



CCP as an opportunity to develop capital markets

Market perception and impact of CCPs on regional capital markets

White Paper

Structure and content

1.	Motivation and approach to the brief study.....	4
2.	CCP background	5
2.1.	Functionality and benefits	5
2.2.	Development and adoption.....	6
3.	Market analysis.....	7
3.1.	CCP are a standard in vital capital markets	7
3.2.	CCP effects on trading and membership.....	9
3.2.1.	Quantitative research.....	9
3.2.2.	Key insights from market interviews	11
4.	Case for a CCP in smaller markets	13
5.	Situation in a specific market without CCP: example Prague Stock Exchange (PSE)	14
5.1.	Capital market and Stock Exchange	14
5.2.	Member structure.....	14
5.3.	Impact of CCP on members and potential members	16
5.4.	Strategic options and recommendation	18
5.4.1.	Overall assessment of the situation.....	18
5.4.2.	CCP as a strategic opportunity	19
5.4.3.	Recommendation.....	19
6.	Perspective: Case for a pan CEE CCP offering	21

Abstract

Central clearing is becoming increasingly an integral part of financial systems in developed capital markets. All Western European and select CEE economies have adopted CCPs which are in compliance with EU regulation. For smaller capital markets and exchanges the introduction of a CCP poses challenges organisationally, financially and in terms of its impact on today's and future business potential in trading and membership. Through market and desk research and interviews with both trading houses and exchanges this study sheds light on the expected impact a CCP will have on membership and trading. It appears that the introduction of a CCP has the potential to unlock access to international trading activity and provide developing capital markets a chance to establish both a more modern market infrastructure and increase both liquidity and access to capital to fuel the financing of future growth. The introduction of a CCP alone however is merely a prerequisite which needs to be complemented with a holistic approach in strategically align with the needs of international and local members to facilitate increased liquidity. This involves an assessment of the entire trading process and value chain as well as the combined fee and cost structure of the entities involved.

The Vienna based CEESEG group includes two exchanges and a shareholding in CCP.A. As a group it is well positioned to provide to smaller capital markets a combined infrastructure offering including the CCP functionality and a state of the art trading technology.

1. Motivation and approach to the brief study

Since the introduction of the CCP at Vienna Exchange (WBAG), it has experienced a significant growth in the number of international market participants (members). This was accompanied with a strong increase in trading, also from High Frequency Trading and consequently an improvement of trading quality. WBAG today is itself a shareholder of the Austrian CCP.A.

A range of smaller exchanges in the CEE region today operate without a CCP. Among them Prague Stock Exchange (PSE), a close partner of WBAG and likewise a part of the CEESEG group.

The aim of the study is to find basic answers to the questions

- What is today's CCP market structure?
- What are strategically relevant considerations for an individual exchange?
- Should CEE exchanges without CCP introduce the functionality, especially PSE?
- What are conditions under which an introduction makes sense?
- Can there be a scalable pen CEE offering by CCP.A?

This study takes a three step approach as laid out in Figure 1: Three step approach in the study.

	Fact finding		Structuring and evaluation	Recommendation and documentation
	Internal/research	Clients		
To do and goal	<ul style="list-style-type: none"> Review/analysis of internal data (business structure, clients and behavior) Assess internal knowhow and perspectives on CCP market and client needs Derive hypothesis on key question areas in prep. of client interviews 	<ul style="list-style-type: none"> Trading houses <ul style="list-style-type: none"> Value proposition Differences by client segments Impact on membership/trading Exchanges <ul style="list-style-type: none"> Attractiveness/rationale of CCP usage Who is likely to use a "3rd party" CCP in new markets? 	<ul style="list-style-type: none"> Analysis of results Derive relevance of CCP for trading activity and membership for different exchange types Derive business impact of a CCP offering by CCP.A <ul style="list-style-type: none"> In Prague For other potential exchanges 	<ul style="list-style-type: none"> Derive recommendation for potential CCP business for other exchanges Documentation of results and findings
Approach	<ul style="list-style-type: none"> Internal interviews/workshops (WBAG, CCP.A, PSE, CSD Prague) Research (desk & studies) Use of both internal and external sources 	<ul style="list-style-type: none"> Structured interviews questionnaires with <ul style="list-style-type: none"> selected trading houses¹ selected exchanges (no CCP or recently started) 	<ul style="list-style-type: none"> Analysis, internal discussions and evaluation of results Condense outcome Quantitative analysis 	<ul style="list-style-type: none"> Decision proposal Documentation of results "White Paper"

1. Local members of exchanges, large international trading houses and non-members

Figure 1: Three step approach in the study

2. CCP background

2.1 Functionality and benefits

Central clearing as provided by a CCP reduced counterparty risk in a financial system. The CCP “interposes itself between the counterparties to the contracts traded on financial markets, becoming the buyer to every seller and the seller to every buyer”¹. Thereby the CCP becomes the sole entity in which all counterparty risk is concentrated (see Figure 2: Basic functionality and setup with and without CCP; source: EBRD).

The massive accumulation of risk in the CCP it is critical to ensure a sufficiently high capitalization of the CCP. Additionally CCPs require superior risk management skills and a strict regulatory governance in order to ensure its functioning in heavily stressed market conditions.

Risk management is based on two main pillars:

- Strict criteria and processes for member selection
- State of the art risk modelling practices

In case of a loss, CCPs apply multiple layers of defence to absorb the impact of the default. This includes both a default fund replenished by local CCP members and at a later stage can include a default fund across a number of capital markets. Additionally, CCPs have sufficient liquidity resources to perform their clearing services at all times. The liquid resources usually include access to central bank liquidity, secured and unsecured credit lines with different banks and can be used to bridge the liquidity needs of the CCP in case of default on payment of one or more clearing members.

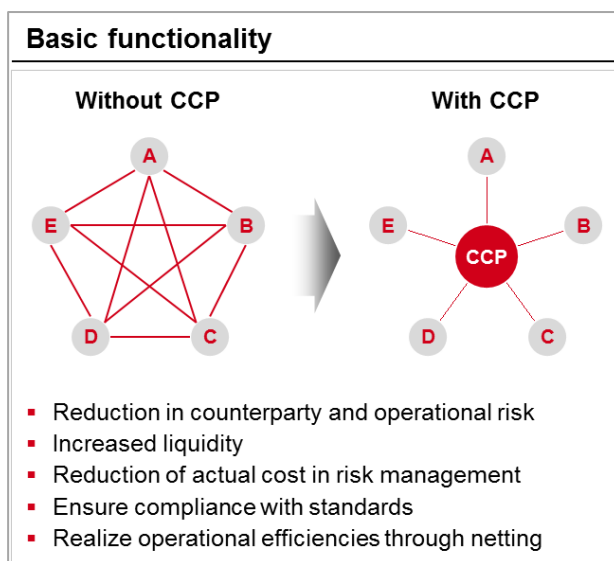


Figure 2: Basic functionality and setup with and without CCP; source: EBRD

¹ EU regulation No. 648/2012

2.2 Development and adoption

Over past decades and especially following the global financial crisis in 2008 and 2009 CCPs have increasingly become a standard for most developed capital markets. Regulation has and continues to advocate strongly for and demands a CCP infrastructure to improve the stability and resilience of capital markets. Many large trading houses have consequently adopted the practise of requiring a CCP in any market they actively engage in as an exchange member.

