based on information from daily stress tests.
Key consideration 5	**A CCP should determine the amount and regularly test the sufficiency of its total financial resources available in the event of a default or multiple defaults in extreme but plausible market conditions through rigorous stress testing. A CCP should have clear procedures to report the results of its stress tests to appropriate decision makers at the CCP and to use these results to evaluate the adequacy of and adjust its total financial resources. Stress tests should be performed daily using standard and predetermined parameters and assumptions. On at least a monthly basis, a CCP should perform a comprehensive and thorough analysis of stress testing scenarios, models, and underlying parameters and assumptions used to ensure they are appropriate for**

	determining the CCP's required level of default protection in light of current and evolving market conditions. A CCP should perform this analysis of stress testing more frequently when the products cleared or markets served display high volatility, become less liquid, or when the size or concentration of positions held by a CCP's participants increases significantly. A full validation of a CCP's risk-management model should be performed at least annually.
Description	*Stress testing* CCLV performs stress tests, through which outstanding positions are stressed to simulate the effect of extreme values of risk factors that are not contemplated in historical scenarios. Stress tests are performed on a daily basis, and may give rise to unscheduled margin calls or additional collateral requirements. Likewise, CCLV performs reverse stress tests on a monthly basis, analyzing the different circumstances under which a default may occur. As per the Risk Management Policy, results of daily stress tests are grouped on a monthly report that the Risk Management Department submits to the risk management committee of the board. The risk management committee then pronounces on the sufficiency, or otherwise needs for adjustment, of CCLV total financial resources. The Risk Management Department also reports on a quarterly basis the state of risk and effectiveness of risk controls to the CEO. *Review and validation* On a monthly basis, CCLV assess the effectiveness and appropriateness of assumptions and parameters used in stress tests. Those tests consider an analysis of historical scenarios and a wide range of parameters and assumptions that reflect extreme but plausible market conditions. This is done in order for CCLV to understand how the adequacy of its total financial resources could be affected by extreme market conditions. Static scenarios with more extreme conditions than those of historical scenarios are also analyzed. In addition to daily stress tests, CCLV performs certain intraday tests to identify the time of the day in which its intraday exposure to settlement members may be highest. This is usually right before closing time (i.e. when the final positions that will go for settlement on the value date are determined). At this time, any collateral deficits must be eliminated. According to the Risk Management Policy (section IV), responsibility for validating the overall risk management model lies with the risk management committee of the board. This committee submits a comprehensive report on this issue to the board in the first quarter of each year. Nevertheless, at any time the board may request from the risk management committee reports on risk management.

Key consideration 6	**In conducting stress testing, a CCP should consider the effect of a wide range of relevant stress scenarios in terms of both defaulters' positions and possible price changes in liquidation periods. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions.**
Description	The criteria for selecting scenarios for stress tests is based on General Rule 258 of the SVS. This General Rule (section IX) states minimum requirements for stress tests that must be performed to determine the sufficiency of the settlement guarantee fund – which is created to cover extreme scenarios in which the collateral posted by individual participants may not suffice to cover losses in their net position(s). CCLV observes those minimum requirements and includes some additional ones. Hence, in its stress testing CCLV includes: i) peak volatilities experienced in the market in which the CCP operates; ii) peak volatilities of the specific financial instruments that the CCP clear and settles; iii) multiple defaults over various time horizons that consider both unidimensional as well as multi-dimensional shocks that illustrate correlations in the prices of the various financial instruments; and, iv) shifts in price determinants and yield curves.
Key consideration 7	**An FMI should establish explicit rules and procedures that address fully any credit losses it may face as a result of any individual or combined default among its participants with respect to any of their obligations to the FMI. These rules and procedures should address how potentially uncovered credit losses would be allocated, including the repayment of any funds an FMI may borrow from liquidity providers. These rules and procedures should also indicate the FMI's process to replenish any financial resources that the FMI may employ during a stress event, so that the FMI can continue to operate in a safe and sound manner.**
Description	*Allocation of credit losses* The CCLV rulebook clearly establishes the allocation of credit losses as a result of any individual of combined default of settlement members. The sequencing of the use of financial resources is established in section C.1.5.5 for the equities clearinghouse and C.2.5.5 for the derivatives clearinghouse. Uncovered credit losses, including any funds the CCLV may have borrowed from its liquidity providers when stepping in during the first stage of a stress event, are covered first with the resources of the defaulting participant. For this purpose, any amounts payable to the defaulting party in all CCLV clearinghouses, plus the collateral posted by that party in the clearinghouse where it defaulted, plus any remaining excess collateral it may have in other CCLV clearinghouses are used. If not sufficient, then the settlement guarantee fund is used. First the contributions made by the

	defaulting settlement member are used, and if not sufficient the contributions of other members are used taking as a basis each non-defaulting member's share in the fund. This is followed by the CCLV's Reserve Fund and eventually its paid-in capital. *Replenishment of financial resources* Settlement members not involved in the default must replenish the share of their contribution to the settlement guarantee fund that was used for the default event the next working day. However, the settlement guarantee fund may be used only once for any single default event.
Key conclusions	CCLV incorporates best practices in its risk management system for identifying, measuring, monitoring and controlling current and potential future credit risk exposures. These practices are documented, and are revised and validated by the risk management committee and approved by the board of directors. CCLV determines the sufficiency of its financial resources through the VaR methodology and hourly recalculation of positions/open contracts and collateral requirements, including of additional financial resources (i.e. the settlement guarantee fund). Sufficiency of total financial resources is tested with rigorous, frequent stress tests. The CCLV rulebook clearly states how losses will be allocated in case of a default, and the replenishment of financial resources in such an event.
Assessment of Principle 4	**Observed.**
Recommendations and comments	

<table>
<tr><td colspan="2">Principle 5. Collateral
An FMI that requires collateral to manage its or its participants’ credit exposure should accept collateral with low credit, liquidity, and market risks. An FMI should also set and enforce appropriately conservative haircuts and concentration limits.</td></tr>
<tr><td>Key consideration 1</td><td>An FMI should generally limit the assets it (routinely) accepts as collateral to those with low credit, liquidity, and market risks.</td></tr>
<tr><td>Description</td><td>According to the Risk Methodologies Manual (section 6.5.1), the following assets are eligible as collateral:

i. Cash (Chilean pesos and U.S. dollars)
ii. Deb securities issued by the National Treasury of Chile or the BCCh
iii. Debt securities issued by foreign governments or foreign central banks as long as the relevant jurisdiction has a sovereign risk rating of investment grade or above
iv. Other debt securities registered in the Securities Registry of the SVS or the Securities Registry of the SBIF, as long as such debt securities have two risk ratings of AA+ or above
v. Term deposits issued by licensed banks in Chile, as long as debt instruments issued by such banks have two risk ratings of N-1 or above. However, term deposits issued by a bank that is direct or indirect settlement member of CCLV are not accepted. Neither are term deposits issued by a bank that is part of the same conglomerate to which the settlement member belongs
vi. Equities that in the last 180 days have traded in at least 25% of the corresponding business days, each day with a minimum of UF 1.000 (approximately USD 37,000).

In practice - due to haircuts and other restrictions/incentives – over 90% of collateral currently posted to CCLV consists of cash in Chilean pesos and debt securities issued by the Chilean Treasury or the BCCh.

CCLV does not accept different collateral on an exceptional basis.

Eligible collateral is loaded into the CCLV’s collateral management system. Any other asset that is posted by a settlement member is not accounted for as collateral in favor of that member. In addition, every hour the system validates collateral diversification rules (see KC 5.4).</td></tr>
<tr><td>Key consideration 2</td><td>An FMI should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions.</td></tr>
<tr><td>Description</td><td>Valuation practices

All securities that are posted as collateral, including for the settlement guarantee fund, are marked to market on a daily basis.

CCLV receives price data from the BCCh, Santiago Stock Exchange and a price vendor. If CCLV determines that prices are not representative or reliable, it reserves the right to determine a daily closing price selecting</td></tr>
</table>

	one of the prices obtained through alternative methodologies. Discretionary methodologies must be informed to the SVS (for additional details see description in KC 6.2). *Haircutting practices* Haircuts are determined on the basis of the VaR methodology. CCLV uses 500 price observations which incorporate historical scenarios and/or assumptions on the value of collateral under stressed market conditions. A confidence level of 99% is used, meaning that the haircut that is applied should be sufficient in 495 of the 500 scenarios. This methodology is documented in an annex of the CCLV rulebook. The sufficiency of haircuts is validated through backtesting, which is performed daily and results are grouped on a monthly basis to analyze any exceptions. Results are reviewed by the risk management committee.
Key consideration 3	**In order to reduce the need for pro-cyclical adjustments, an FMI should establish stable and conservative haircuts that are calibrated to include periods of stressed market conditions, to the extent practicable and prudent.**
Description	Stressed market conditions are included in the analysis for the calibration of haircuts. As mentioned in KC 5.2, haircuts are determined on the basis of VaR using historical simulations and stress scenarios (details are provided in section 6.6 of the Risk Methodologies Manual). Moreover, the assets that are accepted in practice have little credit and market risks – over 90% of collateral currently posted with CCLV is made-up of cash or debt securities issued by the National Treasury or the BCCh.
Key consideration 4	**An FMI should avoid concentrated holdings of certain assets where this would significantly impair the ability to liquidate such assets quickly without significant adverse price effects.**
Description	Section E.2 of the rulebook specifies diversification criteria for assets accepted as collateral in connection with the required collateral and also for the purposes of the settlement guarantee fund. Accordingly, on the basis of the list of acceptable collateral described in KC 5.1: • Collateral in cash and in financial instruments corresponding to items ii) and iii) of the list may not be less than 30% of the total collateral posted by each direct or indirect settlement member. • Eligible collateral mentioned in items iv) and vi) of the list may not be more than 20% of the total collateral posted by each direct or indirect settlement member. Additionally, for the securities corresponding to these same items there is a limit of 4% for securities issued by the same issuer (e.g. five or more different stocks would have to be used to comply with this last criterion). • Assets listed on item v) of the list that were issued or are backed by an issuer or issuers that belong to the same conglomerate may

	not exceed 20% of the total collateral posted by each direct or indirect settlement member. CCLV current holdings of collateral are essentially cash and securities issued by the National Treasury or the BCCh. CCLV holdings of these securities represent a very small share of the total outstanding amount. Recent regulatory changes were implemented in connection with collateral diversification, which prompted CCLV to review its policies in this area.
Key consideration 5	**An FMI that accepts cross-border collateral should mitigate the risks associated with its use and ensure that the collateral can be used in a timely manner.**
Description	Although in principle some cross-border collateral may be accepted (e.g. securities held in other CSDs or by foreign custodians), in practice there is no such collateral posted to CCLV. In any case, legal and operational risks are minimal as any such foreign assets need to be transferred to the account of the DCV with foreign CSDs (e.g. DTCC, Euroclear). Only once DCV confirms the transfer of the securities, these are accounted for by CCLV as collateral and CCLV is entitled to use such securities for its clearing and settlement activities in case of a settlement member default. In terms of market risk, foreign securities are also marked to market and subject to haircuts, just like any of the other securities that are accepted as collateral.
Key consideration 6	**An FMI should use a collateral management system that is well-designed and operationally flexible.**
Description	*Collateral management system design* The collateral management system automatically determines the assets that are accepted by CCLV as collateral, and it also automatically verifies that the diversification criteria is met. Also, assets are marked to market on a daily basis. Settlement members can access, in real-time through a user interface, all the information related to the collateral they have posted. Once collateral is posted to CCLV, the latter becomes the legal owner of the underlying cash and securities. There is no further use of the collateral. *Operational flexibility* The collateral management system is highly parameterized. Hence, changes can be accommodated relatively easily and quickly. The staffing of the collateral management system is organized in the overall context of IT functions of the Santiago Stock Exchange. The collateral management system is covered by the business continuity policy and manual.

