

World Bank Fast Payments Toolkit

Case Study: Chile

TEF | 2008

Payment Instruments



Credit
Transfer



Direct Debit



E-money

Use Cases / Services



Bill
Payment



Bulk/Batch
Payment



Schedule Future
Payments



Glossary of terms

S. No.	Term	Definition
1	GDP	Gross Domestic Product at current price
2	Income Category	Classification as per World Bank based on Gross National Income (GNI) per capita
3	CPMI	Committee on Payments and Market Infrastructure
4	FPS	As per CPMI, fast payment System is defined as payments in which the transmission of the payment message and the availability of final funds to the payee occur in real time or near-real time and on as near to a 24-hour and 7-day (24/7) basis as possible
5	Oversight	Regulating or governing body supervising the payments system
6	Operator	Institutions responsible for the operation of the payment system
7	Alias	Alternative to bank account numbers for increased convenience of the customer. For e.g. mobile number, national identification number
8	Access Channels	Modes used by customer to initiate transaction on FPS. For e.g. branch, internet, mobile
9	Individual Payment Type	Person to person (P2P) – Payment between individuals for non-business purposes
10	Business Payment Type	Person to Business (P2B) – Payment from an individual to a business entity Business to Person (B2P) – Payment from a business entity to an individual Business to Business (B2B) – Payment between two business entities
11	Government Payment Type	Person/Business to Government (P/B2G) – Payment from person/Business to a government institution Government to Person/Business (G2P/B) – Payment from government institution to a person or business entity
12	Credit transfers	Credit transfers are payment instruments based on payment orders or possibly sequences of payment orders made for the purpose of placing funds at the disposal of the payee
13	Direct Debits	Direct debits are payment instruments in which the transaction is pre-authorized and funds are blocked in account for a debit to be initiated at a future date. In direct debits, payer's account is debited on execution of mandate by merchant or payee
14	E-money	E-money is a prepaid value stored electronically, which represents a liability of the e-money issuer (a bank, an e-money institution or any other entity authorized or allowed to issue e-money in the local jurisdiction) and which is denominated in a currency backed by an authority

Abbreviations

S.No.	Term	Expanded form
1	ACH	Automated Clearing House
2	CBC	Central bank of Chile
3	CCA	Centro de Compensacion Automatizado
4	CMF	Comisión para el Mercado Financiero
5	LBTR	Liquidación Bruta en Tiempo Real
6	PAL	Liquidity Management Policy
7	RTGS	Real time Gross Settlement
8	SBIF	Superintendencia de Bancos e Instituciones Financieras
9	TEF	Transferencias en Línea

Select country parameters



GDP
GDP – USD 298.23 billion



Income Category
High



Population
18.72 million



Access to mobile phone*
90.22%



Access to internet*
70.99%



Bank account*
74.34%



Branches per 100,000 adult
15.19



Made or received digital payment in last 1 year*
65.37%



Received government wages or transfer in account*
42.57%

Source : World Bank – 2019, Income Category: World Bank – June 2019
Currency Exchange Rate - USD 1 = CLP 702.90 <2019 Average, World Bank>
Others – World Bank 2017
* For age >15 years

How to read this report

- This **deep dive report** relates to the **Transferencias en Línea (TEF)** system in Chile
- It has been developed based on **primary interviews** with key stakeholders such as **regulators, operators** and **participants** in the system as well as by leveraging **secondary sources**
- Key secondary sources include Comisión para el Mercado Financiero (CMF) website, Centro de Compensación Automatizado (CCA) website and published guidelines by CMF
- The table below presents a legend to assist readers as they navigate through different sections of the report

Legend



The first slide of every section includes a chapter summary to provide readers with an overview of the section contents



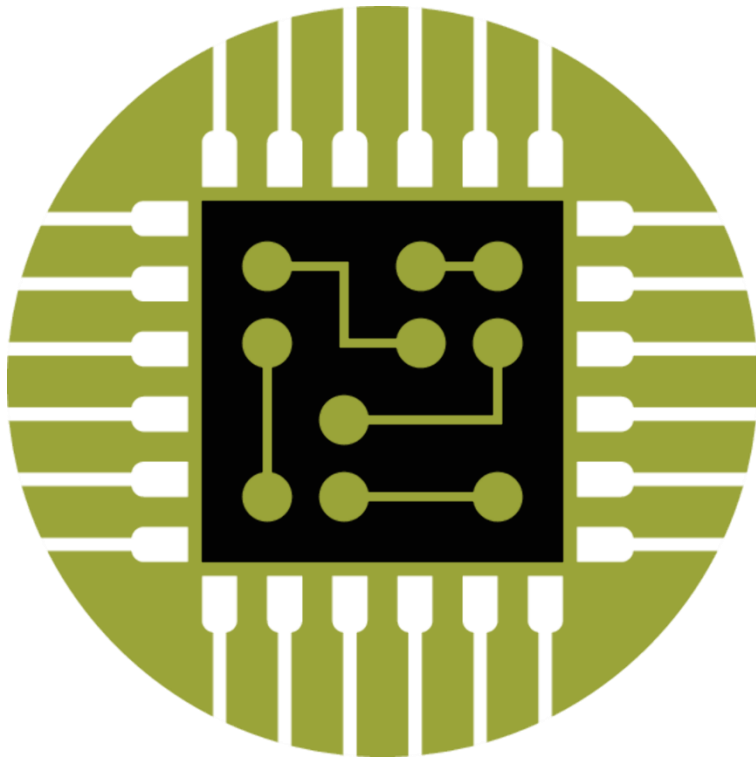
The green box with the adjacent icon indicates **section/sub-section summary across** the report. Reader may choose to read through this for a **high level overview on the selected topic**

