Possible comments and answers for the "Questions for consultation"

Consultative report Facilitating increased adoption of payment versus payment (PvP)

Taiji Inui[1] August 2022

I. Answers to the questions

In Section 2:

1. Do you agree with the analysis of the causes of non-PvP settlement?

(Answer 1):

Yes, I agree. Having said that, netting may not always reduce FX risk and rather cause additional risk for the FX settlement. JPY is included to CLS as one of the currencies. However, significant amount of JPY is still settled with no-PVP system, which is Foreign Exchange Yen Clearing System (FEYCS) owned by the Bankers Association and operated by BOJ. As far as I remember, the FXYCS was a clearing system for the JPY legs of FX transactions settling the netted positions of participating banks using central bank money. But, considering the risks of non-PVP settlement, FXYCS abolished netting and adopted settlement based on RTGS system. One of the reasons may be, if counterpart currency leg failed to settle, FXYCS may need to rewind if netting scheme is adopted. In case of RTGS, only related transaction can be canceled or revised. As such, netting may not always reduce settlement risk for FX related transactions. Currently, FXYCS adopts settlement mode based on RTGS.

With respect to non-PVP transactions, FX risks for end users may be absorbed by banks particularly big banks. This kind of institutional framework may also need to be discussed.

2. Do you find that, for your market segments, some causes are more important than others? Please explain.

(Answer 2)

Either non-PVP or PVP, time zone difference may be one of the biggest issues to discuss FX risk in Japan, which is explained in section 3 as "Reducing delays in clearing and settling cross-border payments" including Providing settlement 24/7.

3. In which currency pairs or products do you find that non-PvP settlement is increasing?

(Answer 3)

I don't know. I am sorry. Having said that taking a look Table 1 (CPMI members and PVP

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implementation), 6 currencies, ARS (Argentina), CNY (China), IDR (Indonesia), RUB (Russia), SAR (Saudi Arabia), and TRY (Turkey) among CPMI members are not supported by any PVP arrangements. Also, based on the IMF Direction of trade statistics, trade amounts (export and import) of CPMI member counties are shown in Table 2a and Table 2b, respectively, because traded amount may be related with cross-border PVP transactions. With respect to the export, the 10 economies (AUS, BRA, HKG, IDN, JPN, KOR, RUS, SAU, SGP, ZAF) export to China most, and the 7 economies (CAN, CHN, DEU, IND, MEX, CHE, GBR) export to United States most. Regarding the import, the 15 economies (AUS, BRA, HKG, IND, IDN, JPN, KOR, RUS, SAU, SGP, ZAF, TUR, GBR, USA) import from China most. Export and import amounts of the trades for the non-CLS currencies are significant based on the tables. It could cause some FX risks in the future. From this perspective, CLS may better cover as many currency-pairs as possible. CNY may need to be covered by PVP arrangements. Also, all RTGS participants (banks) of CPMI members countries may better be able to enjoy the benefits of PVP arrangements. Having said that, not all participants of RTGS systems even connected with CLS can be a member of CLS. As such, it is suggested that CPMI members discuss to connect their RTGS system each other to implement multilateral cross-border PVP utilizing DLT and BCT through a relevant organization such as CLS and BIS. BIS may organize multilateral PVP linkage for such a purpose (please refer to Appendix).

In Section 3:
4. Do you agree with how the proposals for new solutions could increase the adoption of PvP?
(Answer 4)
Yes, I do. It is a good proposal and splendid for BIS contributing to the society.

5. Do you find that these new solutions, together, if launched successfully, can mitigate FX settlement risk? Please explain.
(Answer 5)
Yes, indeed. The solutions will definitely decrease the risk. As a next step, discussions by CPMI members to implement multilateral PVP among the member countries. DLT and BCT[2] may be able to be applied to have better multilateral PVP linkages. New scheme linking all RTGS systems may need to be considered.

