Citi Research

20 October 2023

Korea Macro Outlook

Jin-Wook Kim [AC]
Korea Chief Economist
jinwook.kim@citi.com
+82-2-2077-4229

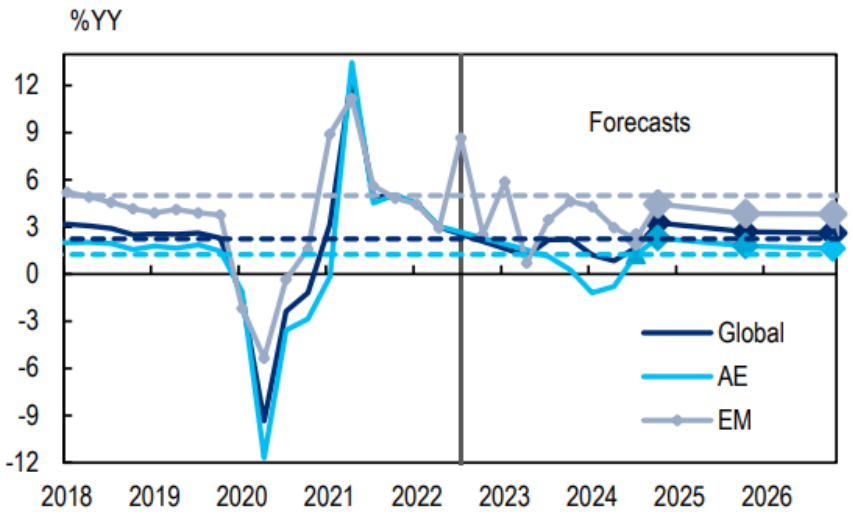
Jiuk Choi [AC]
Assistant Vice President
jiuk.choi@citi.com
+82-2-2077-4227

See Appendix A-1 for Analyst Certification, Important Disclosures and Research Analyst Affiliations

Citi Research is a division of Citigroup Global Markets Inc. (the "Firm"), which does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the Firm may have a conflict of interest that could affect the objectivity of this report**.** Investors should consider this report as only a single factor in making their investment decision. Certain products (not inconsistent with the author's published research) are available only on Citi's portals.

Global GDP – We are seeing evidence of a new regime characterized by **gradual disinflation and decelerating growth**. We see particular vulnerability for the global economy during the first half of next year, as **DM growth is expected to post an outright contraction**

Global - We have kept our 2023 global growth forecasts at 2.3% and lowered 2024 by 0.2pp to 1.7% (2022: 3.1%).

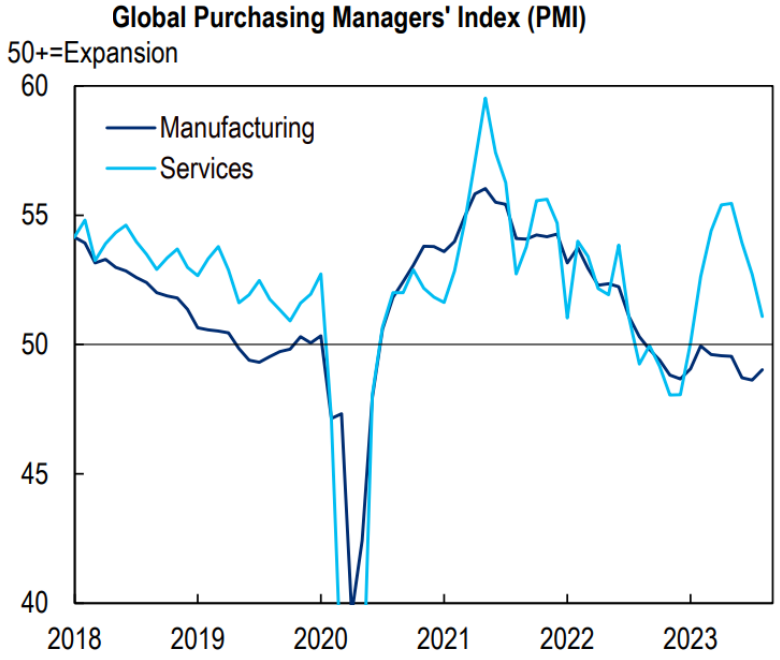


© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Note: At market exchange rates. Horizontal lines are respective LT averages (2000-2020) for Global, AE and EM %YY GDP growth.

Source: Citi Research, National Sources, IMF

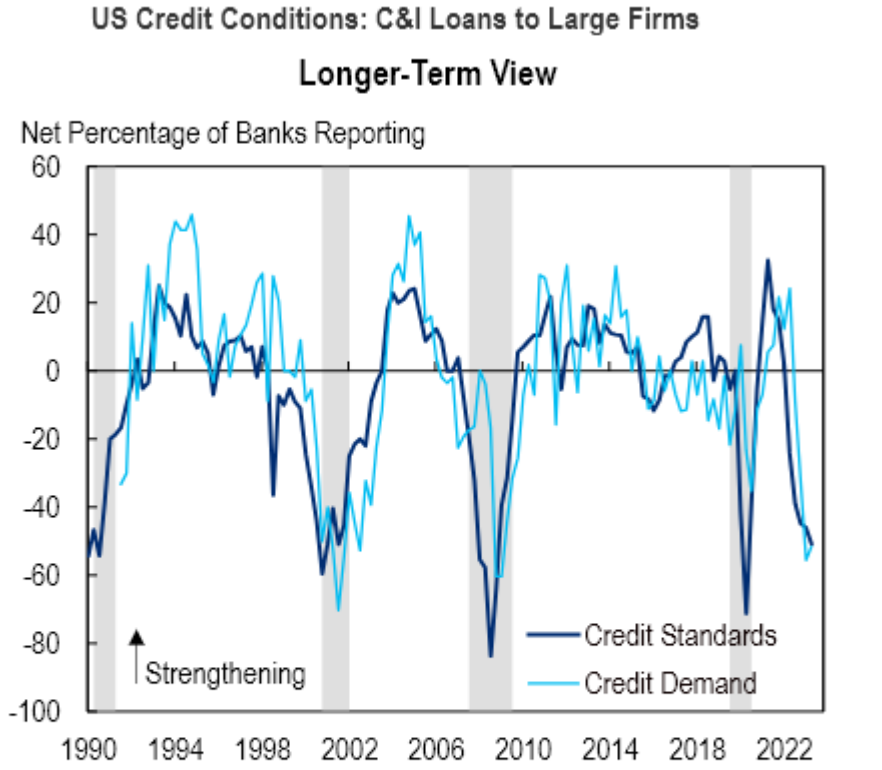
Global – Purchasing Managers' Index



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Citi Research, S&P Global, Haver Analytics

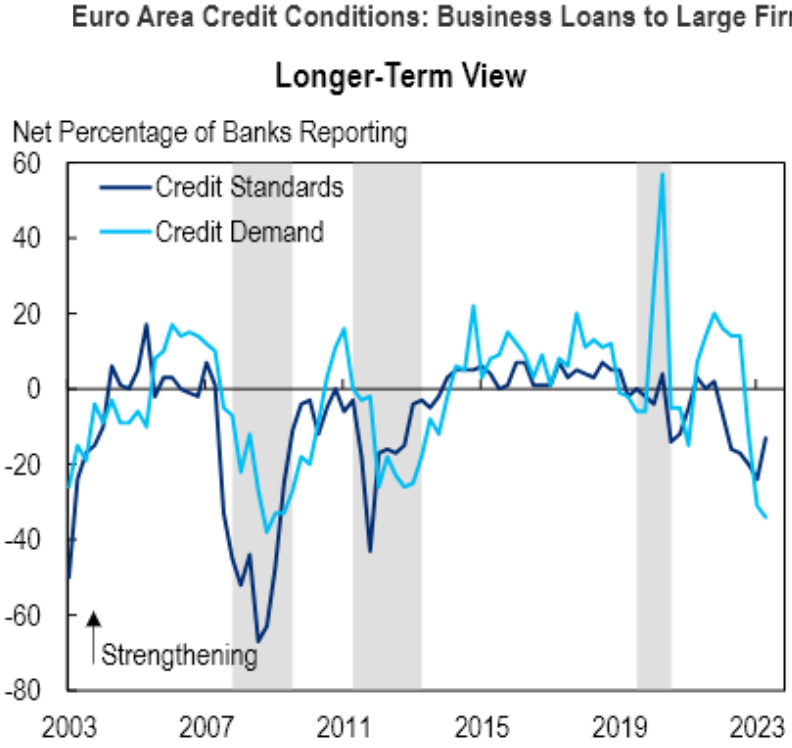
US & EA – The deterioration in credit conditions observed to date could lower real GDP in the US and Eurozone economies by 1-2% (or even more) by the end of next year.



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Note: Shading represents US recessions.

Source: Citi Research, FRB, NBER, Haver Analytics



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Note: Shading represents EA recessions.

Source: Citi Research, ECB, Euro Area Business Cycle Network, Haver Analytics

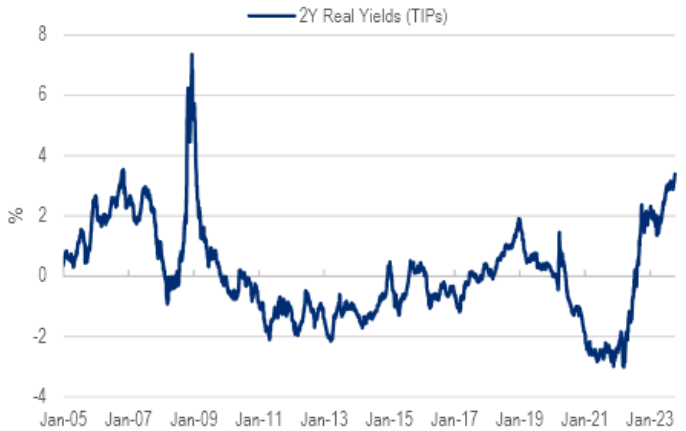
US – Risks of a hard landing are rising **with the rapid tightening of financial conditions** associated with the rise in ten year nominal Treasury yields to 4.8% and real yields to 2.5%

Treasury yields making new post-2007 highs

© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Citi Research, Bloomberg

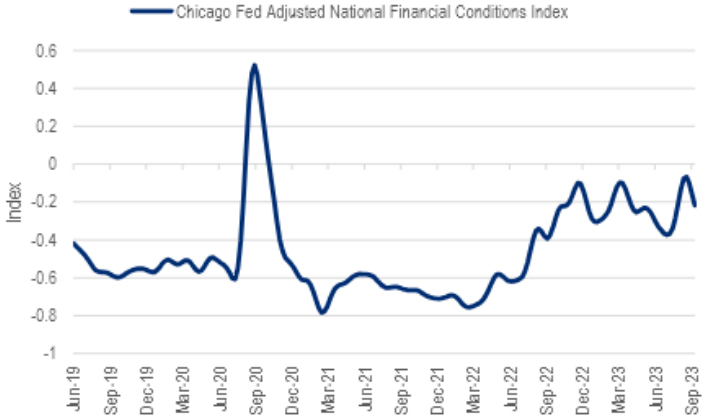
Real yields also making new post-2007 highs



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Citi Research, Bloomberg

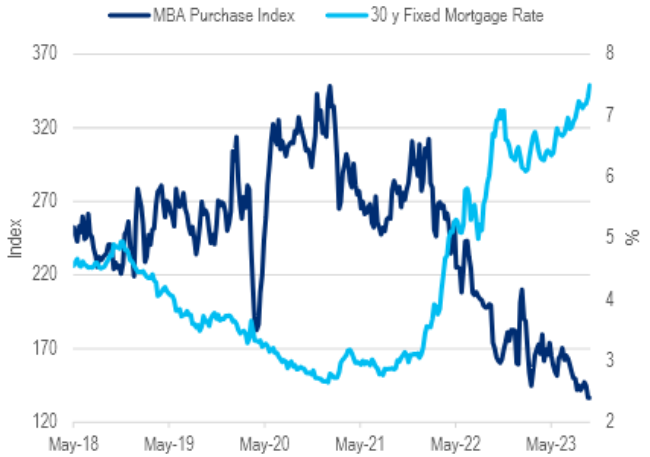
Financial conditions have tightened



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Citi Research, Bloomberg

Mortgage rates above 7%

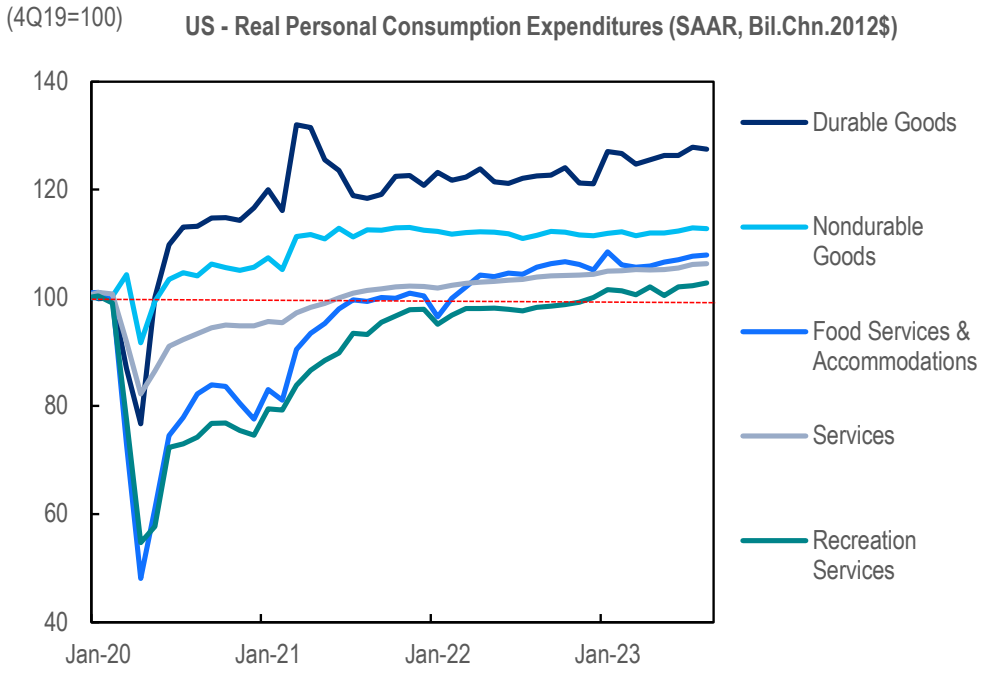


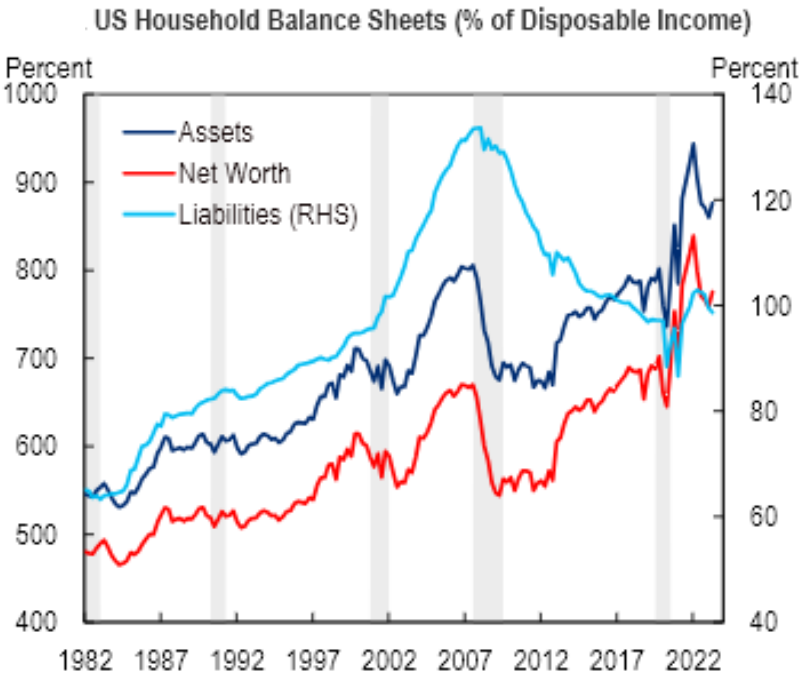
© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Citi Research, Bloomberg

Consumer spending has rotated back toward services, and the demand for goods has moderated. Service sectors are relatively labor intensive. Services inflation shows few signs of abating.

US - Goods vs. Service consumption





© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

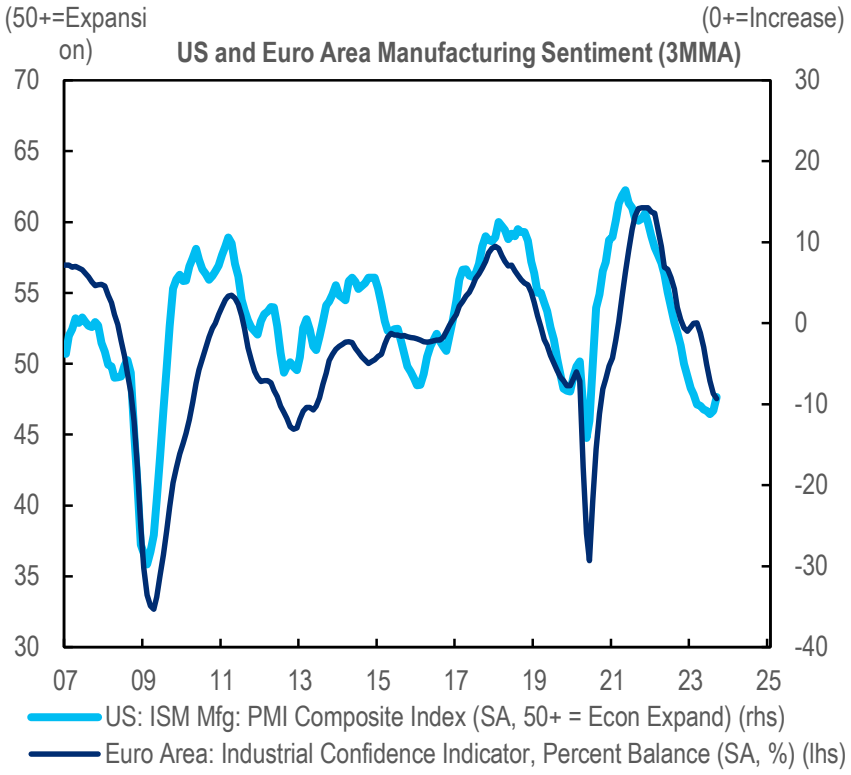
Note: Shading represents US recessions.

Source: Citi Research, FRB (Z.1), NBER, Haver Analytics

Source: BEA, Haver, Citi Research

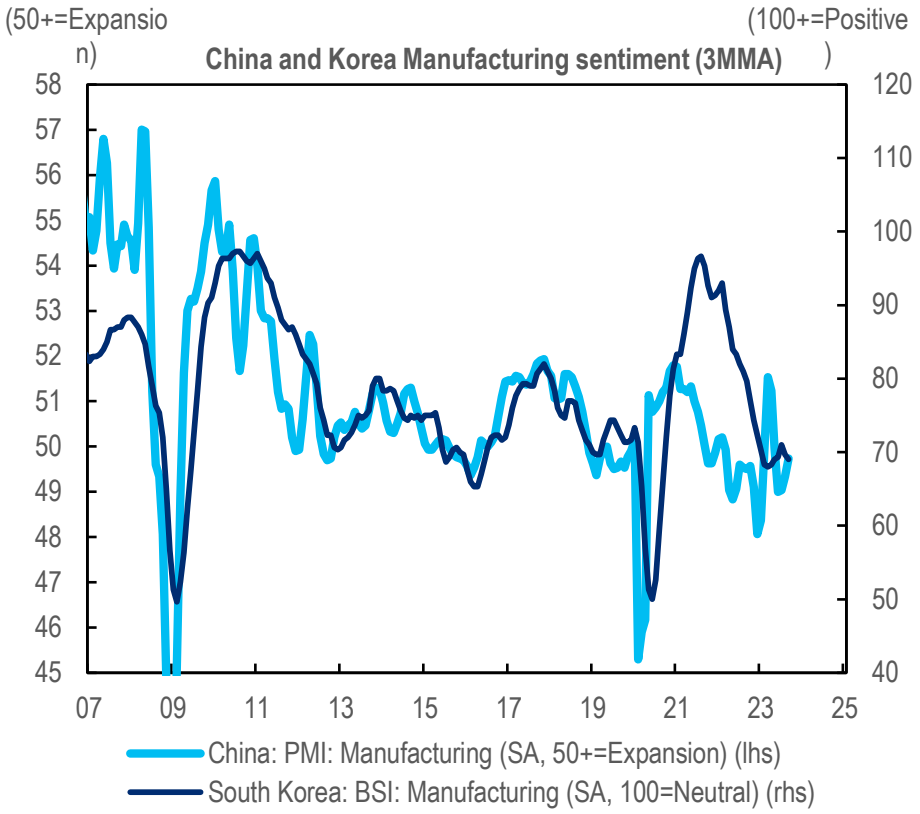
Global – Manufacturing sentiment

US and Euro Area



Source: Haver, CEIC, Citi Research

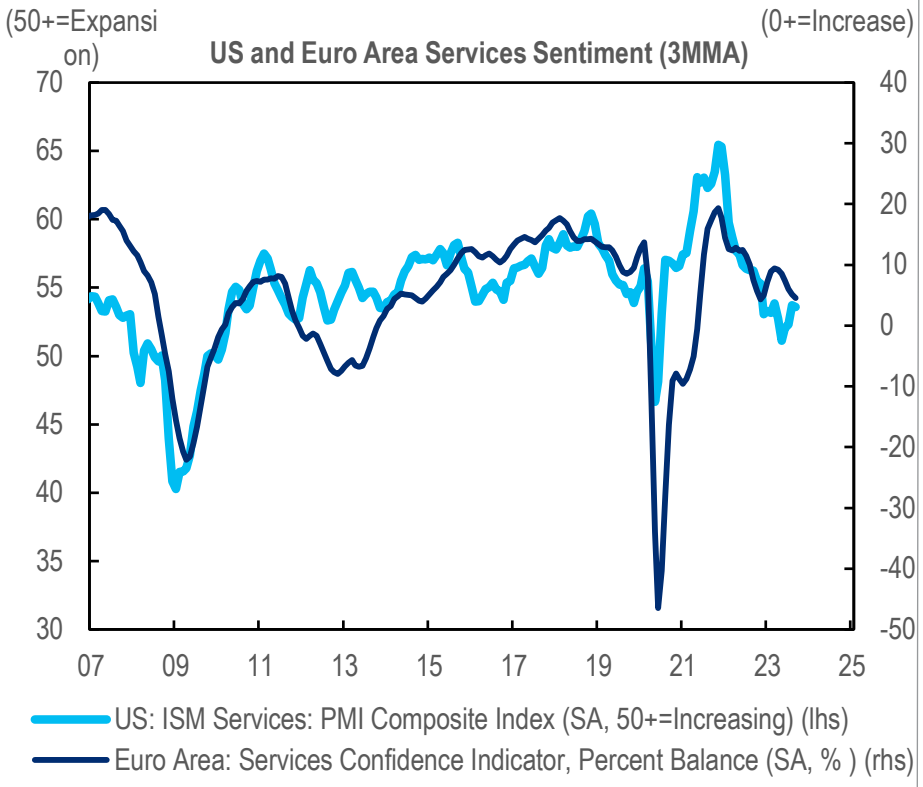
China and South Korea



Source: Haver, CEIC, Citi Research

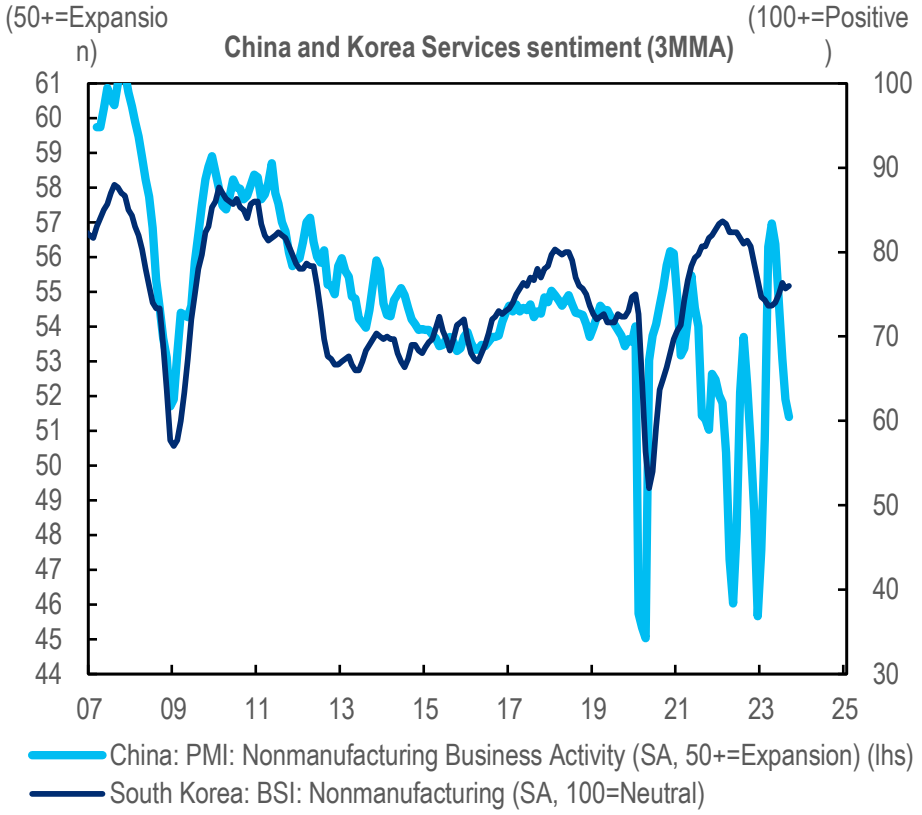
Global – Services sentiment

US and Euro Area



Source: Haver, CEIC, Citi Research

China and South Korea



Source: Haver, CEIC, Citi Research

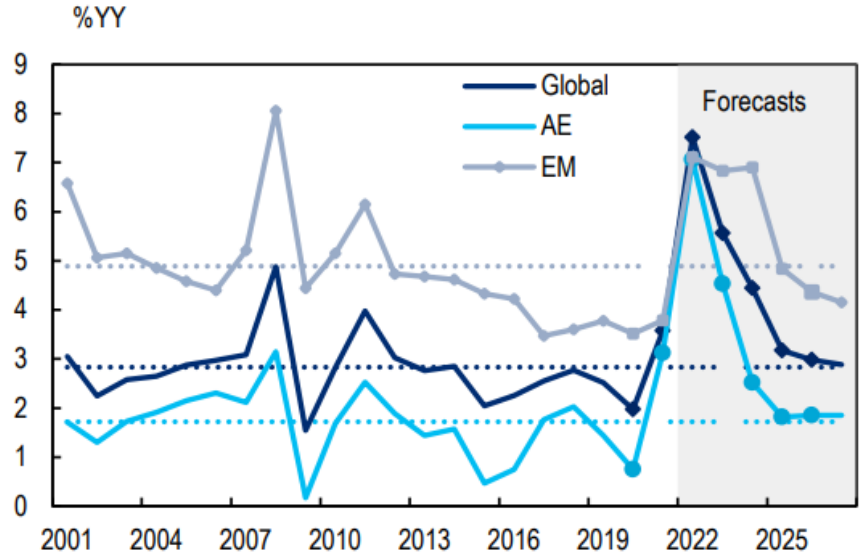
US – Tighter credit and financial conditions, including the recent rise in long-term real rates, are likely to push the economy into recession sometime in the next year. **Stronger-than-expected Q3 activity data has us pushing our "modal" first quarter of contraction from Q1 to Q2 2024**