Key conclusions	CCLV incorporates best practices with regard to collateral. Although in principle the list of acceptable collateral is fairly diverse, in practice - due to haircuts and other restrictions/incentives – over 90% of collateral currently posted to CCLV consists of cash in Chilean pesos and debt securities issued by the Chilean Treasury or the BCCh, all of which have very low credit liquidity and market risks. CCLV marks to market all collateral on a least a daily basis and applies conservative haircuts. Haircuts are regularly tested and validated, applying stressed market conditions. The collateral management systems is robust and operationally flexible.
Assessment of Principle 5	**Observed.**
Recommendations and comments	

Principle 6. Margin A CCP should cover its exposure to its participants for all products through an effective margin system that is risk-based and regularly reviewed.	
Key consideration 1	**A CCP should have a margin system that establishes margin levels commensurate with the risks and particular attributes of each product, portfolio, and market it serves.**
Description	*Description of margin methodology* The general framework of CCLV's margin system consists of requiring each settlement member – direct or indirect – to post collateral that is sufficient in approximately 99% of the cases. In CCLV the margin system is reflected in the "current collateral" requirement. The margin methodology is documented in sections C.1.6.3 and C.2.6.3 and annex D of the rulebook and in the Risk Methodologies Manual. Annex D of the rulebook describes the general methodology and is fairly detailed and is made available to settlement members and the overall public. Moreover, settlement members have participated in the design of the margin system. *Credit exposures* The determinants of credit exposures are the outstanding positions in each clearinghouse where CCLV acts as a CCP, and the risk factors to which the associated financial instruments are exposed. Risk factors include interest rates, exchange rates and stock exchange indexes. Specific risk factors (e.g. risk free yield curves, yield curves for Banks rated N-1 and N-2, etc., IPSA stock exchange index, CLP-USD and CLP-EUR Exchange rates, etc.) are identified for each instrument that is cleared by CCLV. The adequacy of the margin system is analyzed through daily backtesting. *Operational components* The risk of a participant payment failure that would cause a shortage of required margin is addressed through several means, including through the retention of excess collateral in other CCLV clearinghouses, and/or retention of any payments due to that participant. Eventually, the settlement guarantee fund is used, starting with the contributions made by the relevant participant. In parallel, any payment failure merit sanctions and/or fines, and are reported to regulators. CCLV calculates the sufficiency of the current collateral requirement (i.e. variation margin) every hour, and is entitled to make intraday margin calls based on a pre-determined rule (see KC 6.4). Collateral required through a margin call must be posted on the same day, before the next calculation period. If a direct or indirect settlement member does not post the required collateral within the timelines established by CCLV, then the participant is excluded from the trading system of the Santiago Stock Exchange

	(applicable to brokers-dealers that are CCLV settlement members), and any new clearing orders associated with that settlement member may no longer be entered into CCLV's systems. Moreover, any outstanding clearing orders that have not been accepted for settlement by CCLV are rejected (e.g. new orders that gave rise to the deficit in the collateral requirement vs. the posted collateral).
Key consideration 2	**A CCP should have a reliable source of timely price data for its margin system. A CCP should also have procedures and sound valuation models for addressing circumstances in which pricing data are not readily available or reliable.**
Description	*Sources of price data* The variables used by CCLV to determine initial margin include exchange rates, UF, stock Exchange indexes, individual stock prices, interest rates, risk free interest rate yield curves, interbank interest rate yield curves in Chilean pesos, UF and US dollars. Prices are provided by the BCCh, Santiago Stock Exchange and LVA Índices (a price vendor). *Estimation of prices* For derivatives, methodologies to mark to market open positions are described in section C.2.3.1.1 of the CCLV rulebook. CCLV calculates prices on its own on a daily basis and it also works with price vendors. CCLV validates prices obtained from price vendors with prices reported by other entities like Bloomberg and Reuters, and additionally with theoretical prices. Moreover, backtests are performed to validate prices (part of the validation via backtesting of the effectiveness of the margin system). If CCLV determines that prices are not representative or reliable, it reserves the right to determine a daily closing price selecting one of the prices obtained through alternative methodologies. Discretionary methodologies must be informed to the SVS. Independence of the validation of the models used to estimate prices is ensured through the involvement of the risk management committee in that process.
Key consideration 3	**A CCP should adopt initial margin models and parameters that are risk-based and generate margin requirements sufficient to cover its potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default. Initial margin should meet an established single-tailed confidence level of at least 99 percent with respect to the estimated distribution of future exposure. For a CCP that calculates margin at the portfolio level, this requirement applies to each portfolio's distribution of future exposure. For a CCP that calculates margin at more-granular levels, such as at the sub-portfolio level or**

	by product, the requirement must be met for the corresponding distributions of future exposure. The model should (a) use a conservative estimate of the time horizons for the effective hedging or close out of the particular types of products cleared by the CCP (including in stressed market conditions), (b) have an appropriate method for measuring credit exposure that accounts for relevant product risk factors and portfolio effects across products, and (c) to the extent practicable and prudent, limit the need for destabilising, procyclical changes.
Description	*Initial margin model* CCLV's initial margin methodology has been designed to cover potential future exposure in the event of a default of a direct or indirect settlement member under normal market conditions. The specific method used is VaR, which measures the potential loss for a certain time horizon (i.e. the closeout period – see details below) with a 99% confidence level (single tail). This means that settlement members will post collateral that is expected to be sufficient to cover their positions by the end of the closeout period in approximately 99% of the cases. More specifically, CCLV uses "full valuation" VaR, or VaR based on historical simulations. The estimated distribution of losses is based on the usage of price data for the latest 500 business days. EWMA is set at 96%. *Close-out and sample periods* For the equities clearinghouse, in which settlement date is T+2, the close-out period in case of lack of cash is T+3 (i.e. one day after the value date), while in case of lack of securities is T+6 (i.e. four days after value date). For the derivatives clearinghouse, in which there is daily calculation of profits and losses and settlement occurs on the following morning, the close out period is one day after the value date (i.e. two days after profits and losses were calculated). These periods have been determined in order to minimize impact of a member's default on other market participants. In the specific case of lack of securities for the equities clearinghouse, the close-out period considers the completion of the process related to the securities lending mechanism that is used in events like this. Increased liquidation times of collateral is deemed unlikely given the fact that assets accepted as collateral are cash or highly liquid securities, and holdings of such securities at CCLV represent a very small share of the total outstanding amount in the market. *Procyclicality and specific wrong-way risk* Procyclicality is addressed through the "minimum collateral" requirement, which represents a minimum amount that settlement members must maintain with the CCLV at any time. The minimum collateral requirement for the equities clearinghouse is as follows:

	• Minimum collateral requirement= MAX (Average of current collateral requirements (i.e. margin) of the latest 90 calendar days; Average of current collateral requirement of the latest 500 business days). For derivatives, the methodology is similar, although the current collateral requirement is calculated over own open contracts and open contracts not yet assigned to customers. The minimum collateral requirement is informed to participants the first working day of each month and remains applicable for the whole month. To mitigate specific wrong-way risk, securities or term deposits issued by an entity that is direct or indirect settlement member of CCLV are not accepted as collateral by CCLV. Neither are securities or term deposits issued by an entity that is part of the same conglomerate to which the settlement member belongs.
Key consideration 4	**A CCP should mark participant positions to market and collect variation margin at least daily to limit the build-up of current exposures. A CCP should have the authority and operational capacity to make intraday margin calls and payments, both scheduled and unscheduled, to participants.**
Description	Settlement member net positions are recalculated every hour (net positions are determined separately for the equities clearinghouse and the derivatives clearinghouse). Based on this calculation CCLV determines whether the "required collateral" is sufficient (see KC 4.4 for CCLV's definition of "required collateral"). On an intraday basis, CCLV has defined a maximum exposure to its settlement members consisting of a 30% collateral deficit or UF 20,000 (approximately USD 750,000). CCLV activates intraday margin calls in case any such maximum levels are surpassed. Such margin calls can be made each hour, or more frequently if necessary. Positions in equities and derivatives as well as collateral are marked-to-market at the end of the day. Any outstanding collateral deficit must be covered by the end of the operating day. Settlement members that have excess collateral due to positive margin variation during the day can also withdraw the same at this time.
Key consideration 5	**In calculating margin requirements, a CCP may allow offsets or reductions in required margin across products that it clears or between products that it and another CCP clear, if the risk of one product is significantly and reliably correlated with the risk of the other product. Where two or more CCPs are authorised to offer cross-margining, they must have appropriate safeguards and harmonised overall risk-management systems.**
Description	*Portfolio margining*

	CCLV does not allow offsets or reductions across products. In principle, offsets are permitted only within the derivatives clearinghouse. At present, however, only one derivatives contract (i.e. futures of IPSA, which is the Santiago Stock Exchange Index) is operating. The methodology for portfolio margining foresees that offsets or reductions are to be reflected on the hourly re-calculation of the total required collateral (applicable in the case of the derivatives clearinghouse only). *Cross-margining* Not applicable. *Robustness of methodologies* Backtests are foreseen as the methodology to confirm the robustness of portfolio margining. However, as only one derivatives contract is currently operational, such backtests have not been carried out in practice.
Key consideration 6	**A CCP should analyse and monitor its model performance and overall margin coverage by conducting rigorous daily backtesting – and at least monthly, and more-frequent where appropriate, sensitivity analysis. A CCP should regularly conduct an assessment of the theoretical and empirical properties of its margin model for all products it clears. In conducting sensitivity analysis of the model's coverage, a CCP should take into account a wide range of parameters and assumptions that reflect possible market conditions, including the most-volatile periods that have been experienced by the markets it serves and extreme changes in the correlations between prices.**
Description	*Backtesting and sensitivity analysis* CCLV uses backtesting to monitor the performance of its margin system using the VaR methodology with a 99% confidence level, i.e. margin requirements should be able to cover losses in case of a settlement member default in 99% of the cases. Tests are performed daily and are grouped on a monthly basis for analysis purposes (including for reporting to the risk management committee). More specifically, CCLV uses as a basis the model proposed by the Basel Committee (1996), in which the number of exceptions is considered as the key indicator to determine whether the VaR model used in connection with the margin system is performing correctly or not. Sensitivity analysis is performed considering historical as well as certain pre-determined or hypothetical scenarios (e.g. a 20% shock in IPSA). The analysis includes certain complex tests in order to measure the impact of distressed financial or macro-economic conditions. *Margin model performance*

	According to the latest quarterly report of backtests - covering up to June 2015 - the model used by CCLV has performed well. In the equities clearinghouse, the percentage of exceptions during the two-year period running from June 2013 to June 2015 did not exceed 0.5% in any single month. Likewise, the latest quarterly report of sensitivity analysis shows that, based on the proposed simulations, total collateral posted in CCLV is, with few exceptions, sufficient. Exceptions are related to a simulated significant downward shock in interest rates. However, the sensitivity analysis mentioned here considers all collateral held at CCLV, including that of the settlement guarantee fund and not just that coming for margin. At the theoretical level, the main limitation from the use of historical simulations, is that historical data is not necessarily useful to predict future events/distribution of losses. In case the model does not perform as expected, the actions foreseen in the Risk Methodologies Manual to recalibrate the model include: change in the value of EWMA, change in the number of scenarios, obtaining new estimates of correlations and multiplicative factors, etc. In an extreme case, CCLV may decide to revamp the whole model. Both type of tests are preformed daily, and results are grouped on a monthly report that is submitted to the risk management committee. Quarterly reports on the outcomes of backtests and of sensitivity analyses are also disclosed in CCLV's website.
Key consideration 7	**A CCP should regularly review and validate its margin system.**
Description	CCLV validates its margin system performing backtests on a daily basis, and sensitivity analysis periodically (see KC 6.6). Risk models and instrument valuation models are reviewed at least on an annual basis by the risk management committee. Any revisions and adjustments are analyzed by the risk management committee, and in some cases by the SVS.
Key conclusions	CCLV incorporates best practice in its margin system. The margin model is risk-based and generates margin requirements that cover potential future exposure between the last margin collection and the close out of positions. CCLV's systems allow it to identify shortages of collateral on an hourly basis. CCLV is entitled to make margin calls on an hourly basis, or more frequently if necessary. Performance of the margin model is tested and analyzed frequently.