One of the possible solutions may be increase the members of the CLS. The Table 1 attached (CPMI members and PVP implementation) shows the current situation of eligible currencies of CPMI members for existing PVP arrangements as explained above. If all currencies of CPMI members become eligible currencies for CLS, FX risk may be reduced drastically. Having said that there may

[2] DLT: Distributed ledger technology, BCT: Blockchain technology

be some limitation to be an eligible currency of CLS. Also, there may be some limitation for all RTGS participants to be connected with CLS even as indirect members through settlement members. With respect to the multilateral PVP linkages, please refer to Appendix.

In Section 4:

6. Do you agree with the analysis of the barriers to increased adoption of PvP?

(Answer 6)

Yes, I do. The topics discussed here including "Exploring potential changes to conventions for an international value date", "Aligning nostro operating hours and processes", and "Promoting integration and interoperability between legacy and emerging systems" as the roles for private sector are very much essential issues to secure interoperability to connect RTGS systems technologically and operationally. At the same time, roles for central banks and monetary authorities may be more important because central banks may need to connect their RTGS system directly with each other to implement PVP linkages. As pointed out in the document, (i) legal and regulatory issues and (ii) operational issues are extremely important together with supporting private sector (banks) to cooperate each other.

7. Which barriers do you find most significant, and do you observe any additional barriers that are not identified in the report? Please explain with specific reference to individual barriers.

(Answer 7)

All of them are very important. Also, to identify and clarify all the barriers, establishing relevant institutional framework under BIS setting up a meeting by relevant members may be expected.

8. Do you agree with the possible roles for private and public sector stakeholders in addressing the barriers?

(Answer 8)

Yes, I do. Cooperation between private and public sectors will be definitely important. Also, central bank roles to identify and understand the demands from private sector (banks) may be important. Moreover, the role of BIS supporting central banks to coordinate and cooperate with each other may be extremely important to secure interoperability of PVP linkages.

9. Do you find that the private sector could take on other roles in facilitating increased adoption of PvP? Please explain.

(Answer 9)

I don't know. But, private sector may be able to keep assessing the business case to further enhance the benefits of PVP not only reducing the FX risks but also to provide other services to the public.

10. How could the public and private sectors work together to take this forward? Please explain and suggest any practical actions that could be taken by existing industry bodies.

(Answer 10)

Information, demands, and inputs from private sector will be very important. Therefore, under CPMI, a sub-meeting with members not only central banks but also commercial banks may be established. As the output, preliminary draft of user requirements, technical specifications, regulations, and guidelines, etc. may be compiled.

II. General comments

BIS in particular CPMI (CPSS) has been contributing to foster payment and settlement infrastructures globally by leading central banks globally and actually reduced FX risk drastically. Cross-border PVP linkage is a good issue for BIS to lead the central banks as a next topic.

Not only cross-border PVP linkages but also cross-border DVP linkages may be expected to be discussed even though some CSDs are not owned and operated by central banks. More generally, CSD-RTGS linkages may be discussed at CPMI as a topic for connecting member central banks of CPMI if possible. Appendix shows a possible image of multilateral CSD-RTGS linkages utilizing DLT and BCT.

Note: if there is any misunderstanding, could you inform it to Taiji Inui, please?

Appendix: Possible image of multilateral CSD-RTGS Linkages

Multilateral PVP linkages utilizing DLT and BCT[3] may be the most possible model to implemented CSD-RTGS linkages in CPMI members. More specifically, following discussions can be applied to PVP linkages by replacing CSD with RTGS. The conditions and scenario are processed by smart contract base on a relevant blockchain platform.

Figure A1 shows an image of the multilateral CSD-RTGS linkages by blockchain platform and P2P network. CSD (both government bond CSD-G and corporate bon CSD-C) and RTGS systems of CPMI members are to be connected each other by blockchain platform utilizing DLT and BCT.