					2023				2024			
		2023F	2024F		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
GDP	%Avg YoY	2.3	0.8	%QoQ Ann	2.2	2.1	3.8	1.3	0.9	-1.3	-1.9	3.7
Consumption	%Avg YoY	2.2	1.0	%QoQ Ann	3.8	0.8	3.6	1.4	0.8	-0.3	-0.8	3.6
Business Equip. Investment	%Avg YoY	1.2	-0.9	%QoQ Ann	-4.1	7.7	6.8	0.0	2.0	-10.0	-8.0	5.0
Business IPP	%Avg YoY	4.3	0.9	%QoQ Ann	3.8	2.7	2.0	2.0	0.0	0.0	0.5	1.0
Business Structures	%Avg YoY	11.3	-0.6	%QoQ Ann	30.3	16.1	2.0	0.0	2.0	-10.0	-4.0	3.0
Residential Investment	%Avg YoY	-10.4	1.5	%QoQ Ann	-5.3	-2.2	3.6	13.7	2.9	-4.9	-9.8	5.0
Final Private Domestic Demand	%Avg YoY	1.9	0.9	%QoQ Ann	3.6	1.7	3.7	1.8	0.9	-1.4	-1.7	3.5
Government	%Avg YoY	3.2	1.3	%QoQ Ann	4.8	3.3	1.0	1.0	1.0	1.0	1.7	1.5
Exports	%Avg YoY	2.3	1.1	%QoQ Ann	6.8	-9.3	5.0	0.7	2.0	0.7	0.7	4.0
Imports	%Avg YoY	-2.0	0.6	%QoQ Ann	1.3	-7.6	1.0	2.9	2.0	-1.1	-1.1	4.3
Inventories	pp cont.	-0.5	-0.2	pp cont.	-2.2	0.0	0.0	0.0	0.0	-0.5	-1.0	0.5
Core PCE Deflator	%Avg YoY	4.2	3.1	%Avg YoY	4.8	4.6	4.0	3.6	3.2	3.0	3.1	3.0
Core CPI	%Avg YoY	4.8	3.3	%Avg YoY	5.6	5.2	4.4	4.1	3.8	3.3	3.3	3.0
Headline CPI	%Avg YoY	4.2	2.9	%Avg YoY	5.8	4.1	3.6	3.5	3.1	3.0	2.8	2.5
Average Hourly Earnings	%Avg YoY	4.3	3.8	%Avg YoY	4.5	4.4	4.3	4.0	4.0	3.9	3.7	3.6
Unemployment Rate	Avg %	3.6	4.9	Avg %	3.5	3.6	3.7	3.8	4.0	4.4	5.1	5.5
Monthly payroll growth	(1,000s) avg.	226.2	-217.5	(1,000s) avg.	312.3	201.0	266.3	125.0	50.0	-360.0	-360.0	-200.0
ISM Manf	Avg	47.9	46.5	Avg	47.1	46.7	47.7	50.0	48.0	45.0	43.0	50.0
Policy Range	% EOP	5.25-5.5	4.25-4.5	% EOP	4.75-5.00	5-5.25	5.25-5.5	5.25-5.5	5.25-5.5	5.25-5.5	4.75-5.0	4.25-4.5

Source: Citi Research Estimates; Note: US Economics Weekly (13 October 2023)

Global Inflation – We see global inflation gradually declining as tight central bank policies restrain spending and growth moderates. Labor markets should start to loosen and services inflation should eventually yield.

Global - We have raised our 2023 and 2024 global inflation forecast by 0.1pp at 5.6% and 0.1pp to 4.4% (2022: 7.0%).

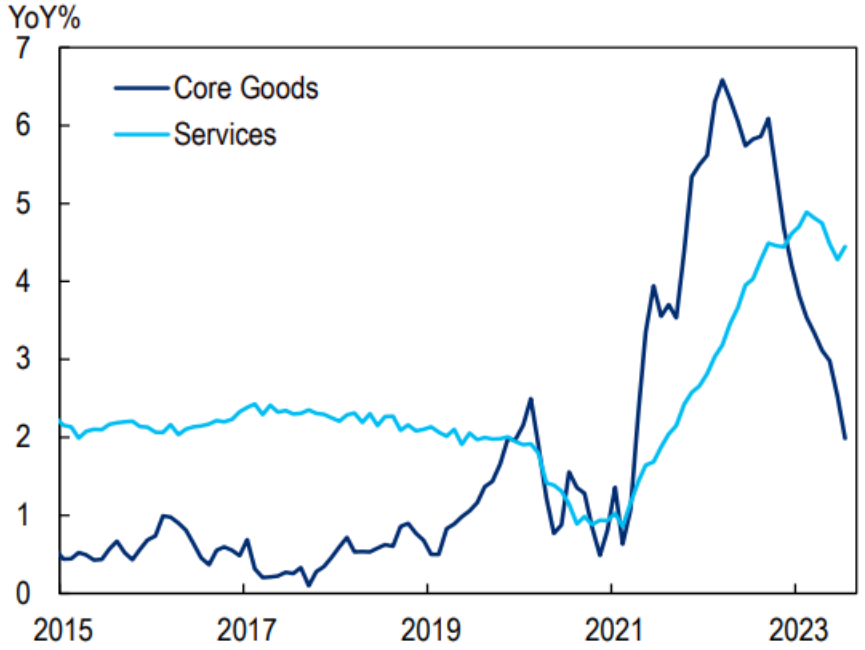


© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Note: At market exchange rates. PCE for the US. Horizontal lines are respective LT averages (2000-2020) for Global, AE and EM %YY inflation.

Source: Citi Research, National Sources, IMF

Global – Core Goods & Services Inflation



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Citi Research, National Statistical Sources, Haver Analytics

Oil – OPEC+ cuts have driven oil higher, but 4Q'23 and 2024 are set to move lower

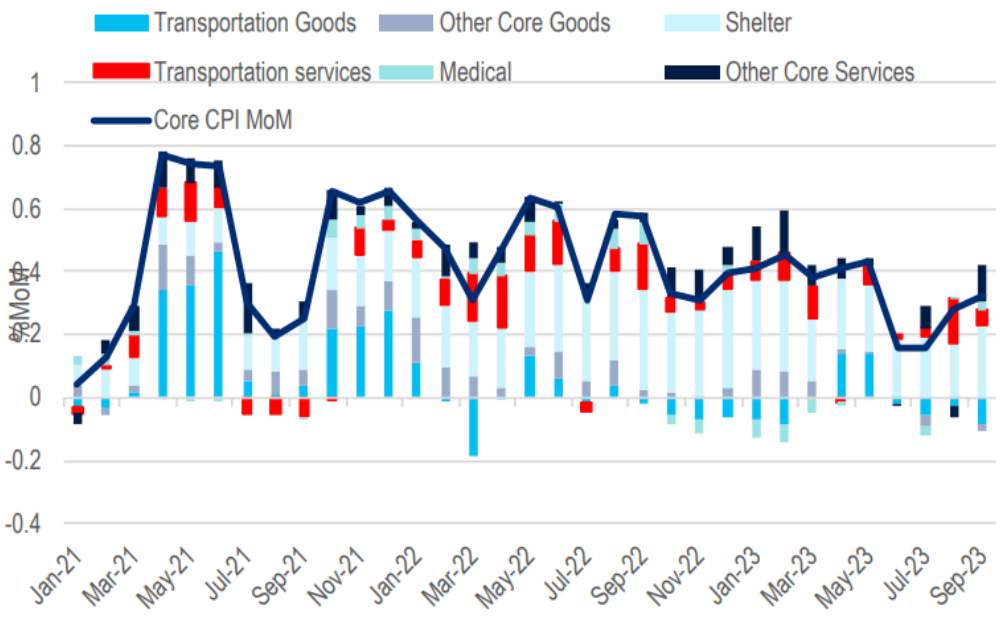
Citi Commodities Price Outlook

		Point Prices																		
		0-3M	6-12M		Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023E	Q1 2024E	Q2 2024E	Q3 2024E	Q4 2024E	2021	2022	2023E	2024E	2025E
Energy				5Y Cyclical																	
ICE Brent	USD/bbl	82	72	70	98	112	98	89	82	79	86	82	80	73	74	68	70	99	82	74	70
NYMEX WTI	USD/bbl	78	68	67	92	108	94	82	76	75	82	78	76	69	70	64	67	95	78	70	67
Henry Hub Natural Gas	USD/MMBtu	2.0	2.7	4.0	4.6	7.5	7.9	6.2	2.8	2.3	2.6	2.5	2.5	2.6	3.0	3.5	3.7	6.5	2.5	2.9	4.0
JKM LNG	USD/MMBtu	4.0	9.0	7.0	31.0	27.0	47.0	33.0	18.3	11.1	12.6	12.0	9.1	10.9	13.5	13.5	18.0	34.0	13.5	11.7	18.0
TTF Gas	USD/MMBtu	3.3	8.0	6.0	33.0	32.0	60.0	40.0	16.8	11.3	10.4	9.2	8.2	10.2	14.9	15.8	16.0	41.0	11.9	12.3	18.5
Base Metals				LT Price																	
LME Aluminum	USD/MT	2,100	2,400	2,500	3,255	2,882	2,356	2,336	2,400	2,264	2,157	2,200	2,200	2,400	2,600	2,650	2,474	2,707	2,255	2,465	2,800
LME Copper	USD/MT	7,500	9,000	9,000	9,993	9,536	7,767	8,030	8,932	8,469	8,371	8,000	8,000	8,000	9,000	10,000	9,314	8,832	8,440	8,750	12,000
LME Lead	USD/MT	2,100	2,200	2,000	2,326	2,200	1,976	2,110	2,140	2,117	2,174	2,150	2,100	2,150	2,200	2,250	2,199	2,153	2,145	2,175	2,300
LME Nickel	USD/MT	18,000	18,000	17,000	28,347	29,018	22,105	25,581	26,033	22,333	20,435	19,000	18,000	18,000	18,000	18,000	18,446	26,263	21,945	18,000	18,000
LME Zinc	USD/MT	2,300	2,500	2,400	3,736	3,925	3,281	3,008	3,130	2,536	2,434	2,400	2,300	2,300	2,400	2,600	3,002	3,487	2,625	2,400	2,700
Precious Metals				LT Price																	
COMEX Gold	USD/t. oz	1,960	2,150	1,400	1,881	1,873	1,728	1,732	1,902	1,992	1,950	1,980	2,050	2,100	2,025	2,010	1,800	1,804	1,955	2,045	1,875
Silver	USD/t. oz	25.0	30.0	16.5	24.0	22.6	19.2	21.3	22.6	24.2	23.6	24.0	25.0	28.0	28.0	26.0	25.1	21.8	24.0	27.0	26.0
Platinum	USD/t. oz	1,000	1,050	1,150	1,031	961	888	977	996	1,027	932	975	1,000	1,010	1,020	1,030	1,092	964	984	1,015	1,050
Palladium	USD/t. oz	1,200	1,175	800	2,330	2,091	2,081	1,936	1,571	1,445	1,253	1,225	1,225	1,200	1,190	1,180	2,493	2,110	1,376	1,200	1,000
Bulk Commodities				5Y Cyclical																	
Hard Coking Coal (Spot)	USD/MT	240	220	140	486	450	250	279	343	243	263	250	240	230	220	215	223	366	275	225	200
Thermal Coal Asia (NEWC)	USD/MT	125	150	75	267	365	418	379	253	161	147	140	130	140	150	150	136	357	175	140	130
Iron Ore Spot (TSI)	USD/MT	100	100	60	141	138	105	98	125	112	113	100	105	100	95	100	158	121	110	100	90
Agriculture																					
CBOT Corn	USd/bu	450	400	N/A	673	777	658	650	600	625	500	450	450	425	400	400	582	693	554	419	375
CBOT Soybeans	USd/bu	1,250	1,150	N/A	1562	1683	1528	1415	1350	1433	1400	1300	1200	1200	1100	1100	1,375	1,550	1,371	1,150	1,000
CBOT Wheat	USd/bu	575	525	N/A	913	1073	815	800	725	648	625	575	575	550	525	515	702	901	643	541	500
ICE Sugar	USd/lb	27.0	28.0	N/A	18.6	19.3	18.3	19.0	20.8	25.0	24.9	26.5	27.0	27.5	28.0	28.0	17.9	18.8	24.3	27.6	N/A
ICE Coffee	USd/lb	155	150	N/A	235	225	210	210	185	170	160	155	165	165	160	160	167	220	168	160	N/A
ICE Cocoa	USD/MT	3,200	2,600	N/A	2580	2480	2342	2400	2685	3095	3450	3300	3000	2900	2800	2800	2,500	2,450	3130	2875	N/A

Source: Bloomberg, Citi Research Estimates

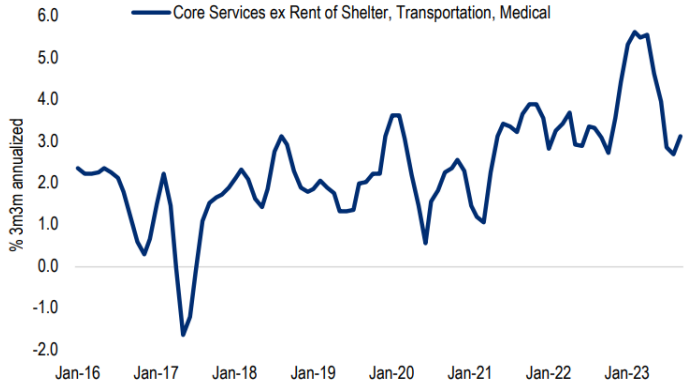
US – September CPI inflation (CPI at 3.7%, Core CPI at 4.1%) - **0.323%MoM core CPI inflation** implies recently slower core inflation was a temporary "soft patch." An unexpected acceleration in owner's equivalent rent to 0.56%MoM and non-shelter services running 0.5%MoM even after excluding hotels are inconsistent with a glide-path back to two percent inflation.

Core inflation



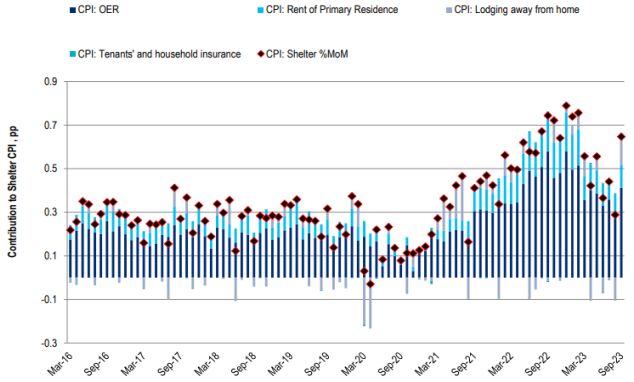
Source: Citi Research, BLS

Core service ex-shelter & others



Source: Citi Research, BLS

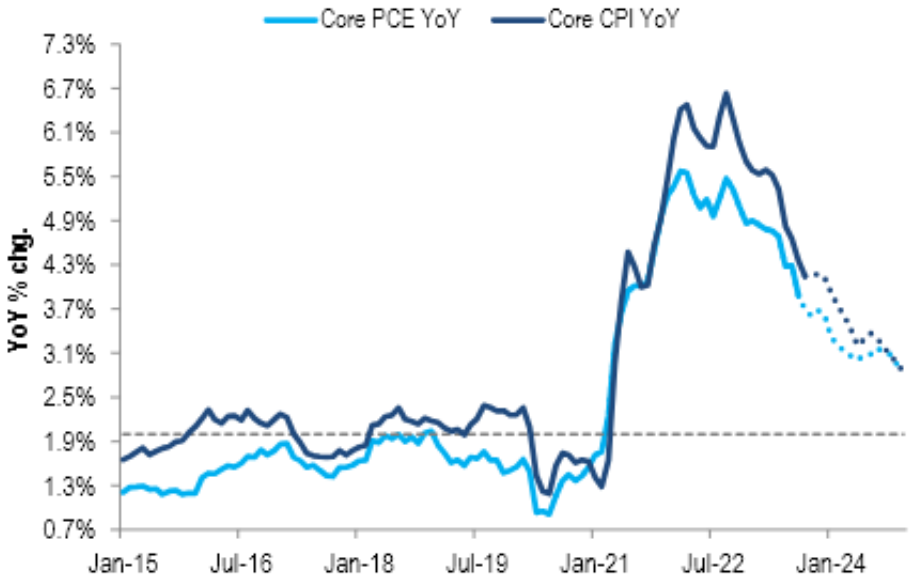
Shelter prices



Source: Citi Research, BLS

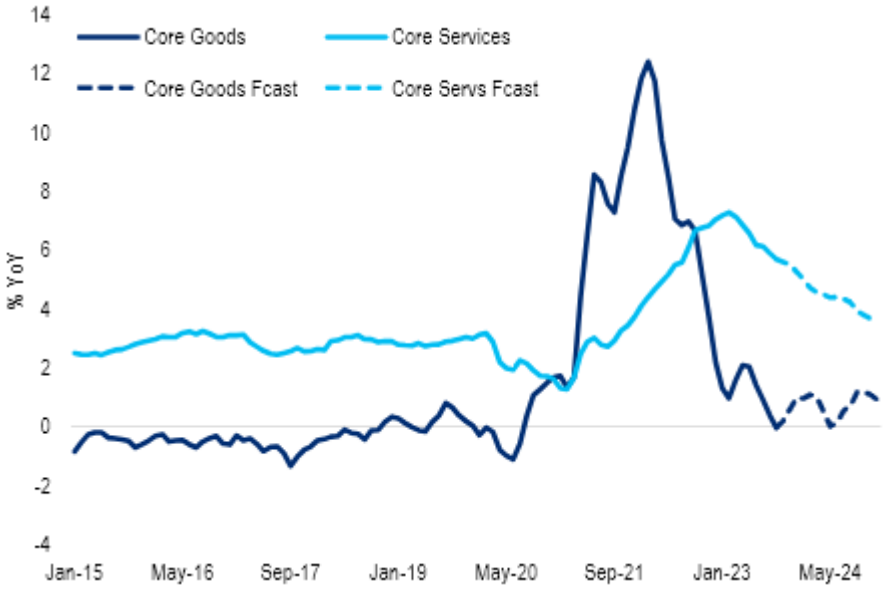
US – Inflationary pressure continues to build through **rising labor costs and resurgent house prices.**

US – We expect inflation to remain above 2% for some time



Source: Citi Research Estimates, BLS, BEA

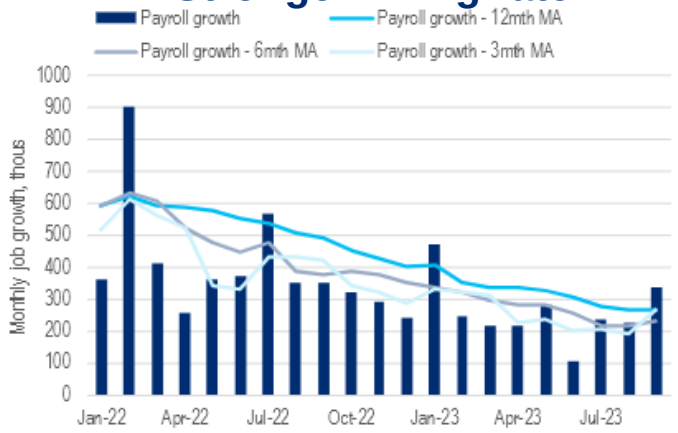
US – We expect core goods inflation to come down quicker than core services



Source: Citi Research Estimates, BLS, BEA

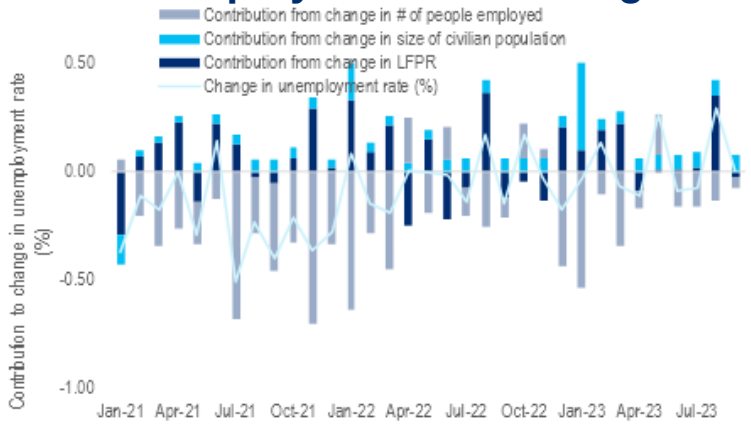
US – 336k new jobs in September means a tight labor market is getting tighter. The unemployment rate held steady at a very-low 3.8%. Average hourly earnings growth has slowed 0.2%MoM for two consecutive months

Stronger hiring rate



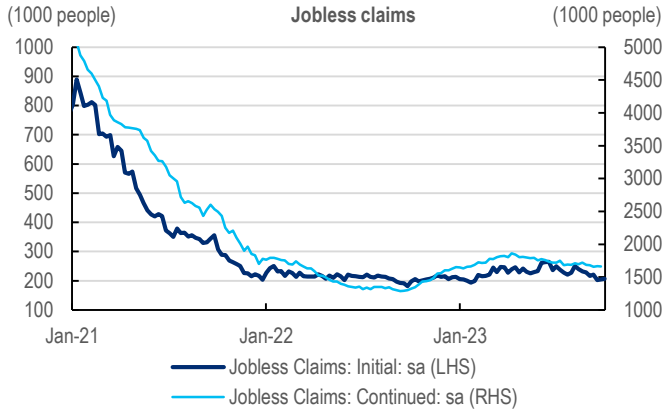
Source: Citi Research, BLS

The unemployment rate changes



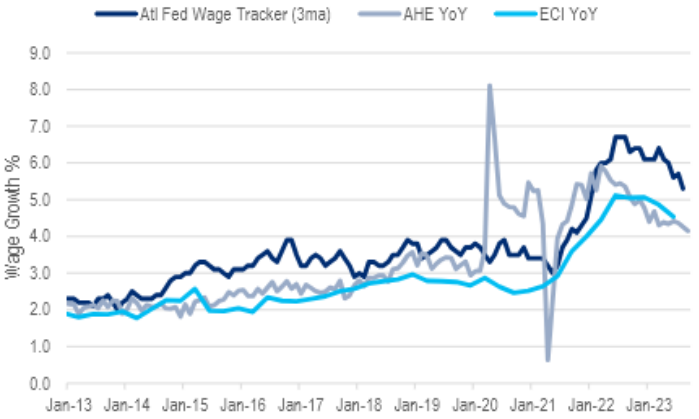
Source: Citi Research, BLS

Jobless claims



Source: Citi Research, BLS

Wage growth measures still above 4%



Source: Citi Research, BLS

US – July FOMC hiked 25bps to 5.25-5.50% while offering no new guidance (vs. June'23: hold, May'23: 25bps, March'23: 25bps, Feb'23: 25bps, Dec'22: 50bps, Nov'22: 75bps),

Chair Powell seemed intent on delivering **a neutral meeting**

According to Powell, the decision at the September meeting **could be to raise rates again or could be to leave them on hold.**

Chair Powell confirmed that in a **"soft landing,"** balance sheet reduction might continue even as the Fed cuts rates.