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A. Executive Summary

Transferencias en Línea (TEF) | Chile FPS



- **Transferencias en Línea (TEF)**, is the fast payment system built in Chile in 2008. TEF was one of the **early faster payment systems** in South America. TEF system operates on **24x7 basis and supports payments in CLP**
- It was implemented by a private sector organization, the Centro de Compensacion Automatizado (CCA), at the request of the government and regulator
- CCA is the operator and owner for TEF, while **Comisión para el Mercado Financiero (CMF)** is the regulator and overseer for the FPS

Key features of TEF are:

- | | | |
|-------------------------------|--------------------------------------|----------------------------------|
| • Real time payments | • Operates 24x7x365 | • Multiple settlement mechanisms |
| • ISO 8583 messaging standard | • Direct debit as payment instrument | |
- Users can make payments in TEF via their **internet or mobile banking platforms apart from branch and ATMs**
 - Bill Payments and Direct Debits are most common services that have seen the highest adoption so far
 - **Open APIs and QR Codes as well as use cases/services such as Request to Pay are not available**

B. Detailed Report

1. Overview

Chapter sections:

1.1. Background, System Development and Key Timelines



Chapter Summary:

- Chile is amongst the early adopter of FPS globally with the launch of **TEF in 2008**. It was the first **instant payments** system in South America
- TEF is operated by **Centro de Compensacion Automatizado (CCA)**, a private sector organization owned by consortium of banks
- CCA was chosen to design and develop TEF. Regulators also asked **CCA** to assist banks with a new **centralized mechanism**
- This system was built in response to the **Central Bank mandate to remove settlement risk and delays due to batch processing**

1.1. Background, System Development and Key Timelines



Transferencias en Línea (TEF) is a real-time, 24*7 payments system. It was implemented by a private sector organization, the **Centro de Compensacion Automatizado (CCA)**

- Existing instant transfer system was based on **batch processing model** and transactions were being **settled in 48 hours**, this prompted the need for a real-time system by the market
- In addition, regulatory authorities also pushed for development of real time payments and asked market participants industry to develop the FPS to **reduce liquidity floats**
- TEF was built on an existing system by the Centro de Compensacion Automatizado (CCA), at the **request of the government and regulator**

Development Process

- Though Redbanc and Transbank (Banking Activities Support Companies) were ready to develop the FPS, the regulator recommended to implement TEF with a new entity to help banks with a new centralized mechanism
- CCA developed and implemented the system. It reached out to other markets like such as UK, USA etc.
- Completely new architecture** was developed for TEF which comprises of a simple software

Implementation Timelines

Implementation Cost

Overall Budget at that time was **\$88,000**

Any Delays

No delays. Project was completed within the scheduled time frame

Key Milestones

2007

SBIF gave mandate to CCA to develop a system for real time payments

2008

Transferencias en Línea (TEF) is launched

2013

A new feature is introduced to enable fund transfers via mobile devices

2. Business and Operating Model

Chapter sections:

- 2.1. FPS Structure
- 2.2. Participants
- 2.3. Payment Instruments, Transaction Limit and Payment Types
- 2.4 Aliases, Channels and Use Cases / Services



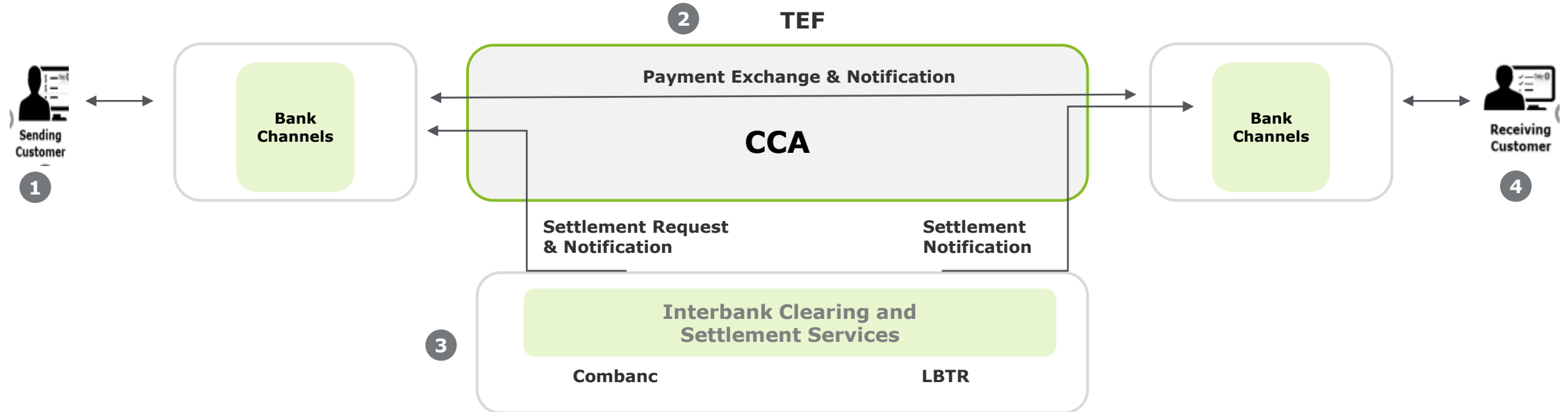
Chapter Summary:

- CCA is a private company jointly owned by the leading banks in Chile. It **operates the TEF System** in Chile while the **CMF performs the role of supervisor and overseer of the system**
- Membership can be both Direct and Indirect in the TEF System, though **there are currently no indirect members**
- Clearing can happen across CCA and Combanc depending on whether it's a low or a high value transaction
- Maximum permissible transaction limit are **CLP 6.94 Million** for standard transactions
- TEF supports **credit transfer, direct debits and e-wallets** as payment instruments. **Mobile number** as an alias is supported by third party PSPs
- TEF supports multiple use cases which results in more customer convenience and adoption. At present, TEF offers **bulk/batch payments, bill payments** and **Schedule future payments** to its users
- Transaction fee has been waived off for individual customers but corporate customers can be charged based on the arrangements with the participating banks

2.1. FPS Structure



CCA is the **owner and operator** of the TEF system, while the final settlement between participants can take place through Combanc or LBTR



Key entities

Centro de Compensación Automatizado (CCA)

- CCA is the owner and operator of TEF system. It is a private ACH, owned by three Chilean banks
- CCA determines debit balances of all participants (in 2 daily cycles) and informs about their obligations

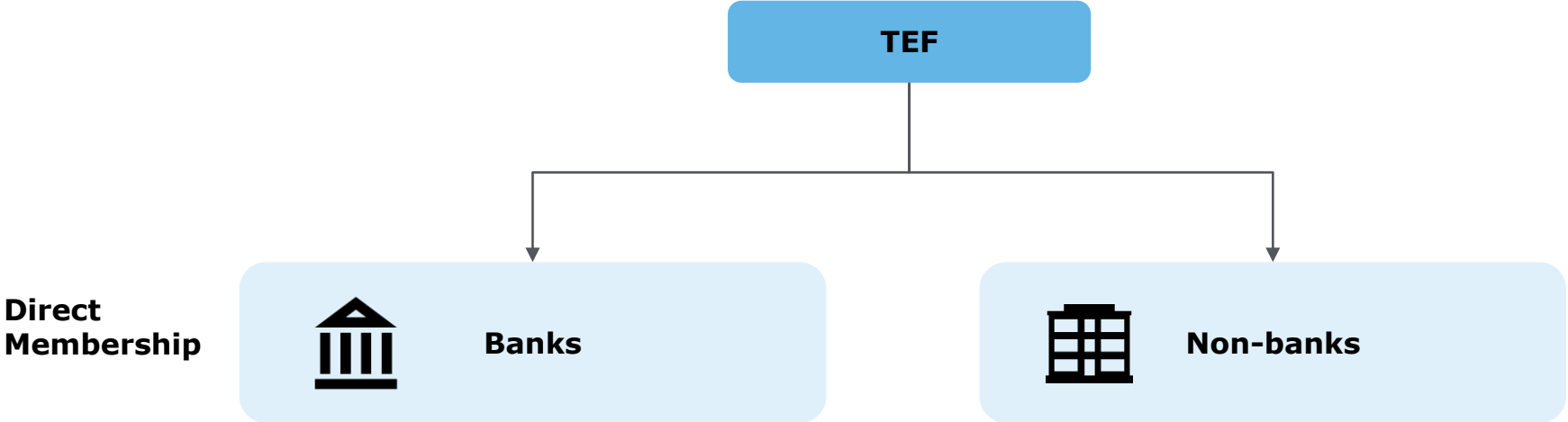
Combanc and LBTR

- Combanc (private entity) is a bank-owned net-settlement system
- Sistema de Liquidación Bruta en Tiempo Real (LBTR), a real-time gross settlement system operated by the central bank

2.2. Participants



Banks and non banks can **both participate directly in the TEF System**, though there are currently no non-bank participants in the system



Almost all banks in Chile are participants of the TEF system, and can access the service provided through which they are authorized by the Commission for the Financial Market to send and receive funds. Although there are no non-bank entities currently participating in the system, they are allowed to participate in the system as per CCA’s offer of services.

Adoption Statistics (as on May-2020)

TEF

14 Banks

These 14 banks account for **99.6% of current accounts** in Chilean Financial System

2.2. Participants



- **CCA has published conditions** which participating entities have to meet before being allowed access to the system
- The conditions lay down **minimal specifications** to be adhered to by the participants

Conditions for Participation

- Participants can join the TEF system only after they have met the following **conditions**:
 - Financial Institution or non-bank issuer or operator registered in the CMF's records and supervised by it
 - Companies that require CCA services and have been duly authorized by law or by specific regulation where such services are incorporated
- Interested participants are required to make a request addressed to CCA, in writing, for access to services provided by CCA including TEF
- These requirements can be fulfilled by a participant on its own or by third parties with whom interested participant has an agreement
- The clients and/or users of the participants which carry out electronic transfers through the electronic platform are not considered contracting Party of CCA for any legal or contractual effect

Scheme Pricing and Fee Structure

- Participant banks are not charged any joining fee while connecting with the system
- Fee charged to the participant banks is combination of fixed annual fee and variable fee. Variable monthly fee is defined according to the number of transactions sent by a participants and is grouped into tranches that consider volume discounts and levels of activity
- Participant banks are not allowed to charge individual customers but they are allowed to design a fee structure for corporate customers