Figure A1: Multilateral CSD-RTGS linkages by Blockchain platform and P2P network

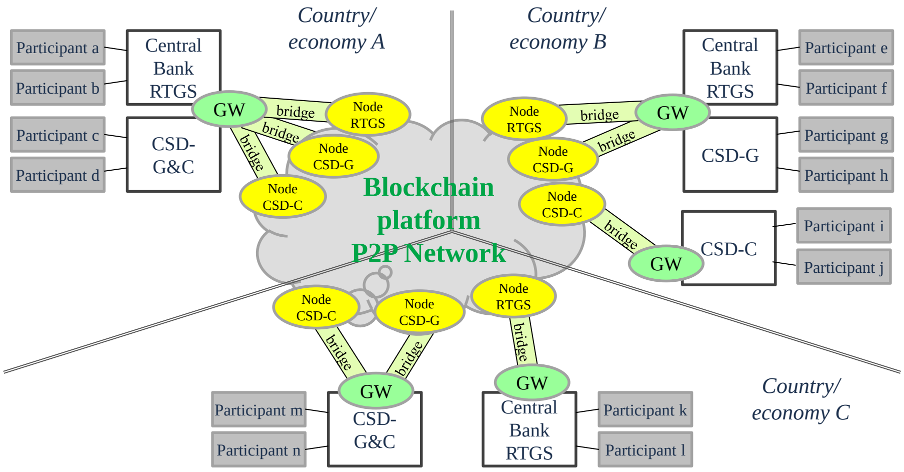
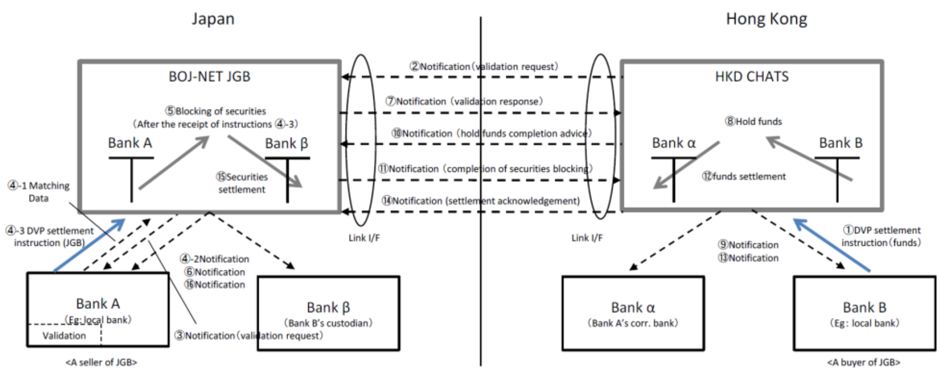


Figure A2 shows the flow of existing cross-border CSD-RTGS linkage connecting Japanese Government Bond book-entry system of BOJ-NET owned/operated by the Bank of Japan (BOJ) and Hong Kong dollar RTGS system CHATS owned by Hong Kong Monetary Authority (HKMA) operated by Hong Kong Interbank Clearing (HKICL). The linkage may use leased line directly (tightly) connecting BOJ-NET and CHAT securely using conventional technologies without using DLT or BCT. When it was

Figure A2: Cross-border DVP linkage connecting JGB (BOJ-NET) and HKD (CHATS)



ISO 20022 messages between BOJ-NET and HKD CHATS
pacs. 002: FIToFIPaymentStatusReport of "Payments Clearing and Settlement"
admi.002: MessageReject of "Post-Trade Foreign Exchange"

