CBDC functional scope, pricing and controls (with emphasis on international aspects)

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The structure…

Why CBDC (in short)?

- Digitalisation of economy and of payments (most obvious case e-commerce).
- Shift of consumer preferences in view of the ever growing convenience of digital payments (mobiles; biometrics, etc.).
- Availability and usability of central bank money for all should be preserved not only in its “traditional” form, but also in a modern digital format.
  - Means of payment are subject to network effects => few global private providers have emerged. It is a matter of sovereignty, continued choices for citizens, and continued competition and complementarity between private and public means of payment
  - Convertibility of commercial bank money into central bank money must remain a meaningful anchor of the monetary system and of financial stability
- The planned deployment of CBDC naturally leads to the question of its use in cross-border payments, and the contribution it could make there to the diversity and efficiency of payment options

The issue…

- CBDC discussions reveal often an almost binary view on the likely success of CBDC:
  - Too much used as store of value? Most economists seem to fear an excessive success and a crowding out of the private sector (and related financial stability issues)
  - Too little used as means of exchange? Others (maybe more retail payment experts) have sometimes expressed doubts on the need and potential demand for CBDC in view of existing efficient private sector retail payment solutions
  - Niche product?: Still others have seen it solving specific problems that would not have been solved so far, and this being the true vocation of CBDC (e.g. offering not in particular standard POI mass payments, but e.g. offline, anonymous, programmable, or other payment functionality)

The disintermediation problem – in flow of fund terms… capturing **the store of value dimension** – is relatively well understood

Flow of funds mechanic illustrates how CBDC can be created and how, depending on its source, it may affect the financial system balance sheets

Not fundamentally different from e.g. flows into banknotes

Still the convenience of CBDC may contribute to bank disintermediation and bank runs if not properly designed

Table 1: Financial accounts representation of bank disintermediation, distinguishing three flows

Non-bank sectors (including Households, corporates, governments, pension and investment funds, insurance companies, ROW)			
Real Assets	E	Household Equity	E
Sight deposits bank 1	$D1 - \alpha - \beta/2 - \lambda/2 - \mu/2$		
Sight deposits bank 2	$D2 + \alpha - \beta/2 - \lambda/2 - \mu/2$	Liabilities to banks	D1+D2+D3+B+C
Banknotes	$B + \beta$		
Non-bank deposits with CB	$D3 + \mu$		
CBDC	$+ \lambda$		
Bank 1			
Loans to Corp. and Govt.	D1+B/2 +D3/2	Sight deposits	$D1 - \alpha - \beta/2 - \lambda/2 - \mu/2$
		CB credit	$B/2+D3/2 + \alpha + \beta/2 + \lambda/2 + \mu/2$
Bank 2			
Loans to Corp. and Govt.	D2+B/2 +D3/2	Sight deposits	$D2 + \alpha - \beta/2 - \lambda/2 - \mu/2$
		CB credit	$B/2+D3/2 - \alpha + \beta/2 + \lambda/2 + \mu/2$
Central Bank			
Credit to banks	$B+D3 + \beta + \lambda + \mu$	Banknotes	$B + \beta$
		CBDC	$+ \lambda$
		Bank deposits	0
		Non-bank deposits	$D3 + \mu$

This problem has also an international dimension…

- Bindseil (2020) provides flow of fund mechanics for different (domestic) and cross-border CBDC scenarios →
- Ferrari, Mehl and Stracca (2020) and IMF (2020) discuss in more detail the possible flow of funds implications of CBDC that is used internationally.
- All conclude that the international use of CBDC could make international capital flows more volatile and thereby create liquidity challenges for banks – in both the issuing and the recipient country

Figure A.1: Financial accounts representation of CBDC, two country case, flexible exchange rates in which banking systems enter cross border claims and liabilities compensating the CBDC related capital flows