Assessment of Principle 6	**Observed.**
Recommendations and comments	

Principle 7: Liquidity risk An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.	
Key consideration 1	**An FMI should have a robust framework to manage its liquidity risks from its participants, settlement banks, nostro agents, custodian banks, liquidity providers, and other entities.**
Description	CCLV's general framework for managing liquidity risk covers its direct and indirect settlement members, its liquidity providers and its custodian banks (for collateral in cash). With regard to settlement members, CCLV rulebook contains a liquidity requirement for settlement members, which must be complied with every day, by certain hour, with Chilean pesos. This requirement is established per clearinghouse, as the lesser between the net debit position of the current day and the average of the net debit positions of the last 180 days plus one standard deviation. Liquid resources to comply with this requirement include: 1. Cash that the settlement member has transferred to the account of CCLV at BCCh (transferred later on to commercial banks) 2. Amounts available in two lines of credit with banks, one of which must be available solely for the equities and derivatives clearinghouses, and the other for any of the CCLV clearinghouses. 3. Excess collateral in liquid instruments, i.e. cash and securities issued by the National Treasury or the BCCh. The CCLV has committed lines of credit with three different providers. With regard to custodian banks, CCLV maintains the cash posted by settlement members as collateral in three commercial banks in Chile. CCLV liquidity needs are associated with settlement member defaults. In particular, during the first steps of a potential default, known as the "period for complementing uncovered balances/positions" (i.e. essentially a settlement member delay), CCLV uses the defaulting member's excess collateral in other CCLV clearinghouses, and if insufficient covers the deficit with funds from its own committed lines of credit. In case of lack of securities, it activates a securities lending mechanism. CCLV's liquidity needs for its core operations are therefore essentially represented by the size of its committed lines of credit (see KC 7.4). The risk management committee has established that the CCLV must have committed lines of credit with 3 banks, although the CCLV liquidity needs must be covered at any time by any combination of only 2 of those banks.

	The diversification of the CCLV lines of credit in three banks was instituted partly to deal with aggregate liquidity risks of banks that are CCLV settlement members and also its liquidity providers.
Key consideration 2	**An FMI should have effective operational and analytical tools to identify, measure, and monitor its settlement and funding flows on an ongoing and timely basis, including its use of intraday liquidity.**
Description	CCLV has the necessary operational and analytical tools. The clearing and settlement system (SCL) allows it to monitor settlement and funding flows on an ongoing and timely basis, while the software used to calculate risk (Algo suite) allows to measure any shortfalls on an hourly basis.
Key consideration 3	**A payment system or SSS, including one employing a DNS mechanism, should maintain sufficient liquid resources in all relevant currencies to effect same-day settlement, and where appropriate intraday or multiday settlement, of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation in extreme but plausible market conditions.**
Description	Not applicable to CCLV in its role as a CCP.
Key consideration 4	**A CCP should maintain sufficient liquid resources in all relevant currencies to settle securities-related payments, make required variation margin payments, and meet other payment obligations on time with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should consider maintaining additional liquidity resources sufficient to cover a wider range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions.**
Description	*Sufficient liquid resources* Right before the start of the settlement window (which starts no later than 15:15 hrs. of the value date for equities, and 13:15 hrs. for derivatives), if a participant is delayed in fully covering its net debit balance in cash, the CCLV steps in and completes settlement, first with any excess collateral the delayed members may have in other CCLV clearinghouses, and then with funds from CCLV's committed lines of credit. It should be noted that with the exception of the last margin call, collateral already posted to CCLV by the delayed/defaulting member should have been sufficient to cover open positions with a 99% confidence level under normal market conditions.

	The minimum size of the committed lines of credit is established in the Risk Methodologies Manual. Minimum size should be equivalent to the sum of the two largest average net debit positions (cash leg) during the last 180 days. For month "t", this calculation is made as of the last day of month "t-1", and is calculated separately for the equities and the derivatives clearinghouses. In parallel to the CCLV stepping in to complete settlement with funds from its credit lines when a settlement member is delayed, it withholds any payments due to that member as well as the collateral it has posted for the clearinghouse in which it is delayed, and any remaining excess collateral it may have in any of the other CCLV clearinghouses (that CCLV was not able to use/liquidate earlier). Retained funds and collateral can be used/liquidated by CCLV during the extraordinary settlement period, which occurs one day after the settlement date in case the delay/default was due to a lack of funds, and four days after settlement date in case the default was due to a lack of securities. *Risk profile and systemic importance in multiple jurisdictions* Not applicable. CCLV does not clear and settle complex instruments. CCLV only clears and settles in Chile.
Key consideration 5	**For the purpose of meeting its minimum liquid resource requirement, an FMI's qualifying liquid resources in each currency include cash at the central bank of issue and at creditworthy commercial banks, committed lines of credit, committed foreign exchange swaps, and committed repos, as well as highly marketable collateral held in custody and investments that are readily available and convertible into cash with prearranged and highly reliable funding arrangements, even in extreme but plausible market conditions. If an FMI has access to routine credit at the central bank of issue, the FMI may count such access as part of the minimum requirement to the extent it has collateral that is eligible for pledging to (or for conducting other appropriate forms of transactions with) the relevant central bank. All such resources should be available when needed.**
Description	*Size and composition of qualifying liquid resources* The collateral posted by the delayed/defaulting settlement members may be used (i.e. liquidated) by CCLV. Collateral diversification requirements state that cash and highly liquid financial instruments may not be less than 30% of the total collateral posted by each direct or indirect settlement member. In practice, however, such assets represent more than 90% of the total collateral posted at CCLV. At present, committed lines of credit amount to 10,000 million Chilean pesos or approximately USD 14 million.

	Availability and coverage of qualifying liquid resources CCLV lines of credit with its three liquidity providers are structured in the form of current account overdrafts, meaning that the funds are readily and immediately available for CCLV's use. CCLV does not have access to central bank liquidity. CCLV's qualifying liquid resources are sufficient to cover its identified liquidity requirements to effect settlement of payment obligations on time. The method by which the minimum size of the CCLV credit lines is calculated renders a result that is larger than the largest margin call made during the last 180 days, which under normal market conditions would be the amount not covered by the collateral already posted by the delayed/defaulting participant before the last margin call.
Key consideration 6	**An FMI may supplement its qualifying liquid resources with other forms of liquid resources. If the FMI does so, then these liquid resources should be in the form of assets that are likely to be saleable or acceptable as collateral for lines of credit, swaps, or repos on an ad hoc basis following a default, even if this cannot be reliably prearranged or guaranteed in extreme market conditions. Even if an FMI does not have access to routine central bank credit, it should still take account of what collateral is typically accepted by the relevant central bank, as such assets may be more likely to be liquid in stressed circumstances. An FMI should not assume the availability of emergency central bank credit as a part of its liquidity plan.**
Description	*Size and composition of supplemental liquid resources* CCLV does not have supplemental liquid resources as its qualifying liquid resources are sufficient to cover its identified minimum liquidity requirement. *Availability of supplemental liquid resources* Not applicable.
Key consideration 7	**An FMI should obtain a high degree of confidence, through rigorous due diligence, that each provider of its minimum required qualifying liquid resources, whether a participant of the FMI or an external party, has sufficient information to understand and to manage its associated liquidity risks, and that it has the capacity to perform as required under its commitment. Where relevant to assessing a liquidity provider's performance reliability with respect to a particular currency, a liquidity provider's potential access to credit from the central bank of issue may be taken into account. An FMI should regularly test its procedures for accessing its liquid resources at a liquidity provider.**
Description	*Use of liquidity providers* CCLV uses three local banks (i.e. licensed in Chile) as liquidity providers. The risk management committee has nevertheless stated that the minimum

	size of CCLV's credit lines must be met by any combination of only two of such banks. *Reliability of liquidity providers* SVS regulations state minimum requirements for a bank to be considered as a liquidity provider for a licensed clearing and settlement entity like CCLV. These include a regulatory capital of at least 10%, external rating of short-term deposits of N-1 or above, etc. Since CCLV started operating as a CCP for equities in 2011, it has used in practice (i.e. in real life situations) its liquidity providers in a few occasions. The results have been satisfactory.
Key consideration 8	**An FMI with access to central bank accounts, payment services, or securities services should use these services, where practical, to enhance its management of liquidity risk.**
Description	CCLV holds a settlement account with the BCCh in order to effect settlement in central bank money. CCLV does not use this account or other account at the BCCh to hold the cash that has been posted as collateral by its settlement members. Holding such cash at the BCCh became possible only recently, and CCLV is starting to analyze this option.
Key consideration 9	**An FMI should determine the amount and regularly test the sufficiency of its liquid resources through rigorous stress testing. An FMI should have clear procedures to report the results of its stress tests to appropriate decision makers at the FMI and to use these results to evaluate the adequacy of and adjust its liquidity risk-management framework. In conducting stress testing, an FMI should consider a wide range of relevant scenarios. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions. Scenarios should also take into account the design and operation of the FMI, include all entities that might pose material liquidity risks to the FMI (such as settlement banks, nostro agents, custodian banks, liquidity providers, and linked FMIs), and where appropriate, cover a multiday period. In all cases, an FMI should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount and form of total liquid resources it maintains.**
Description	*Stress test programme* The Risk Methodologies Manual states that stress tests must be performed to, among other purposes, improve the planning of capital and liquidity requirements.