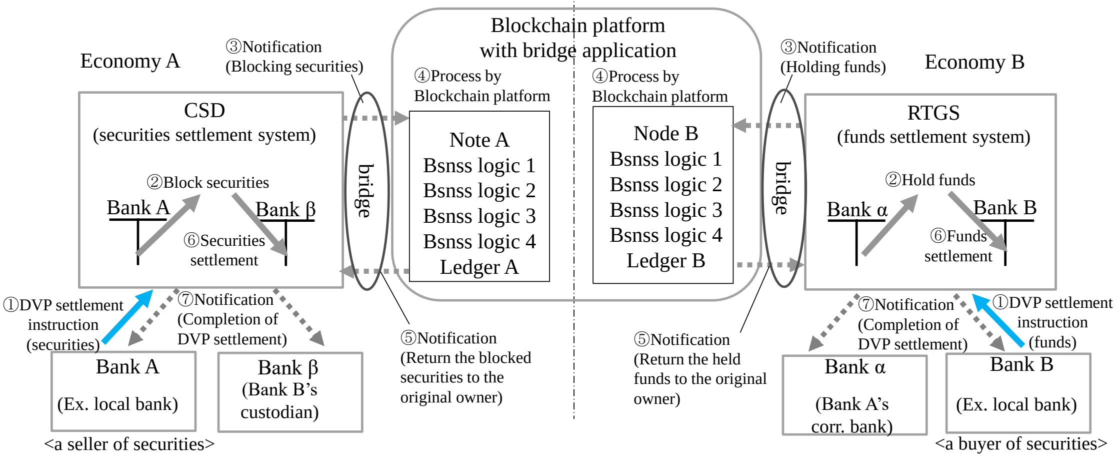
Source: BOJ modified by the presenter

3 DLT: Distributed ledger technology, BCT: Blockchain technology

planned and developed such new technologies were immature. Current technologies may be able to improve business case for such FMI[4] connections.

Figure A3 shows a possible image of CSD-RTGS connections utilizing DLT and BCT. FMIs (CSD and RTGS systems) developed based on conventional technologies may also be connected by utilizing DLT and BCT. Possible conditions and scenarios to implement multilateral CSD-RTGS linkages which will be processed by utilizing DLT and BCT are also shown.

Figure A3: Possible image of CSD-RTGS connections utilizing DLT and BCT



Note: Bsnss logic means business logic including smart contract

Possible conditions and scenario to implement multilateral CSD-RTGS linkages

Node A

Bsnss logic 1: when receiving ③Notification (Blocking securities) from CSD of Economy A, forward the notification to Node B of Economy B.

Bsnss logic 2: when receiving ③Notification (Holding funds) from Node B of Economy B, try to match the data with the data of ③Notification (Blocking securities) .

Bsnss logic 3: when the matching is successful, send Notification (Release the blocked securities to the counterparty) to CSD of Economy A.

Bsnss logic 4: when not receiving the ③Notification (Holding funds) within the specified time period and/or the matching is unsuccessful, send Notification (Return the blocked securities to the original owner) to CSD of Economy A.

Node B

Bsnss logic 1: when receiving ③Notification (Holding funds) from RTGS of Economy B, forward the notification to Node A of Economy A.

Bsnss logic 2: when receiving ③Notification (Blocking securities) from Node A of Economy A, try to match the data with the data of ③ Notification (Holding funds) .

Bsnss logic 3: when the matching is successful, send Notification (Release the held funds to the counterparty) to RTGS of Economy B.

Bsnss logic 4: when not receiving the ③Notification (Blocking securities) within the specified time period and/or the matching is unsuccessful, send Notification (Return the held funds to the original owner) to RTGS of Economy B.

Business logics (conditions and scenario) are processed by smart contract.

[4] Financial Market Infrastructues

Table 1: CPMI members and PVP implementation

CPMI member	Code	CLS	Other PVP
Central Bank of Argentina	ARS		
Reserve Bank of Australia	AUD	CLS	
National Bank of Belgium	EUR	CLS	
Central Bank of Brazil	BRL		B3
Bank of Canada	CAD	CLS	
The People's Bank of China	CNY		
European Central Bank	EUR	CLS	
Bank of France	EUR	CLS	
Deutsche Bundesbank	EUR	CLS	
Hong Kong Monetary Authority	HKD	CLS	CHATS
Reserve Bank of India	INR		CCIL
Bank Indonesia	IDR		
Bank of Italy	EUR	CLS	
Bank of Japan	JPY	CLS	
Bank of Korea	KRW	CLS	
Bank of Mexico	MXN	CLS	
Netherlands Bank	EUR	CLS	
Central Bank of the Russian Federation	RUB		
Saudi Central Bank	SAR		
Monetary Authority of Singapore	SGD	CLS	
South African Reserve Bank	ZAR	CLS	
Bank of Spain	EUR	CLS	
Sveriges Riksbank	SEK	CLS	
Swiss National Bank	CHF	CLS	
Central Bank of the Republic of Turkey	TRY		
Bank of England	GBP	CLS	
Board of Governors of the Federal Reserve System	USD	CLS	
Federal Reserve Bank of New York	USD	CLS	