A - Households, pension and investment funds, insurance companies					
Real Assets	20		Household Equity	40	
Sight deposits	5	-CBDC2.A			
Savings + time deposits	4		Bank loans	5	
CBDC		+CBDC1.A +CBDC2.A			
Banknotes	1	-CBDC1.A			
Bank bonds	4				
Corporate/Government bonds	7				
Equity	8				
A- Commercial Banks					
Loans to corporates	8	-	Sight deposits	7	-CBDC2.A
Loans to government	2		Savings + time deposits	5	
Loans to HH	5		Bonds issued	4	
Corp/state bonds	5	-	Equity	3	
Central bank deposits	0		CB credit	1	+CBDC2.A +CBDC1.B +CBDC2.B
Claims on banks of country B		+CBDC1.B +CBDC2.B			
A - Central Bank					
Credit to banks	1	+CBDC2.A +CBDC1.B +CBDC2.B	Banknotes issued	1	-CBDC1.A
Corp/Government bonds	0		Deposits of banks	0	
			CBDC		+CBDC1.A +CBDC2.A+CBDC1.B +CBDC2.B
B - Households, pension and investment funds, insurance companies					
Real Assets	20		Household Equity	40	
Sight deposits	5	-CBDC2.B			
Savings + time deposits	4		Bank loans	5	
CBDC		+CBDC1.B +CBDC2.B			
Banknotes	1	- CBDC1.B			
Bank bonds	4				
Corporate/Government bonds	7				
Equity	8				
B- Commercial Banks					
Loans to corporates	8	-	Sight deposits	7	-CBDC2.B
Loans to government	2		Savings + time deposits	5	
Loans to HH	5		Bonds issued	4	
Corp/state bonds	5	-	Equity	3	
			Central bank credit	1	-CBDC1.B
			Liabilities to banks of country B		+CBDC1.B +CBDC2.B
B - Central Bank					
Credit to banks	1	-CBDC1.B	Banknotes issued	1	-CBDC1.B

Mitigants against excessive flows of funds… all applying also to the international dimension

- Holding limits (differentiated across domestic vs. foreign holders)
- Tiered remuneration
    - Domestic holders have access to a **first "tier"** which will never be remunerated worse than banknotes, and which may even be positively remunerated when interest rate levels are high. A **second tier** is remunerated less attractively, such as to be either zero or less attractive then the highest quality domestic short term fixed income instruments, such as to avoid reliance as investment of value beyond tier one.
    - Cross border holders could have only tier two remuneration at their disposal

Necessity also depends on prevailing interest rate level for a certain CBDC currency. Mitigants particularly useful for NIRP and low interest rate cases

The means of payment dimension…

- More complex
- Payments has strong network effects => steering towards a good but not "excessive" success of CBDC is more challenging
- Less obvious comparative advantages for central banks compared with store of value function of money:
  - No experience in front-end of digital payment solution – Nor wish to replace existing providers … BUT …
  - Possible ability to leverage on the relation: safest settlement asset – legal tender – widespread merchant acceptance
- Need for appropriate funding/defunding model of CBDC wallets from/into commercial bank money to facilitate payments with a average limited balance / store of value

The means of payment dimension… for what payments?

Table 4: Payment instruments frequently used in the EU for different payment segments.

Payment segment	**Frequent payment instruments in the segment in the EU (varies per country)**
Person to Person (P2P) payments	Cash, mobile applications supporting various payment instruments, (instant) credit transfers
Physical Point of Interaction (POI) payments	Cash, cards, mobile applications supporting various payment instruments
E-commerce payments	e-commerce solutions supporting various possible payment instruments (incl. web-based wallets), cards
Recurrent payments	Direct debit, standing orders
Corporate / Business to Business (B2B) payments	Specific applications generating (instant) transfers or wholesale payments

In which segments should we desire success … Some criteria

1. Legacy / Use case currently covered by banknotes
2. Adapt to and facilitate innovations in e-commerce => forward looking approach taking into account future trends
3. Strategic autonomy: which payment segments are strategically important and subject to potential threat of disruption by foreign actors?
4. Market power and abuse: in which segments is there a risk of abuse of market power, which could be contained by an additional public sector option?
5. Where could CBDC support citizens with limited access to electronic payment services?