	CCLV tests on a regular basis the sufficiency of its liquid resources to face one or multiple delays/defaults under extreme market conditions. Tests are performed daily and results are grouped in monthly reports that are presented with same periodicity to the risk management committee. *Stress test scenarios* For its stress tests, CCLV performs daily scenario analysis to measure the impact on outstanding positions. As part of historical scenarios, CCLV considers the peak volatilities that have been recorded for the various risk factors associated with each product that it clears. In addition, hypothetical shocks are also considered, both unidimensional and multi-dimensional (i.e. considering correlations among risk factors). All these tests consider the ultimate risk for CCLV as a CCP. Scenarios that reflect failure to perform by one or more of the liquidity providers had not been included as of yet. *Review and validation* The effectiveness and appropriateness of stress tests assumptions and parameters is assessed at least on an annual basis. For example, at the beginning of each year CCLV analyses whether in the last year there were volatilities that exceeded the ones considered in the time horizon of "N" years considered for the analysis. If this is the case, then observations of that year are included and years/time periods with less volatile market conditions that were considered before become excluded. The model is validated through backtests. Internal audit also assesses the effectiveness of the risk management model at least on an annual basis.
Key consideration 10	**An FMI should establish explicit rules and procedures that enable the FMI to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations on time following any individual or combined default among its participants. These rules and procedures should address unforeseen and potentially uncovered liquidity shortfalls and should aim to avoid unwinding, revoking, or delaying the same-day settlement of payment obligations. These rules and procedures should also indicate the FMI's process to replenish any liquidity resources it may employ during a stress event, so that it can continue to operate in a safe and sound manner.**
Description	*Same day settlement* The rulebook states that from the moment the final net positions in securities (for the equities clearinghouse) and cash are determined and until 14:00 hours of settlement day, settlement members with a net debit balance must transfer the necessary funds/securities to CCLV in order for it to make payments to members with net credit positions. Settlement members have a "grace period" (subject to sanctions) from 14:00 to 15:00. If by 15:00 of the settlement day a settlement member has not covered a net debit positions in cash, the rulebook allows CCLV to use any excess collateral the delayed/defaulting member may have in other CCLV clearinghouses, and if

	this is not sufficient then CCLV steps in to cover the deficit with funds from its own credit lines. If the net debit positions that has not been settled is in securities, then a securities lending operation is launched. If the necessary securities are made available through the securities lending mechanism, then the deficit is covered in that same time period. The methodology is similar for the derivatives clearinghouse, although the time limit to cover positions is 12:00 hours – and the "grace period" extends until 13:00 hours. *Replenishment of liquidity resources* Replenishment of liquid resources used by CCLV is provided for in its rulebook and its performed through the use/liquidation of the collateral posted by delayed/defaulting settlement member for the relevant clearinghouse, through the withholding and use of payments due to that member, and use/liquidation of any excess collateral the member may have in other CCLV clearinghouses (amounts not yet used by CCLV).
Key conclusions	CCLV incorporates best practices in its management of liquidity risks. These practices are well-documented and have proved effective so far in practice (there have been some real-life events over the last 4+ years). Liquidity requirements are measured and tested through stress tests and sensitivity analysis, and are validated with backtests. Moreover, the vast majority of collateral held at CCLV is cash or highly liquid securities. CCLV does not have access to central bank liquidity – specifically the intraday liquidity facility "FLI" - and does not use an account at the BCCh to hold cash posted as collateral by its settlement members.
Assessment of Principle 7	**Broadly observed.**
Recommendations and comments	CCLV does not have access to the FLI used as part of the Sistema LBTR. Access to the FLI could give CCLV an additional "line of defense" to deal with a settlement member delay/default before using the funds from its own credit lines with liquidity providers. In other words, CCLV could automatically repo FLI-eligible securities it holds as collateral of the delayed/defaulting member to obtain liquid funds before using its own lines of credit. Or, following its current procedures, through the FLI CCLV could have a reliable and expedite means to replenish its liquid resources. Granting liquidity to CCLV or other FMIs is currently not permitted by the legal framework. Hence, the BCCh and other financial authorities in Chile should discuss within a defined timeline the desirability, in terms of benefits and costs, of CCLV (and other relevant FMIs) gaining access to the FLI, and proceed with the necessary legal and regulatory changes. On a separate matter, liquidity stress tests should also include failure to perform by one or more of CCLV's liquidity providers.

Principle 8: Settlement finality An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time	
Key consideration 1	**An FMI's rules and procedures should clearly define the point at which settlement is final.**
Description	*Point of settlement finality* A clearing order becomes irrevocable and unconditional once it is accepted for settlement by CCLV. In this moment CCLV becomes the irrevocable counterpart for all accepted trades. In the case of the equities clearinghouse, clearing orders are accepted every hour as long as they observe the various risk considerations (e.g. collateral, limits, etc.). Orders that for any reason were not accepted in any of these hourly cycles that run from 9:30 to 18:30 hours can be accepted in the last window of the day, up to 20:00 hours. In the case of the derivatives clearinghouse, the orders are accepted online as they are received from the Santiago Stock Exchange, also as long as they observe the risk considerations. The rulebook states that once accepted, net positions in cash and securities are considered as "net balances and positions pending settlement". This status is maintained until the value date. Article 24 of Law 20.345 underpins finality as earlier described. This provides a high degree of legal certainty within Chile, which is the only jurisdiction relevant for CCLV. *Finality in the case of links* All payments made through the Sistema LBTR (for the cash legal) are final and irrevocable. Likewise, all securities transfers at the DCV are final and irrevocable. In practice, as part of the settlement process CCLV first receives cash and securities from net debit positions in its accounts at BCCh and DCV, respectively. Once this has been verified, CCLV makes the cash and securities transfers to settlement members with net credit positions.
Key consideration 2	**An FMI should complete final settlement no later than the end of the value date, and preferably intraday or in real time, to reduce settlement risk. An LVPS or SSS should consider adopting RTGS or multiple-batch processing during the settlement day.**
Description	*Final settlement on the value date* CCLV processes are designed to complete settlement in the value date, no later than by 15:45 hours for equities and 13:45 for derivatives. In case a member is delayed in covering its net debit position in cash, CCLV tries to complete settlement by covering the pending amount with resources from other collateral positions from that participant and if necessary also

	with funds from its credit lines with liquidity providers. Such coverage is made in a previous step, ensuring that funds will be available during the actual settlement window. In case the delay is related to insufficient securities (for the equities clearinghouse), a securities lending is attempted before the start of the settlement window. If the required securities are available, then settlement is completed no later than 15:45 hours. Otherwise, the extraordinary settlement procedure is initiated. However, only the specific order that is pending delivery of securities remains unsettled, while all others orders of the day are settled. Once the processes mentioned above have been completed (by 15:45 of the value date for equities and 13:45 for derivatives), CCLV verifies that all payments/securities transfers were executed correctly and at this moment it declares that settlement has been finalized. The results are loaded into its information systems and can be accessed by settlement members at that time. CCLV has not experienced delays not provided for in its rules, procedures or contracts. *Intraday or real-time final settlement* CCLV provides only end-of-day final settlement services.
Key consideration 3	**An FMI should clearly define the point after which unsettled payments, transfer instructions, or other obligations may not be revoked by a participant.**
Description	Accepted orders that remain unsettled may not be revoked by a participant. General Rule 258 of the SVS details general cases in which accepted orders may be cancelled, and states that specific cases must be detailed in the rulebook. These have to do mainly with operational errors and in no case orders may be cancelled due to a lack of cash or securities. The CCLV rulebook states that only the Santiago Stock Exchange may cancel or modify clearing orders on exceptional cases, on the basis of mutual agreement of the parties to the transaction. Instructions from the Exchange are accepted up to one hour before the start of the time window for “complementing uncovered balances and positions”.
Key conclusions	The principle of settlement finality and the specific moment in which transactions become irrevocable and final (i.e. upon acceptance for settlement by the CCLV) are clearly defined at the level of the law and in the CCLV rulebook, respectively. CCLV achieves final settlement on the value date.

	Accepted clearing orders which remain unsettled may not be revoked by a participant, but only by the Santiago stock Exchange due to operational errors and only under exceptional circumstances.
Assessment of Principle 8	**Observed.**
Recommendations and comments	

Principle 9: Money settlements An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimize and strictly control the credit and liquidity risk arising from the use of commercial bank money.	
Key consideration 1	**An FMI should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks.**
Description	CCLV conducts all money settlements via its account at the Sistema LBTR operated by the BCCh. This is mandated by law. All settlement members must make settlement-related funds transfers to this account, and receive settlement-related funds transfers from this account. CCLV only conducts money settlements in Chilean pesos.
Key consideration 2	**If central bank money is not used, an FMI should conduct its money settlements using a settlement asset with little or no credit or liquidity risk.**
Description	Not applicable.
Key consideration 3	**If an FMI settles in commercial bank money, it should monitor, manage, and limit its credit and liquidity risks arising from the commercial settlement banks. In particular, an FMI should establish and monitor adherence to strict criteria for its settlement banks that take account of, among other things, their regulation and supervision, creditworthiness, capitalisation, access to liquidity, and operational reliability. An FMI should also monitor and manage the concentration of credit and liquidity exposures to its commercial settlement banks.**
Description	Not applicable.
Key consideration 4	**If an FMI conducts money settlements on its own books, it should minimize and strictly control its credit and liquidity risks.**
Description	Not applicable.
Key consideration 5	**An FMI's legal agreements with any settlement banks should state clearly when transfers on the books of individual settlement banks are expected to occur, that transfers are to be final when effected, and that funds received should be transferable as soon as possible, at a minimum by the end of the day and ideally intraday, in order to enable the FMI and its participants to manage credit and liquidity risks.**
Description	Not applicable.
Key conclusions	CCLV conducts all money settlements via its account at the Sistema LBTR operated by the BCCh. This is mandated by law.
Assessment of Principle 9	**Observed.**
Recommendations and comments	

Principle 12: Exchange-of-value settlement systems If an FMI settles transactions that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.	
Key consideration 1	**An FMI that is an exchange-of-value settlement system should eliminate principal risk by ensuring that the final settlement of one obligation occurs if and only if the final settlement of the linked obligation also occurs, regardless of whether the FMI settles on a gross or net basis and when finality occurs.**
Description	The CCLV rulebook (section 1.5) states that, in the equities clearinghouse, settlement of cash and securities must be done under the principle of "delivery versus payment". In those rules, this is defined as settlement members with net debit positions in cash and net selling positions in securities delivering the respective funds/securities, which in turn are transferred to members with net credit positions in cash and net buying positions in securities, conditional to the latter members having fulfilled their respective payment/delivery obligations. However, the payment/delivery of securities to members with net credit positions in cash/net buying in securities is not conditional on other members fulfilling their obligations as CCLV is the irrevocable counterparty for each clearing order. Hence, strictly speaking CCLV is not an exchange-for-value settlement system for the clearinghouses in which it acts as a CCP (i.e. equities and derivatives). Also, CCLV does not rely on DvP or PvP services provided by another FMI.
Key conclusions	This principle is deemed not applicable to CCLV in its role as a CCP.
Assessment of Principle 12	**Not applicable.**
Recommendations and comments	