Table 2a: Export of CPMI members based on IMF Direction of Trade Statistics in 2020 (million USD)

FOB from / to	ARG	AUS (cls)	BEL (cls)	BRA	CAN (cls)	CHN	FRA (cls)	DEU (cls)	HKG (cls)	IND	IDN	ITA (cls)	JPN (cls)	KOR (cls)	MEX (cls)	NLD (cls)	RUS	SAU	SGP (cls)	ZAF (cls)	ESP (cls)	SWE (cls)	CHE (cls)	TUR	GBR (cls)	USA (cls)
Algentina		115	589	8498	181	7090	726	2104	314	741	159	871	539	329	712	722	86	63	126	133	781	132	548	154	361	5950
Australia(cls)	567		2043	467	1592	53509	3152	68680	4409	3466	2506	4231	12132	6207	1000	3667	127	865	6759	761	1694	1742	2746	727	5234	23489
Belgium(cls)	251	607		2636	1710	20776	36218	49515	1873	4567	1237	17041	6526	2753	1455	69770	5,788	3859	3705	2404	8914	5540	4294	3635	13389	27621
Brazil	7942	546	3179		1593	34973	3532	9670	2252	3676	1015	4164	2943	3944	3055	2655	2,051	2675	975	295	2577	1099	2083	589	2231	35047
Canada(cls)	439	1459	3742	4221		42126	3581	10667	1970	2811	789	4885	7224	5464	11139	3812	291	1129	892	308	2157	1127	4063	1005	7597	255328
China	5244	100542	9737	68377	18765		20137	110373	304902	18922	31776	14771	140544	132580	7891	17846	49,583	32363	41290	9909	9384	8449	16477	2866	18590	124649
France(cls)	360	1296	58233	2034	2769	37272		103870	4041	4368	945	51700	5639	3039	1295	57858	4,689	1619	3264	563	50426	6358	19601	7195	23062	28285
Germany(cls)	723	2594	73722	4128	4741	86998	71073		8109	7657	2457	64090	17402	9577	6585	157991	18,638	445	4347	7074	34797	16522	44579	15979	40403	57795
Hong Kong,China (cls)	152	4663	1527	2327	1422	275463	5959	6409		9585	2037	4897	31879	30662	1190	2458	1,904	252	35490	1488	828	361	5845	818	10594	23986
India	2508	7464	5129	2950	2582	66780	6562	12233	13234		10414	3475	9081	11943	2661	2239	5,958	16767	7410	3164	1254	1058	10084	890	4017	27395
Indonesia	1318	3615	646	2169	1329	41061	1162	2387	3238	4367		1226	9166	6343	137	864	589	2398	16988	470	398	305	491	214	741	7425
Italy(cls)	815	375	21620	3056	2753	32947	37277	69284	2947	4377	1746		3763	3221	1166	28031	9,786	2672	514	660	24528	4187	13990	8083	10725	19922
Japan(cls)	317	30992	3625	4137	9191	142722	6529	20157	14117	4040	13663	8136		25086	3652	5616	9,294	16580	13931	3816	2905	2490	6839	441	7311	64098
Korea, Rep. of(cls)	691	15723	2023	3834	3448	113029	5511	20706	6994	4515	6507	5355	44392		5487	7662	12,524	14799	13188	1416	1722	1564	2829	1104	5329	33
Mexico(cls)	438	141	1369	3811	4563	44886	2996	12995	3567	3049	937	3570	8368	8242		2547	1,165	66	1010	220	3684	618	1249	539	1324	212672
Netherlands(cls)	1593	1791	49177	7455	4048	79057	18485	96644	8344	6269	3114	13023	10818	3987	2041		25,345	5133	8004	3339	10993	8059	6169	5195	24011	45521
Russia	612	459	4408	1533	448	50608	5894	26482	3768	2560	974	8103	5855	6905	421	7608		50	425	373	2143	2027	3220	4507	2905	4884
Saudi Arabia	958	635	1902	1889	1164	28153	3544	6617	1195	6161	1338	3662	4232	3302	317	3909	1,419		1024	345	1987	1035	1585	2505	3599	11177
Singapore(cls)	60	8272	1629	4037	919	58022	8063	6948	10905	8274	10712	2152	17633	9853	733	3527	1,149	5462		512	775	952	6315	343	5675	27086
South Africa(cls)	340	790	1353	980	233	15260	1520	7494	879	3499	572	1730	1665	668	188	2264	280	2359	260		1346	717	480	574	1695	4455
Spain(cls)	1103	320	12570	4105	1055	27543	35886	42992	1995	3085	1516	23873	2176	2302	3323	21339	1,695	2125	303	918		2863	7426	6683	10948	12870
Sweden(cls)	27	237	7631	381	307	8364	5936	26622	634	702	172	5390	1249	921	84	15966	1,016	79	113	145	2921		3681	1330	5256	4690
Switzerland(cls)	1021	1798	5659	1369	1351	5021	16461	64768	15072	1271	2398	28922	4825	729	1005	10091	2,910	604	2004	849	5829	1540		1095	19689	18085
Turkey	518	277	5699	2797	839	20372	7278	25347	1311	3825	1048	8839	2657	5546	335	7034	15,760	2749	569	461	4887	1612	5771		6383	10008
United Kingdom(cls)	626	10306	32441	2549	14943	72666	31261	76777	18494	7790	1284	25858	10694	4497	2619	51285	23,067	811	3271	4224	20163	8030	14867	11236		59010
United States(cls)	3264	13165	29572	21677	287076	452832	37402	118688	40353	49340	18667	48540	118293	74531	338701	30075	10,827	8821	31640	7164	13984	13129	68361	10183	57305	