2.3. Payment Instruments, Transaction Limit and Payment Types



- TEF allows **credit transfer, e-wallet and direct debits** as payment instruments and is fully interoperable for transactions with wallets
- TEF enables **consumers, businesses and government agencies** in Chile to make payments in Chilean Peso between accounts and e-wallets of the participating financial institutions
- **Transaction limit is defined at CLP 6.94 Million** for TEF

Payment Instruments Supported

- Credit Transfer** ✓
- Direct Debit** ✓
- E-money** ✓

Interoperability

- Interoperability with wallets is allowed in TEF, though number of use cases are limited

Payment Types and Transaction Limit

Payment Types	Individual	Business	Government
	✓	✓	✓
Transaction Limit	<ul style="list-style-type: none"> • There is an upper limit for transactions capped at CLP 6.94 Million (approx. \$10,000) 		

Transaction Currency

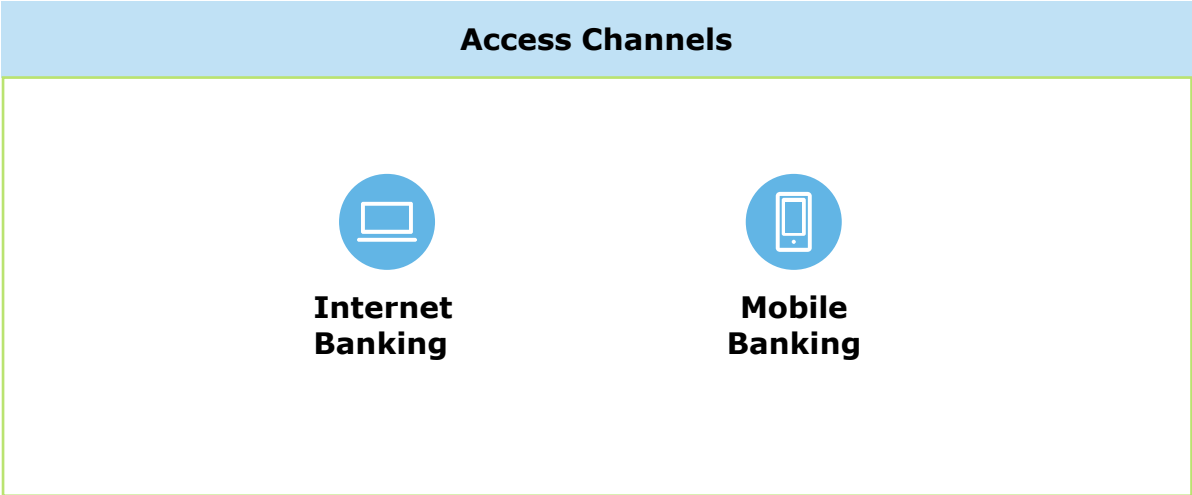
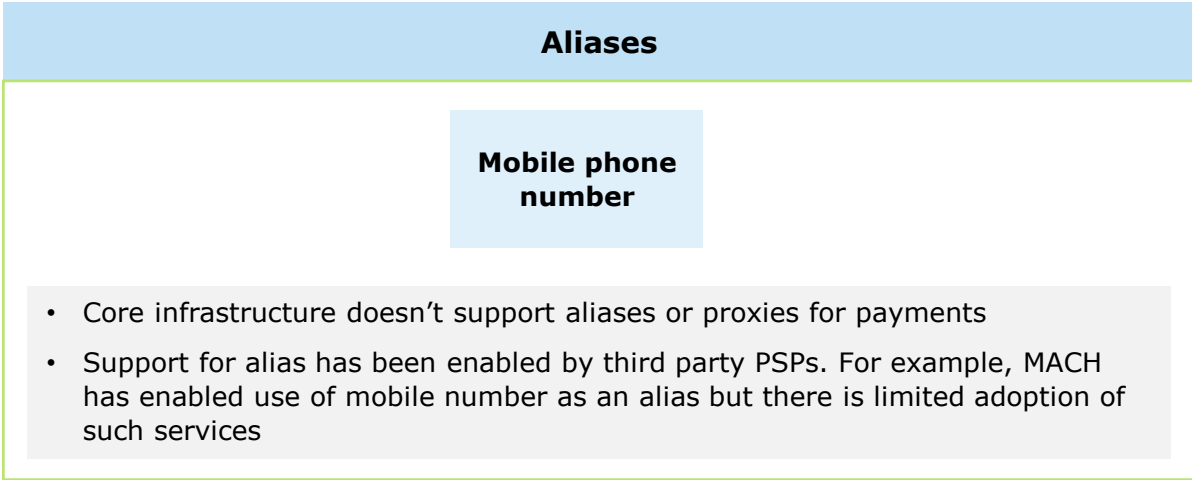
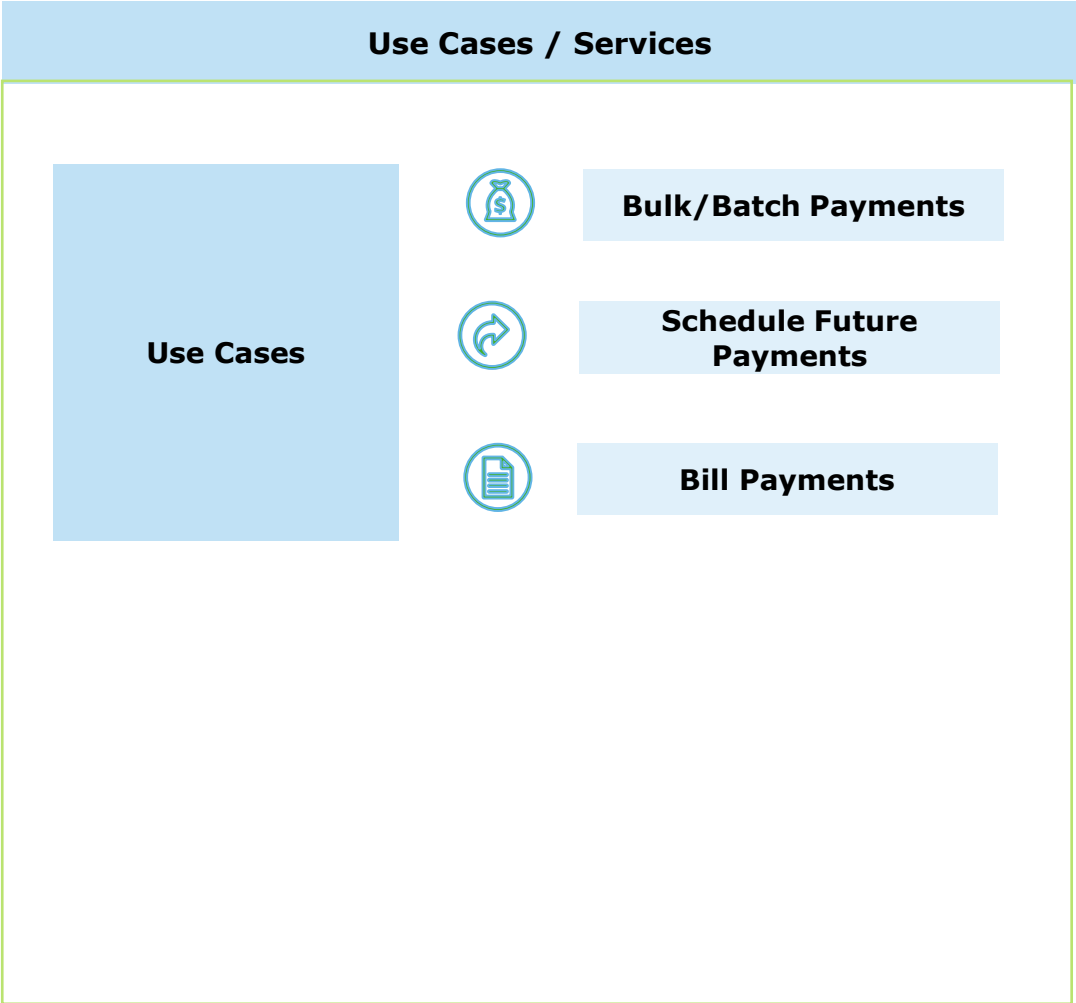
Pesos (CLP)