Principle 13: Participant-default rules and procedures An FMI should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.	
Key consideration 1	**An FMI should have default rules and procedures that enable the FMI to continue to meet its obligations in the event of a participant default and that address the replenishment of resources following a default.**
Description	*Participant default rules and procedures* The CCLV rulebook (sections C.1.5 and C.2.5, in particular sub-sections C.1.5.3, 1.5.5, 2.5.3 and 2.5.5) defines an event of default when a settlement member has not fully covered its net debit balance/obligation in cash or securities by the end of the window known as "complementing of uncovered cash balances and securities positions". This process ends at 15:00 hrs. of the value date for equities and 13:00 for derivatives. At that time and up to 15:15 hrs. (13:15 for derivatives) CCLV verifies all balances, and positions not yet covered by a settlement member are included in an extraordinary settlement process. Before that, however, if the settlement member experienced a delay in covering its net debit positions by the start of the aforementioned process (i.e. 14:00 hours, 12:00 for derivatives) but did so by the end of that process, this is not regarded as a default, although the relevant settlement member may have to pay fines and any costs the CCLV may have incurred to cover those positions. The rulebook addresses all relevant aspects of a member default, including the actions the CCLV will take when a default is declared, actions that are automatic and discretionary actions the CCLV may make under exceptional circumstances to protect the system as a whole, the steps to be followed as part of the extraordinary settlement period including the way in which transactions will be managed, treatment of settlement member accounts and customer accounts (the latter only exist in the derivatives clearinghouses) , the sequencing of actions, the roles, obligations and responsibilities of all settlement members, and the mechanisms that will be activated to contain the impact of the default. *Use of financial resources* Immediately prior to the settlement window, if a participant is delayed in fully covering its net debit balance in cash, the CCLV steps in and completes settlement, first with any excess collateral the delayed members may have in other CCLV clearinghouses, and then with funds from CCLV's committed lines of credit. In case of lack of securities, it immediately activates the securities lending mechanism of the Santiago Stock Exchange (on behalf of the defaulting member). If the relevant equity is not available by noon of the following working day, then CCLV will launch an outright purchase on behalf of

	the defaulting party and if not successful it may try to finalize settlement by offering a compensation in cash to the affected member. In case the collateral posted by the defaulting member, any payments/securities deliveries due to it and any unused excess collateral in other CCLV clearinghouses are insufficient to cover the position(s) of that defaulting member,[6] then the settlement guarantee fund is used. Only the respective settlement guarantee fund is used (i.e. the one for equities <u>or</u> the one for derivatives) First the contributions made by the defaulting settlement member are used, and if not sufficient the contributions of other members are used, taking as a basis each non-defaulting member's share in the fund. This is followed by the CCLV's Reserve Fund and eventually its paid-in capital. Settlement members not involved in the default must replenish the share of their contribution to the settlement guarantee fund that was used for the default event the next working day. However, the settlement guarantee fund may be used only once for any single default event. In parallel, CCLV will execute any necessary legal actions with regard to the defaulting member.
Key consideration 2	**An FMI should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules.**
Description	The overall plan for implementing default rules and procedures is described in the rulebook. There is no specific committee or department that deals with defaults, but rather a de-centralized ad-hoc approach is followed. The rulebook (sub-sections C.1.5.5 and C.2.5.5 for equities and derivatives respectively) states the communication procedures to reach all relevant stakeholders. The plan, as well as other contingency plans, are reviewed at least on an annual basis by the risk management committee of the board.
Key consideration 3	**An FMI should publicly disclose key aspects of its default rules and procedures.**
Description	All key aspects of the participant default rules and procedures, as described under KC 13.1, are detailed in the rulebook, which is a public document.
Key consideration 4	**An FMI should involve its participants and other stakeholders in the testing and review of the FMI's default procedures, including any**

[6] The indirect settlement members of a defaulting direct settlement member are not affected by these measures. If the defaulting party is an indirect settlement member, then the retention applies to the indirect settlement member, and if insufficient to cover its positions a retention is also made to tis direct settlement member.

	close-out procedures. Such testing and review should be conducted at least annually or following material changes to the rules and procedures to ensure that they are practical and effective.
Description	CCLV does not perform tests as such, although since it began operating as a CCP in 2011 it has already faced a small number of events in which the participant default rules and procedures were activated. Hence, these rules and procedures have been tested in real life situations. Practically all CCLV settlement members have been involved in an event of this kind. All events have been resolved satisfactorily, i.e. within the extraordinary settlement period.
Key conclusions	CCLV has effective rules and procedures to manage a participant default. This rules allow CCLV to take timely action to contain losses and liquidity pressures and continue to meet its obligations in the event of a settlement member delay or default.
Assessment of Principle 13	**Observed.**
Recommendations and comments	

Principle 14. Segregation and portability A CCP should have rules and procedures that enable the segregation and portability of positions of a participant's customers and the collateral provided to the CCP with respect to those positions.	
Key consideration 1	**A CCP should, at a minimum, have segregation and portability arrangements that effectively protect a participant's customers' positions and related collateral from the default or insolvency of that participant. If the CCP additionally offers protection of such customer positions and collateral against the concurrent default of the participant and a fellow customer, the CCP should take steps to ensure that such protection is effective.**
Description	*Customer protection from participant default* In the equities clearinghouse, there is segregation between direct and indirect settlement members at the level of positions (in cash and in securities) and collateral. In the derivatives clearinghouse there is also segregation at the level of customers (i.e. "*comitentes*") of direct and indirect settlement members. There is also complete segregation between these two clearinghouses (and other CCLV clearinghouses). Regarding portability, for the derivatives clearinghouse open contracts that have been assigned to a customer may be transferred to another direct or indirect settlement member upon request of the customer. The settlement member that will receive the open contracts shall inform the CCLV, and the transaction must be confirmed by the settlement member from which the open contracts were transferred. All this is valid as long as the customer also has a contractual relationship with the settlement member receiving his positions. In any case, CCLV is entitled to make such position transfers. In case of absence of a contract, or if the transfer has not been confirmed, then the positions of the customer are subject to the same treatment as the positions of its settlement member. In the equities clearinghouse CCLV does not provide segregation arrangements for customer positions (i.e. at the level of "comitentes"), and as result those customer positions are not readily identifiable to CCLV. The legal and regulatory framework applicable to clearing and settlement systems (i.e. Law 20.345) does not provide specific protection for those positions. Some protection might be provided by the banking law for settlement members that are banks, or the capital markets law for brokers-dealers that are settlement members, although this is uncertain. *Customer protection from participant and fellow customer default* In the derivatives clearinghouse, collateral posted by a customer can only be used for the positions of such customer, and cannot be used to cover the required collateral of any other customer or any other requirement of the relevant direct or indirect settlement member.

	Legal basis Segregation and portability is only provided for at the level of the CCLV rulebook and is not provided for in Law 20.345 or any other law.
Key consideration 2	**A CCP should employ an account structure that enables it readily to identify positions of a participant's customers and to segregate related collateral. A CCP should maintain customer positions and collateral in individual customer accounts or in omnibus customer accounts.**
Description	In the equities clearinghouse, there is segregation between direct and indirect settlement members at the level of positions (cash and securities) and collateral. In the derivatives clearinghouse there is also segregation at the level of customers of direct and indirect settlement members. There is also complete segregation between these two clearinghouses (and other CCLV clearinghouses). In the equities clearinghouse CCLV does not provide segregation arrangements for customer positions (i.e. at the level of "comitentes"), and as result any customer positions are not readily identifiable to CCLV. In this clearinghouse, CCLV does not aim at identifying customer positions, so it does not request settlement members' records containing the sub-accounting for individual customers.
Key consideration 3	**A CCP should structure its portability arrangements in a way that makes it highly likely that the positions and collateral of a defaulting participant's customers will be transferred to one or more other participants.**
Description	For the derivatives clearinghouse, the rulebook states that in the event of a default by a direct or an indirect settlement member, customers to which open contracts have been assigned may request that their positions (together with the associated collateral) be transferred to another direct or indirect settlement member, as long as the customer also has a contractual relationship with the settlement member that will receive his positions. The rulebook also specifies that the settlement member that will receive the open contracts shall inform the CCLV, and the transaction must be confirmed by the settlement member from which the open contracts were transferred. Article 13 of the contract between settlement members and CCLV specifies that in an event of a default by a settlement member, the latter authorizes CCLV to transfer customer positions and the associated collateral to another settlement member.
Key consideration 4	**A CCP should disclose its rules, policies, and procedures relating to the segregation and portability of a participant's customers' positions and related collateral. In particular, the CCP should disclose whether customer collateral is protected on an individual or omnibus basis. In addition, a CCP should disclose any constraints,**

	such as legal or operational constraints, that may impair its ability to segregate or port a participant's customers' positions and related collateral.
Description	The rules, policies and procedures relating to segregation and portability of customer positions are contained in the CCLV rulebook, which is publicly available. However, as mentioned earlier such rules, policies and procedures are only applicable to the derivatives clearinghouse (in the case of customers).
Key conclusions	The CCLV rulebook and settlement member contracts provide the mechanism for the segregation and portability of positions. In the equities clearinghouse segregation of positions and collateral is achieved between direct and indirect settlement members, while in the derivatives clearinghouse also customer positions (and collateral) are accounted for separately. The legal framework applicable to securities clearing and settlement systems does not provide a legal underpinning to segregation and portability of positions and collateral.
Assessment of Principle 14	**Partly observed.**
Recommendations and comments	Although segregation of positions and collateral is achieved in practice, there is no legal certainty that these arrangements will be upheld in a court of law if contested. Hence, it is recommended that provisions on segregation and portability of positions and collateral (covering explicitly both indirect settlement members and customers) be included with high priority in the relevant laws.

Principle 15: General business risk An FMI should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialize. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services.	
Key consideration 1	**An FMI should have robust management and control systems to identify, monitor, and manage general business risks, including losses from poor execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses.**
Description	CCLV uses standard ISO 31000 as the general framework for managing the various risks it is exposed to. This framework includes general business risks. The main general business risk that has been identified is entry of a new competitor in the market, and in general a down turn of the market in terms of a reduced number of transactions being cleared and settled through CCLV. CCLV monitors and manages these (and other) risks with a methodology based on ISO 31.004. The assessment considers potential effects of the identified business risk on its capital position, on its operations, on regulatory aspects and reputational considerations. To manage a potential downturn of transactions cleared and settled, CCLV updated its pricing policy, considering variable fees depending on the total number of transactions cleared and settled. Hence, in the event of a slowdown this structure provides a cushion to CCLV's cash flow.
Key consideration 2	**An FMI should hold liquid net assets funded by equity (such as common stock, disclosed reserves, or other retained earnings) so that it can continue operations and services as a going concern if it incurs general business losses. The amount of liquid net assets funded by equity an FMI should hold should be determined by its general business risk profile and the length of time required to achieve a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken.**
Description	As of end-2014 CCLV held liquid net assets funded by equity for an amount equivalent to approximately 7,000 million CLP or USD 10 million. At present, this amount ensures it can continue operations and services as a going concern if it incurs general business losses. However, CCLV has not calculated the specific amount of liquid net assets it would need to cover its general business risks, nor has it calculated the time and operating costs of achieving a recovery.
Key consideration 3	**An FMI should maintain a viable recovery or orderly wind-down plan and should hold sufficient liquid net assets funded by equity to implement this plan. At a minimum, an FMI should hold liquid net assets funded by equity equal to at least six months of current**

	operating expenses. These assets are in addition to resources held to cover participant defaults or other risks covered under the financial resources principles. However, equity held under international risk-based capital standards can be included where relevant and appropriate to avoid duplicate capital requirements.
Description	*Recovery or orderly wind-down plan* CCLV has not developed a plan to achieve financial recovery or orderly wind-down as a result of general business losses. *Resources* CCLV's liquid net assets as of end-2014 amounted to approximately USD 10 million. Operational expenses for six months are estimated at USD 1.6 million (approximately 1,000 million CLP). The Reserve Fund that can be used to cover participant defaults amounts to approximately USD 110,000. Hence, liquid net assets net of the Reserve Fund amount to USD 9.9 million, which based on current figures would be sufficient to cover nearly 3 years of operations.
Key consideration 4	**Assets held to cover general business risk should be of high quality and sufficiently liquid in order to allow the FMI to meet its current and projected operating expenses under a range of scenarios, including in adverse market conditions.**
Description	The composition of liquid net assets funded by equity is cash and other short-term financial assets net of short-term liabilities.[7] Short-term financial assets correspond to securities issued by the National Treasury or the BCCh, or certificates of deposit issued by large Chilean banks. All these types of assets can be converted into cash at little or no loss of value in adverse market conditions. The quality and liquidity of CCLV's liquid net assets is assessed as part of its Investment and Custody Policy (see principle 16).
Key consideration 5	**An FMI should maintain a viable plan for raising additional equity should its equity fall close to or below the amount needed. This plan should be approved by the board of directors and updated regularly.**
Description	A provision for raising additional equity is considered in CCLV's by-laws. This follows the requirements of SVS regulations and Law 20.345 (articles 16-19), which state that a clearing and settlement entity acting as a CCP must maintain at all times a minimum paid-in capital of UF150,000 (approximately USD 5.8 million). In case of any insufficiency, the CEO or Chairman of the board of the organization should convene a shareholders assembly to approve and raise the necessary additional equity. Otherwise, the organization may be put on probation by the SVS, and eventually its license may be cancelled.