Fed median projections (June)

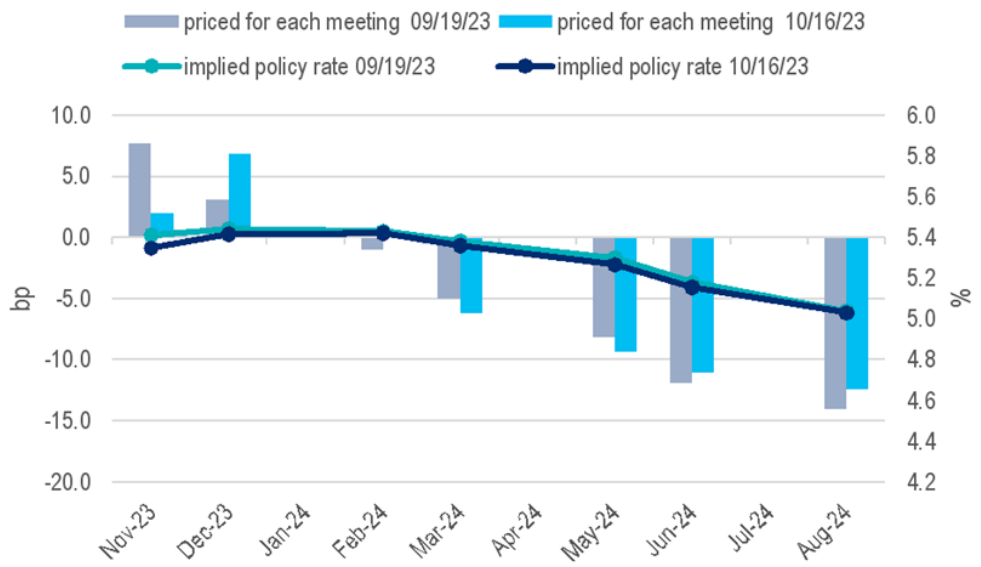
		2023	2024	2025	Longer Run
Real GDP	June	1	1.1	1.8	1.8
	March	0.4	1.2	1.9	1.8
Unemployment rate	June	4.1	4.5	4.5	4.0
	March	4.5	4.6	4.6	4.0
PCE Inflation	June	3.2	2.5	2.1	2.0
	March	3.3	2.5	2.1	2.0
Core PCE Inflation	June	3.9	2.6	2.2	
	March	3.6	2.6	2.1	
Fed funds rate	June	5.6	4.6	3.4	2.5
	March	5.1	4.3	3.1	2.5

Source: Citi Research, Federal Reserve Bank

US – Our base case is for the Fed to remain on-hold until the US economy falls into recession at some point next year and the Fed cuts rates.

We pencil these in as 25bp cuts at each meeting starting in July to a terminal rate of 3% reached in 2025, but we would not be surprised by a faster pace of cuts depending on the speed with which activity data deteriorate

Market pricing less than 50% probability of an additional hike



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Citi Research

US Rates Strategy – The Fed appears to be lightly targeting 10y yields based on recent Fedspeak, which is likely to box the Fed into a dovish corner.

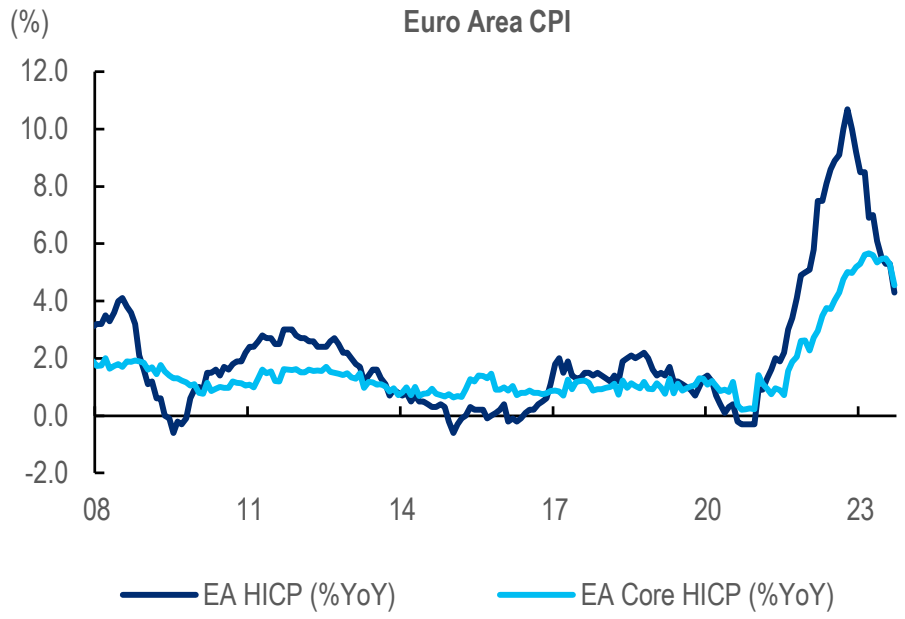
Rates forecasts for End-2023

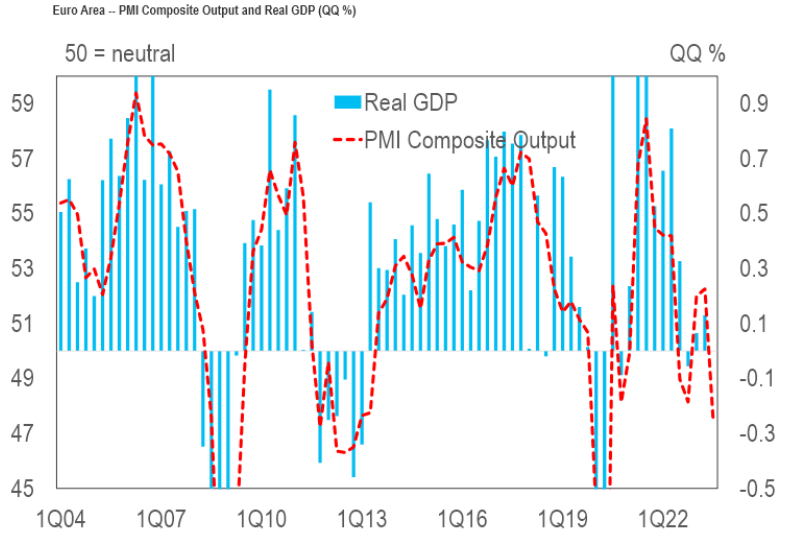
US Rates	Spot	Forwards	Base Case	Bull Case	Bear Case
2y	5.02%	4.88%	4.30%	3.95%	5.40%
5y	4.68%	4.65%	3.85%	3.60%	4.80%
10y	4.71%	4.72%	3.65%	3.40%	4.40%
30y	4.89%	4.88%	3.85%	3.60%	4.35%

Source: Citi Research Estimates (as of 6 October, 2023)

Euro Area – Headwinds to the tradable sector are spreading. The economy will likely shrink over 3Q23E-1Q24E. Inflation remains sticky as energy shocks continue and wages rise fast. Core HICP was flat MM.

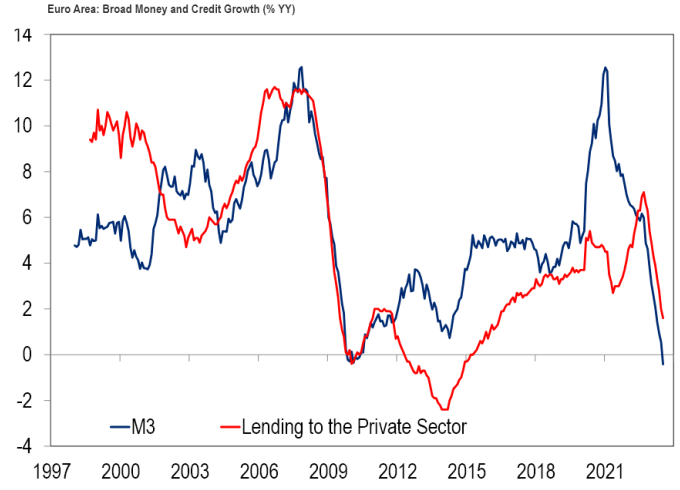
Euro Area – Headline CPI fell to 4.3% YY, core easing to 4.5% YY in September





© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Citi Research



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

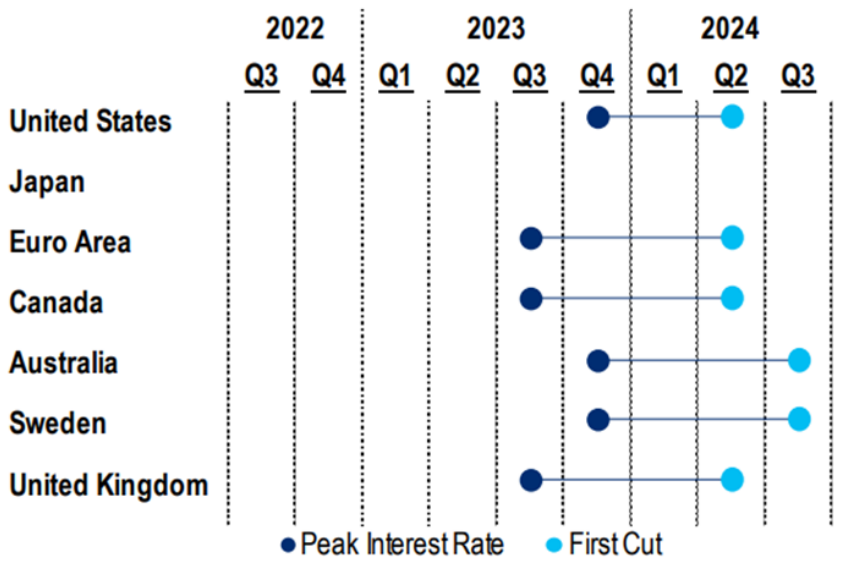
Source: Citi Research, Haver Analytics

Source: Citi Research, Eurostat

Euro Area – ECB rate hike by 25bp to 4% in Sep'23 was probably the last. The key sentence is "*maintained for **a sufficiently long duration***". Governors may express residual hawkishness via a faster balance sheet rundown soon.

We are more pessimistic on growth than the ECB, but we also think inflation should remain sticky. We bring forward our call for the **first rate cut to June 2024.**

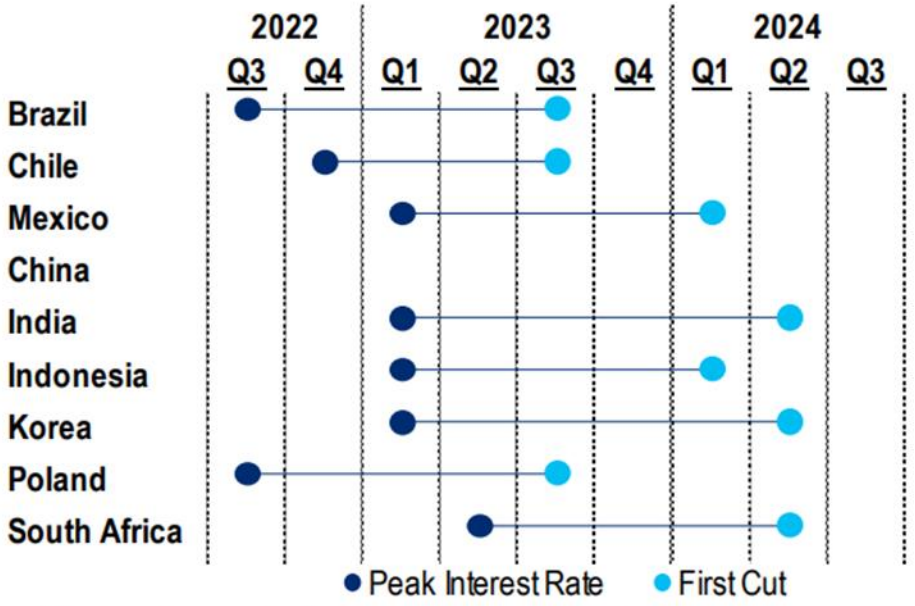
DM Policy Rates Forecasts



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Citi Research

EM Policy Rates Forecasts

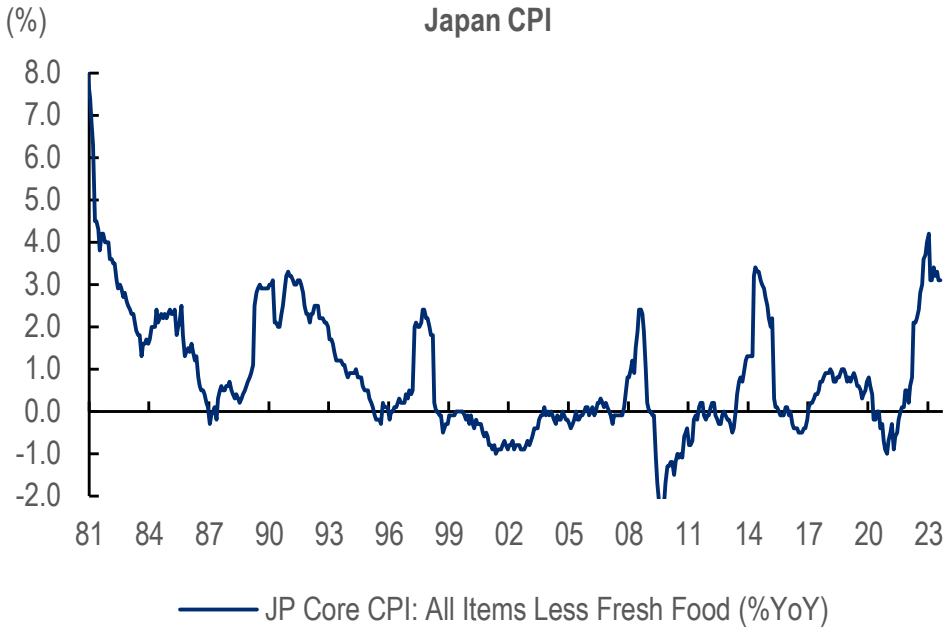


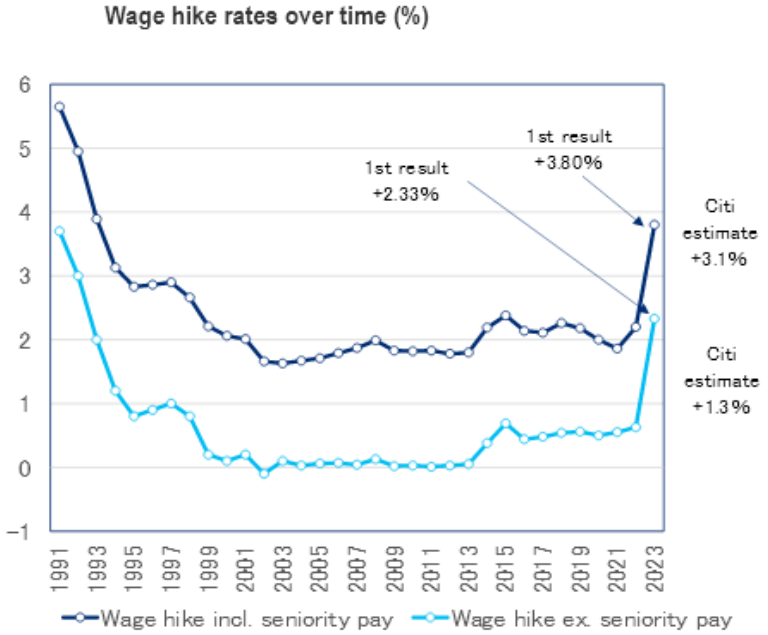
© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Citi Research

Japan – The nationwide core CPI (excluding only fresh food) increased 2.8% YoY in September, slowing from a 3.1% YoY rise in August

We expect core CPI to increase 2.9% YoY in October and 2.6% YoY in November. Downward pressure from energy looks likely to ease in October reflecting a halving of government subsidies for electricity and gas charges.





Source: MHLW, Japan Trade Union Confederation (Rengo), Citi Research.

Source: Citi Research, Haver

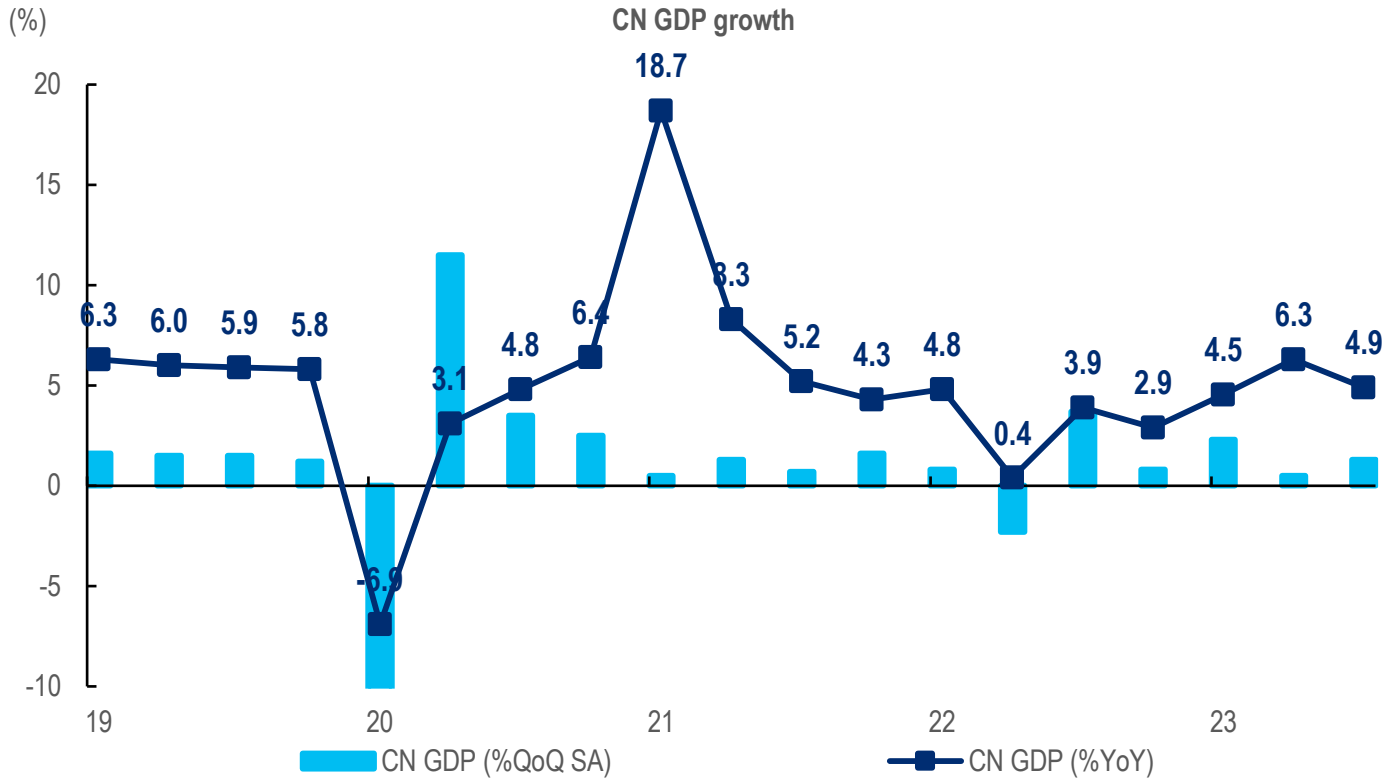
Japan – YCC increasingly a formality

In July, although the BoJ kept the YCC band **at +/- 50 bps, it no longer views this band as a rigid limit** and will not look to rein the rate in via unlimited fixed-rate bond purchasing operations even if it rises above 50bps. Rather, it will use such operations only if the long-term rate threatens to exceed 100bps.

Our baseline scenario, predicated on a US recession in 2Q24-3Q24, continues to put **the termination of YCC in January 2025 followed by NIRP in April 2025.**

However, we continue to emphasize our risk scenario of the abolishment of YCC in January 2024 and NIRP in April 2024, given the current environment of resilient US economy and Fed higher for longer policy, which tend to lead to weaker JPY.

China – GDP growth was a strong beat at 4.9%YoY in 23Q3, representing cyclical bottom thanks to consumption. The dual-track economy is showing large divergence across sectors: non-property sectors are gaining momentum, while property-related sectors are still struggling. We revised up **our 2023E GDP growth forecast to 5.3%YoY** from 5.0%YoY previously



Source: CEIC, Citi Research

China – Policy momentum is clearly picking up with multiple measures to support the property sector

For monetary policies, we reckon that liquidity management and credit growth will be the focus. We see another 25bps RRR reduction in 23Q4.

For fiscal policies, implementation and risk prevention could be moving to the center stage. We see the contour of the "holistic" LGFV debt resolution plan in 4Q23. Policymakers could issue at least RMB1trn of additional central government bonds for infrastructure investment to meet the growth target this year.

For property policies, further easing on the demand side (especially, home purchase restrictions in Tier-1 cities) and the way to finance old-village redevelopments in high-tier cities could be the next.