Table 2b: Import of CPMI members based on IMF Direction of Trade Statistics in 2020 (million USD)

CIF to / from	ARG	AUS (cls)	BEL (cls)	BRA	CAN (cls)	CHN	FRA (cls)	DEU (cls)	HKG (cls)	IND	IDN	ITA (cls)	JPN (cls)	KOR (cls)	MEX (cls)	NLD (cls)	RUS	SAU	SGP (cls)	ZAF (cls)	ESP (cls)	SWE (cls)	CHE (cls)	TUR	GBR (cls)	USA (cls)
Algentina		520	343	8256	552	6811	410	732	179	2611	1748	975	517	893	623	1719	809	918	74	392	1549	40	1064	557	922	4158
Australia(cls)	142		728	608	1865	114767	655	2565	3264	7251	4647	387	35623	18681	284	1866	664	639	3873	804	345	264	1871	407	10431	14434
Belgium(cls)	264	1370		1398	3423	7857	56035	66255	2351	6633	526	20770	3237	1551	1004	47742	2157	1296	833	946	11691	6952	3958	3716	28303	20886
Brazil	8685	639	2319		5197	84021	2409	4693	2242	3191	2561	3432	7105	4239	5972	6128	2010	2156	2071	1131	3977	425	1433	3228	2905	23311
Canada(cls)	294	1757	3833	1914		21873	3142	5168	1032	2731	1615	2008	9857	4382	8825	3565	827	1832	1369	293	1417	422	1924	1078	15109	270382
China	8656	62014	20870	36076	60277		41112	93725	251385	58701	39635	36816	163920	108855	77916	105091	54908	26509	37802	15132	28760	9266	17677	23041	75520	435449
France(cls)	782	4257	38929	3387	5105	30216		67834	5715	2992	1360	35777	9255	5898	3593	18043	8094	4062	8344	1677	36522	5730	17218	6988	28874	43047
Germany(cls)	1988	9957	54794	9114	13607	105282	101435		6368	9676	3024	70117	21209	20656	14703	90167	23418	6809	6965	6665	44889	27201	56508	21733	72229	115120
Hong Kong,China (cls)	7	907	433	625	444	7126	568	1777		14563	2747	347	733	1540	427	532	424	731	3112	170	369	210	12126	254	14867	7934
India	801	3981	4403	4184	3931	20873	4435	8033	7449		3764	4828	4718	4904	4510	4450	3458	6367	4124	3811	3494	701	1921	4830	7462	51190
Indonesia	233	3440	1463	1193	1274	37428	1148	2663	2279	12007		2035	14488	7585	1562	3650	1787	1752	10921	665	1888	209	2750	1185	1732	20232
Italy(cls)	1007	4934	16612	3660	7105	22249	48862	63008	4485	3690	1557		10494	6650	5128	13506	10213	4072	3175	1874	23086	5205	23710	9200	22550	49465