[7] This composition was determined by the assessor based on CCLV's 2014 audited financial statements. CCLV has not developed a definition for liquid net assets.

Key conclusions	CCLV has the necessary financial resources (i.e. liquid net assets funded by equity) that, in principle, would allow to operate for approximately 36 months without new income, and is the only CCP for equities and exchange-traded derivatives. However, CCLV has not made specific calculations of the amount of liquid net assets it would need to cover general business risks. Nor has it developed a detailed plan for its financial recovery were it to experience significant general business losses that reduce its capital below the regulatory minimum.
Assessment of Principle 15	**Broadly observed.**
Recommendations and comments	CCLV should develop a specific plan for its financial recovery in the event it were to incur significant general business losses. As part of this plan, CCLV should determine the amount of liquid net assets funded by equity it will need to continue operations and services as a going concern (in the specific event it incurs general business losses). The calculation should reflect not only a scenario where CCLV stops receiving revenues for a certain period of time, and should also estimate potential costs related to operational losses, fraud, claims and investment losses, along with the length of time and administrative costs for achieving a recovery.[8]

[8] Subsequently to this assessment, CCLV has notified that it has incorporated this recommendations in its working program for 2016.

Principle 16. Custody and investment risks An FMI should safeguard its own and its participants' assets and minimise the risk of loss on and delay in access to these assets. An FMI's investments should be in instruments with minimal credit, market, and liquidity risks.	
Key consideration 1	**An FMI should hold its own and its participants' assets at supervised and regulated entities that have robust accounting practices, safekeeping procedures, and internal controls that fully protect these assets.**
Description	CCLV holds all securities posted as collateral and any securities of its own at the DCV, which is the only CSD in the country. DCV is supervised by the SVS. CCLV holds its own cash and cash posted as collateral at three commercial banks. The main criterion for the selection of these banks is that they must have a rating of N1 (the highest local rating for short-term deposits) from two different rating agencies. These banks are supervised by the Superintendencia de Bancos e Instituciones Financieras (SBIF) of Chile.
Key consideration 2	**An FMI should have prompt access to its assets and the assets provided by participants, when required.**
Description	CCLV's rulebook and contracts with settlement members specify that any collateral posted by direct or indirect settlement members in the current account of CCLV at the BCCh or in its securities account at the DCV becomes irrevocable and may be used by CCLV in the settlement process based on the processes and procedures established in its rulebook. These provisions in the rulebook and contracts are supported by Law 20.345 (articles 27 and 29, among others). Article 29 states that a securities clearing and settlement system may use the collateral posted to it based on what established in its rulebook, without any need of intervention from judicial authorities. From an operational standpoint, CCLV constantly verifies as part of its routine activities that it has prompt access to its assets. Such prompt access has been verified also in events of delays and defaults (i.e. launch of the extraordinary settlement period). Currently, CCLV does not hold assets with custodians in other jurisdictions.
Key consideration 3	**An FMI should evaluate and understand its exposures to its custodian banks, taking into account the full scope of its relationships with each.**
Description	CCLV holds cash posted as collateral and own cash at commercial banks. These banks and CCLV's liquidity providers and are also settlement members. To deal with these multiple relationships, CCLV has diversified its holdings (and lines of credit) in three different commercial banks.
Key consideration 4	**An FMI's investment strategy should be consistent with its overall risk-management strategy and fully disclosed to its participants, and investments should be secured by, or be claims on, high-quality obligors. These investments should allow for quick liquidation with little, if any, adverse price effect.**

Description	*Investment strategy* CCLV's investment strategy is approved by the board. There is a joint investment policy for the Santiago Stock Exchange and CCLV. One of the key objectives of this policy is to underpin liquidity management, in particular to ensure that cash flows are available for CCLV to fulfill on a timely manner is short-term financial obligations. CCLV's assets are invested solely on financial instruments that have a risk rating that provides certainty that the amount invested will be recovered, with a reasonable return. For short-term investments, minimum rating should be N1+, and for longer-term investments AA- (both on local rating scale). Investment in foreign assets is allowed as long as such assets are rated with investment grade or above. Additionally, the strategy is to put together a diversified portfolio to withstand shocks in specific sectors of the economy. Cash holdings are limited to between 3-10% of the portfolio. *Risk characteristics of investments* Accepted risk exposure is "Low to Moderate". Limits to portfolio investments are as follows: • Equities: 0% - 0% • Fixed income (mid-term and long-term): 15%-55% • Money market instruments: 50%-80% • Cash and overnight deposits: 3%-10% CCLV does not make any investments with participants' assets, be them cash or securities.
Key conclusions	CCLV holds its assets and those of its members with safe custodians which are heavily regulated and supervised. The legal framework and the operational reliability of custodians used ensure prompt access to both its own assets and those from participants that were posted as collateral. The investment strategy for own resources is conservative and diversified. In general, it is reasonable to assume that assets held can be liquidated quickly with any significant adverse price effect.
Assessment of Principle 16	**Observed.**
Recommendations and comments	

Principle 17: Operational risk An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfillment of the FMI's obligations, including in the event of a wide-scale or major disruption.	
Key consideration 1	**An FMI should establish a robust operational risk-management framework with appropriate systems, policies, procedures, and controls to identify, monitor, and manage operational risks.**
Description	*Identification of operational risk* As with other risks, CCLV approach to operational risk is based on its Risk Management Policy which provides the general framework for identifying, analyzing, integrating, assessing, managing, monitoring and communicating risks. Identified sources of operational risk include: • Organizational • Technological • Information • Human resources • Processing • External disruption *Management of operational risk* The risk management policy is based on ISO 31.000. Operational risks and associated controls are monitored and managed through risk matrices. In these matrices, CCLV has identified 80 specific risk factors in connection with the above-mentioned sources of operational risk. A report on the performance of risk controls is prepared for the risk management committee. *Policies, processes and controls* Specific policies that have been developed from the overarching risk management policy include the Business Continuity Policy (and Manual), and the Information Security Policy – based on ISO 22.301 and 27.001, respectively. Other policies include Vendors Policy, Policy on Safety on Communications, Policy on Safety on Operations, and Policy on Acceptable Use of Information Assets. With regard to human resources, the main objectives are to provide sufficient training to staff, align incentives to performance, in particular with regard to quality, streamlining staff selection criteria, and in general promoting a sustainable organizational culture to reduce personnel turnover.

	Fraud prevention (internal and external) is addressed in the Information Security Policy and a Compliance Policy (based on law 20.393 on the legal responsibility of firms on different types of felonies, and other laws). For the implementation of changes, CCLV has an internal committee on change analysis and management, made-up by IT staff and with participation of business areas that are affected with each planned change. This committee meets weekly before all planned changes in system applications, communications, etc. are released.
Key consideration 2	**An FMI's board of directors should clearly define the roles and responsibilities for addressing operational risk and should endorse the FMI's operational risk-management framework. Systems, operational policies, procedures, and controls should be reviewed, audited, and tested periodically and after significant changes.**
Description	*Roles, responsibilities and framework* Roles and responsibilities are assigned based on the overall risk management policy framework, which assigns the primary role to process owners, and goes up all the way to board members. In the specific case of operational risk, the principles behind the definition of roles and responsibilities are similar, although not all the areas of the organization are included but only those with direct involvement in these matters (those other areas, e.g. finance, planning, administration, still assign one representative for internal communication purposes). The board explicitly has endorsed CCLV's operational risk management framework. Every year the board pronounces on the adequateness of this framework. *Review, audit and testing* Every two years CCLV audits compliance with operational, technological and business continuity requirements by participants. Additionally, internal audit performs random audits to approximately 20% of the participants every year. Those audits cover participants' operational risk management in connection with CCLV. Internal audit, which has a direct reporting line to the Audit Committee of the board, performs a review of risk management at CCLV, including operational risk. CCLV is certified by BSI on ISO standards 22.301 and 27.001. This certification has been renewed every two years, although starting from 2016 it will be renewed every year.
Key consideration 3	**An FMI should have clearly defined operational reliability objectives and should have policies in place that are designed to achieve those objectives.**
Description	All IT services are outsourced, including some from its parent organization, the BCS. CCLV has signed a "master" contract with the BCS for the latter to handle all IT services for CCLV. This contract includes

	service level agreements (SLAs) and operational level agreements (OLAs) with its vendors. The General IT Policy states a 99.5% up-time level for critical mission systems (i.e. the SCL, Algo Suite, etc.) from 8:00 am to 8:00 pm every day of the week, or for some specific systems/services 24 x 7. This objective in reflected in the contract signed between CCLV and the BCS (annex 2 "SLA"). The General IT Policy also provides for capacity management, to ensure that all IT services have adequate processing and data storage capacity to ensure the operational reliability objective is met in a continuous manner (see below).
Key consideration 4	**An FMI should ensure that it has scalable capacity adequate to handle increasing stress volumes and to achieve its service-level objectives.**
Description	The adequacy of the processing capacity of the various IT systems is measured through a number of indicators such as availability, response time, current volume of transactions, etc. In addition, CCLV receives feedback on these issues from its settlement members via a help desk ("SAC"). The data obtained, together with an analysis of technological innovations and projected changes in volumes, is used to assess on an annual basis the processing and storage capacity of the IT infrastructure, and if necessary to improve the infrastructure in order to guarantee the reliability objectives. Over the last 4 years, considering both its operations as a CCP and as a SSS, CCLV has not experienced increases in volumes, or significant abnormal peaks.
Key consideration 5	**An FMI should have comprehensive physical and information security policies that address all potential vulnerabilities and threats**.
Description	*Physical security* There is a Physical Security Policy, which establishes key considerations and parameters to define and regulate physical security standards for the IT infrastructure and other information assets. In addition, it establishes standards that must be followed to ensure a satisfactory level of physical protection for the assets mentioned earlier. The policy covers all the processes and services of CCLV. The policy and the detailed methodology are based on ISO 27.001: 2013. *Information security* There is an Information Security Policy. This policy states the following objectives: • Protection of information against unauthorized access • Protection against information corruption during processing, storage or transmission

	• Protection of information against attempts for destroying or stealing such information • Protection against the denial of service to authorized users, or provision of the service to unauthorized users, including measures for detection, documentation and recording of such threats • Protection of the privacy of personal information of clients. The policy and the detailed methodology are based on ISO 27.001: 2013.
Key consideration 6	**An FMI should have a business continuity plan that addresses events posing a significant risk of disrupting operations, including events that could cause a wide-scale or major disruption. The plan should incorporate the use of a secondary site and should be designed to ensure that critical information technology (IT) systems can resume operations within two hours following disruptive events. The plan should be designed to enable the FMI to complete settlement by the end of the day of the disruption, even in case of extreme circumstances. The FMI should regularly test these arrangements.**
Description	*Objectives of business continuity plan* The objectives of CCLV's BCP are: • Establish the general as well as the specific framework for action by the organization in the vent of the materialization of a risk that affects is normal operations. This framework describes the main high-level strategies for business continuity. The framework also describes the alternative mode for the operation of all organization units and the procedures applicable to each process within the organization. • Define the organizational structure, roles and responsibilities of the teams that will handle specific tasks to respond to a contingency during its various phases, up to the moment in which normal operations are reinstated. *Design of business continuity plan* To ensure that critical IT systems are able to resume operations within two hours following a disruptive event, CCLV has made a BIA in which it identifies critical process, the desired time for resuming and the maximum time for resuming. Currently, maximum resuming time is two hours. The status of all transactions can be identified in a timely manner as the database is replicated in real time, and the SCL application accesses the alternative database automatically in the event of a problem. Still, CCLV considers conciliations between its different IT systems. CCLV has a Crisis Management Plan that defines the responsibilities of the various teams considered in that plan and internal communications. In addition, the plan contains a communication strategy to inform authorities and key external stakeholders.