Category	Measures outlined in our H2 outlook	Threshold for action	Status post mid-year Politburo
Monetary	Guide down interest rates on both RMB and FX deposits	Low	Ongoing
	Additional 20bps MLF/LPR cut	Low	Ongoing
	50bps RRR cut	Low	Ongoing
	A weaker RMB	Low	On hold
	New PSL and other structural monetary policy tools	Medium	Ongoing/?
	Close the interest rate gaps between outstanding and new mortgages	High	Ongoing
Fiscal	Targeted support for durable goods	Low	Ongoing
	Quasi-fiscal tools through policy banks for new and green infrastructure and urban renewal	Medium	Ongoing
	Targeted cash subsidy for low income households / families with more than one children	Medium	?
	Special CGB issuance	High	?
	Tap into the unused quota for special LGBs	High	?
	Personal Income Tax cut with higher deductions for families with children and elderly	Unexpected	Ongoing
Property	Further mortgage rate cut following MLF/LPR cuts	Low	Ongoing
	Funding support for developers	Low	Ongoing
	Close the interest rate gaps between outstanding and new mortgages	Low	Ongoing
	Further tax and fee cuts for home purchases	Unexpected	Ongoing
	Lower down payment ratio for second home purchases	Medium	Ongoing
	A broad-based cut in down payment ratio	High	Ongoing
	Relaxation of purchase restrictions in core regions	High	Ongoing
Others	Activate capital markets and revive investor confidence as pledged by the Politburo	Unexpected	Ongoing
	A holistic approach for local government debt resolution as pledged by the Politburo	Unexpected	Ongoing

© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

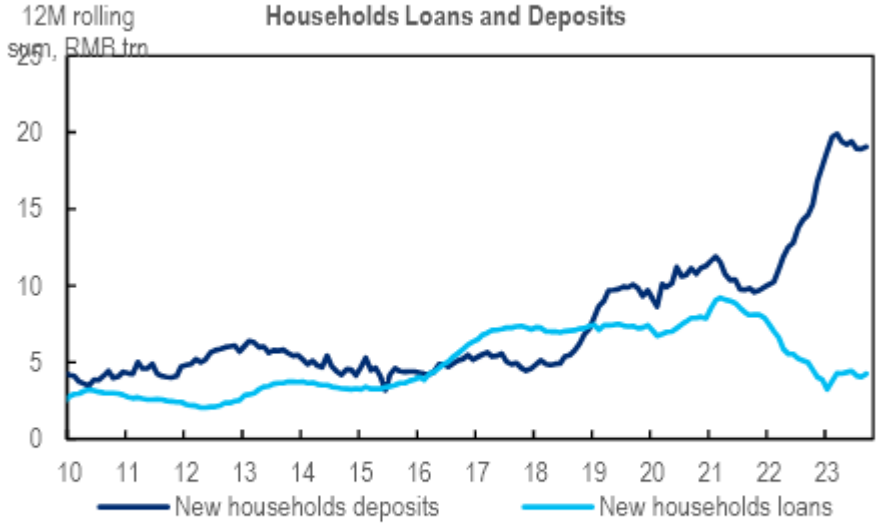
Source: Citi Research

China - Consumption gained momentum in September.

Headline retail sales growth accelerated for three consecutive months to 5.5%YoY. Goods sales quickened to 4.6%YoY in September (vs. 3.7%YoY in Aug), boosted by stronger consumer staples and auto sales. Restaurant revenue climbed to 13.8%YoY in September (vs. 12.4%).

Headline retail sales grew 5.5%YoY

Mortgage repricing could help with household borrowing

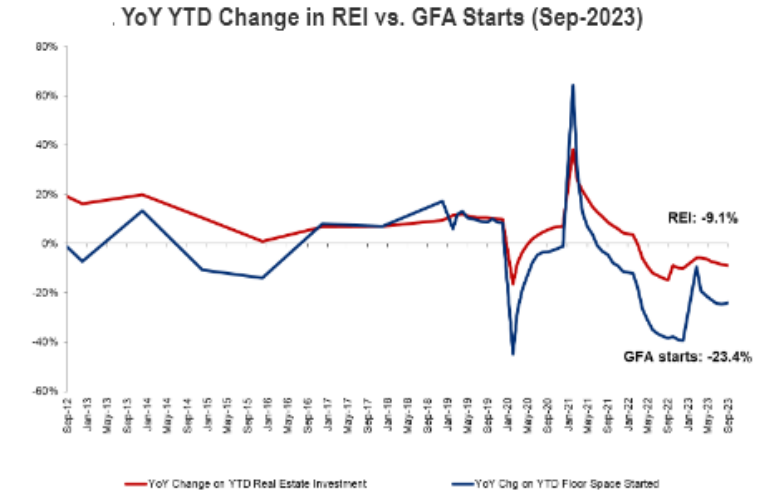


© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: PBoC, Wind, Citi Research

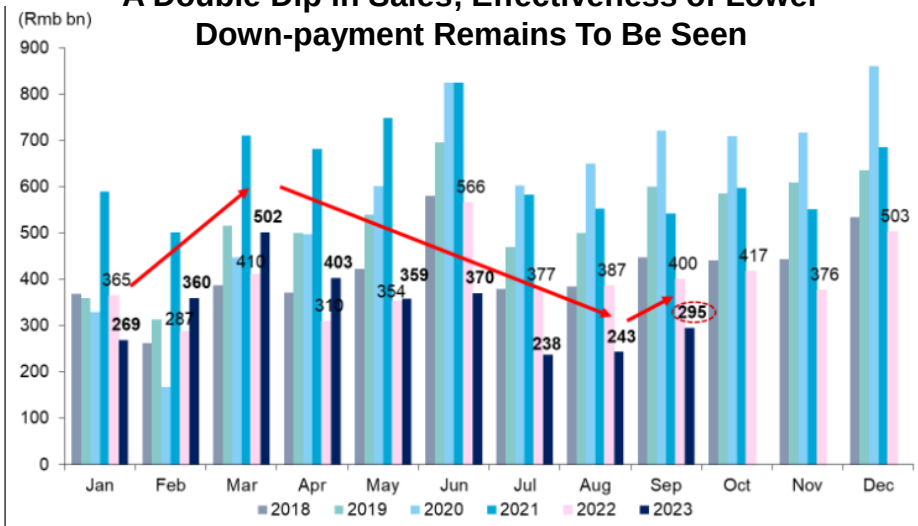
Source: NBS, Citi Research

China – A double dip in Property market: Citi's Property research team waits to assess effectiveness for a sustainable demand recovery in November after September's marginal sales impulse



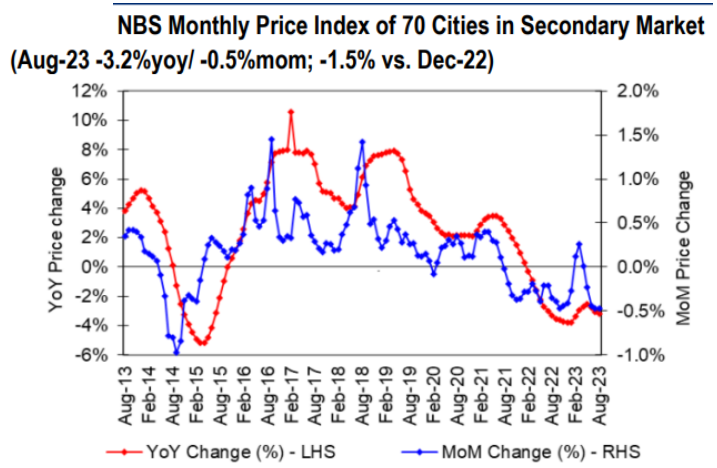
© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: NBS, Citi Research



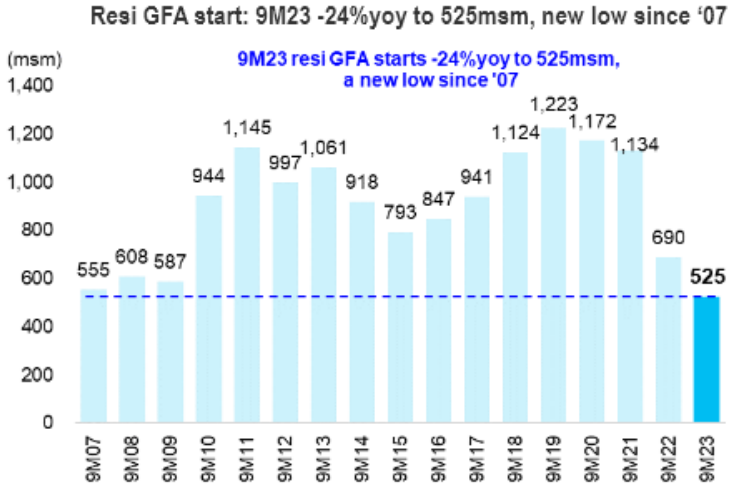
© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Company Reports , Citi Research



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: NBS, Citi Research



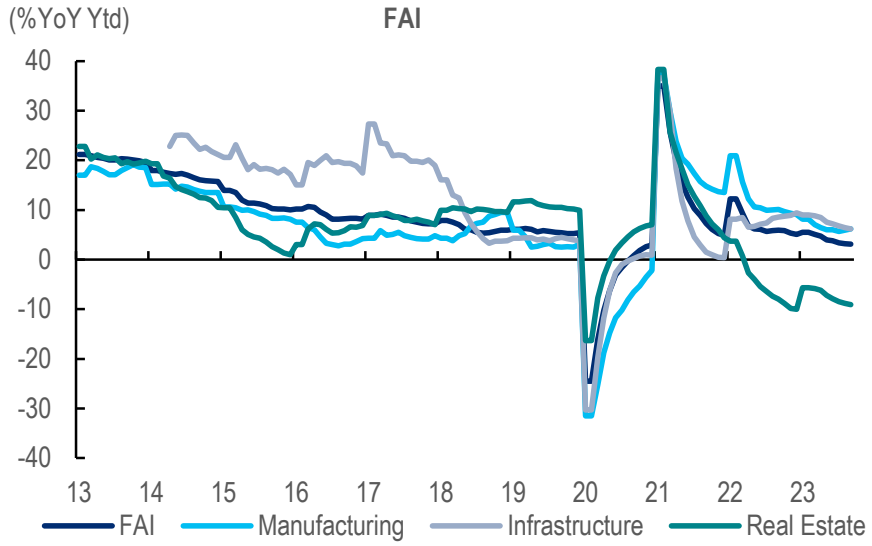
© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: NBS, Citi Research

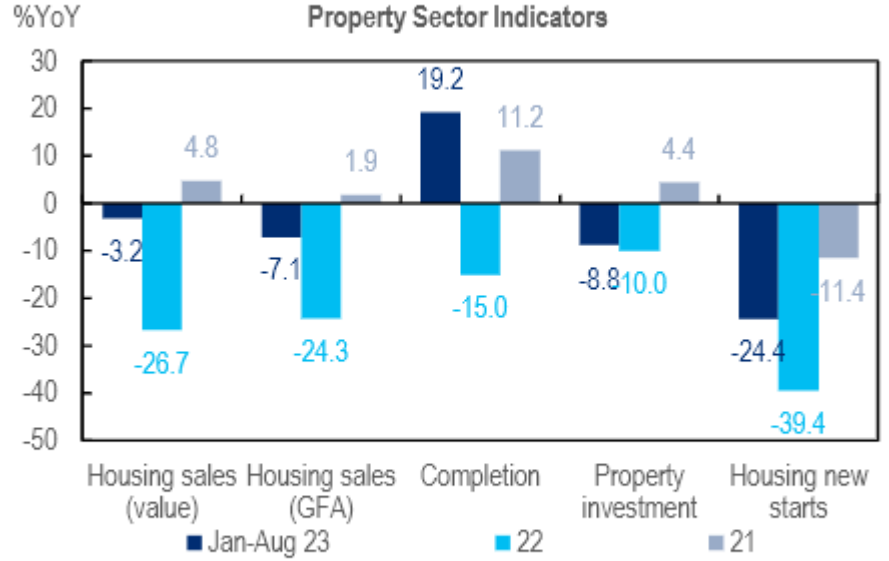
Reference: China Property (15 August 2023)

China – For Fixed Asset Investment, property was a weak link, yet both infrastructure investment and capex picked up. Headline FAI moderated to 3.1%YoY in the first three quarters partially due to deflation

Fixed asset investment and its breakdown: January-September FAI growth at 3.1%YoY (MI: 6.2%, REI: -9.1%, II: 6.2%)



The property sector remained in a soft patch before the latest round of policy easing



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

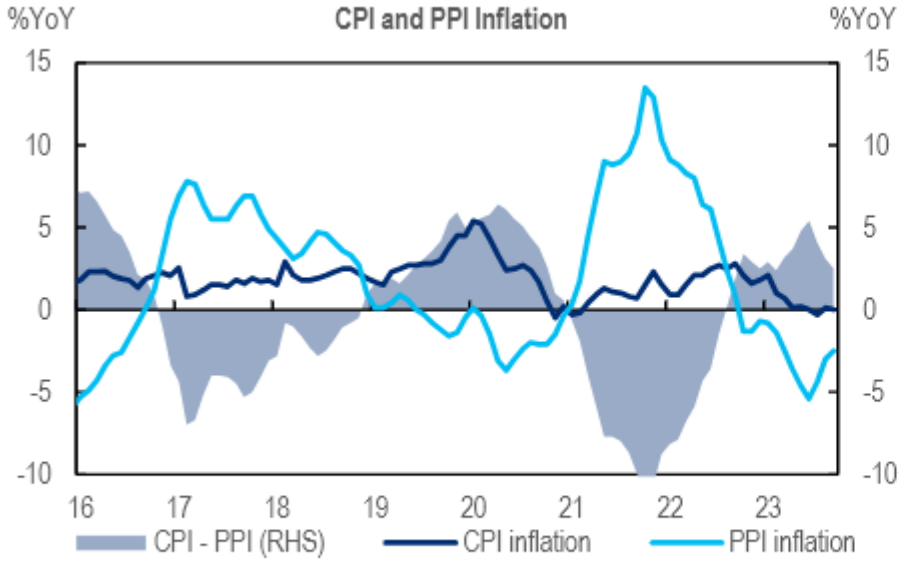
Source: NBS, Wind, Citi Research

Source: NBS and Citi Research

China – CPI inflation dipped to zero again in September

(0.0%YoY vs. August: 0.1%YoY). The high base driven by pork prices (-22%YoY) last year could be responsible for the soft reading. Core goods prices improvement has started, albeit at a mild pace.

CPI dipped to 0 again in September driven by food prices



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: NBS, Wind, Citi Research

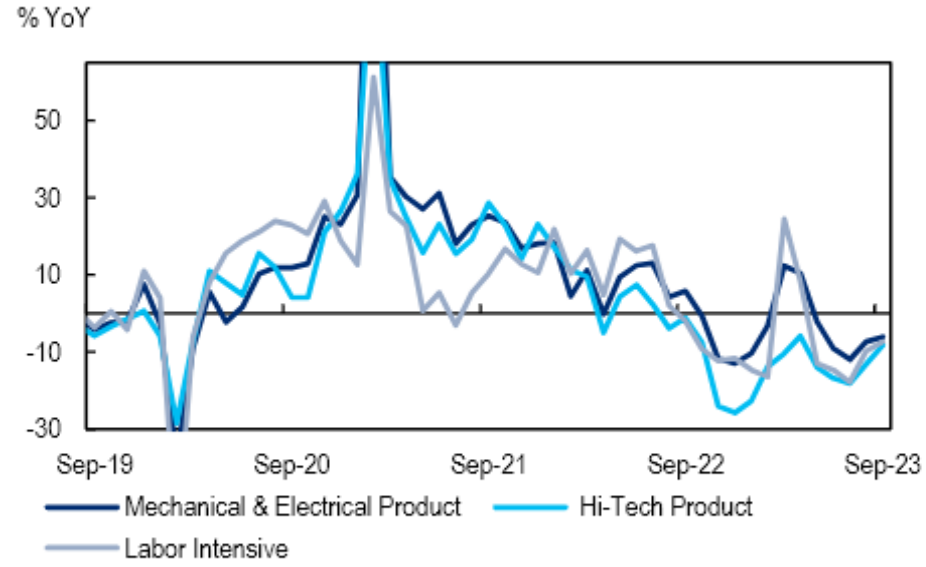
Core goods prices continued its modest recovery

© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: NBS, Wind, Citi Research

China - Exports (-6.2%YoY vs. August: -8.8%YoY) improved for the second month. In addition to the favorable base effects, China's diversified product structure and partner network remain the sources of export resilience, with headline growth likely turning positive in 23Q4.

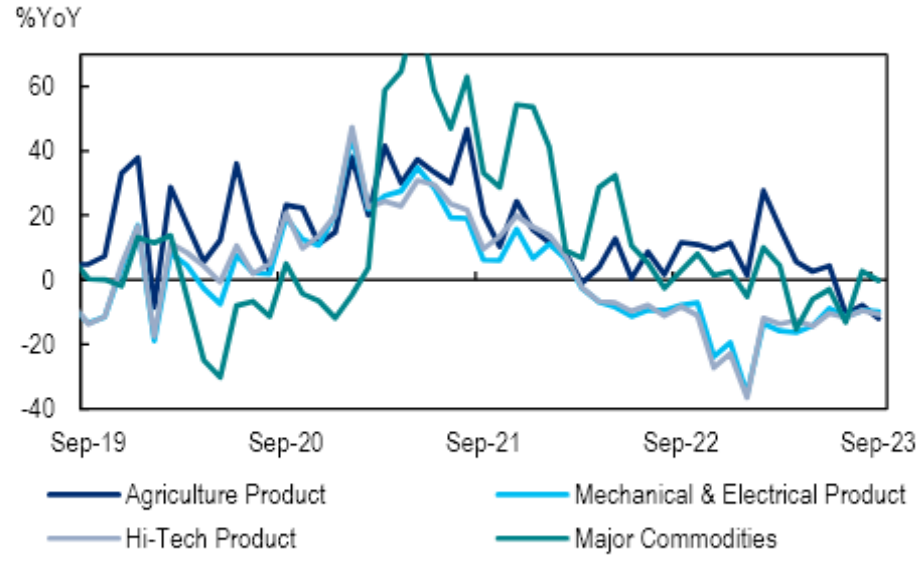
China's exports of major categories improved across the board



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: China Customs, CEIC, Citi Research

The import improvements could reflect the tentative stabilization of domestic demand.



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: China Customs, CEIC, Citi Research

China – In September, the PBoC announced a 25-bps RRR cut due to the tight liquidity conditions in the interbank market **The PBoC's focus may shift towards liquidity management and credit growth**, with policy rate cuts no longer on top of priority list.

In August'23, PBoC cut 1yr MLF rate by 15bps & 7D reverse repo rate and 1Y LPR by 10bps
In June'23, PBoC cut 1yr MLF rate & 7D reverse repo rate by 10bps, 1Y LPR by 10bp & 5Y LPR by 10bps
In March'23, PBoC announced a 25bps RRR cut
In Nov'22, PBoC announced a 25bps RRR cut

In Aug'22, PBoC cut 1Y MLF rate & 7D reverse repo rate by 10bps, 1Y LPR by 5bps, 5Y LPR by 15bps
In May'22, 5yr LPR was trimmed by -15bps to 4.45%.
In April'22, PBoC unveiled a 25bps RRR cut on April 15, smaller than expected.
In Jan'22, PBoC cut 1yr MLF rate & 7D reverse repo rate by 10 bps, 1yr LPR by 10bps & 5yr LPR by 5bps
In Dec'21, PBoC delivered a 50bps broad-based RRR reduction and a 5bps 1yr LPR cut.

Required Reserve Ratio 7.4%

Source: PBoC and Citi Research

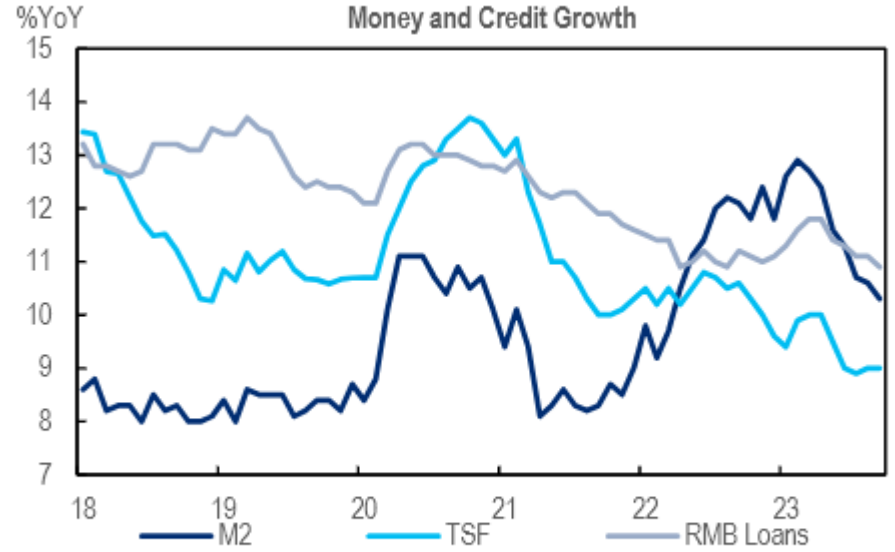
LPR 5-year 4.20%, LPR 1-year 3.45%, MLF 1-year 2.50% and 7-day Reverse Repo Rate 1.80%

Source: CEIC and Citi Research
Note: **Reverse repo rate** is the rate at which the central bank borrows money from banks
MLF rate is at which the central bank lends to the market for medium terms
LPR is the average of loan rates provided for customers of best credit qualities

China – Growth of outstanding TSF stabilized at 9.0%YoY. Loan growth dipped to 10.9%YoY from 11.1% in August.

Household borrowing had another end-quarter surge, yet with mortgage refinancing. Government bond issuance stayed strong, and could continue to support the economy.

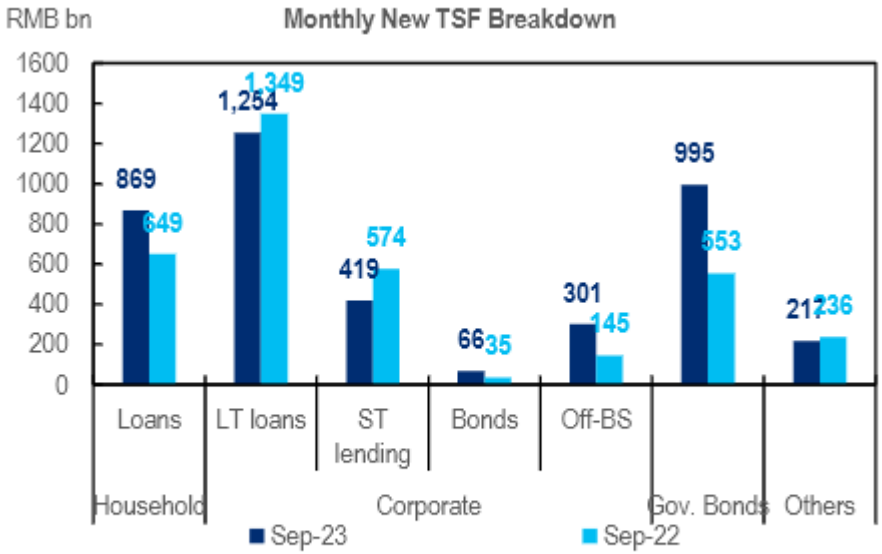
TSF growth stabilized while loans and money growth dipped



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: PBoC, Wind, Citi Research

. Government bond financing had another strong month



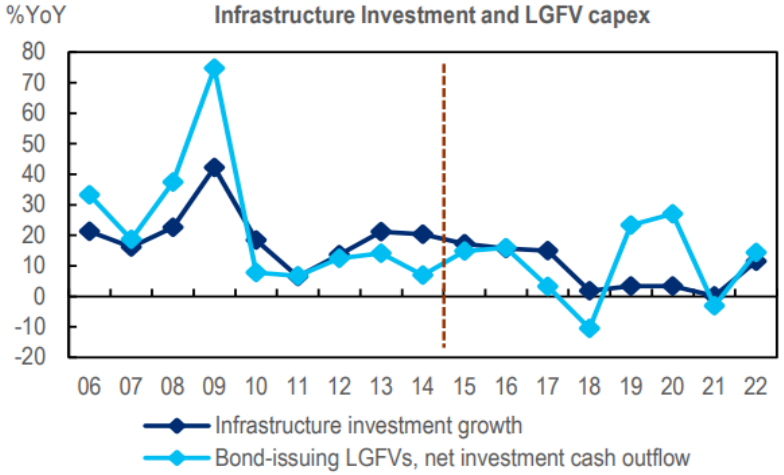
© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: PBoC, Wind, Citi Research

China – We estimate **China's general government debt reached RMB108trn or 90% of GDP as of end-2022.** Interest-bearing debt of LGFVs could amount to RMB47trn or 39% of GDP.