The EU has introduced a set of regulations for CCPs which aim to harmonize CCP practices across EU capital markets. For CEE markets in the EU the adoption of a CCP is likely to become a regulatory necessity in coming years.



3. Market analysis

3.1 CCP are a standard in vital capital markets

A mapping of the CCP landscape in Europe reveals that by now all developed capital markets have a CCP infrastructure in place. In Eastern Europe also Poland, Hungary, Estonia, Lithuania and Latvia have adopted the use of a CCP while further countries are contemplating the move. It has essentially become a standard element of modern financial systems (see Figure 3: European CCP landscape).

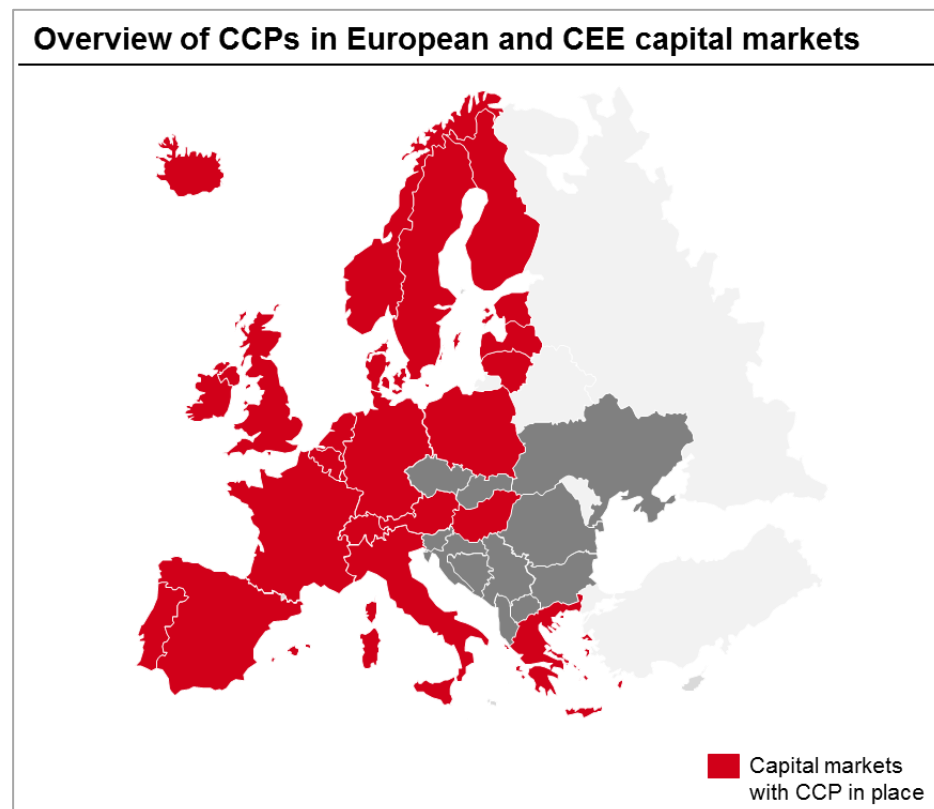


Figure 3: European CCP landscape

There is an increasing regulatory push towards CCPs:

- In the aftermath of the financial crisis in 2007 central clearing is seen as an integral feature of capital markets in order to reduce counterparty risk in the financial system
- Increasing regulation for CCPs is imposed by EMIR, in particular definition of EU-wide standard requirements regarding capital, risk management and governance
- CCPs need to be authorized by ESMA in order to clear market transactions in EU markets. Also 3rd Party CCPs (located outside the union) have to be recognized by ESMA to provide services for trading venues and clearing members in the union.



Key trends in recent years have been

- The rise of competitive clearing options in several European markets with more than one CCP offering clearing services for the same market place and free choice of CCP to market members
- The development of pan-European CCPs offering clearing services in multiple European capital markets
- The requirement for interoperability between CCPs with various benefits to market participants, in particular reducing risk exposure, liquidity risks and complexity as well as increasing netting effects
- The explicit requirement of most large international trading houses for a CCP to be in operation at every exchange they are engaged as direct members

Hence increasingly the CCP landscape becomes more standardized and smaller capital markets are provided with choices to use existing CCP models as clients to CCP service providers. This use of CCP infrastructures across multiple markets allows to realize significant synergies and economies of scale and significantly reduces the cost of implementing a CCP for individual financial markets.

The European CCP market is very concentrated with Euro.CCP and LCH being the dominant players (see Figure 4: Ranking of European CCPs by clearing volume).