	Secondary site The main risk to both the primary and secondary site is related to earthquakes. However, the physical infrastructure of both sites has been developed on the basis of standards that are much higher than what required by Chilean authorities for this type of risk. At the level of communications between the Santiago Stock Exchange and CCLV there are no alternative arrangements (i.e. manual) for the processing of time-critical transactions in extreme circumstances. In case brokers-dealers are not able to access the systems of the Santiago Stock Exchange, there are alternative arrangements, like using computer terminals at the premises of the exchange, etc. *Review and testing* CCLV has a number of testing plans that involve both "desk work scenarios" as well as real-life scenarios. The BCP plan includes a set of external contacts that is made-up of all relevant internal contacts and those of key vendors that were defined as critical for the smooth operation of CCLV. For CCLV participants, any switch of operations from the main site to the alternative site is transparent. CCLV has so far participated in the FMI business continuity committee created by the BCCh. Four business continuity tests across FMIs were made during 2014. No incidences on the performance of CCLV's technological systems has been reported so far. Business continuity and contingency arrangements are reviewed on an annual basis.
Key consideration 7	**An FMI should identify, monitor, and manage the risks that key participants, other FMIs, and service and utility providers might pose to its operations. In addition, an FMI should identify, monitor, and manage the risks its operations might pose to other FMIs.**
Description	*Risks to the FMI's own operations* Risks have been identified in Risk Matrices. Risks from FMIs include first and foremost the inability for CCLV to provide CCP cash and/or securities settlement services, or inability to manage collateral requirements in cash and/or securities. Risks from service and utility providers include CCLV not being able to operate its systems, including the clearing and settlement system SCL, the risk management system (Algo suite), etc. DCV and Sistema LBTR meet high reliability and contingency requirements. In the case of service and utility providers, CCLV makes an assessment of these providers based on the following criteria: • Number of vendors that can provide the relevant service: if there is only one, then CCLV must work with that vendor regardless of

	other considerations and manage risks through SLAs and OLAs, etc. • Capacity of the vendor to service the capital markets more broadly: there is a preference for hiring vendors that already provide services to CCLV members or members of the Santiago Stock Exchange • Prizes, rankings, certifications obtained by the vendor • Business continuity policies and procedures of vendors, ensuring those policies and procedures are robust enough to achieve the desired reliability standards. • Service quality reports • Cost *Risks posed to other FMIs* CCLV does not pose operational risks to DCV or to Sistema LBTR, as it is merely a user of those FMIs. CCLV uses applications and communications means provided by those FMIs. CCLV participates in the business continuity committee that is led by the BCCh and that brings together other FMIs like DCV and COMBANC.
Key conclusions	CCLV has established best practices and standards for the management of operational risks. Policies and procedures are comprehensive and are properly documented. CCLV places a strong emphasis on reliability, continuity and information security, and has obtained certifications on these operational risk components.
Assessment of Principle 17	**Observed.**
Recommendations and comments	Even if CCLV has a contract with BCS covering all its IT requirements, both entities must make sure that contracts, SLAs and OLAs signed by BCS with critical external service providers are consistent with best international practice. For this purpose CCLV and BCS may take as a basis the CPMI-IOSCO Assessment Methodology for the Oversight Expectations Applicable to Critical Service Providers.[9]

[9] Subsequently to this assessment, CCLV notified that it has modified its Vendors' Policy to incorporate this recommendation.

Principle 18. Access and participation requirements An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access**.**	
Key consideration 1	**An FMI should allow for fair and open access to its services, including by direct and, where relevant, indirect participants and other FMIs, based on reasonable risk-related participation requirements.**
Description	*Participation criteria and requirements* Law 20.345 (article 21) states that the following entities may become settlement members in a CCP: • Securities agents • Brokers-dealers (securities and commodities) • Banks • Other entities that the SVS may authorize through general rules Rule 256 issued jointly by SVS and SBIF states the minimum financial, technological and human resources of settlement members. Based on these regulatory requirements, CCLV's rulebook states the following in connection with direct settlement members: • General requirements: signed contract, qualitative assessment, etc. • Capital requirements: there is a formula that considers type and volume of activity, with a minimum requirement of UF 20,000 for the equities clearinghouse and UF 40,000 for the derivatives clearinghouse. This minimum requirement is raised 100% in each case if the direct settlement member intends to provide settlement services to indirect settlement members. • Technological and business continuity requirements • Human resources: staff with sufficient experience and a professional background that are consistent with their responsibilities vis-à-vis CCLV, and attendance of the CCLV training/induction course • Operational risk management requirements, for example the applicant must have an operational risk management policy approved by its board, a manual describing procedures and processes, etc. Indirect settlement members need only to comply with operational risk management and human resources requirements. These requirements must be met initially and in an ongoing basis.
Key consideration 2	**An FMI's participation requirements should be justified in terms of the safety and efficiency of the FMI and the markets it serves, be tailored to and commensurate with the FMI's specific risks, and be publicly disclosed. Subject to maintaining acceptable risk control standards, an FMI should endeavour to set requirements that have the least-restrictive impact on access that circumstances permit.**
Description	*Justification and rationale of participation criteria*

	The requirements are deemed reasonable considering the role of a settlement member in a CCP. Moreover, requirements like the minimum capital requirement are tailored to the specific risks born with regard to CCLV (i.e. products, volume, liabilities due to third-party activity, etc.). These requirements are identical for the different types of institutions within the same class (i.e. direct or indirect settlement member). *Least restrictive access* Capital requirements are risk-sensitive, meaning that current or potential settlement members that find it difficult to comply with the stated requirement may opt for reducing their risk exposures and/or volume of activities, or eventually participating as indirect settlement members, etc. *Disclosure of criteria* Criteria for both direct and indirect settlement members are specified in the CCLV rulebook, which is publicly available through CCLV's website.
Key consideration 3	**An FMI should monitor compliance with its participation requirements on an ongoing basis and have clearly defined and publicly disclosed procedures for facilitating the suspension and orderly exit of a participant that breaches, or no longer meets, the participation requirements.**
Description	*Monitoring compliance* The rulebook states that all participation requirements must be met on an ongoing basis. CCLV verifies the various requirements through different methods. For example, fulfillment of the minimum capital requirement is verified automatically each day in the clearing and settlement system. Members must obtain certification from CCLV at least every two years on operational risk, human resources and technology aspects. In addition, CCLV internal audit inspects 20% of members – random selection – every year. The minimum capital requirement is risk-sensitive, therefore a participant whose risk profile deteriorates would be subject to higher requirements to keep clearing orders in CCLV. Additionally, the risk management committee may request a special audit of any given settlement member. *Suspension and orderly exit* If a settlement member does not observe participation requirements it can be subject to the following measures: • Temporary suspension: the participant can no longer enter clearing orders • Indefinite suspension: only the board of directors may decide when this suspension may be lifted

	• Authorization revoked/cancelled: the CEO of CCLV will decide the course of action for any positions pending settlement that belong to the member whose membership has been revoked or cancelled. Procedures for managing the suspension and exit of direct and indirect settlement members are specified in the CCLV rulebook, which is publicly available through CCLV's website. Likewise, any disciplinary actions taken by the board or the CEO are publicly disclosed in the website.
Key conclusions	CCLV has clear, risk-based access and participation requirements for direct and indirect settlement members. These requirements are reasonable considering the role of settlement members in a CCP. The same set of requirements are applied consistently for each of the various membership types. CCLV monitors on an ongoing basis the fulfillment of minimum capital requirements, and periodically the fulfillment of other requirements. CCLV has explicit procedures for managing the suspension or cancellation of authorization of its participants.
Assessment of principle 18	**Observed.**
Recommendations and comments	

<table>
<tr><td colspan="2">Principle 19. Tiered participation arrangements
An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.</td></tr>
<tr><td>Key consideration 1</td><td>An FMI should ensure that its rules, procedures, and agreements allow it to gather basic information about indirect participation in order to identify, monitor, and manage any material risks to the FMI arising from such tiered participation arrangements.</td></tr>
<tr><td>Description</td><td>Tiered participation arrangements

CCLV has direct and indirect settlement members. In the case of the derivatives clearinghouse, customers (“comitentes”) of direct and indirect settlement members can also participate in CCLV.

Information on indirect settlement members and customers (positions and collateral) is segregated in CCLV’s systems and is readily available to it.

Risks to the FMI

Indirect settlement members settle their own positions directly with CCLV, although their respective settlement members is ultimately liable for a default of the indirect settlement member. Customers settle through their respective settlement member.

CCLV does not allow for compensation/reduction of collateral requirements across the various participation levels.</td></tr>
<tr><td>Key consideration 2</td><td>An FMI should identify material dependencies between direct and indirect participants that might affect the FMI.</td></tr>
<tr><td>Description</td><td>Direct and indirect settlement members are essentially seen as independent risks by CCLV. Their respective operations (positions and collateral) are managed independently.

In case of a default of an indirect settlement member, settlement members may have to absorb some costs. Under normal market conditions, collateral posted by the indirect member should be sufficient to cover its positions with a 99% confidence level. If this were not the case, then the respective direct settlement member would need to cover the difference through its own contribution to the settlement guarantee fund (indirect settlement members do not contribute to this fund, although their exposures are considered as part of the calculation of the contribution of their respective direct settlement member).