Japan(cls)	724	12889	10946	3935	10720	176089	5630	17659	33527	10193	10672	4166		46023	14730	10739	7114	5662	14386	2030	2547	995	5377	3743	10128	119512
Korea, Rep. of(cls)	365	6631	2648	4332	7555	173501	3492	10263	32842	12166	6849	3576	26569		15592	6415	7159	3821	12387	722	2515	989	1094	5734	4688	76020
Mexico(cls)	946	2140	3457	3346	23559	16012	1554	7631	1098	3061	269	1106	5429	6347		3534	1018	822	1840	476	3453	151	1099	833	3287	325394
Netherlands(cls)	323	1999	66497	1419	2523	0	50146	160776	2039	2955	804	25504	3118	6224	2156		3753	1707	1945	1013	20630	14759	5350	3629	44880	27470
Russia	166	156	6617	2879	949	57092	6111	21888	1082	5935	958	10297	10728	10683	922	15245		694	1167	547	2942	1413	1336	17829	24532	16843
Saudi Arabia	62	677	2264	1619	1324	39064	2748	840	338	17756	2613	3374	18411	15954	113	2376	219		4120	2853	2587	69	651	1720	1221	8993
Singapore(cls)	120	5806	3997	848	926	31583	2050	3988	41301	12328	12341	536	8540	8446	1877	5286	526	1336		395	239	156	4090	300	2894	30840
South Africa(cls)	124	772	3101	647	1510	20608	535	8598	1826	6677	689	1502	5761	1697	540	2918	693	803	324		800	137	2454	888	8415	11370
Spain(cls)	706	1529	9297	2684	2385	10352	46256	35859	736	1430	457	23350	2900	1901	3987	10319	3075	2125	759	1562		2502	7422	5039	18065	15290
Sweden(cls)	155	1357	6554	899	1658	9478	7115	17164	252	949	435	4375	2816	1721	913	8087	1927	1180	885	772	3118		1501	1764	7369	12511
Switzerland(cls)	420	2527	9586	2027	4652	17379	16569	47289	6925	11340	702	11098	7453	2757	1585	8807	2727	1483	4727	1014	5558	1035		7772	11903	75071
Turkey	196	832	5142	589	1483	3720	7641	14458	725	1576	274	8539	689	1321	873	4923	5110	1992	292	592	7014	1233	1904		11424	11015
United Kingdom(cls)	421	5113	16081	2307	6085	19771	22376	43608	9202	4723	959	10120	6018	4379	1920	25360	3389	2993	6136	1807	12094	6364	16477	5583	58329	50206
United States(cls)	4366	25367	27723	25925	209356	136123	27881	57858	23014	26592	8643	16837	71642	57763	177828	45208	13222	14104	27685	4712	13370	4293	20828	11525	57305	

Blue figures show CLS pair currencies. Yellow marks denote the biggest amount of “FOB from” and “CIF to” for export and import, respectively.