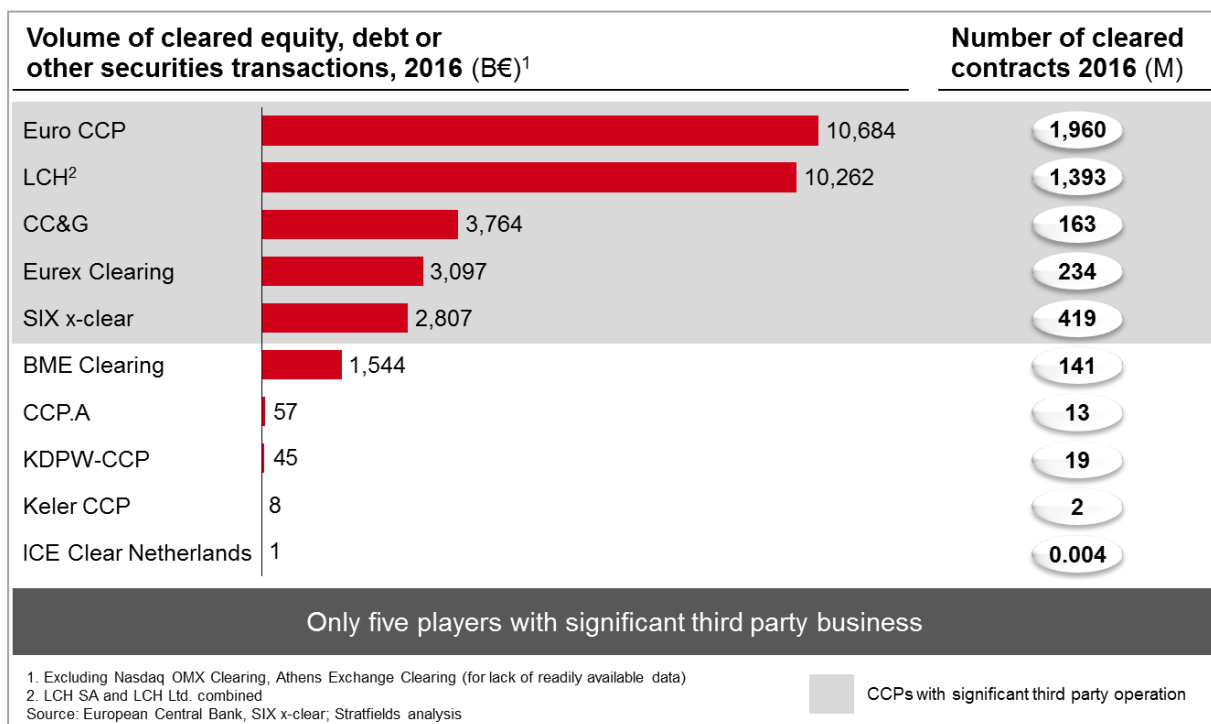


Figure 4: Ranking of European CCPs by clearing volume

Competition in the CCP market is increasing. Today five CCPs have a significant third party business.

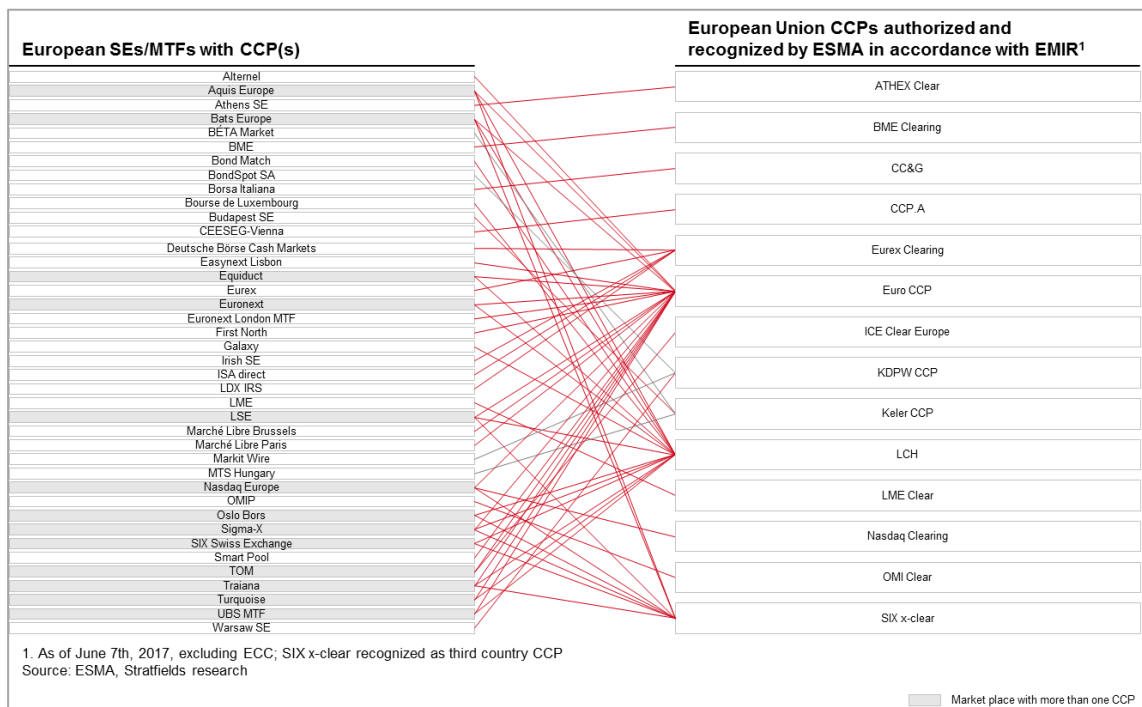


Figure 5: Exchange CCP relation Europe

3.2 CCP effects on trading and membership

3.2.1 Quantitative research

Capital markets in the CEE region with a CCP have a significantly higher trading volume relative to GDP than those markets without a CCP (see Figure 6: Benchmark of CEE markets – trading volume relative to GDP).

While there are also other factors causing this pattern, e.g. it tends to be the larger economies that both have a CCP and a more developed capital market, the data shows that this alone does not explain the clear pattern.

The data suggests that the presence and availability of an EMIR compliant CCP helps to unlock capital market activity in an economy.