LGFV risks & property weakness could reinforce each other. Local govts could coordinate with local SOEs, banks & local AMCs. The central govt could intervene if financial stability looks under threat. **LGFV risks could impose de facto fiscal austerity.**

Instead, rapid expansion of LGFVs' capex supported the big boom in infrastructure

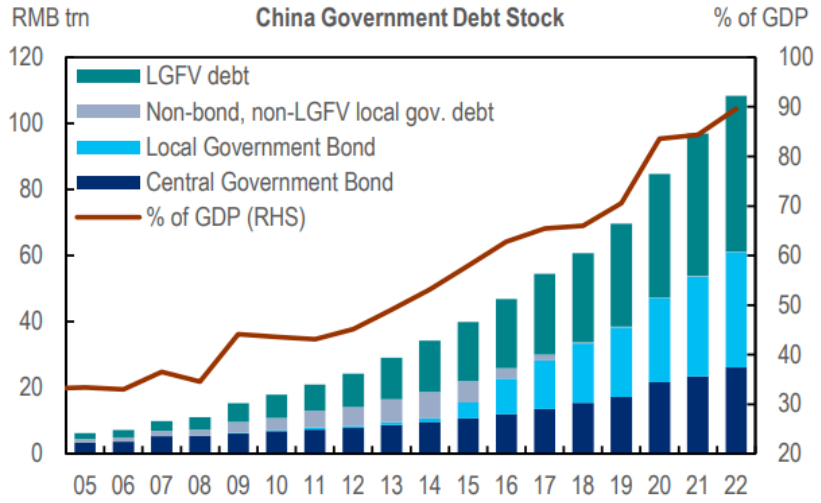


© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Note: Year-on-year change of capex is calculated for LGFVs with observations for two consecutive years.

Source: NBS, Wind, Citi Research

China's government-related debt may no longer be low now after including LGFV debt



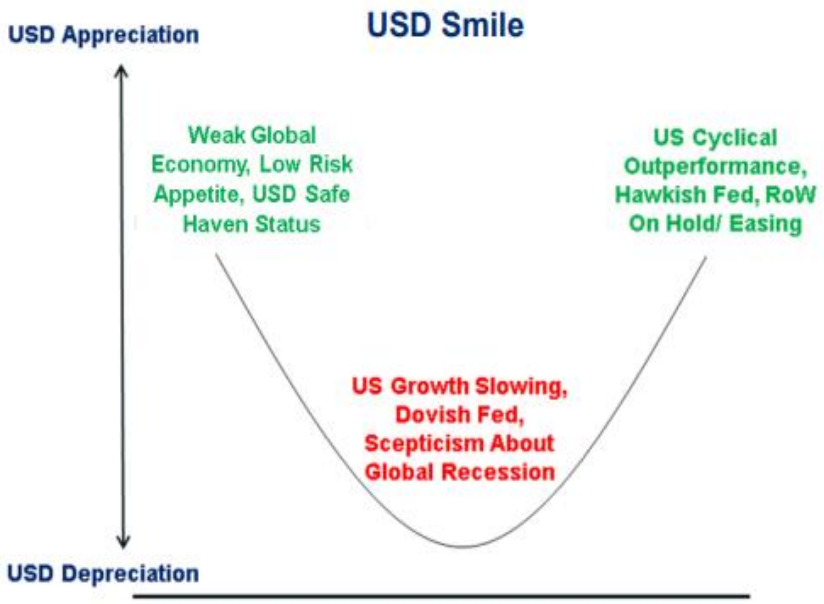
© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: MoF, NBS, Wind, Citi Research Estimates

USD – Bulls but not at current levels (Spot: 106 as of Oct 20, 0-3m: 106, 6-12m: 107)

EUR – Recession risk confirmed (Spot: 1.06 as of Oct 20, 0-3m: 1.05, 6-12m: 1.02)

- We see USD weakness in coming months as temporary, as **strength should re-emerge next year** driven by a US economy that remains relatively resilient compared to a sharper contraction in Europe
  - **Key drivers: (i) US growth outperformance, (ii) Euro Area economic contraction, (iii) US yields remain elevated**
  - Key risks: (i) more balanced Fed speak amid the rise in longer-end yields, where Citi US Econ's base case is no further hikes this cycle, (ii) a potential cyclical bottoming in China aiding global growth expectations, (iii) unattractive risk/reward
- **We weigh a German manufacturing slowdown** against tactical USD headwinds. The former likely wins out over the near-term as Euro Area recession risk gets priced in, strong US data keeps expectations for another Fed hike alive, and EUR's beta to China has gradually diminished



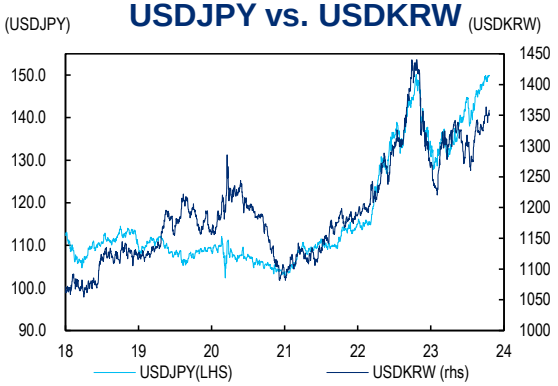
Source: Citi Research

Note: Forecast as of <Foreign Exchange Forecasts>(October 2023);
Source: Bloomberg, Macrobond and Citi Research Estimates

JPY – Tactical tailwinds

(USDJPY Spot: 150 as of Oct 20, 0-3m: 148, 6-12m: 130)

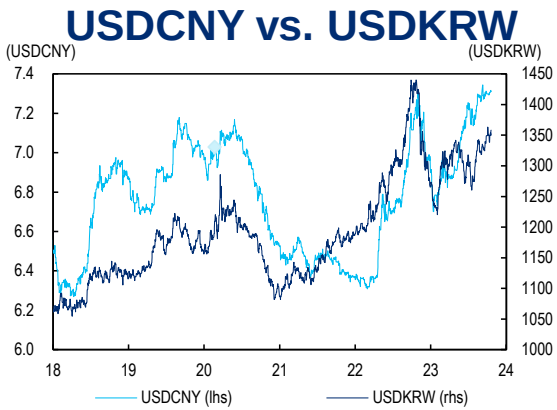
- While the pair has largely tracked rate differentials this cycle, USDJPY also remains sensitive to both oil and risk sentiment, where developments here could be JPY supportive despite recent geopolitical tensions
- We see these as marginally JPY supportive (0-3m forecast of 148) but expect further USDJPY downside over the medium-term amid lower US rates and potential BoJ normalization (6-12m forecast of 130)



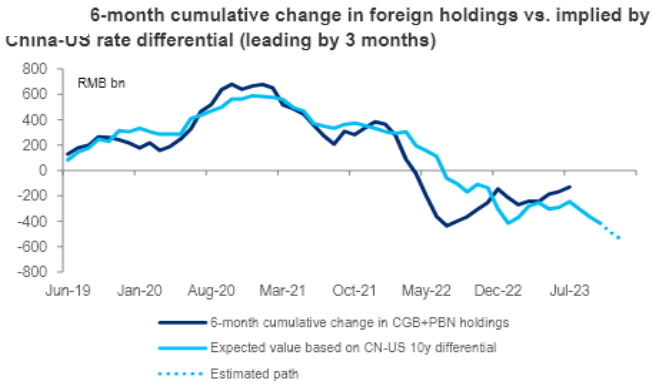
Source: Bloomberg and Citi Research

CNY – The RMB could struggle in the race between policies & the economy

(USDCNY Spot: 7.31 as of Oct 20, 0-3m: 7.25, 6-12m: 7.10)



Source: Bloomberg, Citi Research



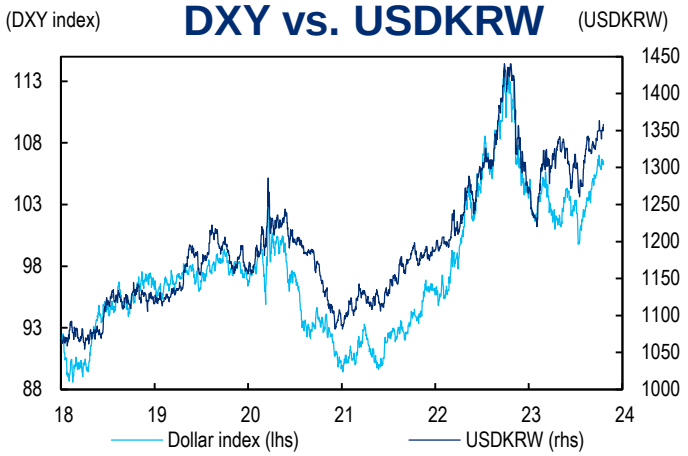
© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Citi Research, CEIC Data Company Limited, Wind, Bloomberg

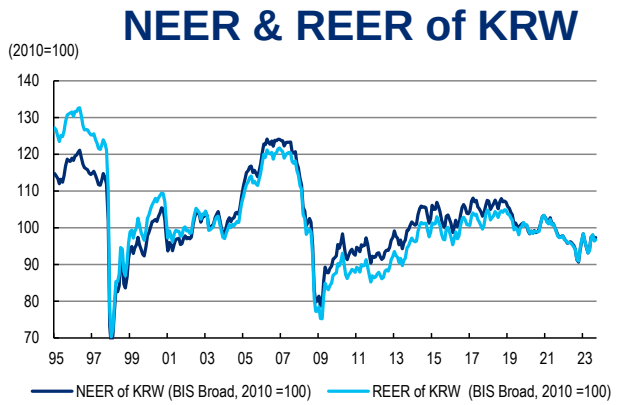
Note: Forecast as of <Foreign Exchange Forecasts>(October 2023);
Source: Bloomberg, Macrobond and Citi Research Estimates

KRW – In our view, USDKRW will likely fall to 1,300 in 0-3 months and 1,270 in 6-12 months (USDKRW Spot: 1,358 as of Oct 20, 0-3m: 1,300, 6-12m 1,270)

- **KRW appreciation risk factors:**
  - Citi's view of a termination of Fed's rate hiking cycle by 3Q23 and Fed's rate cutting cycle from 3Q24
  - Citi's view of memory chip prices recovery from 4Q23
  - Resilient current account surplus
- **KRW depreciation risk factors:**
  - Higher-than-expected energy price
  - The risks of higher-for-longer Fed's policy rates
  - Potentially high correlation between CNY and KRW
  - Prolonged global manufacturing sentiment downturn



Source: Bloomberg, Citi Research

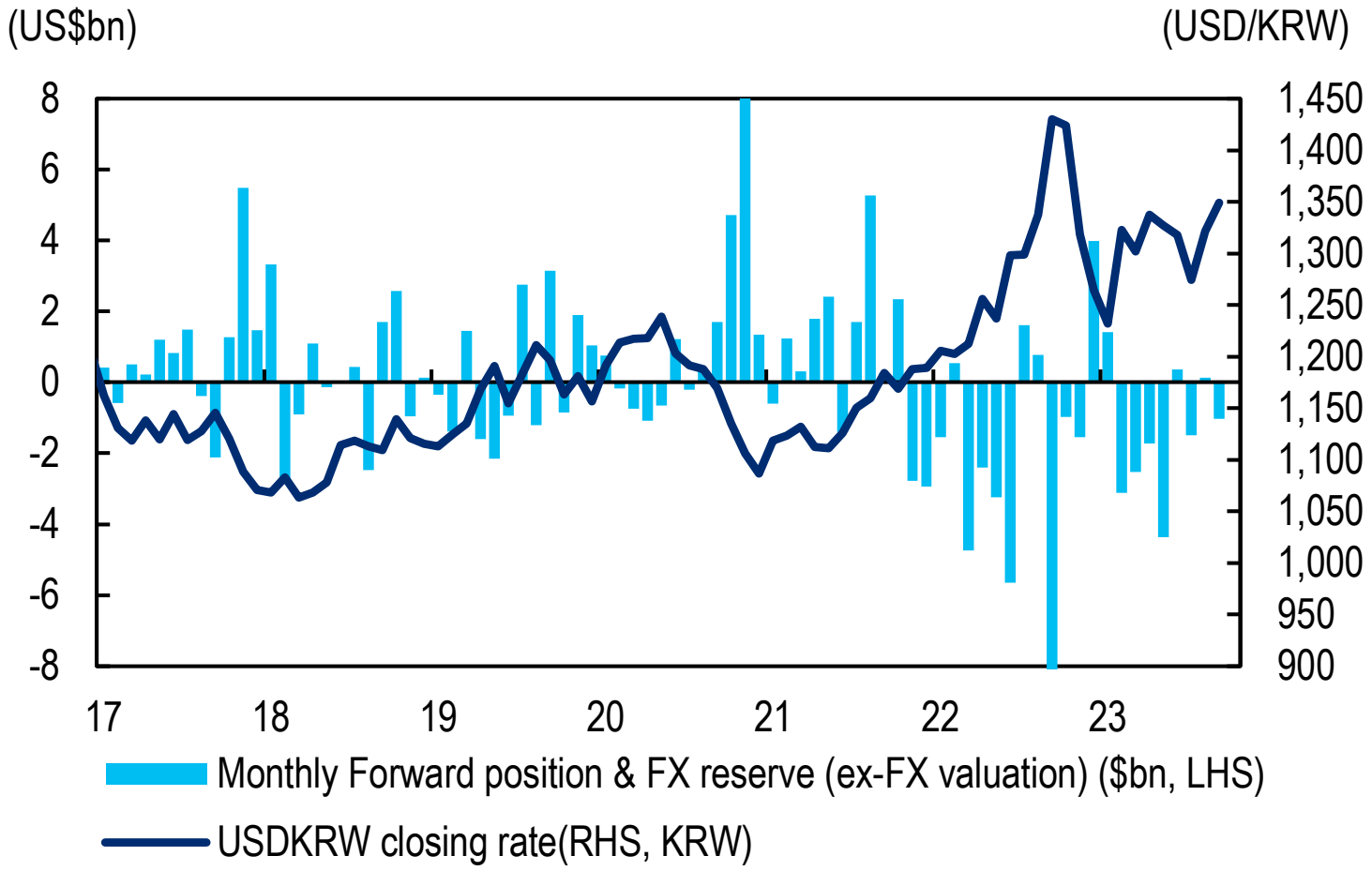


Source: CEIC, Citi Research

Note: Forecast as of <Foreign Exchange Forecasts>(October 2023); Source: Bloomberg, Citi Research Estimates

KRW – FX authorities' verbal intervention and smoothing operations may have marginally moderated volatility of USDKRW while unlikely setting either a certain level or direction.

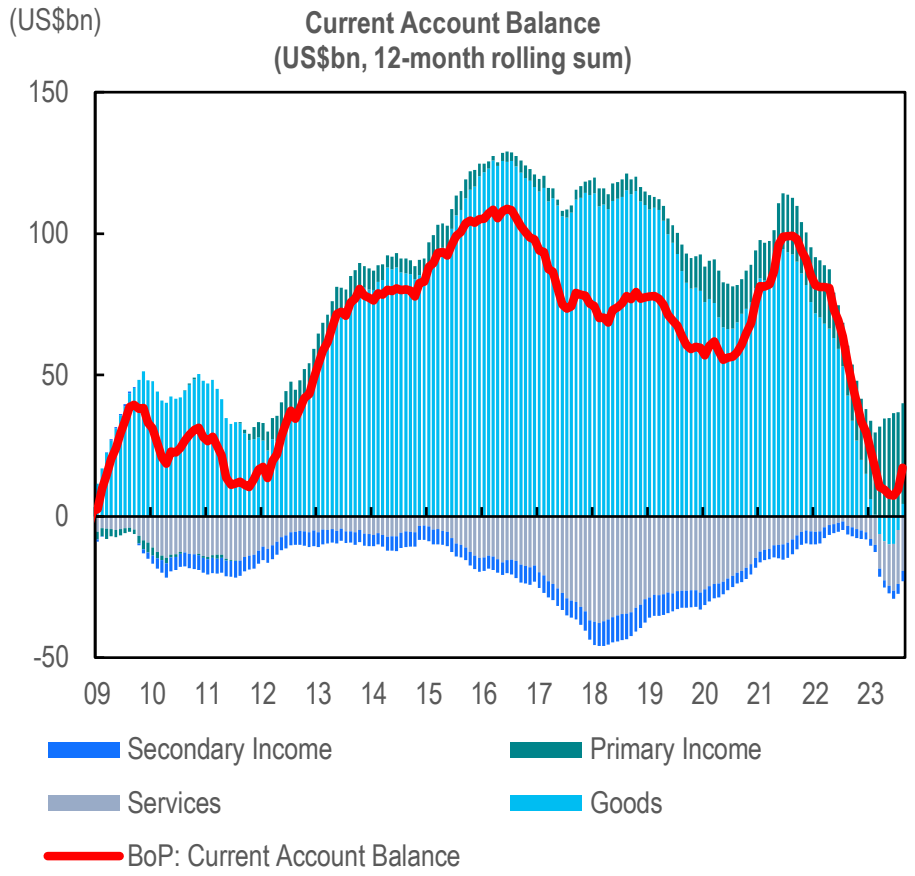
Smoothing operations via FX reserve and forward position



Source: CEIC, Citi Research

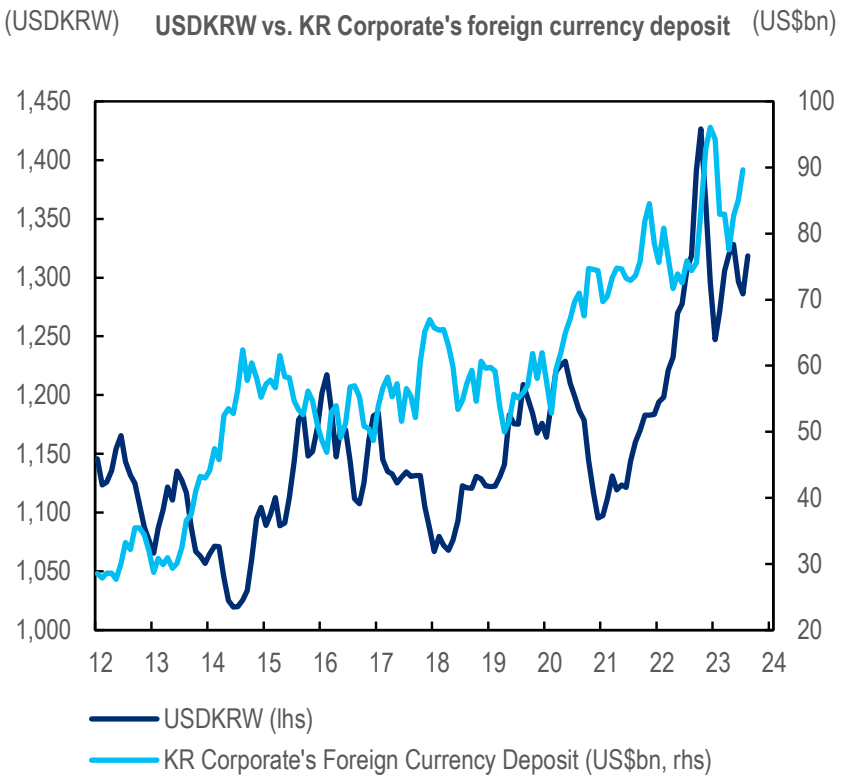
KRW – Current account surplus and corporates' foreign currency deposits

Current account balance



Source: CEIC, Citi Research

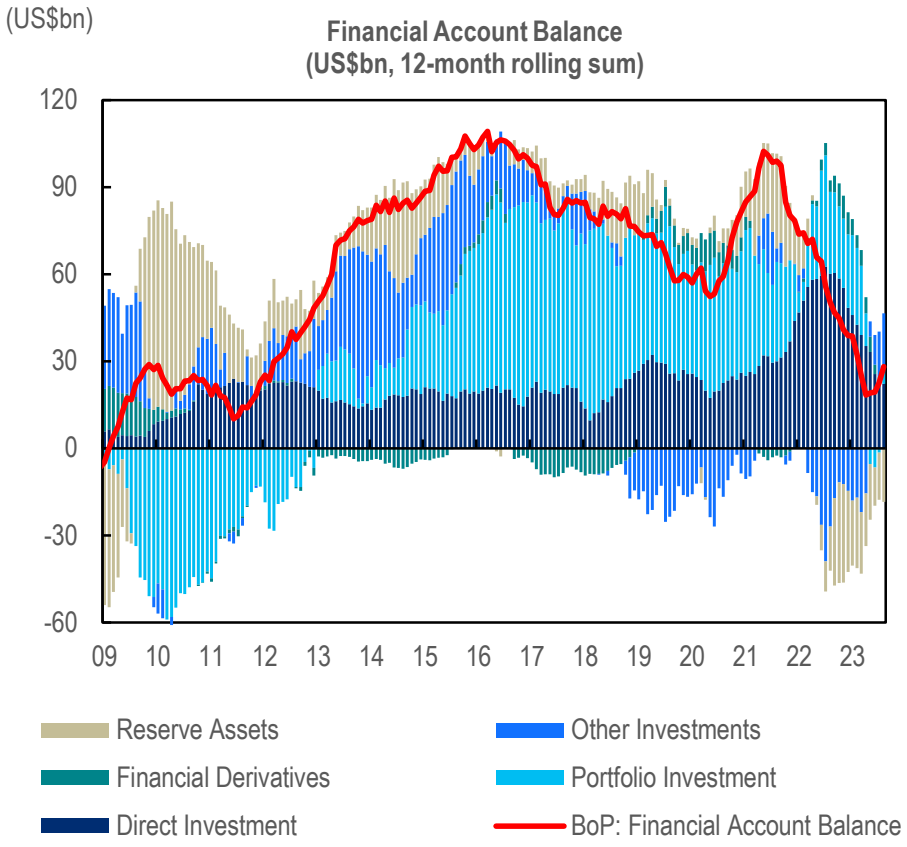
Corporates' foreign currency deposits



Source: CEIC, Citi Research

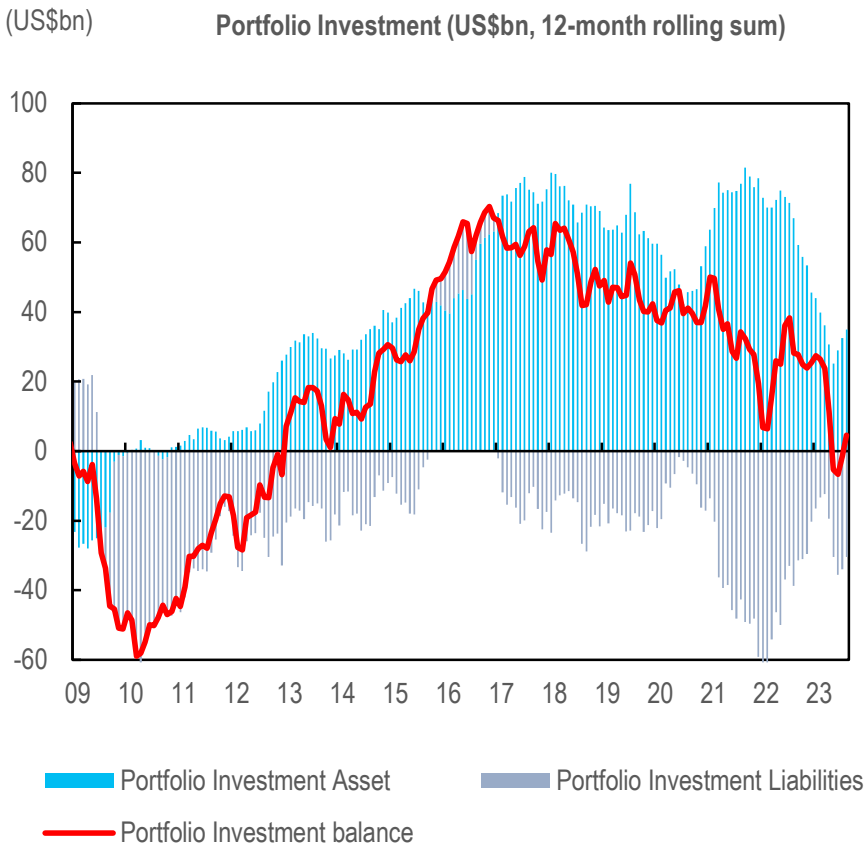
KRW – Domestic investors' outbound investments outweigh foreign investors' inbound investments