A usage objective for CBDC?

- Central banks have never explicitly formulated usage objectives for banknotes (although worries have been expressed on the trend decline in the usage)
- For CBDC, as a new form of central bank money, central banks should probably know what usage they could consider adequate.
- Central banks might prefer a situation where a large portion of the population uses CBDC on a regular basis for a small fraction of their payments rather than a situation in which a minority of the population relies on CBDC for the overwhelming majority of their day-to-day payments.
- The concretisation of such an idea would probably also be segment-dependent

Success factors for POI payments?

- **Widespread merchant acceptance**
  - Role of legal tender? Some issues which do not apply for cash: merchant fee (?); requirement to have a digital device for accepting digital euro
  - Maybe legal tender requirement only for merchants that also accept other digital payments at the POI (?)
- **Efficient distribution of CBDC via supervised intermediaries**
  - Compensation for costs
  - Distinguish on-boarding services and payment services
  - Including KYC, service desk, conflict resolution; fraud cases management?
  - Sweep facility with commercial bank accounts / transfer ins and out
  - Positive revenue impact on central banks to be considered as well?
- **End user demand by consumers to pay with CBDC**
  - Convenience of onboarding and usage
  - Universal acceptance; pan-European
  - Free of cost for consumers and P2P

The international dimension

- Financial stability risks of large flows of funds (see above)
- Banning cross border use would address all related risks, but reduce usefulness of CBDC
- The G20 / FSB BB19 advocates role of CBDC to enhance cross border payments. It is visionary about global “mCBDC” platforms with different architectures and highlights importance of inter-operability
- Another perspective is the one to promote the international usage of a currency through CBDC. The digital euro report concludes that: *“The digital euro should be potentially accessible outside the euro area in a way that is consistent with the objectives of the Eurosystem and convenient to non-euro area residents*.”
- International usage of currencies is <u>not</u> per se a zero-sum game, as more offer and competition can improve services. But rules of competition need to be clear and agreed before, and the rules should probably contain limits for domestic crowding out of currencies

Importance of distinguishing different cross-border use cases before jumping to conclusions