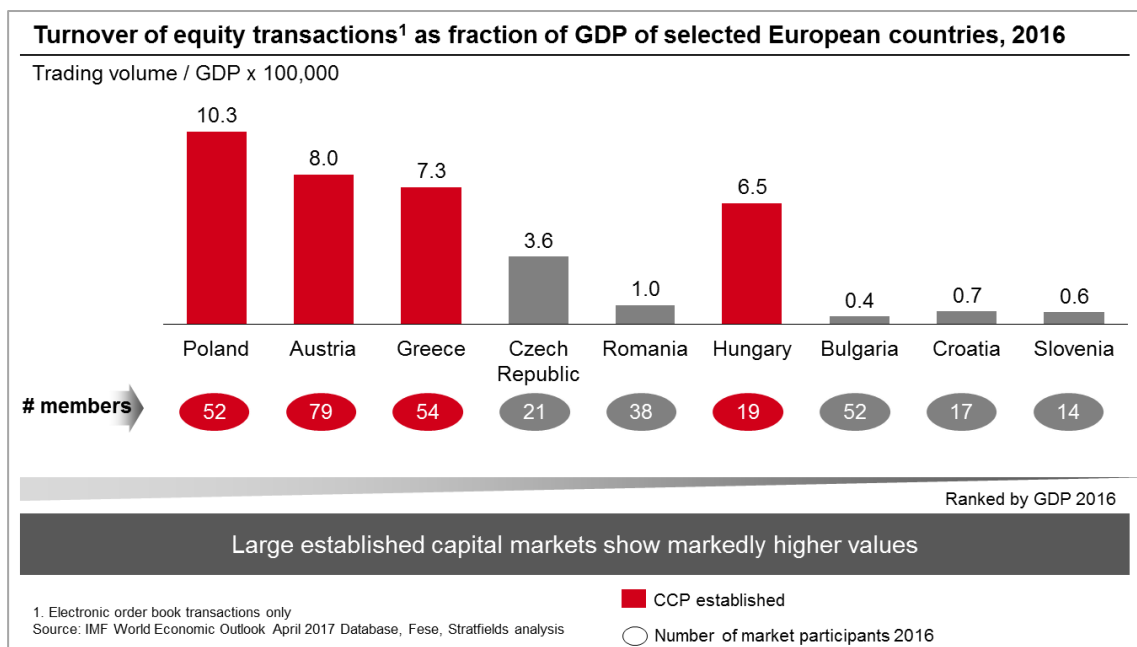


Figure 6: Benchmark of CEE markets – trading volume relative to GDP

There appears to be a similar pattern when comparing membership of large international trading houses by capital market. It is those markets with a CCP that show the longest list of large international investment banks as members in equity trading (see Figure 7: Major international members at selected CEE markets). Again, this likely also reflects a correlation between size of a market and existence of a CCP.

Major international market participants – Markets with CCP			
Warsaw SE	CEESEG-Vienna	Athens SE	Budapest SE ¹
<ul style="list-style-type: none"> BNP Paribas Credit Suisse Deutsche Bank Goldman Sachs HSBC ING J.P. Morgan Merrill Lynch Morgan Stanley Raiffeisen Centrobank Société Générale UBS Unicredit Wood & Company 	<ul style="list-style-type: none"> ABN Amro BNP Paribas Citigroup Credit Suisse Deutsche Bank Goldman Sachs HSBC J.P. Morgan Merrill Lynch Morgan Stanley Nomura Société Générale UBS Unicredit Wood & Company 	<ul style="list-style-type: none"> Bank of America BNP Paribas Citigroup Credit Suisse Deutsche Bank HSBC Merrill Lynch Société Générale UBS 	<ul style="list-style-type: none"> Erste Investment Interactive Broker Raiffeisen Centrobank Société Générale Wood & Company
Major international market participants – Markets without CCP			
CEESEG-Prague ²	Bucharest SE	Bulgarian SE	Cyprus SE
<ul style="list-style-type: none"> Raiffeisen Centrobank Société Générale Wood & Company Unicredit 	<ul style="list-style-type: none"> Erste Group Raiffeisen Centrobank Wood & Company 	<ul style="list-style-type: none"> Wood & Company 	–

1. Additionally BNP Paribas, Deutsche Bank, Goldman Sachs, J.P. Morgan, Merrill Lynch, Nomura members for debt securities but not equities
2. Česká treated as local trading house
Source: Stratfields analysis

Figure 7: Major international members at selected CEE markets

3.2.2 Key insights from market interviews

Market interviews were conducted with three groups of institutions: 1) Large international trading houses and investment banks, 2) Local trading houses, 3) Exchanges with and without CCP

Key insights from market interviews – summary

Large international trading houses

- All respondents confirmed that direct membership at any trading venue and exchange will require a CCP
- This is both on the basis of actual risk management considerations as well as a general drive to standardize procedures in the trading activities across the company
- Smaller markets like Czech Republic are rarely covered by a dedicated individual or team at a trading desk but rather as part of a CCP or developing market team
- At exchanges without a CCP, client orders will be directed via a broker or intermediary. These trading houses consequently do not conduct high frequency trading activities in markets without CCPs
- The business decision of membership at a trading venue is influenced by a number of factors. The two most important ones seem to be
 - Exchange/trading venue meets the formal requirements, including availability of a CCP
 - Market attractiveness (size of the economy and capital market, attractive stock, liquidity)
- Not only is the introduction of a CCP a prerequisite for membership for almost all large international players. Most also explicitly stated that the introduction of the CCP would significantly increase their likelihood of becoming a member (see Figure 11: Statements by international trading houses concerning their attitude towards the introduction of a CCP)

Local trading houses which are already members today

- See the potential of additional trading business entering the market from abroad but expect this to be mainly HFT
- Local brokers who today act as intermediaries for international houses are concerned about losing brokerage business from clients as they become direct members
- Except for the larger local trading houses it is expected that the CCP will cause additional direct and indirect cost through CCP membership fees, equity requirements, need to implement changes to their trading and settlement infrastructure which today is tuned to the current setup
- It is seen as crucial that they are being offered affordable ways to outsource the fulfilment of conditions to service providers such as GCMs
- No immediate positive effect on the business expected except for the possibility of the local market becoming more liquid and will be easier to access internationally



Exchanges having implemented a CCP

- Exchanges which have already implemented a CCP stress that they see it as an important element to ensure that the capital market meets future requirements of clients and investors
- In most cases these markets have seen an increase of membership at the exchange, especially from international participants
- Also trading volumes tend to have increased in these markets in the years following the CCP introduction
- It is typically assumed by these exchanges that the introduction of the CCP was an important factor in the positive development of the capital market. To what exact degree it played a role in attracting membership and business is usually hard to determine
- The general understanding seems to be: without CCP a positive future development is difficult, however other factors and requirements need to be met (e.g. protection of the market, attractiveness of trading conditions, etc.)
- Also the size of the market plays a role in how much trading potential can be unlocked through a CCP

Exchanges operating today without CCP

- Many smaller exchanges without a CCP are considering the introduction
- Concerns are the significant management and regulatory challenges and costs associated with implementing a CCP alone. Some exchanges therefore consider using existing infrastructures of larger CCPs
- Some smaller markets are essentially determined to introduce a CCP while others see the need but are uncertain about the balance of benefits and costs

Vienna Exchange serves as a very positive example for how international membership has increased significantly following the introduction of the CCP (see Figure 8: Development of international members at Vienna Exchange). CCP Austria was founded in August 2004 and commenced operations on January 31 2005.