Financial account balance



Source: CEIC, Citi Research

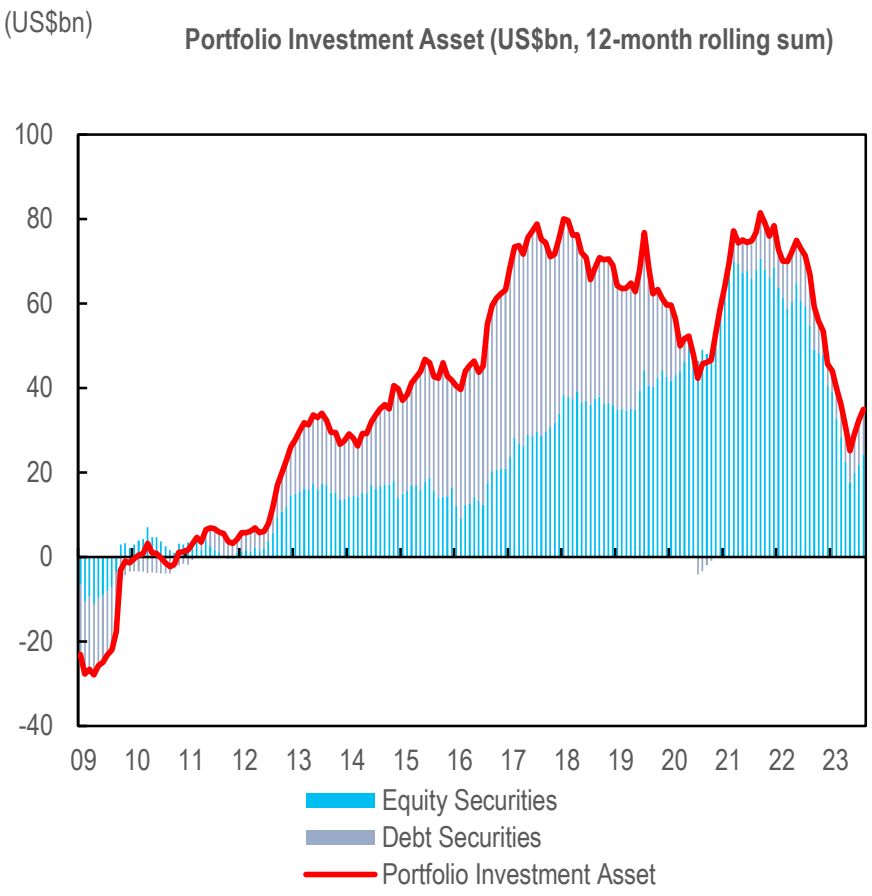
Domestic investors' outbound investments outweigh foreign investors' inbound investment



Source: CEIC, Citi Research

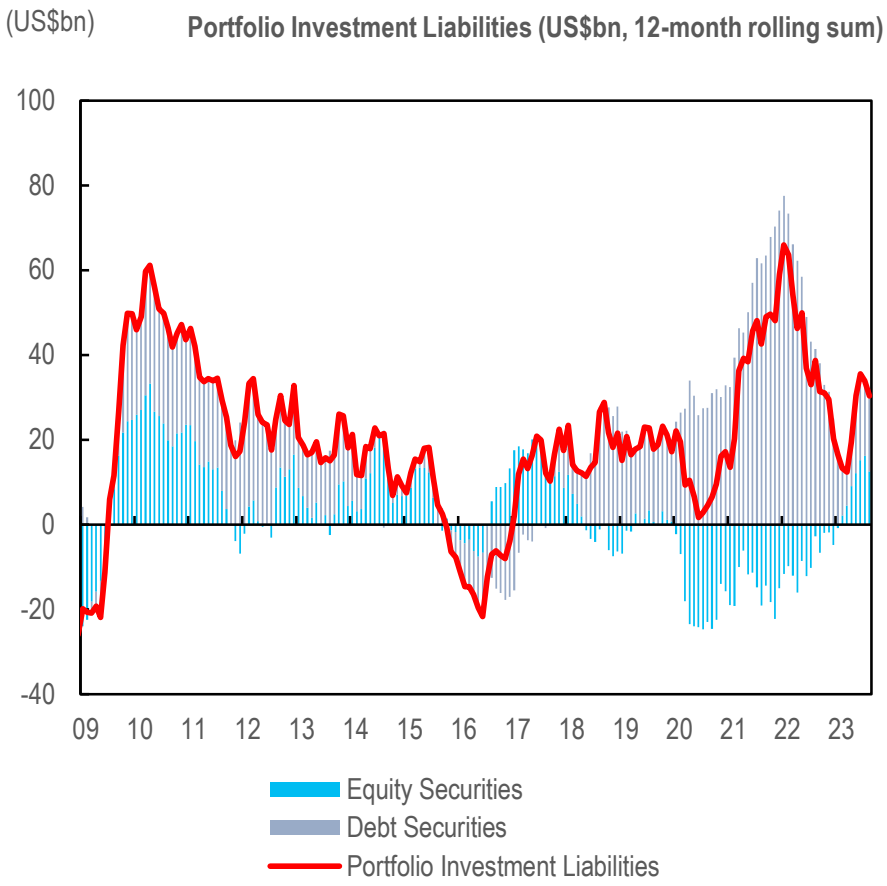
KRW – Domestic investors are purchasing foreign equity; foreign investors are purchasing domestic bonds & equities

Domestic investors are purchasing foreign equity



Source: CEIC, Citi Research

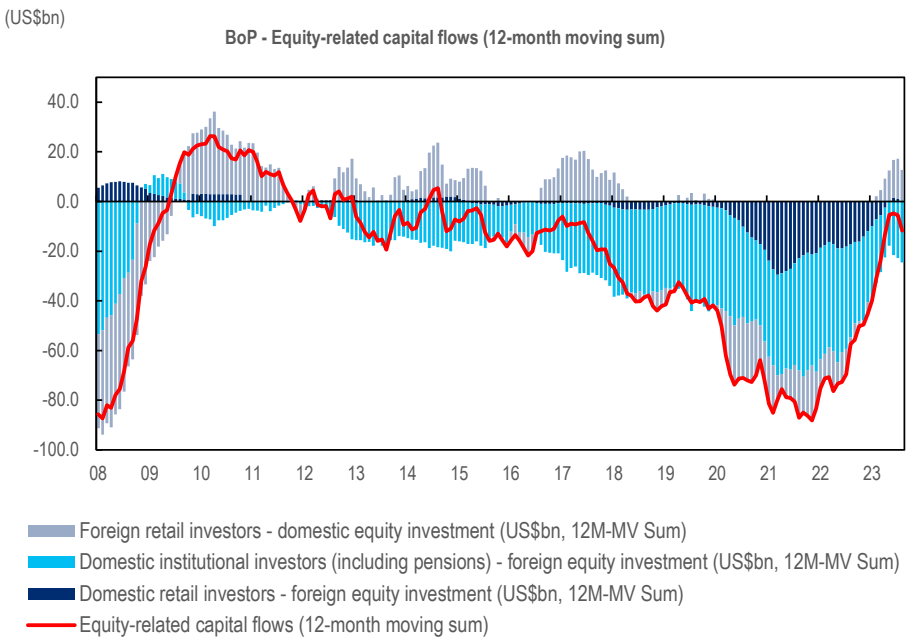
Foreign investors are purchasing domestic bonds & equities



Source: CEIC, Citi Research

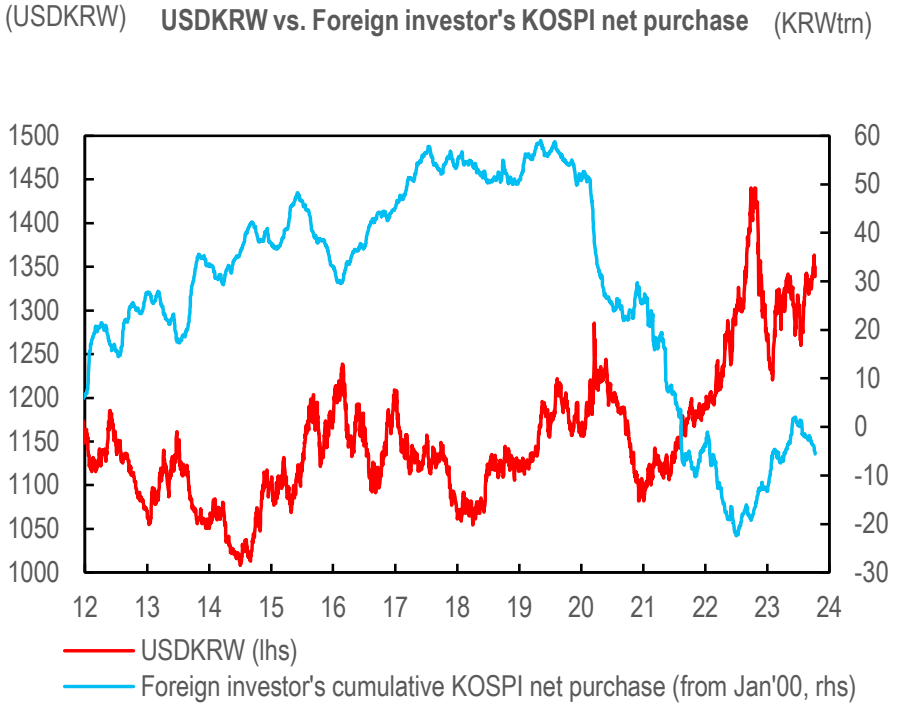
KRW – Capital outflow via equity securities; foreign investors' KOSPI net purchases

Capital outflow via equity securities



Source: CEIC, Citi Research Estimates

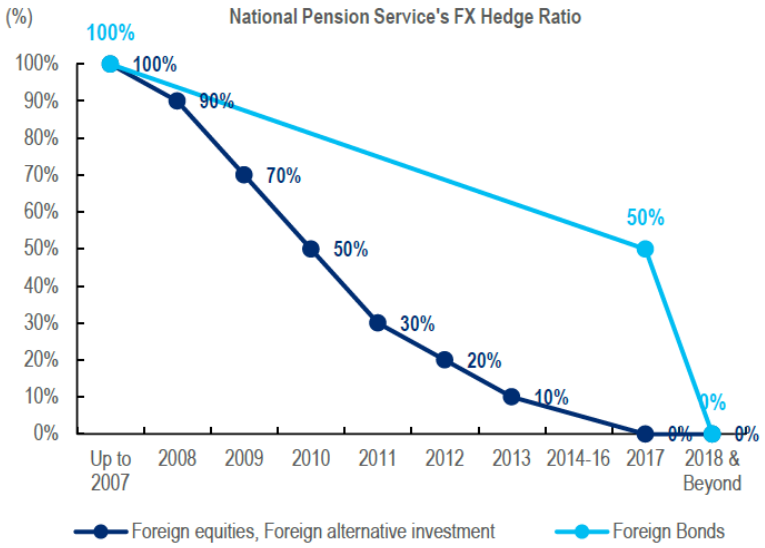
Foreign investors' KOSPI net purchases



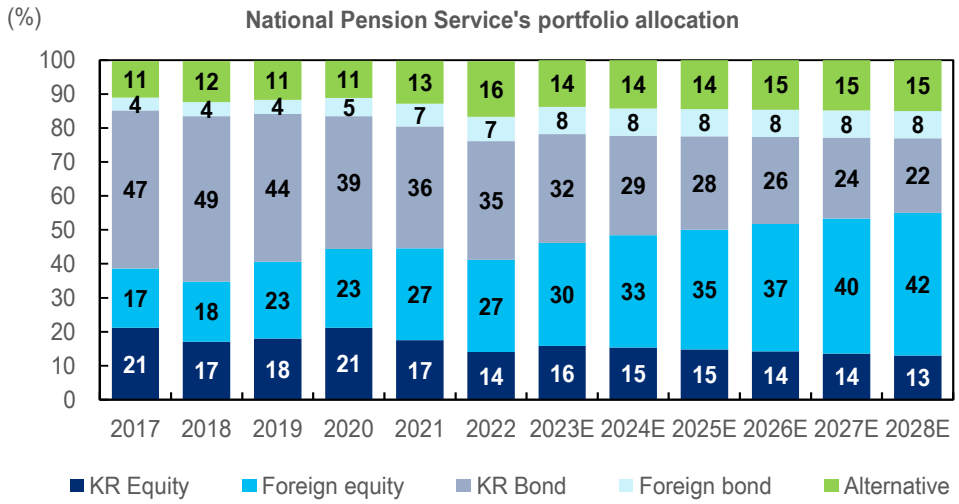
Source: Bloomberg, Citi Research

KRW – National Pension Service, the biggest domestic institutional Buy-side player, is likely to further increase both the share and the nominal amount of **foreign equity investment in 2023-2028.**

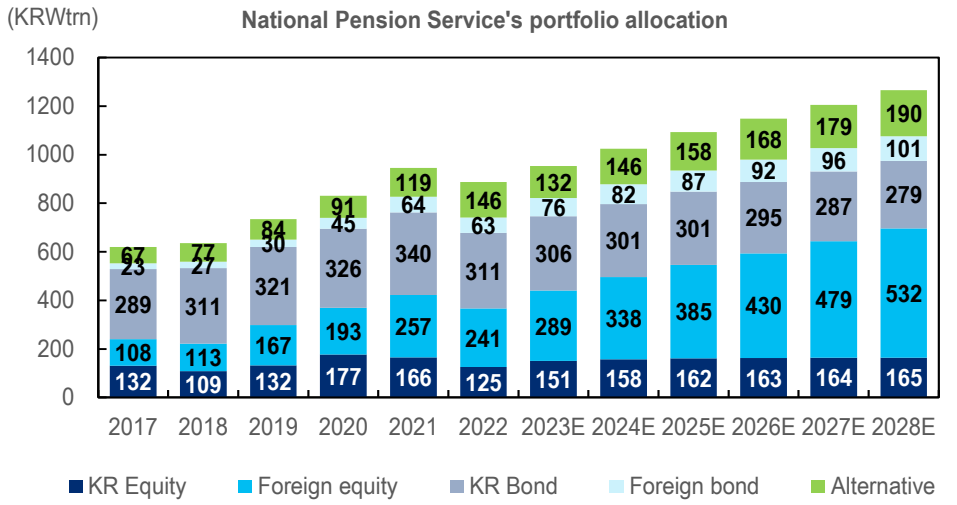
NPS has structurally decreased FX hedging of its foreign investment but it temporarily allowed FX hedging up to 10% in December'22



Source: CEIC, Infomax, National Pension Service



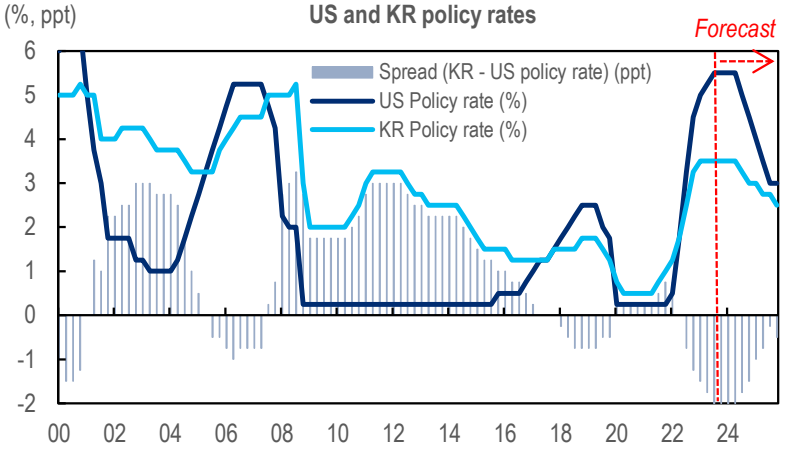
Source: Citi Research, National Pension Service



Source: Citi Research, National Pension Service

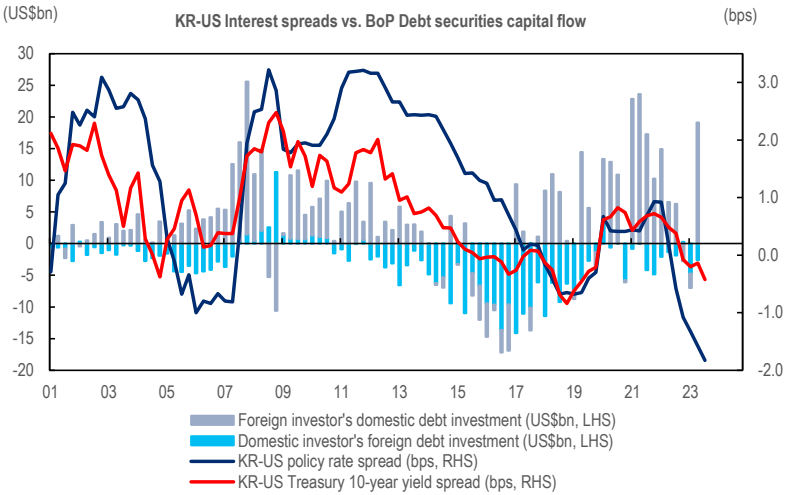
KRW – External financial imbalance risks

Negative KR-US rate spread likely to widen



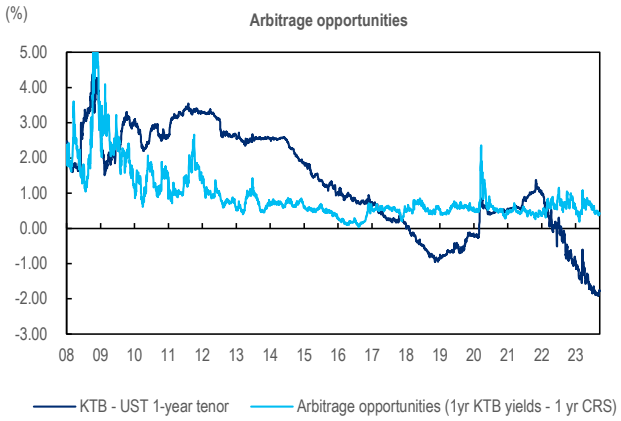
Source: Citi Research Estimates, CEIC

Bond capital flow



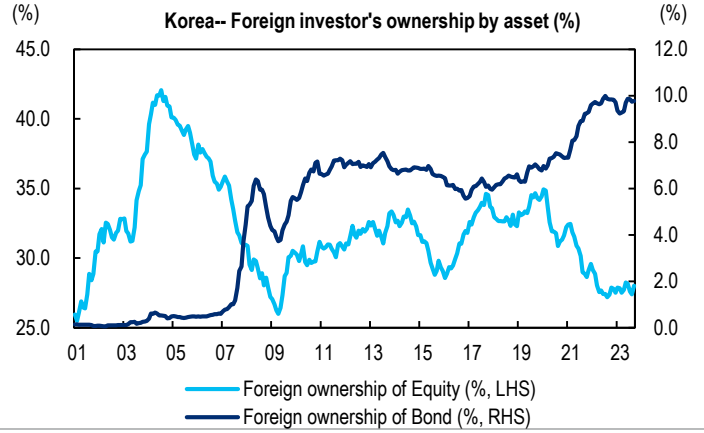
Source: Citi Research, Bloomberg, BoK

FX arbitrage opportunities



Source: Citi Research, Bloomberg

Foreign investor's ownership by asset



Source: Haver, Citi Research

FX Forecasts

		Market data*			Forecasts		
		spot	3m Fwd	12m Fwd	0-3 mos	6-12 mos	long-term
G10							
Euro	EURUSD	1.06	1.06	1.075	1.05	1.02	1.20
Japanese yen	USDJPY	150	148	141	148	130	130
British Pound	GBPUSD	1.21	1.21	1.21	1.23	1.15	1.40
Swiss Franc	USDCHF	0.90	0.89	0.86	0.90	0.90	0.85
Australian Dollar	AUDUSD	0.63	0.63	0.64	0.65	0.63	0.76
New Zealand Dollar	NZDUSD	0.58	0.58	0.58	0.59	0.58	0.67
Canadian Dollar	USDCAD	1.37	1.37	1.37	1.34	1.35	1.25
Dollar Index**	DXY	106.43	105.87	104.27	106.25	107.20	93.48
G10 Crosses							
Japanese yen	EURJPY	158	157	152	155	133	156
Swiss Franc	EURCHF	0.95	0.94	0.93	0.94	0.92	1.02
British Pound	EURGBP	0.87	0.87	0.89	0.85	0.89	0.86
Swedish Krona	EURSEK	11.63	11.63	11.67	11.36	11.52	10.50
Norwegian Krone	EURNOK	11.70	11.72	11.80	11.49	11.40	9.50
Norwegian Krone	NOKSEK	0.99	0.99	0.99	0.99	1.01	1.11
Australian Dollar	AUDNZD	1.08	1.09	1.09	1.10	1.09	1.13
Australian Dollar	AUDJPY	95	93	90	96	82	99
Asia							
Chinese Renminbi	USDCNY	7.32	7.26	7.16	7.25	7.10	6.80
Hong Kong Dollar	USDHKD	7.83	7.81	7.78	7.82	7.80	7.80
Indonesian Rupiah	USDIDR	15815	15855	15933	15600	15400	14500
Indian Rupee	USDINR	83.2	83.6	84.8	82.3	82.0	83.0
Korean Won	USDKRW	1357	1353	1331	1300	1270	1220
Malaysian Ringgit	USDMYR	4.77	4.74	4.66	4.65	4.55	4.30
Philippine Peso	USDPHP	56.9	56.9	57.1	56.25	56.0	53.0
Singapore Dollar	USDSGD	1.37	1.37	1.35	1.35	1.34	1.30
Thai Baht	USDTHB	36.5	36.2	35.4	36.0	35.0	32.5
Taiwan Dollar	USDTWD	32.3	32.2	31.5	32.2	31.0	30.5
EMEA							
Czech Koruna	EURCZK	24.7	24.8	25.0	24.9	24.7	24.0
Hungarian Forint	EURHUF	384	391	405	380	380	385
Polish Zloty	EURPLN	4.45	4.48	4.56	4.50	4.60	4.55
Israeli Shekel	USDILS	4.03	4.01	3.92	3.90	3.75	3.65
Turkish Lira	USDTRY	28.00	31.03	41.04	29.50	35.00	40.00
South African Rand	USDZAR	19.12	19.28	19.74	18.90	19.05	18.45
LATAM							
Brazilian Real	USDBRL	5.06	5.13	5.38	5.00	4.95	4.90
Chilean Peso	USDCLP	947	954	964	895.00	899.00	825
Mexican Peso	USDMXN	18.4	18.7	19.5	18.00	19.30	19.70
Colombian Peso	USDCOP	4237	4370	4614	4150	4050	4000

* market data including spot as of 7:55 AM London time on 19-Oct-2023

** The DXY forecasts are implied from the forecasts of the constituent crosses. *** Returns are relative to forwards

	Currency	Spot	2023*	2024*	2025*
G10					
Euro	EURUSD	1.06	1.07	1.05	1.17
Japanese yen	USDJPY	150	143	132	129
British Pound	GBPUSD	1.21	1.23	1.19	1.35
Swiss Franc	USDCHF	0.90	0.91	0.90	0.86
Australian Dollar	AUDUSD	0.63	0.66	0.65	0.74
New Zealand Dollar	NZDUSD	0.58	0.61	0.59	0.65
Canadian Dollar	USDCAD	1.37	1.34	1.34	1.27
Swedish Krona	USDSEK	11.01	10.76	10.86	9.14
Norwegian Krone	USDNOK	11.08	10.73	10.67	8.43
EM Asia					
Chinese Renminbi	USDCNY	7.32	7.16	7.08	6.85
Hong Kong Dollar	USDHKD	7.83	7.83	7.80	7.80
Indonesian Rupiah	USDIDR	15815	15252	15309	14667
Indian Rupee	USDINR	83.2	82.4	82.2	82.9
Korean Won	USDKRW	1357	1316	1267	1228
Malaysian Ringgit	USDMYR	4.77	4.60	4.53	4.34
Philippine Peso	USDPHP	56.9	55.6	55.6	53.5
Singapore Dollar	USDSGD	1.37	1.35	1.34	1.31
Thai Baht	USDTHB	36.5	35.5	34.8	33.0
Taiwan Dollar	USDTWD	32.3	31.5	31.1	30.6
EM Europe					
Czech Koruna	USDCZK	23.4	22.6	23.5	20.7
Hungarian Forint	USDHUF	364	356	364	330
Polish Zloty	USDPLN	4.22	4.27	4.38	3.91
Israeli Shekel	USDILS	4.03	3.75	3.76	3.67
Turkish Lira	USDTRY	28.00	25.77	34.92	39.23
South African Rand	USDZAR	19.12	18.62	18.95	18.55
EM Latam					
Brazilian Real	USDBRL	5.06	4.97	4.95	4.91
Chilean Peso	USDCLP	947	846	889	838
Mexican Peso	USDMXN	18.4	17.7	19.2	19.7
Colombian Peso	USDCOP	4237	4249	4057	4006

* Averages of end-quarter data shown in quarterly interpolation table.