Every use case is different and implementing each has different challenges

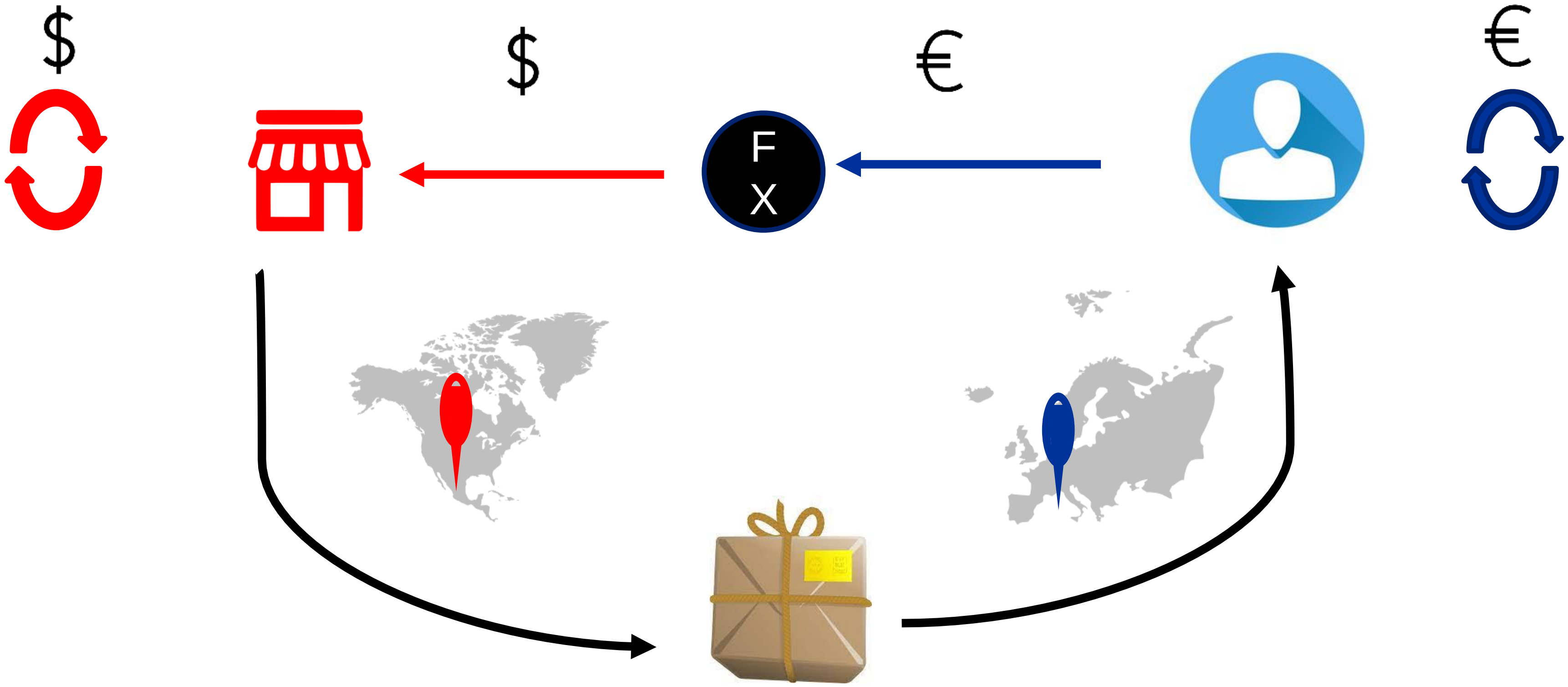
With FX conversion (still creating cross border claims)

1. Cross-border e-commerce with FX conversion
2. Foreigners entering the currency area to pay with domestic CBDC.
3. Account-to account cross-currency payments in CBDC with FX conversion

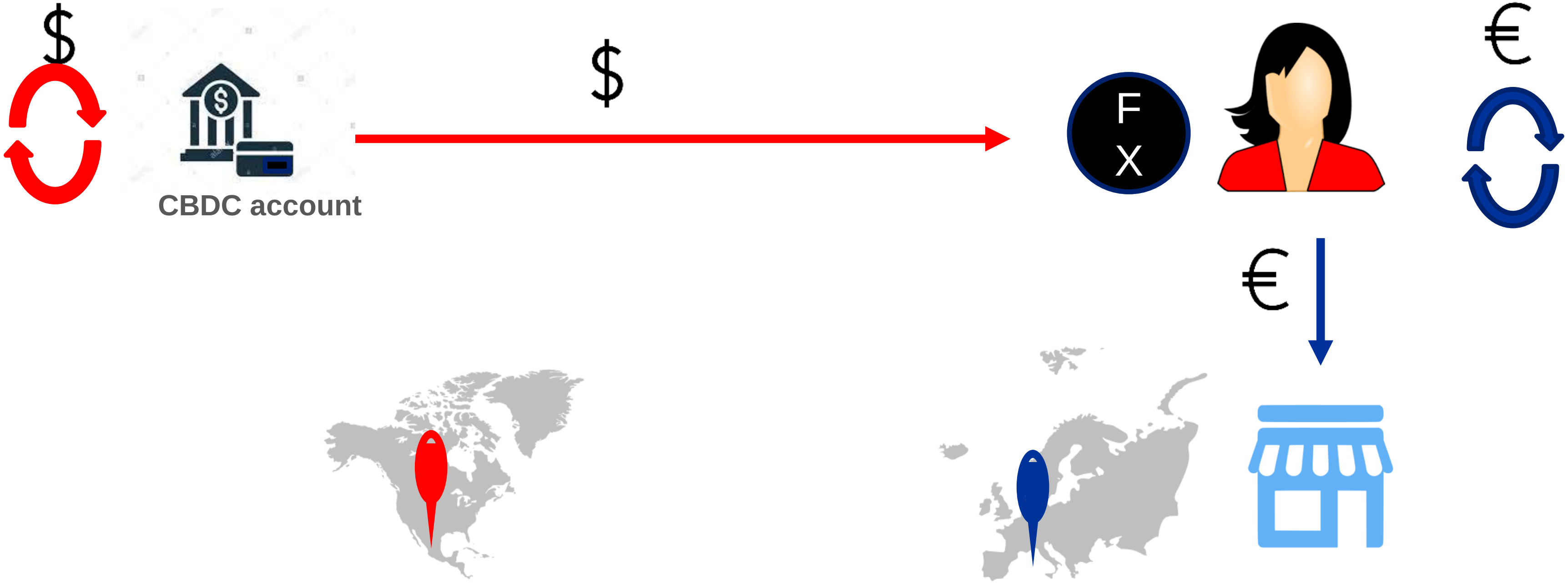
Without FX conversion (creating cross-border holdings in CBDC)