TEF is restricted to local currency and no cross-border transactions are available

2.4. Aliases, Channels & Use Cases / Services



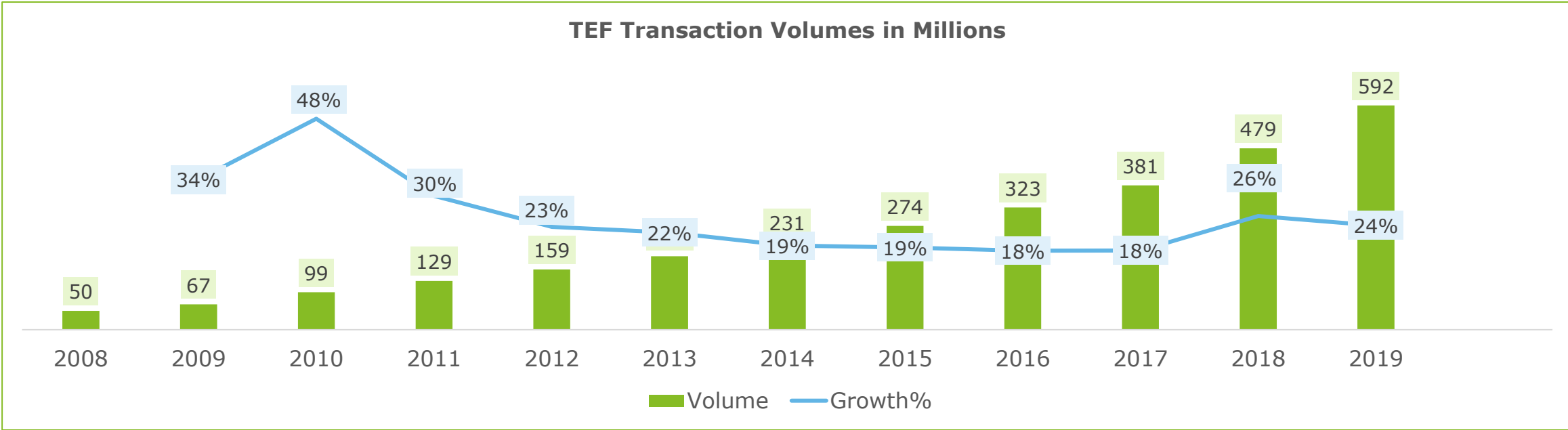
TEF supports use cases / services such as **bulk payments, bill payments and future payments**. Core infrastructure **doesn't support aliases** but third-party PSPs are allowing use of **mobile number** as an alias for payments



3. User Adoption



There has been steady growth in transaction volumes (CAGR 21.24% in last 5 years) over the years. Most of the payments are currently P2P transactions due to lack of overlay services such as Request to Pay.