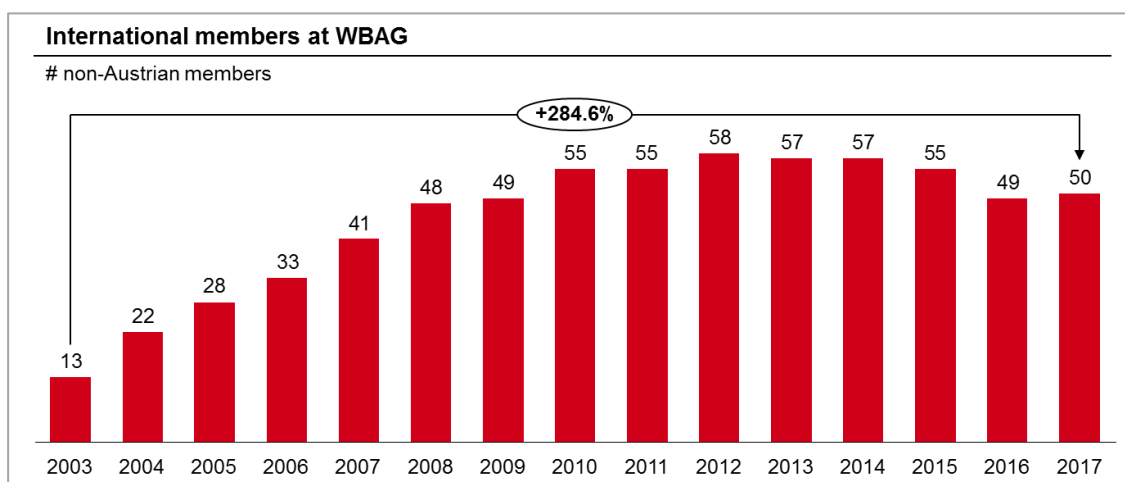


Figure 8: Development of international members at Vienna Exchange

If only a fraction of this development can be realized in other capital markets with an improvement of trading, clearing and settlement infrastructure it would significantly increase international reach and liquidity.

4. Case for a CCP in smaller markets

In the consideration of whether and possibly when to introduce a CCP to a market, a range of aspects needs to be addressed. Among them shall be highlighted:

- **Regulatory** environment and development and their impact on
 - Today's and future post trade requirements for the exchange in the specific country in question (EU and local)
 - Today's post trade infrastructure and practise in the specific country
 - Regulatory and standardization trends among the main sources of orders for the specific market (existing members, trading houses which are not members but send significant orders via intermediaries)
- **Strategic** outlook of the local economy and capital market
 - Mid-term development potential of the capital market, especially need and potential for international liquidity to the market
 - Role of a CCP to enable to access these international sources of liquidity
 - Impact on today's trading members (client trading, HFT, intermediaries):
 - Cost: CCP fees, IT adaptations, additional processes and staff requirements
 - Increased operational requirements: regulatory process and risk management processes
 - Protection of local membership either in their ability to meet the CCP membership requirements or the availability of a high quality and affordable indirect solution for smaller members (e.g. through GCM offerings in the market)
 - Actual potential to unlock additional international membership and trading in the short- and mid-term
 - Alternative long-term strategic perspective for the trading place: is there any sound long term strategy for the market place without a CCP?
 - Impact of a CCP introduction on existing revenue sources in the exchange environment (e.g. CSD, trading income, etc.)
- **Investment** in setup and running cost
 - Investment in setting up the CCP with a suitable partner
 - Running cost of the CCP (and consequently resulting fees for members)
- **Timing and implementation:**
 - If a CCP is considered desirable: what is the best way to implement it and when is the ideal timing in the context of other initiatives and developments in the market?

While large markets such as Poland have been able to setup and implement a CCP by themselves this will be significantly more difficult for the smaller markets that remain without CCP in the CEE region today. Moreover it seems to be economically not viable as set out in section 0.

5. Situation in a specific market without CCP: example Prague Stock Exchange (PSE)

5.1 Capital market and Stock Exchange

The Czech capital market today operates with Prague Stock Exchange as the central trading venue. A significant share of trading also takes place OTC. Compared to the size of the economy the capital market and trading can be considered not developed to its potential. Market capitalization, trading volume and liquidity and international investment still have ample potential for development.

The number of members has decreased over the past years while international membership is very limited. Liquidity in the market is low with only three to four stocks being supported by reliable liquidity. Trade is massively concentrated on two members.

Traditionally high dividends in Czech stocks favour buy-and-hold investment strategies with many investors.

Overall the Czech equity capital market has experienced little positive impulses. The event of a large IPO at PSE has not translated into an increase in trading activity.

5.2 Member structure

The 21 members of the exchange are mostly local, with Raiffeisen Centrobank, Unicredit, Wood & Company and Société Générale being the only significant international trading participants. Completely absent are large global trading houses, especially also high frequency traders. International investment flows into the market primarily through intermediaries.

65% of trading is concentrated to the two largest brokers. The largest player alone holds almost 50% of trading creating a massive dependence on a single broker, bundling most of international flow from trading houses not directly connected to PSE.

PSE has participated in global growth of trading but this growth can be entirely attributed to the single dominant broker, thereby increasing the concentration risk associated with it (see Figure 9: Trading volume at PSE by members).

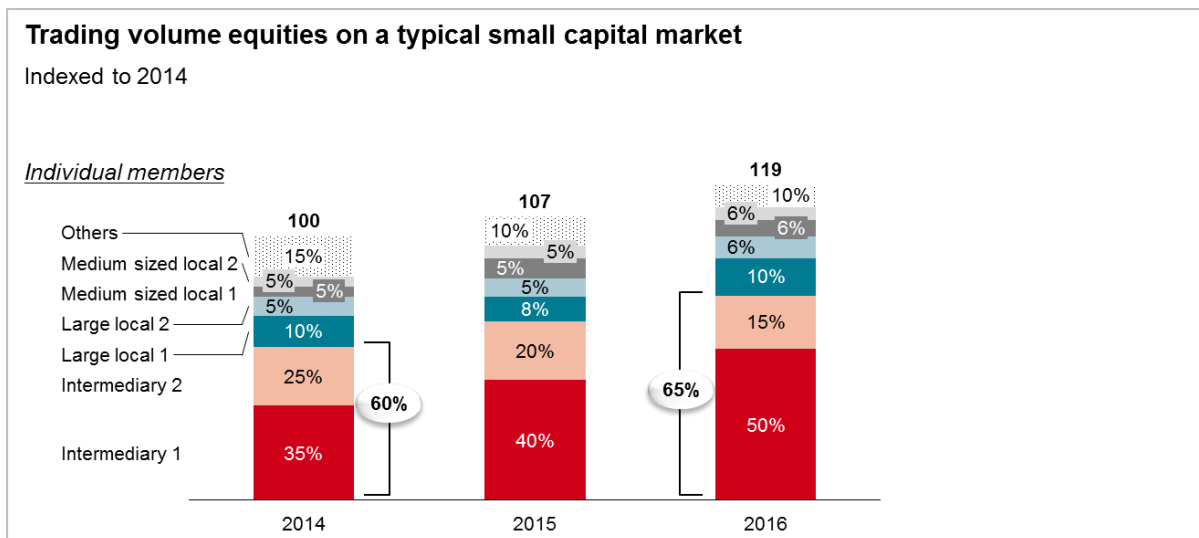


Figure 9: Trading volume at PSE by members

A CCP would also reduce the impact of a potential default through CCP protection and reduce concentration risk through potential attraction of international membership to diversify the counterparties for international orders.