1. Cross-border payments without FX conversion and involving at least one party in the country of issuance
2. Foreign residents using CBDC for payments between them (within one, or between two jurisdictions), without FX conversion.

Scenario 1: **Use of domestic CBDC to purchase goods and services abroad with currency conversion**

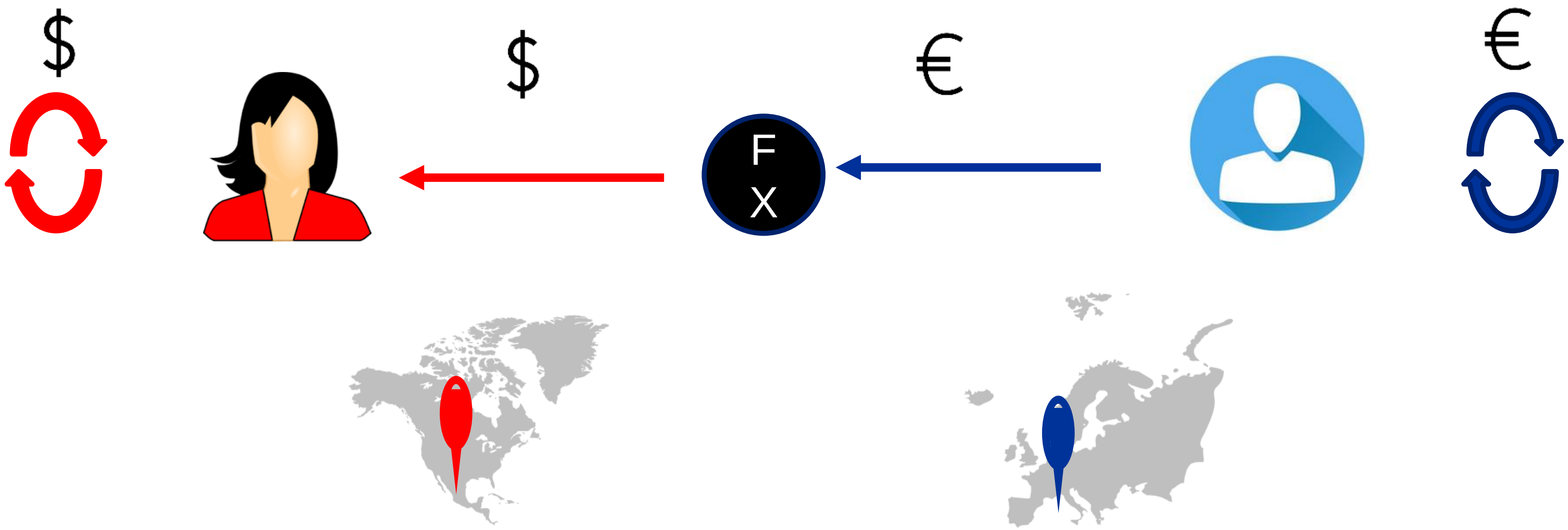


Scenario 2: **Foreigners entering the currency area to pay with domestic CBDC with currency conversion when obtaining the domestic CBDC**