- Information not available on Transaction Value
- Approximately 80-85% payments are between individual customers
- Bill Payments and Direct Debits are most common services that have seen the highest adoption so far

4. Technical Details and Payment Process

Chapter sections:

4.1. Technical Details | Messaging Format & APIs

4.1. Technical Details | QR code and Customer Authentication

4.2. Payment Process (Customer Registration, Transaction Fulfilment, Liquidity Management and Settlement)



Chapter Summary:

- TEF has adopted **ISO 8583** messaging standard, as it was the known standard when it was implemented
- **QR Codes are not implemented in** Chile though there have been many discussions on facilitating QR payments
- **Participants have to comply with authentication guidelines** as mandated by the central bank. No additional authentication measures were imposed by TEF
- **Open APIs are not supported in TEF**
- **TEF has multiple clearing institutions in place** CCA – for lower value transactions and for high value transactions - LBTR and Combanc
- TEF has adopted a pre-funding deposit model to **mitigate credit and liquidity risk**

4.1. Technical Details | Messaging Format, APIs, QR Code and Customer Authentication



Below are the technical details of TEF covering the **messaging format & use of open APIs**. The messaging standard is ISO 8583 and Open APIs are not allowed

QR Code

ISO 8583

- **TEF system was developed in 2008 and ISO 8583 was the known messaging standard at that time**
- The TEF system was created at a time when ISO 20022 was not a public knowledge, but over the years the awareness about ISO 20022 has increased but there are no plans for implementation