In case of a default of a settlement member, this does not affect indirect settlement members. In any case, they may transfer their position to another direct settlement member.</td></tr>
<tr><td>Key consideration 3</td><td>An FMI should identify indirect participants responsible for a significant proportion of transactions processed by the FMI and indirect participants whose transaction volumes or values are large relative to the capacity of the direct participants through which they</td></tr>
</table>

	access the FMI in order to manage the risks arising from these transactions.
Description	Currently CCLV has 35 direct settlement members and only 3 indirect settlement members. Volume of operations of the latter represent less than 1% of the total volume of operations of their respective direct settlement member.
Key consideration 4	**An FMI should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.**
Description	CCLV monitors risks from tiered participation arrangements on an ongoing basis. If necessary, the risk management committee may propose changes to the risk management framework, including the operational model for dealing with these risks.
Key conclusions	CCLV has established clear rules and has the necessary operational tools to identify, monitor and manage risks that could arise in connection with tired participation arrangements.
Assessment of Principle 19	**Observed.**
Recommendations and comments	

Principle 20. FMI links An FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks.	
Key consideration 1	**Before entering into a link arrangement and on an ongoing basis once the link is established, an FMI should identify, monitor, and manage all potential sources of risk arising from the link arrangement. Link arrangements should be designed such that each FMI is able to observe the other principles in this report.**
Description	Risks are identified following the risk management policy and other specific policies derived from that one, including the security information policy and the business continuity policy. CCLV has established links with the DCV and the Sistema LBTR, both of which are essential for its operations, i.e. collateral management and settlements for securities and cash, respectively. Links with these other FMIs are designed for CCLV to remain observant with other principles, i.e. DCV is the only CSD in the country, regulated by the SVS, and the Sistema LBTR operated by the BCCh allows settlement in central bank money.
Key consideration 2	**A link should have a well-founded legal basis, in all relevant jurisdictions, that supports its design and provides adequate protection to the FMIs involved in the link.**
Description	CCLV has established links only in Chile with other regulated and supervised FMIs that are essential for its operations.
Key consideration 3	**Linked CSDs should measure, monitor, and manage the credit and liquidity risks arising from each other. Any credit extensions between CSDs should be covered fully with high quality collateral and be subject to limits.**
Description	Not applicable.
Key consideration 4	**Provisional transfers of securities between linked CSDs should be prohibited or, at a minimum, the retransfer of provisionally transferred securities should be prohibited prior to the transfer becoming final.**
Description	Not applicable.
Key consideration 5	**An investor CSD should only establish a link with an issuer CSD if the arrangement provides a high level of protection for the rights of the investor CSD's participants.**
Description	Not applicable.
Key consideration 6	**An investor CSD that uses an intermediary to operate a link with an issuer CSD should measure, monitor, and manage the additional risks (including custody, credit, legal, and operational risks) arising from the use of the intermediary.**
Description	Not applicable.

Key consideration 7	**Before entering into a link with another CCP, a CCP should identify and manage the potential spill-over effects from the default of the linked CCP. If a link has three or more CCPs, each CCP should identify, assess, and manage the risks of the collective link arrangement.**
Description	CCLV does not have links with other CCPs.
Key consideration 8	**Each CCP in a CCP link arrangement should be able to cover, at least on a daily basis, its current and potential future exposures to the linked CCP and its participants, if any, fully with a high degree of confidence without reducing the CCP's ability to fulfil its obligations to its own participants at any time.**
Description	CCLV does not have links with other CCPs.
Key consideration 9	**A TR should carefully assess the additional operational risks related to its links to ensure the scalability and reliability of IT and related resources.**
Description	Not applicable.
Key conclusions	CCLV has established links only in Chile with FMIs that are essential for its operations, i.e. the DCV and the Sistema LBTR. Both these FMIs are regulated and supervised, and allow CCLV to remain observant of the other principles.
Assessment of Principle 20	**Observed.**
Recommendations and comments	

Principle 21: Efficiency and effectiveness An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.	
Key consideration 1	**An FMI should be designed to meet the needs of its participants and the markets it serves, in particular, with regard to choice of a clearing and settlement arrangement; operating structure; scope of products cleared, settled, or recorded; and use of technology and procedures.**
Description	CCLV takes into account the needs of its participants and the markets it serves through direct communication with such participants. This is done through monthly committee or sub-committee meetings. In this regard, the Santiago Stock Exchange has an Operations Committee made-up of Operations Managers from the participants of the exchange. That committee has a sub-committee on clearing and settlement. Both meet regularly, on a monthly basis. Most current settlement members of CCLV were closely involved in the original design of CCLV. Additionally, CCLV carries out customer satisfaction surveys and meets settlement members according to a pre-defined schedule. Through these feedback mechanisms CCLV gathers information on opportunities for improvements.
Key consideration 2	**An FMI should have clearly defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk-management expectations, and business priorities.**
Description	Goals and objectives have been established for the Santiago Stock Exchange and its subsidiaries, including CCLV. One of the key goals and objectives include maintaining the highest possible percentage of clearing orders that are settled on time i.e. during the ordinary settlement process, and that the extraordinary settlement process, when initiated, flows as smoothly as possible. Additional objectives include high operational reliability and availability (see principle 17). Interviews held by the WB team with three CCLV participants confirmed that the established minimum service levels are achieved, and are maintained in an ongoing basis.
Key consideration 3	**An FMI should have established mechanisms for the regular review of its efficiency and effectiveness**.
Description	CCLV reviews its efficiency and effectiveness through various mechanisms. These include independent customer survey, reviews made by internal audit, and the fulfillment of KPIs (see principle 3). CCLV prepares a monthly report to the risk management committee and the board on the actual outcomes on issues such as the successful and timely fulfilment of clearing orders, adequacy of collateral, etc. Internal audit prepares an annual report that is submitted to the audit committee of the board.

	Regarding its fee schedule, SVS requires CCLV (and other FMIs) to present a detailed analysis of costs and fees (see KC 23.3) and to update this analysis every two years.
Key conclusions	CCLV places emphasis on being efficient and effective in meeting the requirements of its participants. It monitors this through a number of tools, including independent customer surveys and through direct contact with the participants. CCLV performance with regard to efficiency and effectiveness is reviewed periodically by the board and its committees.
Assessment of Principle 21	**Observed.**
Recommendations and comments	

Principle 22: Communication procedures and standards An FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording.	
Key consideration 1	**An FMI should use, or at a minimum accommodate, internationally accepted communication procedures and standards.**
Description	*Communication procedures and standards* Information about clearing orders is loaded from the Santiago Stock Exchange to CCLV's systems. To communicate with the Santiago Stock Exchange, protocol Fix 4.4 is used. Communication with the Sistema LBTR is via SWIFT. With the DCV, CCLV uses a web service in connection with collateral postings. CCLV downloads information from DCV to its own systems for its collateral management activities. With regard to settlements, communication with DCV is done through ISO-compliant protocols and file transfers. CCLV monitors manually that securities transfers were performed successfully. CCLV is currently working on achieving STP also for the latter processes. CCLV does not engage in cross-border operations (the only exception could be the acceptance of foreign collateral, which would be managed through DCV accounts in foreign CSDs).
Key conclusions	CCLV uses ISO-compliant communication procedures and standards.
Assessment of Principle 22	**Observed.**
Recommendations and comments	

Principle 23: Disclosure of rules, key procedures, and market data An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed.	
Key consideration 1	**An FMI should adopt clear and comprehensive rules and procedures that are fully disclosed to participants. Relevant rules and key procedures should also be publicly disclosed.**
Description	*Rules and procedures* CCLV's rules and procedures are reflected mainly in its rulebook, internal communications, its by-laws and a number of internal policies, including the risk management framework and corporate governance. The rulebook and internal communications are publicly available at CCLV's website (the latter are also sent via email to a contacts list of participants). Other documents may be accessed solely by participants. Rules and procedures are based on regulatory requirements and guidance. The rulebook is approved by the SVS, also with the binding opinion from the BCCh. Rules and procedures are also reviewed by external auditors and certification entities (i.e. BSI). CCLV also has active feedback mechanisms with users. There have been a few instances, basically with regard to sanctions and fines, where interpretation by users has not coincided with that of CCLV. The corresponding rules have been amended as necessary. *Disclosure* The rulebook describes the procedures that will be followed in non-routine events, like participant defaults. The rulebook also describes those cases in which CCLV may exercise a discretionary criterion, always considering the benefit of the market as a whole. The business continuity plan also describes procedures to be followed in crisis situations. Any changes to the rulebook must be submitted to the SVS for approval. Changes to specific procedures and processes that do not require changes to the rulebook (e.g. operating hours) are informed to participants at least 10 days in advance of their coming into force.
Key consideration 2	**An FMI should disclose clear descriptions of the system's design and operations, as well as the FMI's and participants' rights and obligations, so that participants can assess the risks they would incur by participating in the FMI.**
Description	The rulebook contains detailed information about the system's design and operation, including flow charts for each of the clearinghouses showing operations under normal and abnormal (i.e. the extraordinary settlement process) circumstances.

	The rulebook also contains detailed information on the areas in which CCLV may exercise discretion and the general approach it will follow in such circumstances. The rulebook (section B.4) also contains detailed information on the rights and obligations of participants. Risks participants incur through participation in CCLV are explained throughout the rulebook, for example in the description of ordinary and extraordinary settlement processes.
Key consideration 3	**An FMI should provide all necessary and appropriate documentation and training to facilitate participants' understanding of the FMI's rules and procedures and the risks they face from participating in the FMI.**
Description	Access and participation criteria include specific human resources requirements, including a sound professional background and commensurate experience with the role a staff member of a participating entity will be playing in CCLV. There is also a requirement that new members or new staff take a mandatory training course. At least two persons from each member must take this training course. There have been no significant misunderstandings of the contents of the rules and procedures (see KC 23.1). CCLV offers its general training course every quarter. In case some misunderstandings are identified, it organizes specific training sessions.
Key consideration 4	**An FMI should publicly disclose its fees at the level of individual services it offers as well as its policies on any available discounts. The FMI should provide clear descriptions of priced services for comparability purposes.**
Description	CCLV's fees are described at a high-level only in the rulebook. However, CCLV has also posted on its website a detailed analysis/description of its fee structure (i.e. the "*Estudio Tarifario*"), including the rationale for adopting the structure, volume-based discounts, etc. Rule 257 of the SVS states that the aforementioned analysis must be updated every two years. The rulebook states that changes to fees shall be informed to participants via Internal Communications at least 10 days in advance of such new fees coming into force. Although another CCP (i.e. COMDER) initiated operations recently, the fee structure of this other CCP and that of CCLV are not readily comparable as they serve different markets. Moreover, COMDER and CCLV have quite different ownership structures, which is partly reflected in their fee structure (i.e. all users of COMDER are shareholders, while this is not the case for CCLV).
Key consideration 5	**An FMI should complete regularly and disclose publicly responses to the CPSS-IOSCO disclosure framework for financial market infrastructures. An FMI also should, at a minimum, disclose basic data on transaction volumes and values.**

Description	CCLV has not completed the CPSS-IOSCO Disclosure Framework for Financial Market Infrastructures. CCLV publishes quantitative information in its website, including a monthly report on Operations that includes data on number of transactions that were accepted, settled, required collateral, etc. for each of the clearinghouses it operates. It also publishes quarterly information on performance of its risk models.
Key conclusions	CCLV makes extensive disclosure of its rules, key procedures and market data. Although CCLV prepared a recent self-assessment based on the CPSS-IOSCO Assessment Methodology (not available to the public), it has not yet completed the CPSS-IOSCO Disclosure Framework for Financial Market Infrastructures.
Assessment of Principle 23	**Broadly observed.**
Recommendations and comments	CCLV should complete the CPSS-IOSCO Disclosure Framework for financial Market Infrastructures in a defined timeline and make it available to the general public through its website or other proper means. This should be updated at a minimum every two years.