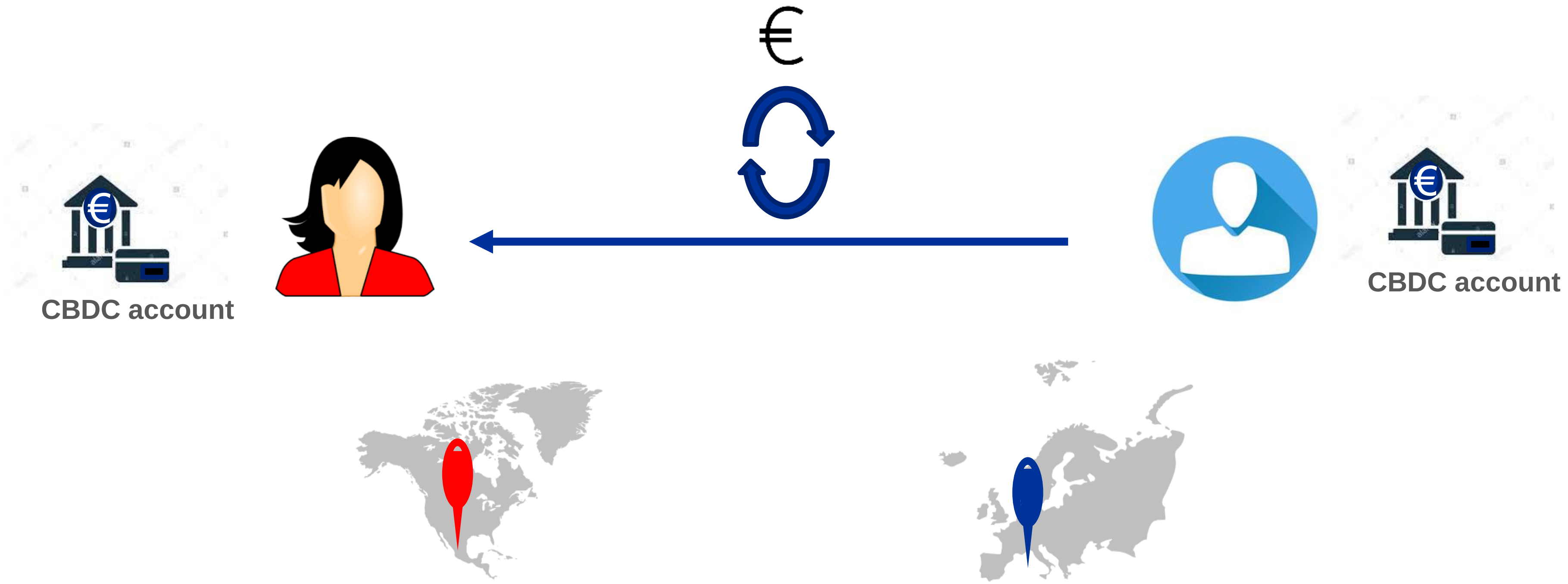


Scenario 3: **Remittance-like cross-currency payments in CBDC with FX conversion**