Members can be grouped into five main categories of trading participants: 1) Intermediaries, 2) Large local members, 3) Small local members, 4) Large international members, 5) Smaller international members (see Figure 10: Groups of members at a smaller exchange, e.g. PSE).

Groups of trading clients	Number of members (exampe Prague)	Combined share of trading volume	Comment
Intermediaries	2	<div> <div></div> <div>≥ 65%</div> </div>	<div> <div></div> <div> <ul style="list-style-type: none"> Dominate the market Key source of international flow today </div> </div>
Large locals	5	<div> <div></div> <div>20%</div> </div>	<div> <div></div> <div> <ul style="list-style-type: none"> Relatively small role in trading Kept position in past three years </div> </div>
Small locals	10	<div> <div></div> <div>12%</div> </div>	<div> <div></div> <div> <ul style="list-style-type: none"> Numerous but irrelevant in terms of trading volume </div> </div>
Large internationals	1	<div> <div></div> <div>1%</div> </div>	<div> <div></div> <div> <ul style="list-style-type: none"> Mostly absent </div> </div>
Smaller internationals	1	<div> <div></div> <div>2%</div> </div>	<div> <div></div> <div> <ul style="list-style-type: none"> Mostly absent </div> </div>

Figure 10: Groups of members at a smaller exchange, e.g. PSE

Intermediaries and local members represent 97% of the trading volume in Prague. The top three members alone constitute around 75% of trading at PSE, used as an example exchange.

5.3 Impact of CCP on members and potential members

Feedback from international trading houses which are not yet members is consistently in favour of the introduction of a CCP in a new market. For them a CCP is a prerequisite to even consider becoming a member. A CCP is stated to increase the probability for these international banks to become members at the specific exchange, some even state they would become members after introduction (see Figure 11: Statements by international trading houses concerning their attitude towards the introduction of a CCP). Especially the fact that most relevant international banks already are members of CCP.A in Austria, an additional CCP membership for a new market operated by CCP.A would pose a significantly lower hurdle. The advent of international membership promises both a better diversification of order flow as well as a significant increase of trading, especially due to additional high frequency trading.

Trading house		Position of international trading house concerning CCP introduction				
Name or description	Type (MM, agent)	No relevance	CCP significantly increases likelihood of membership	Stated to become member with CCP	Commitment to become member with CCP	CCP prerequisite for membership
1. Interactive Brokers	Agent		✓		✓	✓
2. Hudson	MM			✓		✓
3. Tower Research Cap.	MM			✓		✓
4. ABN Amro	GCM					✓
5. Citibank	Agent			✓		✓
6. Deutsche Bank	Agent		✓			✓
7. J.P. Morgan	Agent		✓			✓
8. Erste Group	Agent, MM			✓		✓
9. Merrill Lynch	Agent					✓
10. Unicredit	Agent		✓			✓
11. BNP Paribas S.A.	Agent			✓		✓
12. Morgan Stanley	Agent	Strong relationship with Wood & Company, likely to join among the last				✓

Source: Interviews with international banks and trading houses

Figure 11: Statements by international trading houses concerning their attitude towards the introduction of a CCP in a specific CEE market

Growth in investment (buy side) trade is also possible but less certain. Only few international banks have a trading desk or personnel dedicated to smaller markets. Thus much of today's investment trades are linked to indices and happen already today through intermediaries.

Index trading could grow if the CCP helps to increase the probability for a developing economy to eventually become classified as a developed market. An EMIR compliant CCP will surely improve the score on the dimension of "stability of the institutional framework" which is used by MSCI in its country classification.



For existing members the picture is more differentiated (see Figure 12: Expected impact and considerations on CCP for different member categories).

Groups of trading clients	Opportunity/challenge related to CCP introduction	Hypothesis for reaction on CCP introduction	Potential impact
Intermediary	<ul style="list-style-type: none"> Increased cost burden Own revenues potentially threatened by CCP Lose brokerage business short-term to new members Large influence because of business weight today 	<ul style="list-style-type: none"> Can handle requirements Will remain members Need to be involved in CCP-set-up 	
Large local	<ul style="list-style-type: none"> Increased cost burden Significant IT challenges Relatively large influence because of business weight today 	<ul style="list-style-type: none"> Can handle requirements Remain members Enjoy long-term benefits 	
Small local	<ul style="list-style-type: none"> Additional cost of direct membership severe if not prohibitive Might fail to meet admission criteria of EMIR compliant CCP Significant IT challenges 	<ul style="list-style-type: none"> Solution needed to shield them from costs and keep as members (GCM, Agent) Some might drop out 	
Large international	<ul style="list-style-type: none"> Open up new direct membership potential from international trading houses The few internationals are typically already used to international CCP requirements (and already members in Vienna) 	<ul style="list-style-type: none"> Will handle requirements and costs Additional members and trading volume 	
Smaller international	<ul style="list-style-type: none"> Mostly already members in Vienna Additional players enabled to join Need for remote membership capability 	<ul style="list-style-type: none"> Existing members likely to stay New members to local exchange from Vienna 	
Clearing members	<ul style="list-style-type: none"> Play crucial role in today's clearing Well positioned to play an even greater role in a CCP environment 	<ul style="list-style-type: none"> Expect more business as a GCM with a CCP Strong supporters 	

Source: Interviews with members, local exchange, WBAG Sales, CCP.A

Figure 12: Expected impact and considerations on CCP for different member categories

In summary it is expected that:

- **Large Intermediaries:** would most likely cope with the incremental burdens imposed by a CCP. A large intermediary in particular noted that this causes them little worry. They are expected to lose intermediary business to new international members as they join. In the longer run they would however have the opportunity to become beneficiaries of a more vital market.
- **Large locals:** will face extra cost burdens and potentially IT adaptations. They do not expect an immediate benefit rather a reduction of margins due to the prospect of higher liquidity in the market. They are expected to handle the challenge and become CCP members.
- **Small locals:** Additional cost associated with CCP introduction is severe for these players. Also some of the smallest might fail to meet criteria to become direct CCP members. If an affordable and practicable alternative approach such as the service of a GCM is provided this is expected to be a solution of most to stay members at the local exchange.
- **Large internationals:** Only a CCP will enable most of them to become direct members who are not yet already. Given the CCP.A membership already in place for Vienna, incremental additional costs for on boarding are limited.
- **Small internationals:** most potential members are already CCP.A members. Existing members of the exchange are expected to stay.
- **Additional group – Clearing Members:** are expected to benefit greatly from a CCP introduction. They would be needed to serve in a GCM role. It is also crucial to involve them closely in the process and to ensure membership of the key partners for international members.