Note: Forecast as of <Foreign Exchange Forecasts>(October 2023); Source: Bloomberg, Citi Research Estimates

Korea Economy

Source: Citi Research

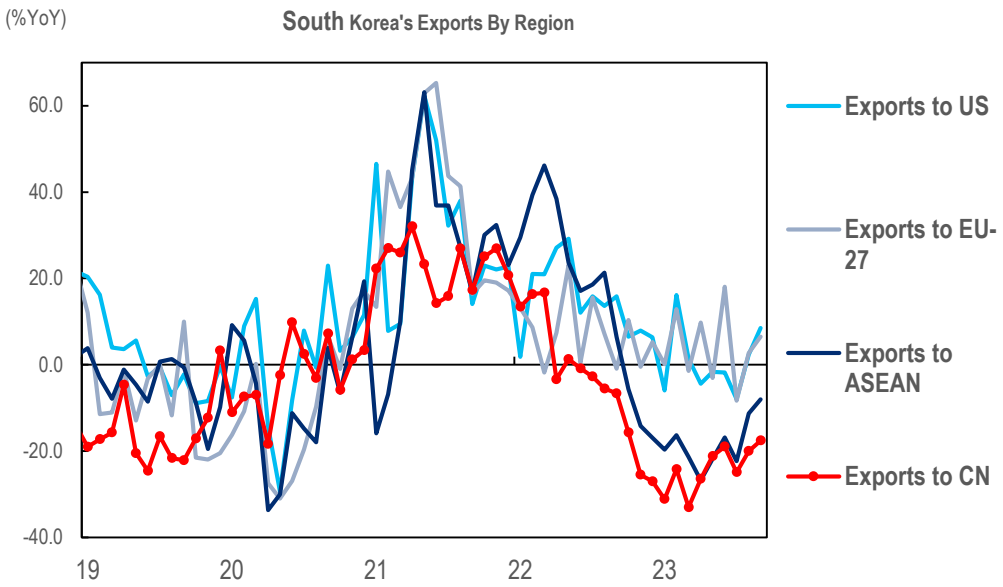
South Korea - We keep up our 2023E GDP and 2024E GDP at 1.1% and 1.8%. We recently marginally revised up our 3Q23E GDP by 0.2ppt to 0.5%QoQ while cutting 4Q23E GDP by 0.1ppt to 0.3%QoQ reflecting recent trade & IP data.

	2019	2020	2021	2022					2023E					2024E				
	Annual	Annual	Annual	1Q	2Q	3Q	4Q	Annual	1Q	2Q	3QE	4QE	Annual	1QE	2QE	3QE	4QE	Annual
GDP (%YoY)	2.2	-0.7	4.3	3.1	2.9	3.2	1.4	2.6	0.9	0.9	1.0	1.6	1.1	1.9	1.7	1.6	1.8	1.8
(%QoQ s.a.)				*0.7*	*0.8*	*0.2*	*-0.3*		*0.3*	*0.6*	*0.5*	*0.3*		0.4	0.5	0.4	0.5	
Private Consumption	2.1	-4.8	3.6	4.0	4.1	5.2	3.3	4.1	4.6	1.6	0.0	0.9	1.7	0.8	0.2	0.8	0.8	0.7
Gross Fixed Capital Formation	-2.1	3.5	3.2	-2.9	-2.9	2.1	1.6	-0.5	3.2	3.0	0.3	-1.8	1.1	-1.1	-0.7	0.7	1.5	0.2
Construction	-1.7	1.5	-1.6	-3.8	-3.7	-2.0	-1.8	-2.8	1.9	1.7	4.7	0.2	2.1	-0.8	-0.2	0.7	1.9	0.5
Facilities Investment	-6.6	7.2	9.3	-7.3	-6.7	4.4	6.5	-0.9	5.9	4.7	-6.4	-9.1	-1.5	-4.3	-4.7	-0.5	0.0	-2.4
Intellectual Property Products	3.1	3.4	6.1	5.9	4.2	7.5	2.5	5.0	2.4	3.5	-0.7	3.2	2.1	2.1	2.9	2.4	2.4	2.5
Exports of Goods & Services	0.2	-1.7	11.1	7.4	4.7	5.0	-2.7	3.4	-2.0	0.3	-0.9	5.1	0.6	4.3	0.8	4.1	2.0	2.8
Imports of Goods & Services	-1.9	-3.1	10.1	4.5	1.6	7.8	0.5	3.5	5.9	2.8	-4.1	-0.3	1.0	-1.0	-2.7	2.2	0.3	-0.3
CPI	0.4	0.5	2.5	3.8	5.4	5.9	5.2	5.1	4.7	3.2	3.1	3.6	3.7	3.0	2.9	2.3	2.1	2.5
Core CPI	0.7	0.4	1.4	2.8	3.5	4.0	4.2	3.6	4.0	3.8	3.3	3.0	3.5	2.2	2.0	1.9	1.7	1.9
Policy Rate (%, e.o.p.)	1.25	0.50	1.00	1.25	1.75	2.50	3.25	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.00	3.00
Custom Exports (US$ bn)	542	512	644	173	177	174	159	684	151	156	157	160	624	160	161	160	160	640
(%YoY)	-10.4	-5.5	25.7	18.4	13.0	5.8	-10.0	6.1	-12.7	-12.0	-9.7	0.3	-8.7	5.6	3.1	1.5	0.4	2.6
Custom Imports (US$ bn)	503	468	615	178	184	192	178	731	174	159	151	169	653	172	162	151	165	649
(%YoY)	-6.0	-7.1	31.5	30.2	23.0	22.6	3.1	18.9	-2.2	-13.2	-21.7	-4.7	-10.7	-1.2	1.7	0.0	-2.8	-0.6
Custom Trade Balance (US$ bn)	38.9	44.9	29.3	-4.5	-6.4	-18.3	-18.6	-47.8	-22.7	-3.5	6.5	-9.7	-29.4	-12.1	-1.4	8.8	-4.2	-8.8
Current Account (US$ bn)	59.7	75.9	85.2	14.9	10.0	0.9	4.1	29.8	-4.6	7.0	15.8	9.6	27.8	-0.7	5.6	18.8	14.8	38.5

Source: Citi Research Estimates, CEIC

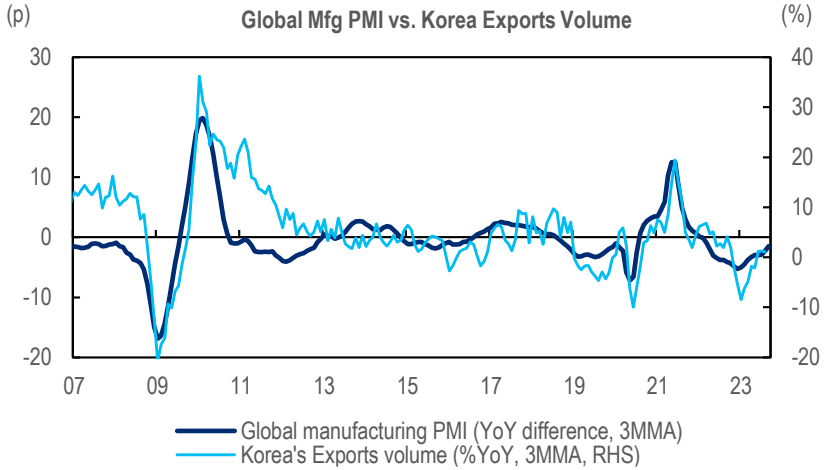
South Korea's semiconductor exports and exports to China

Exports by region



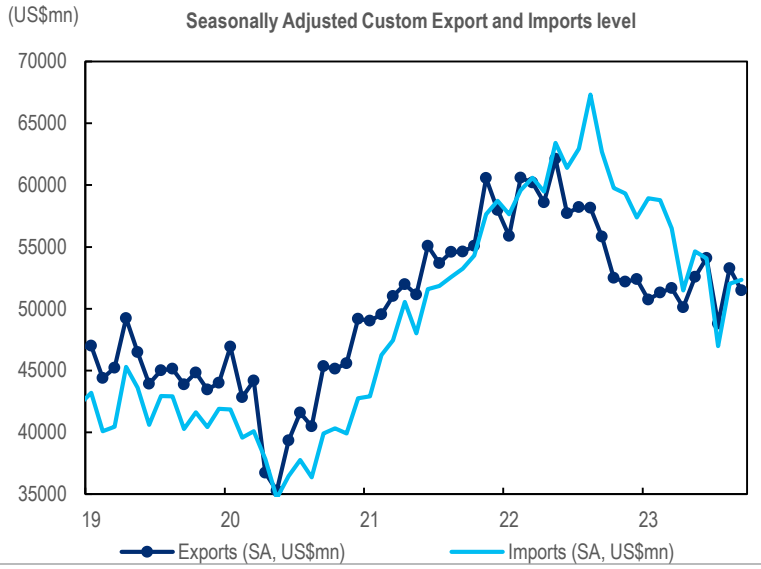
Source: Citi Research, CEIC

Korea's exports volume



Source: Citi Research, CEIC

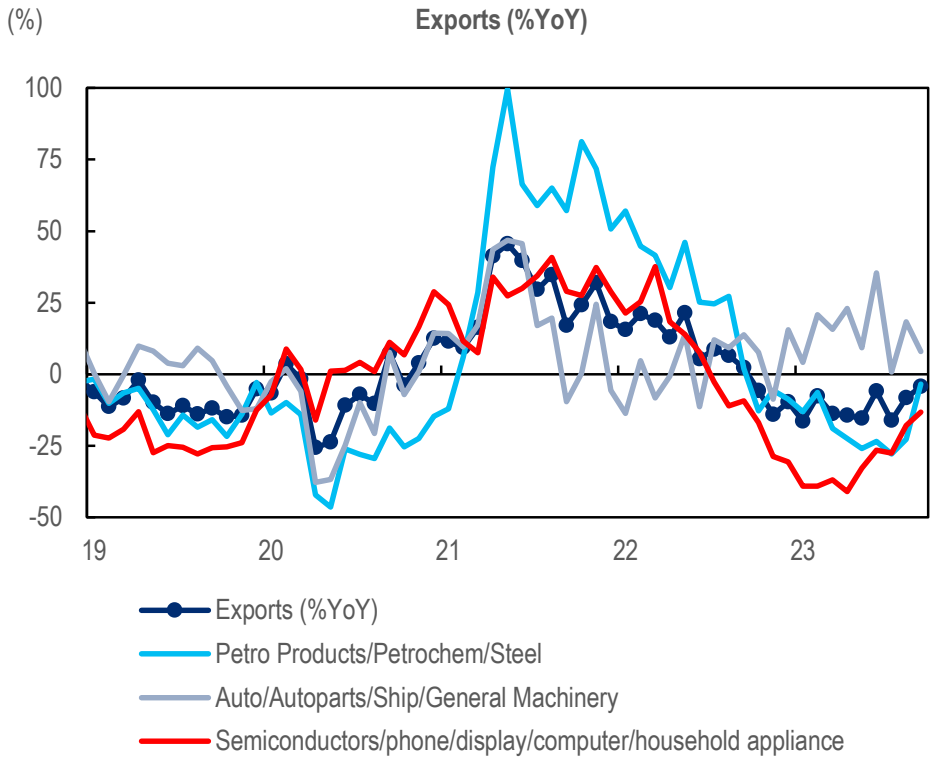
Weak momentum



Source: CEIC, Citi Research

South Korea's semiconductor exports and exports to China

Exports by product

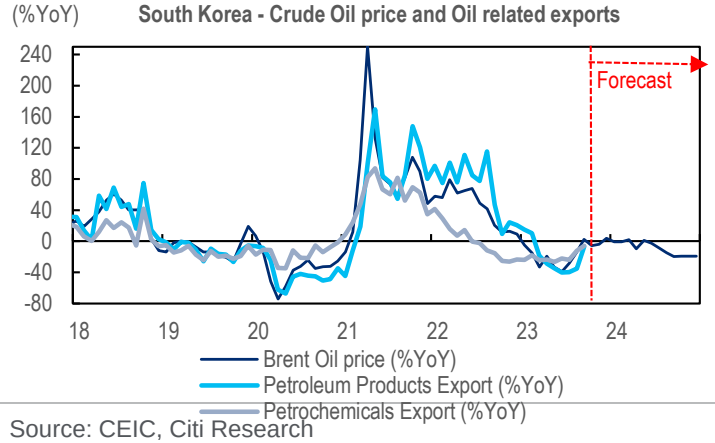


Source: Citi Research, CEIC

Shipbuilding sector has accumulated orders

Source: Citi Research, CEIC

Exports of petro-products and petrochemicals



Source: CEIC, Citi Research

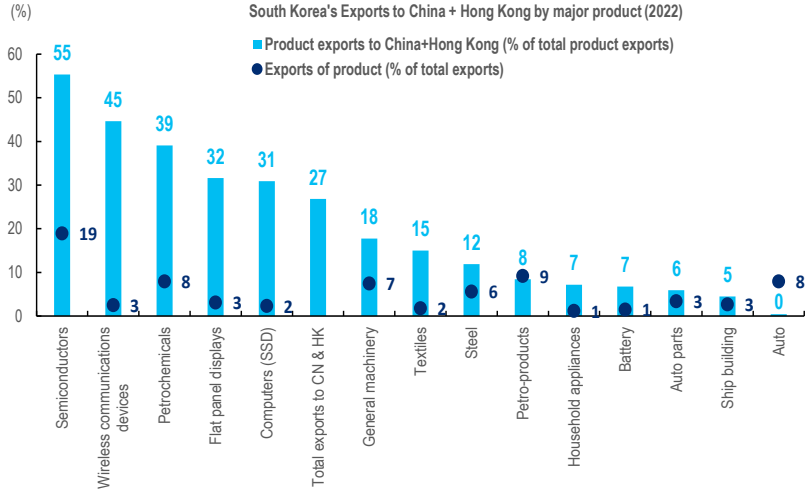
South Korea's semiconductor exports and exports to China

KR exports to CN & HK

= +39% of semiconductor
+11% of smart phone/display/computer
+15% of petro chemical & petro products

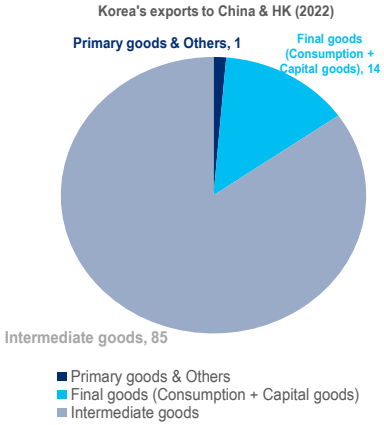
Source: CEIC, Citi Research

55% of KR chip exports shipping to CN & HK



Source: KITA, Citi Research

85% of exports to CN+HK = Intermediate goods



Source: KITA, Citi Research

In 2023, **global semiconductor revenue growth & unit growth** is likely to fall to the lowest since 2001

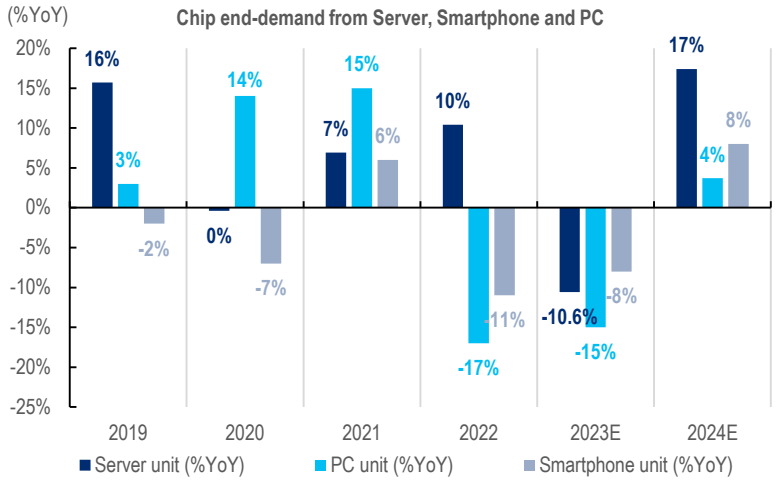
Semiconductor Sales and YoY Change in Sales, Units, and ASPs

	Sales	Sales Growth	Unit Growth*	ASP Growth*	Sales* Ex-Mem	Unit* Growth Ex-Mem	ASP* Growth Ex-Mem	Global GDP
2000	$204.4	37%	26%	9%	33%	27%	5%	4.3%
2001	$139.0	-32%	-19%	-16%	-26%	-20%	-7%	1.7%
2002	$140.7	1%	13%	-10%	-1%	14%	-13%	2.0%
2003	$166.4	18%	17%	2%	19%	18%	1%	2.6%
2004	$213.0	28%	20%	7%	25%	20%	4%	3.8%
2005	$227.5	7%	12%	-4%	9%	12%	-2%	3.5%
2006	$247.7	9%	20%	-9%	5%	16%	-9%	4.0%
2007	$255.6	3%	13%	-9%	5%	15%	-9%	3.9%
2008	$248.6	-3%	6%	-8%	2%	6%	-3%	1.5%
2009	$226.3	-9%	1%	-10%	-10%	1%	-10%	-2.1%
2010	$298.2	32%	22%	7%	25%	22%	2%	4.2%
2011	$299.5	0%	4%	-4%	4%	3%	1%	3.1%
2012	$291.6	-3%	7%	-8%	-1%	8%	-8%	2.5%
2013	$305.6	5%	7%	-1%	2%	7%	-5%	2.7%
2014	$335.8	10%	10%	0%	7%	11%	-3%	2.9%
2015	$335.2	0%	10%	-8%	1%	11%	-8%	2.9%
2016	$338.9	1%	5%	-4%	1%	4%	-3%	2.6%
2017	$412.2	22%	14%	7%	10%	15%	-4%	3.3%
2018	$467.1	13%	15%	-1%	7%	16%	-8%	3.2%
2019	$409.5	-12%	-7%	-7%	-2%	-7%	6%	2.6%
2020	$438.6	7%	1%	6%	6%	1%	5%	-4.0%
2021	$555.9	27%	18%	7%	25%	19%	5%	5.7%
2022	$574.1	3%	-3%	6%	10%	-2%	13%	2.9%
2023E	$507.5	-12%	-18%	7%	-4%	-19%	19%	2.3%
Avg. '00-'21		**6%**	**9%**	**-3%**	**5%**	**9%**	**-3%**	**2.5%**
Avg. '11-'21		**6%**	**8%**	**-1%**	**6%**	**8%**	**-2%**	**2.5%**

© 2022 Citigroup Inc. No redistribution without Citigroup's written permission.

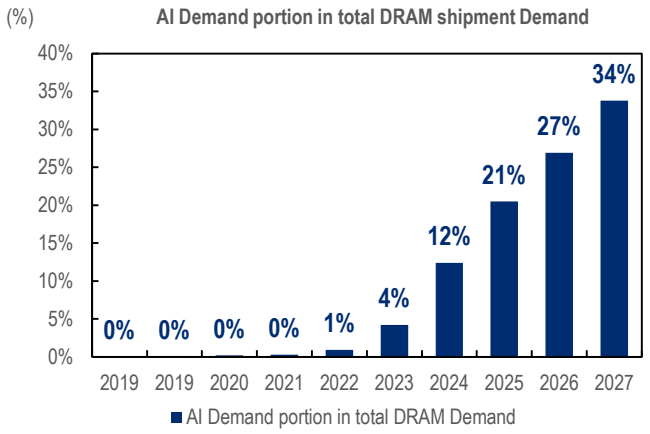
Source: Citi Research, WSTS, *calculation excluded discretes

Server, PC and Smartphone shipment



Source: Factset, IDC, Citi Research Estimates

AI demand portion in DRAM

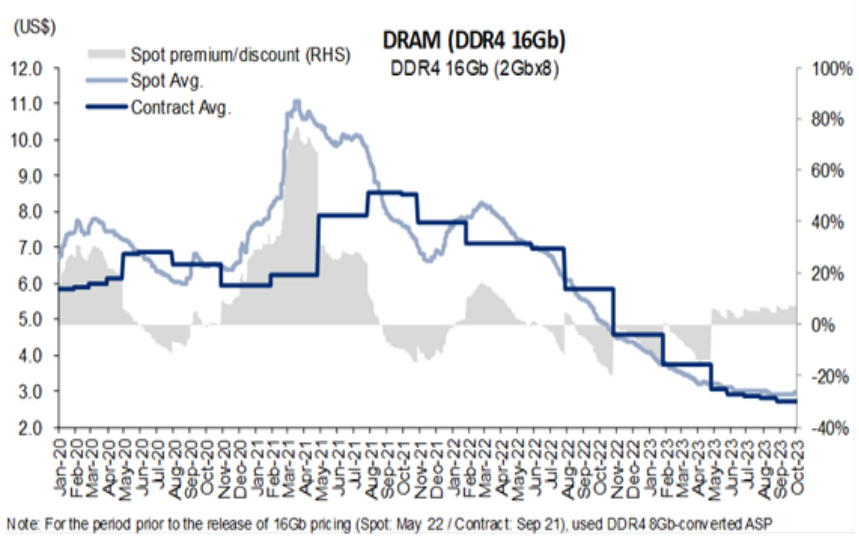


Source: Factset, IDC, Citi Research Estimates

Reference: US Semiconductors (16 October 2023)

Citi Research's semiconductor research team foresees stabilizing memory prices in 2H23 and memory market recovery in 2024E, led by **drastic production cut in 3Q23** (e.g. 40% for DRAM and 65% for NAND), **CAPEX cut** and **AI demand upside**

PC DRAM price trends



Note: For the period prior to the release of 16Gb pricing (Spot: May 22 / Contract: Sep 21), used DDR4 8Gb-converted ASP

Source: DRAMeXchange, Citi Research

Citi's DRAM & NAND ASP Projection

Latest Projection(Oct 2023)

DRAM ASP Projection by Application

	2022				2023				2024				YoY
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
Server	-6%	-2%	-18%	-34%	-21%	-11%	9%	9%	8%	13%	17%	17%	+46%
Mobile	-4%	+1%	-17%	-25%	-17%	0%	3%	9%	2%	3%	7%	15%	+21%
PC	-7%	-3%	-19%	-30%	-15%	-12%	0%	10%	5%	14%	16%	19%	+37%
Graphic/Consumer	-3%	-4%	-19%	-25%	-10%	-3%	1%	13%	1%	7%	13%	18%	+30%
DRAM ASP QoQ	**-5%**	**-1%**	**-18%**	**-29%**	**-18%**	**-6%**	**5%**	**10%**	**5%**	**9%**	**13%**	**17%**	**+32%**

Server DRAM ASP Projection($)

DDR4	2022				2023				2024				YoY
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
32GB RDIMM	140	138	113	75	56	48	45	49	51	57	72	89	+36%
64GB RDIMM	272	267	219	146	112	95	90	99	102	115	145	178	+36%
QoQ (%)	-6%	-2%	-18%	-34%	-25%	-15%	-5%	+9%	+4%	+12%	+26%	+23%	