APIs

Open APIs are not allowed

- **Chile follows a closed and limited API landscape**

QR Code

- **There have been many discussions but not any implementations yet**

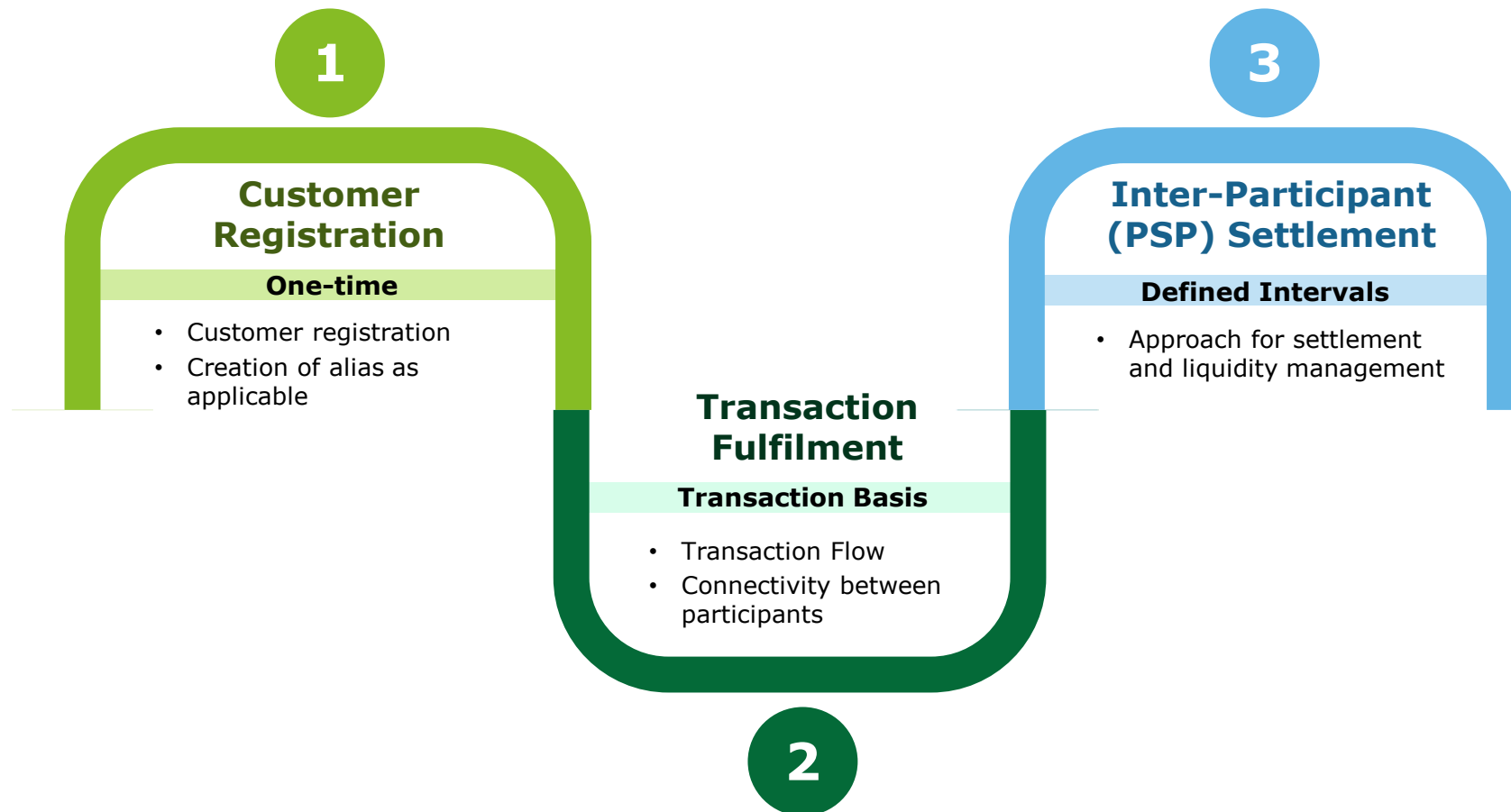
Customer Authentication

- The detailed requirement include:
- To have a technological platform that includes **strong encryption**
 - have at least **two different authentication** factors for each transaction, one of which must be dynamic generation or allocation
 - Establish the requirement for **advanced digital signature for transfers** greater than an amount that the bank determines

4.2. Payment Process



Steps in the payment process include **one-time customer registration, payer-payee transaction fulfilment and inter-participant settlement.** Subsequently, various aspects related to these areas are covered




4.2. Payment Process | Liquidity Management and Settlement



- **TEF has multiple settlement mechanisms in place.** Participants can either choose to clear transactions through Combanc and perform final settlement via LBTR at the end of the day, or they can directly settle their obligations through LBTR
- TEF has adopted a pre-funding deposit model to **mitigate credit and liquidity risk**

Settlement Mechanism

Approach	 Hub	Type Time	Deferred Net Settlement 2 Cycles per day	Settlement Institution	LBTR (Central Bank's RTGS system)
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- Final inter-bank settlement is performed on **Deferred Net basis** using 2 cycles per day.
- The following mechanisms for inter-bank settlement are available:
 - Clearing through Combanc(a private clearing house) and settlement via LBTR at the end of the day
 - Directly settlement through LBTR on deferred net basis
- Non-banks can also send indirect payment instructions through either of these systems

Liquidity Management

- Banks are the major participants in the system and are required to **prefund the central bank accounts** in order to mitigate liquidity risks. Since CCA is not a regulated entity, there are no additional requirements for CCA
- Apart form the prefunding model, banks are required to adopt and implement a Liquidity Management Policy (PAL) aimed at ensuring the timely fulfillment of their obligations, safeguarding liquidity risks both under normal operating conditions and in stress situation. PAL is not specific to TEF system and banks are required to adopt it for fulfilling all obligations
- PAL must also specify the institution's level of tolerance to liquidity risk and include specific management strategies, under normal operating conditions and under defined stress scenarios
- The Central Bank of Chile also provides liquidity to commercial banks through **Open Market Operations** and short term credit through **Standing Facilities**

5. Governance Framework

Chapter sections:

- 5.1. Legal and Regulatory Aspects
- 5.2. Risk Management
- 5.3. Dispute Resolution and Customer Complaints



Chapter Summary:

- The **Electronic transfer of Information and Funds guidelines by SBIF and guidelines by CMF** provides the legal basis for the regulation of payment system
- The CMF has been empowered with **the role of overseer and regulator** of the Payment Systems in Chile. The Central Bank of Chile is more interested in promoting innovation in payments
- **CCA as operator** of the system follows the SBIF guidelines for fraud, money laundering which apply on all participants in Chile
- **No Centralized guidelines** were issued by the central bank for dispute resolution and customer complaints
- Centralized guidelines have been issued for liquidity management for all the participants

5.1 Legal, Regulatory and Governance Aspects



The guidelines provided from time to time by CMF and Electronic transfer of Information and Funds guidelines by SBIF are the major regulations constituting legal framework for TEF

Institutional and Governance Framework

Legal Framework:

CMF guidelines & Electronic Transfer of Information and Funds Guidelines by SBIF

Regulator and Overseer

CMF & Central Bank Of Chile

Operator

CCA

Primary regulations:

- CMF is the legal successor of SBIF. All regulations issued by SBIF are now under the purview of CMF. Chapter 1-7 on Electronic Transfer Of Information And Funds constitute the legal framework for TEF.
- **Electronic Transfer of Information and Funds guidelines by SBIF** have detailed guidelines that are included in the domain of
 - **Authentication:** The electronic channels offered by banking institutions to carry out these transfers must have appropriate authorization privileges and authentication measures, logical and physical access controls, adequate security infrastructure to observe compliance with the restrictions and limits established for activities. internal and external, as well as to take care of the integrity of the data of each transaction and the adequate privacy of the records and information of the clients. For these purposes they must:
 - have a technological platform that includes strong encryption
 - have at least two different authentication factors for each transaction, one of which must be dynamic generation or allocation
 - establish the requirement for advanced digital signature for transfers greater than an amount that the bank determines
 - **Fraud Preventions:** Banks must have systems or procedures that allow identifying, evaluating, monitoring and detecting in the shortest possible time those operations with patterns of fraud, in order to mark or abort potentially fraudulent activities or operations, for which they must establish and maintain, in According to the dynamics of frauds, known patterns of these and behaviors that are not associated with the client.
 - **Money Laundering:** Banking institutions should have robust authentication schemes mechanisms or tools for identification, risk assessment, monitoring and detection of money laundering
- **Guidelines provided by CMF** to include
 - Security and Resilience
 - Liquidity Risk Management
- In addition detailed guidelines can be issued by CMF across domain