5.4 Strategic options and recommendation

5.4.1 Overall assessment of the situation

It is widely expected that the Eastern European countries will over the coming years show the strongest growth among economies in Europe while they set out to gradually catch up with their Western European peers.

This catching up process will require massive investment in the development and modernization of the countries' infrastructure. This investment will have to be largely financed internationally, facilitated through internationally active banks with sales networks throughout Europe, the USA and Asia.

In order to be able to attract international banks and allow them to more effectively engage in the local capital market, the local exchange will have to position itself with a modern capital market infrastructure which complies with international standards and a trading friendly environment.

A positive development in the exchange's core function of equity trading will depend on a number of factors. Some can be positively influenced by the exchange more directly, such as providing a modern infrastructure, others require external events and can at most be indirectly influenced (see Figure 13: Factors to positively influence membership and trading at a local exchange).

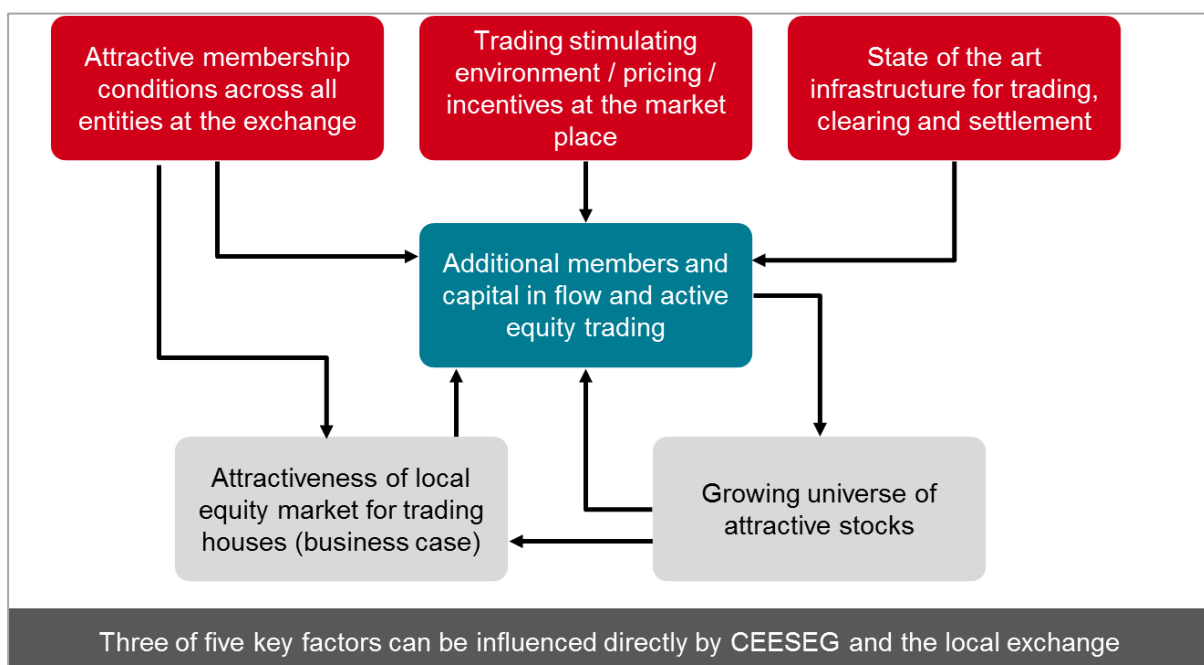


Figure 13: Factors to positively influence membership and trading at a local exchange

5.4.2 CCP as a strategic opportunity

The thoughtful introduction of a CCP can be seen as a strategic necessity and opportunity for an exchange:

- With a CCP
 - It will provide a missing element for a stronger participation of the local market in international trade, the improvement of liquidity and better access to international financial resources
 - There is a clear indication among international members at Vienna Exchange that they will over time also become additional members at the local exchange
 - Create the opportunity to access untapped global trading potential, especially from High Frequency Traders
 - Increase likelihood of inclusion into more relevant indices
- Without a CCP the local exchange is likely to
 - Remain an unhealthy dependency on a single broker as main source of orders
 - Remain a trading place with underdeveloped trading and a mostly local membership while blocking international direct membership
 - Disincentivize attractive IPOs due to lack of liquidity and international exposure
 - Risk further loss of existing members

However, the introduction of a CCP alone only provides one key element for this potentially promising development and needs to be embedded in a set of carefully drafted measures in order to minimize the risks of the CCP introduction and improve its chances for success.

There are risks associated with an introduction of a CCP that is not embedded in a careful overall strategy for the whole exchange value chain and actively involving all relevant stakeholders. Without a proactive strategy tuned to the needs of international banks, providing a trading supportive pricing and service environment and securing a solution to local players the local exchange could arrive in a scenario with reduced revenues, loss of small members and significant setup investments.

5.4.3 Recommendation

The local exchange, current clearing and settlement players, CEESEG and CCP.A should actively work in a joined approach towards the implementation of a CCP.

In order to increase the chances of success for the CCP introduction from an exchange strategy perspective it will be necessary to embed it in an overall strategic initiative which needs to focus on four additional areas as laid out in Figure 14: Additional components for a successful CCP implementation.

Wholesome strategic approach of local exchange to foster membership and trading

- Design an overall package along entire value chain (exchange, CSD, CCP) to incentivize 1) additional membership and 2) trading
- Optimize pricing strategy along value chain in order to optimize overall business case

Proactive sales strategy to secure additional membership and trading business

- Develop impactful sales strategy and pitch document based on compelling overall offer
- Secure additional anchor clients (both market makers and agents)
- Ensure commitment of flow and membership prior to CCP implementation

Careful and smart CCP implementation

- Provide efficient solution for smaller players to remain exchange members with a CCP
- Ensure attractive pricing for new members
- Take into account impact on other business areas (e.g., CSD)
- Smart timing (also in relation to other large projects, e.g. MiFID implementation, Brexit strategies, T7 implementation, etc.)