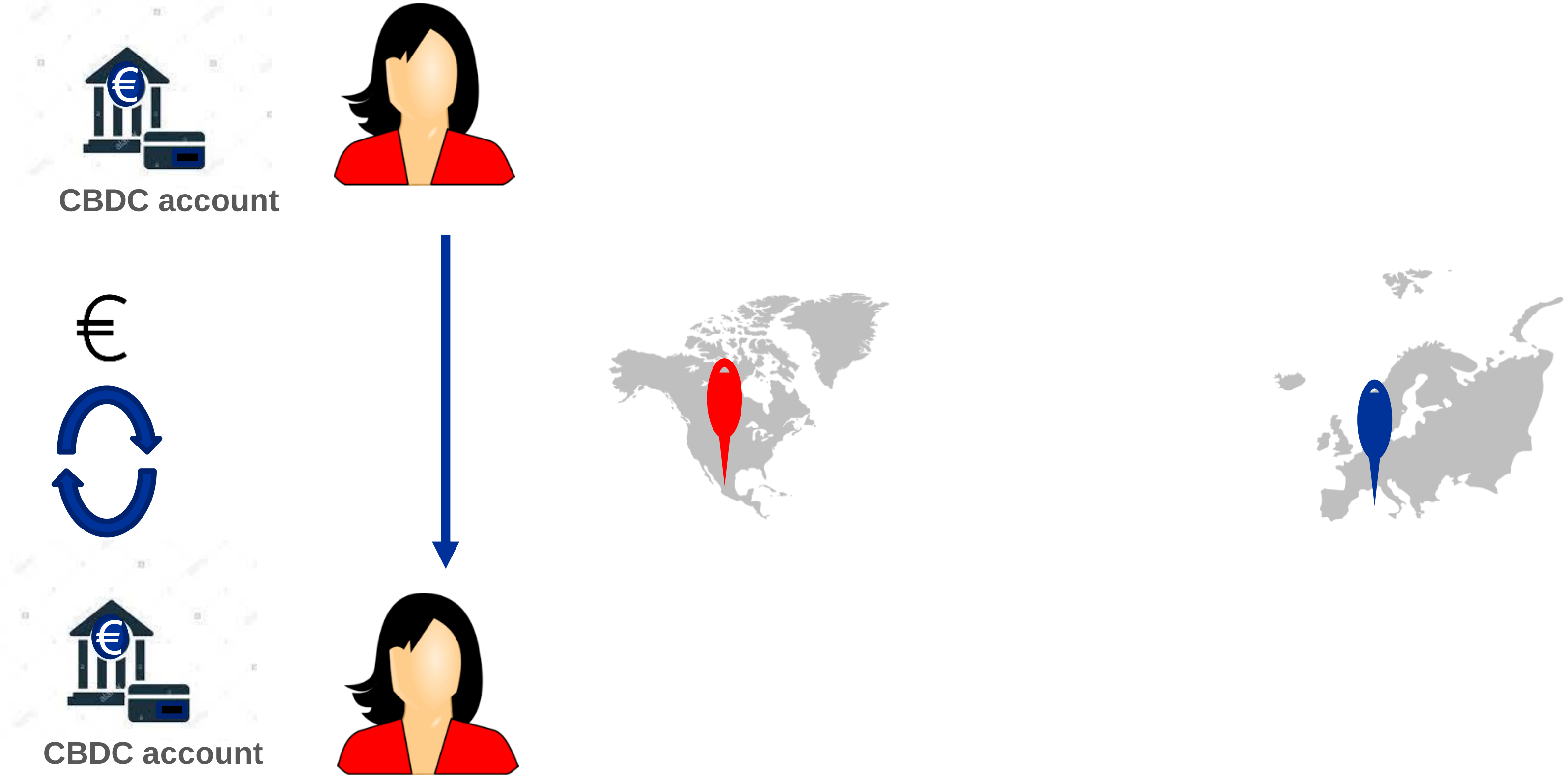
Person stays, CBDC stays



Scenario 4:**Cross-border payments without FX conversion**



Scenario 5: **Foreign residents using CBDC for payments between them (within one, or between two jurisdictions), without FX conversion**



Four considerations on CBDC for cross border use

- Cross border holdings should only be allowed on basis of an international consensus and a set of rules, and probably need some safeguards against facilitating large and fast capital flows;
- Key reasons which contributed to inefficient cross-border payments would also apply to CBDC cross border use, such as AML/CFT compliance. Progress in these fields would benefit private solutions and CBDC alike.
- A global cross-border SEPA CBDC network with automatic currency conversion layer (supported by competing private market makers) is thinkable for the medium to longer term future, in particular once CBDCs will be effectively deployed for domestic usage and if the compliance with AML/CFT rules in international payments has been made more efficient

Thank you for your attention