5.1 Legal, Regulatory and Governance Aspects



CMF is the regulator and performs all supervisory roles after the merger with SBIF. Central Bank of Chile doesn't issue any guidelines to financial institutions with regards to TEF

Institutional and Governance Framework

Legal Framework:

CMF guidelines & Electronic Transfer of Information and Funds Guidelines by SBIF

Regulator and Overseer

CMF & Central Bank Of Chile

Operator

CCA

As per the CMF Website

• Commission for the Financial Market

- The Financial Market Commission (CMF) is a decentralized public service, of a technical nature, endowed with legal personality and its own assets, which is related to the President of the Republic through the Ministry of Finance
- It is the regulatory and supervisory entity of the Chilean financial market, and has under its supervision more than 70% of the financial assets regulated in the country
- The Commission for the Financial Market (CMF) has among its main objectives to ensure the proper functioning, development and stability of the financial market, facilitating the participation of market agents and promoting the care of public faith
- The Commission for the Financial Market is responsible for the supervision of entities of the securities markets, insurance, banks and financial institutions and of other entities established by law

• Central Bank of Chile (CBC)

- Central Bank of Chile doesn't issue any guidelines to financial institutions with regards to TEF. It operates the RTGS system LBTR through which final settlement takes place. Therefore, it issues guidelines on Liquidity Management Policy to the commercial banks
- Central Bank of Chile also promotes innovations in financial markets and specifically focused more robust clearing of retail payments

5.1 Legal, Regulatory and Governance Aspects



CCA as the system Operator of TEF has published rules on the operations which is mandatorily applicable on all the participants of the system



As per the CCA Website

- CCA (a private ACH) is owned by three banks: Banco de Chile, Banco Santander, Banco de Crédito e Inversiones. These three banks have equal shareholding in CCA
- CCA (Automated Clearing Center) was created as the **Bank Business Support Company** ("SAG") created in accordance with **Article 74 of the General Banking Law** to expand the banking business scope of electronic transactions, increasing the quality and security of payment systems and offering the rest of the community alternative channels for payment. development of electronic means of payment
- Consequently, CCA operates solely as a communications switch to receive, record and distribute various instructions and information from the financial institutions, intended to carry out electronic transfer operations as authorized by current regulations

5.2 Risk Management



The fraud and liquidity risk management guidelines along with money laundering and cyber security mechanisms have been listed below

As per the SBIF Guidelines

Fraud Risk

- Banks must have systems or procedures that allow identifying, evaluating, monitoring and detecting in the shortest possible time those operations with patterns of fraud, in order to mark or abort potentially fraudulent activities or operations, for which they must establish and maintain, in according to the dynamics of frauds, known patterns of these and behaviors that are not associated with the client.
- These systems or mechanisms must allow having a comprehensive and timely view of the client's operations, of the non-client (for example in access attempts), of the access points (for example IP addresses, ATM or others), make the monitoring and correlating events and / or frauds in order to detect other frauds, points at which they are committed, modus operandi, and points of commitments, among others.

KYC / AML

- Electronic fund transfers within the financial market can be used as one more tool to carry out money laundering. In order to mitigate the risk of this practice in this way, it is necessary that banking institutions, complementing the robust authentication schemes, have mechanisms or tools for identification, risk assessment, monitoring and detection of money laundering, to facilitate two main aspects : the detection of predefined patterns in the money laundering operation and transactional tracking to detect emerging forms or practices by analyzing behavioral deviations from the standards of each of the clients.

Liquidity & Settlement Risk

- The Central Bank regulates the general liquidity requirements of Commercial Banks. These regulations and guidelines, amongst others:
 - Assign responsibilities to the Commercial Bank's Board in Liquidity Management.
 - Require the Bank to comply with Basel III's Liquidity Coverage Ratio
 - Require the Bank to measure terms mismatches
 - Require the bank to preform stress tests and have contingency plans in place

Cyber Security

- CCA Works through a private network and uses VPN for authentication. This private network is used only by financial institutions.
- In addition, SBIF Guidelines that are being followed and additional rules for business continuity are being used'

5.2. Dispute Resolution and Customer Complaints

Customer Complaints

- Participants are supposed to **formulate their own dispute resolution** and **customer complaint procedures** to ensure fair redressal

Inter-Bank Dispute and Customer Complaints

- These topics are not regulated by the Central Bank; however, they can be part of the internal rules of operations of CCA.

6. Annexure



Chapter sections:

6.1. Key Features

6.1. Key Features

Features

Key Highlights

	Operating hours	• 24*7 including weekends and bank holidays
	Payment speed	• Real time (<10 seconds)
	Transaction limit	• CLP 6.94 Million (approx. \$10,000)
	Alias	• Mobile number
	Channel	• Internet Banking and Mobile banking
	User charges	• Information not available
	Infrastructure setup	• New System
	Messaging format	• ISO 8583
	Use of Open APIs	• Open APIs not available
	Authentication	• CMF defined guidelines

Payment types & Use Cases/Services

Individual	Business	Government
	Merchant	
		Bulk / Batch Payment
	Cross-border payments	
		Request to Pay
	Schedule future payments	
		Bill payments
	Direct Debits	

Settlement

Approach	Hub	RTGS	Distributed clearing
Type Time	Deferred Net Settlement	2 cycles per day	

Source: CCA website | ACI Report | BIS Report | FIS Report | Payments NZ Report | AFP Report