Proactively approach new exchanges for CCP.A

- Systematically cover and work on other CEE markets in order to expand CCP.A operation in these and to realize scale in the operation
- Simplified access to new markets for all members of participating exchanges
- Reduce cost base due to improved scale

CEESEG will act from a group perspective including CCP.A and exchange in order to maximize benefits for a partner exchange and the group

Figure 14: Additional components for a successful CCP implementation

The project should be approached from a group strategic perspective as it will likely involve a change and shift in revenue streams between the related entities. The group wide optimization of economics can only be ensured if the individual entities are given rationale and incentives to cooperate in the face of changing cost and revenue structures individually.

As a project with multiple facets and streams with an implementation horizon well beyond 1 year a project plan should be developed as an immediate next step.



6. Perspective: Case for a pan CEE CCP offering

Given the overall trend towards a standardization of the post trade world it can be assumed that over time more capital markets in the CEE regions will introduce a CCP functionality.

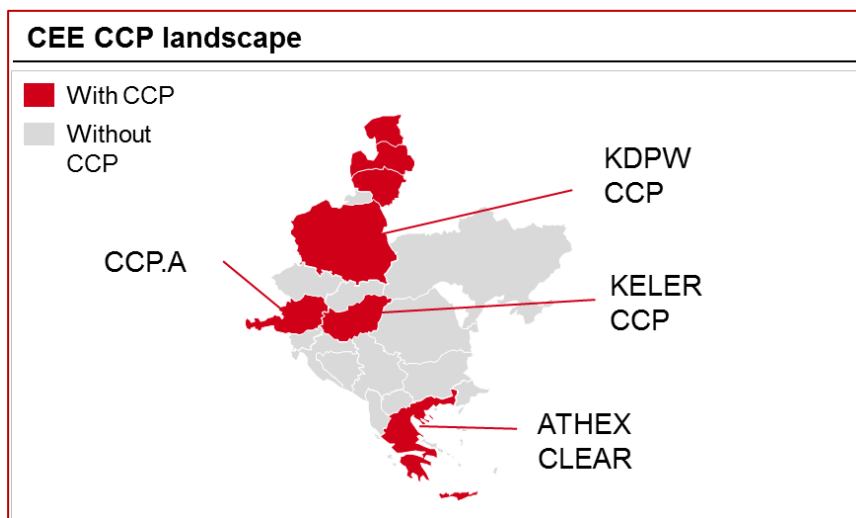


Figure 15: CEE CCP landscape

There is a strong rationale to develop a pan CEE offering of a CCP infrastructure. The key drivers are:

- Most CEE markets will require a CCP infrastructure to develop their capital market
- The stand-alone development for these markets which are often subcritical in size will be prohibitively expensive to implement and very complex to manage
- An EBRD study estimates a 90% cost saving when cooperating with an existing CCP provider versus a stand-alone

		Poland KDPW CCP	Austria CCP.A	Greece ATHEXCLEAR	Hungary KELER CCP
# of equity transactions (M, 2016)		45	57	15	8
EMIR authorization		✓	✓	✓	✓
Asset class capabilities (cash)	Equity	✓	✓	✓	✓
	Bonds	✓	✓	✓	✓
	Struct. Prod.	✓	✓	✓	✓
Asset class capabilities (derivatives)	Commodities	✗	✗	✓	✓
	FX	✓	✗	✓	✓
	IR	✓	✗	✗	✓
	Equity	✓	✗	✓	✓

Figure 16: EMIR compliant CCPs in CEE region 2017; Source: EBRD, ESMA, Athens Exchange



CCP capabilities for the cash market segments including structured products appear the most relevant need for most CEE markets without a CCP today. The existing CCPs in CEE, including CCP.A, are functionally capable to meet this requirement.

Country	# of equity transactions (M, 2016)	Cash Products		Derivatives				
		Equity	Bonds	Struct. Products	Comm.	FX	IR	Equity
Poland	18.4	✓	✓	✓	✗	✓	✓	✓
Greece	6.3	✓	✓	✓	✓	✓	✗	✓
Hungary	1.6	✓	✓	✓	✓	✓	✓	✓
Romania	0.7	✓	✓	✓	✗	✗	✗	✓
Croatia	0.3	✓	✓	✓	✗	✗	✗	✗
Bulgaria	0.05	✓	✓	tbd	✗	✗	✗	✓
Slovenia	0.1	✓	✓	✓	✗	✗	✗	✗
Slovak Republik	<0.01	✓	✓	tbd.	✗	✗	✗	✗

Source: FESE, Exchange data

Figure 17: Asset classes being traded in CEE capital markets; source: FESE, EBRD

With KDPW CCP of Poland, CCP.A of Austria, ATHEX Clear of Greece and KELER CCP of Hungary there are in principle four EMIR compliant CCPs in the CEE region that could serve as a platform to provide services beyond their borders in the CEE region. ATHEX Clear is already the CCP for the local Romanian Sibiu Stock Exchange and is in discussions with Bucharest Exchange.

The Austrian CCP.A appears well-positioned to be the nucleus for pan CEE CCP services for a number of reasons:

- Large international CCP providers seem to have limited appetite to enter the CEE markets due to a lack of scale of these markets and assumptions on assumed complexity in the process
- Among the remaining potential CCP providers CCP.A is situated in the most developed economy with the strongest ratings in financial and political stability
- The Austrian economy has extensive relationships in the region and is known as a trusted partner
- Thanks to its international state of the art trading technology at Vienna Exchange it is able to provide a combined infrastructure offering for Trading System Services and CCP. In fact, Vienna Exchange already today is providing its trading system to a growing number of partner exchanges in the region
- CCP.A's full capability to clear all relevant cash market asset classes matches the majority of asset classes needed in many of the markets in question. If required the previously held license to clear derivatives could be reapplied for



The study shows that the following CEE economies would benefit from the introduction of a CCP:

■ Czech Republic	■ Bulgaria	■ Albania
■ Slovakia	■ Croatia	■ Macedonia
■ Slovenia	■ Serbia	■ Bosnia
■ Romania		

Most of these CEE markets are part of Target2Securities and therefore already have their settlement infrastructure in line with European standards. An EMIR compliant CCP is a natural next step. Globally further economies would benefit from the introduction of a CCP, following a similar logic as laid out before.

CCP.A is open to offer its CCP services to other exchanges in CEE and beyond. With a highly liquid home market, state of the art trading technology and an EMIR compliant CCP the Vienna based CEESEG group is well positioned to provide both a combined package and selective infrastructure offering.

Autors of this White Paper:

Dr. Ludwig Nießen, CTO & COO Vienna Stock Exchange
Peter Schuh, Managing Partner Stratfields GmbH & Co. KG