DDR5	2022				2023				2024				YoY
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
64GB RDIMM			307	197	168	143	150	151	166	174	192	217	+23%
QoQ (%)				-36%	-15%	-15%	5%	1%	10%	5%	10%	13%	

DDR4&DDR5 Blended	2022				2023				2024				YoY
Blended ASP(64GB)	**272**	**267**	**220**	**146**	**115**	**102**	**111**	**121**	**131**	**148**	**173**	**203**	+46%
QoQ(%)	-6%	-2%	-18%	-34%	-21%	-11%	9%	9%	8%	13%	17%	17%	
DDR5 Penetration (%)	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
	0%	0%	1%	1%	5%	15%	+35%	+43%	45%	55%	+60%	+65%	

Latest Projection(Oct 2023)

NAND ASP Projection by Application

	2022				2023				2024				YoY
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
SSD	0%	7%	-20%	-35%	-29%	-15%	-2%	15%	3%	5%	9%	15%	+22%
Mobile	-5%	3%	-20%	-32%	-22%	-12%	-1%	10%	3%	4%	7%	12%	+17%
USB& Others	-7%	3%	-22%	-30%	-23%	-14%	-1%	15%	2%	7%	11%	12%	+24%
NAND ASP QoQ	**-3%**	**+5%**	**-20%**	**-33%**	**-25%**	**-14%**	**-1%**	**13%**	**3%**	**5%**	**9%**	**+13%**	**+22%**

NAND ASP by Density($)

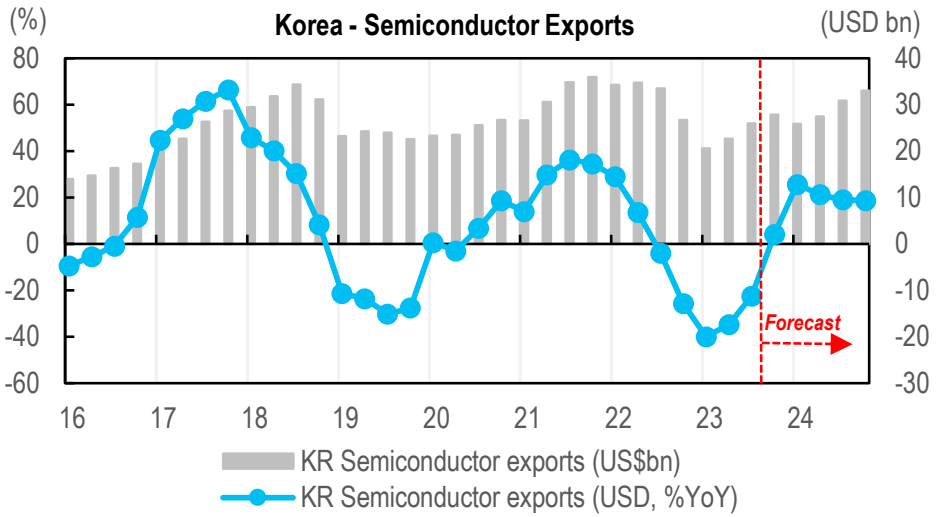
8Gb(1GB)	0.10	0.11	0.08	0.06	0.042	0.037	0.036	0.041	0.042	0.044	0.048	0.054	
256Gb	3.25	3.41	2.71	1.82	1.359	1.173	1.156	1.307	1.344	1.410	1.531	1.735	
512Gb	6.50	6.81	5.43	3.64	2.718	2.345	2.311	2.613	2.687	2.821	3.062	3.470	

Reference: Global Semiconductors (4 October 2023)

Source: DRAMeXchange, Citi Research Estimates

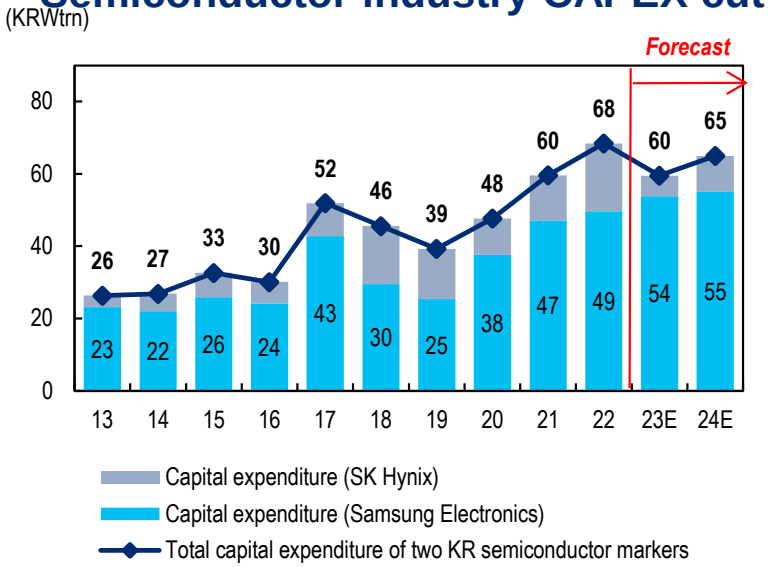
Korean **semiconductor export growth** likely to rebound in 2H23; **semiconductor CAPEX cut** should contract facilities investment

KR Semiconductor exports likely to rebound



Source: Citi Research Estimates, CEIC

Semiconductor industry CAPEX cut



Source: Citi Research Estimates, Bloomberg

Citi's DRAM + NAND Wafer Fab Equipment CAPEX Projection

Total DRAM+NAND Capex (US$mn)	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E
Total DRAM+NAND Capex	**18,207**	**20,833**	**24,725**	**35,783**	**36,535**	**31,735**	**35,413**	**47,367**	**54,776**	**34,480**	**35,711**
DRAM+NAND Capex YoY %	28.0%	14.4%	18.7%	44.7%	2.1%	-13.1%	11.6%	33.8%	15.6%	-37.1%	3.6%

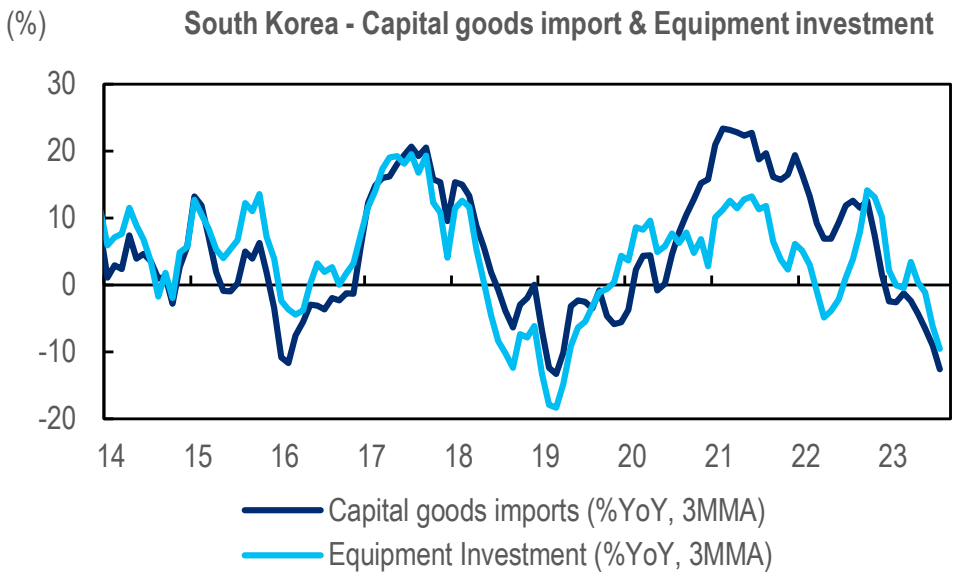
© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Citi Research Estimates

Reference: Global Semiconductors (26 September 2023)

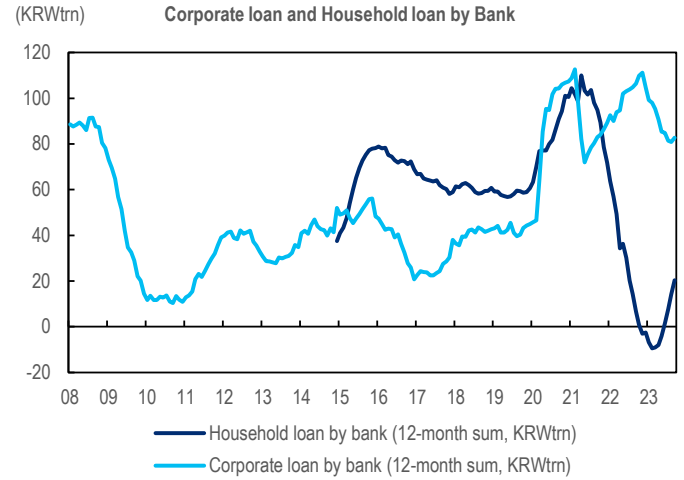
Several headwinds to facilities investment

Facilities investment will likely weaken



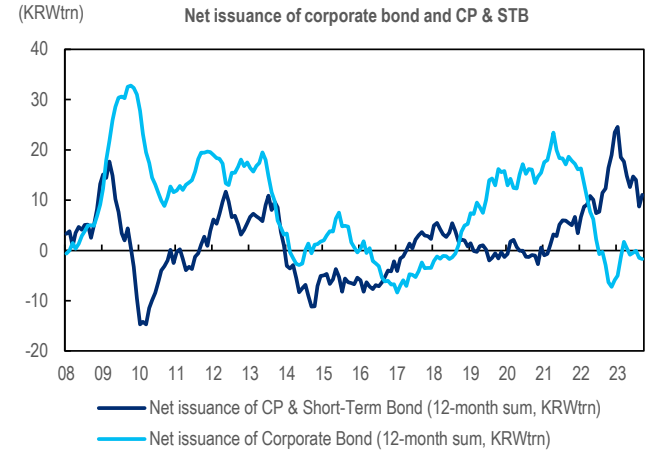
Source: Citi Research, CEIC

Corporates are relying on loans by banks



Source: Citi Research, CEIC

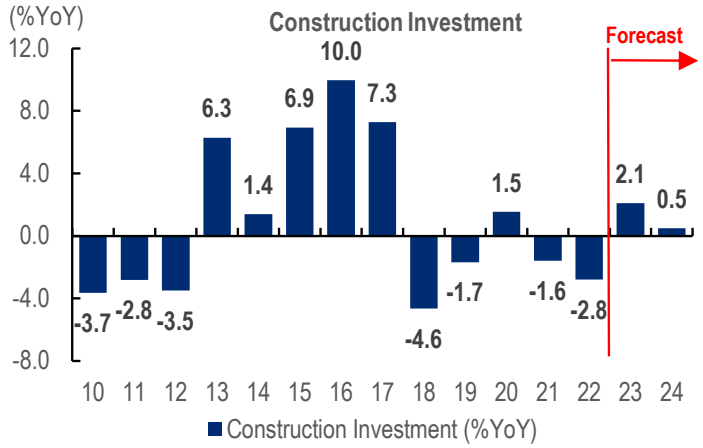
Difficulties in financing corporate bonds



Source: Citi Research, CEIC

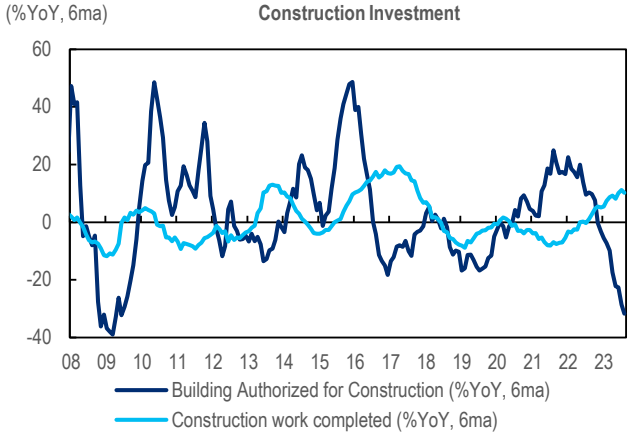
Several headwinds to construction investment

Weak construction investment



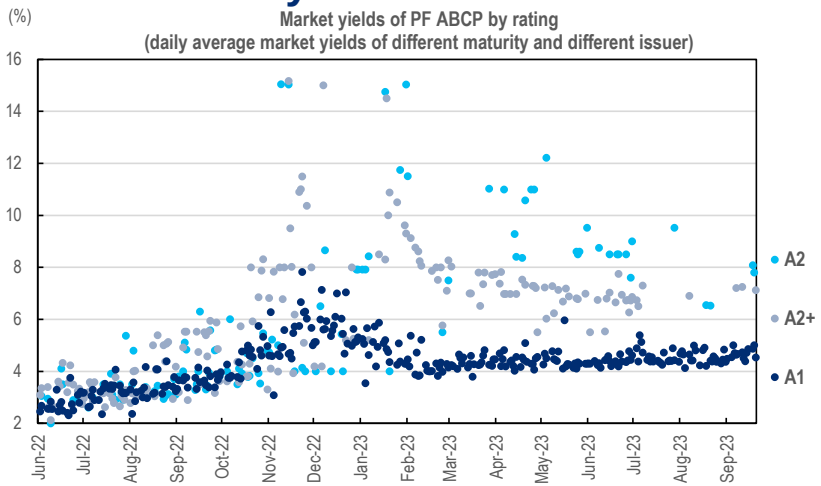
Source: Citi Research Estimates, CEIC

Construction order and completion cycle



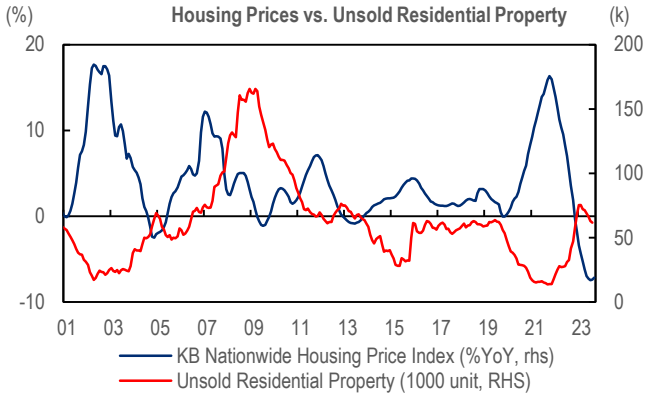
Source: Citi Research, CEIC

Market yields of PF-ABCP



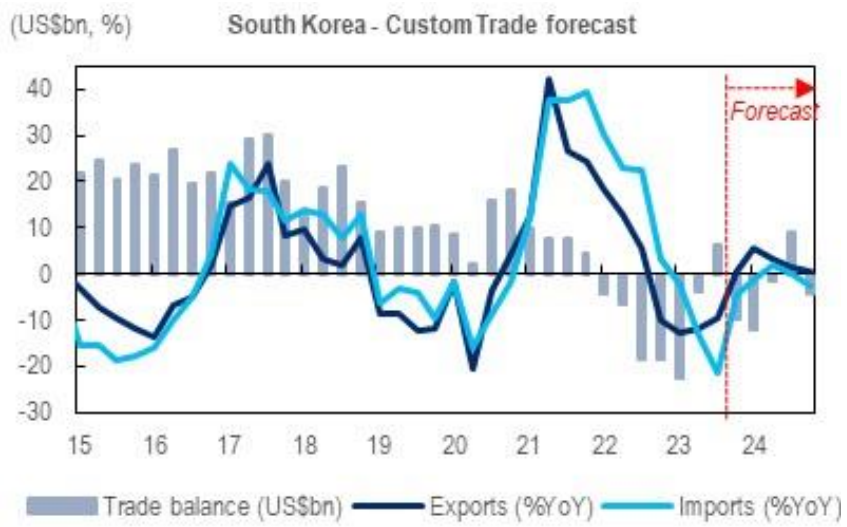
Source: Citi Research, Infomax

A correction in housing market price could raise unsold volume of apartment

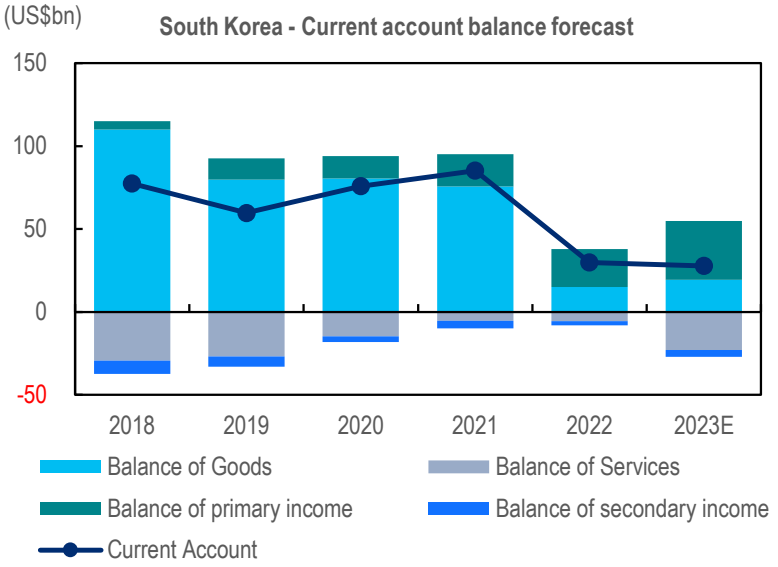


Source: Citi Research, CEIC

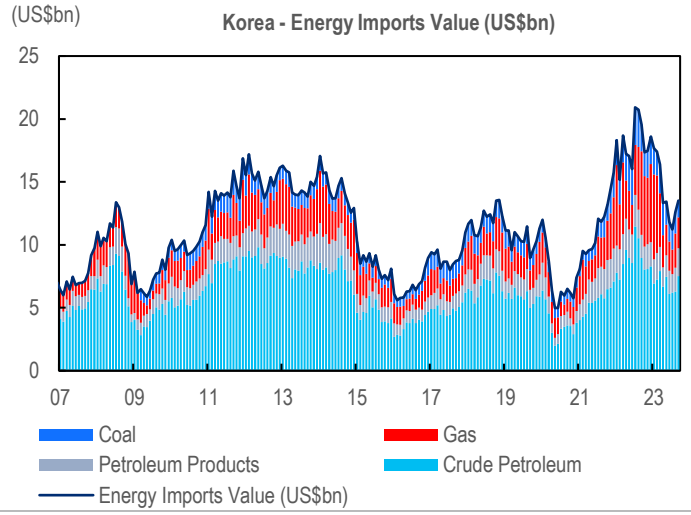
Our 2023E current account surplus is 1.6% of GDP (vs. 2022: 1.8% of GDP; the average in 2009-2022: 4.3% of GDP).



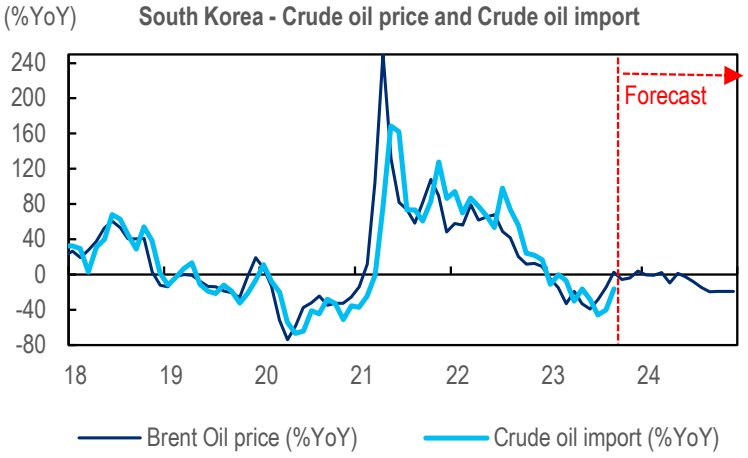
Source: CEIC, Citi Research Estimates



Source: CEIC, Citi Research Estimates



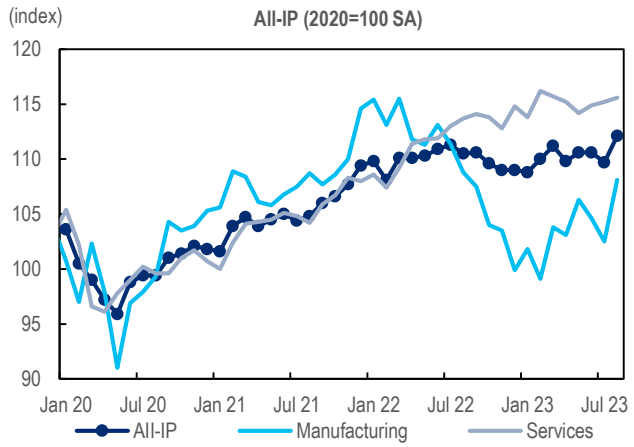
Source: CEIC, Citi Research



Source: CEIC, Citi Research Estimates

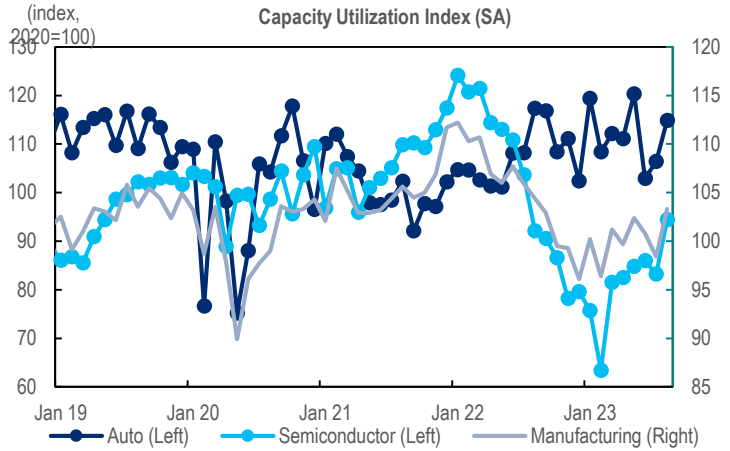
The strong recovery in manufacturing production would not last long

All-Industrial Production



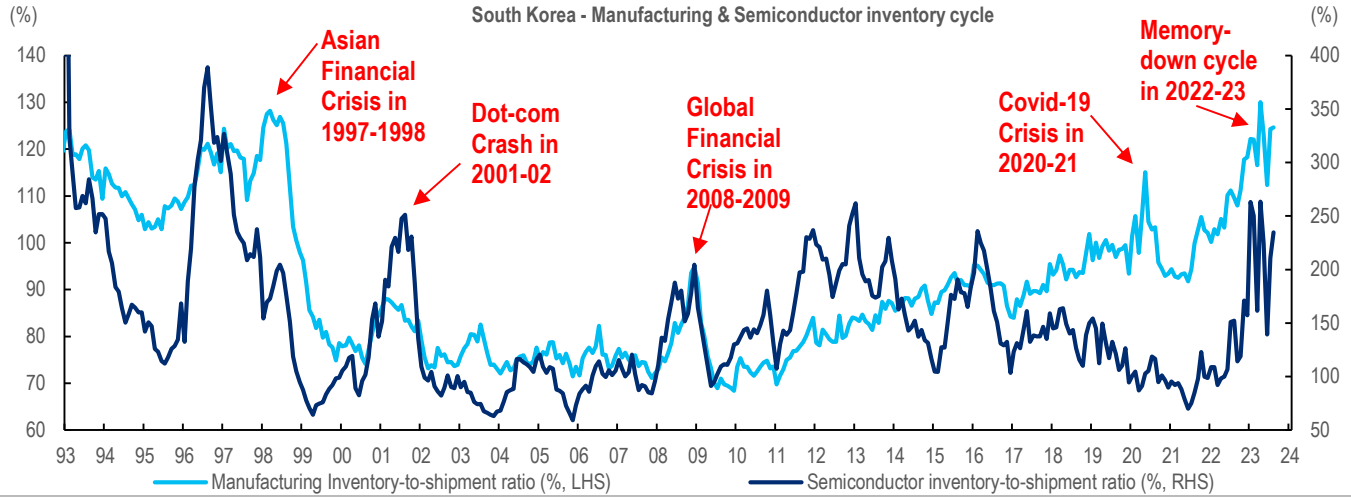
Source: Citi Research, CEIC

Mfg & Chip Capacity Utilization



Source: Citi Research, CEIC

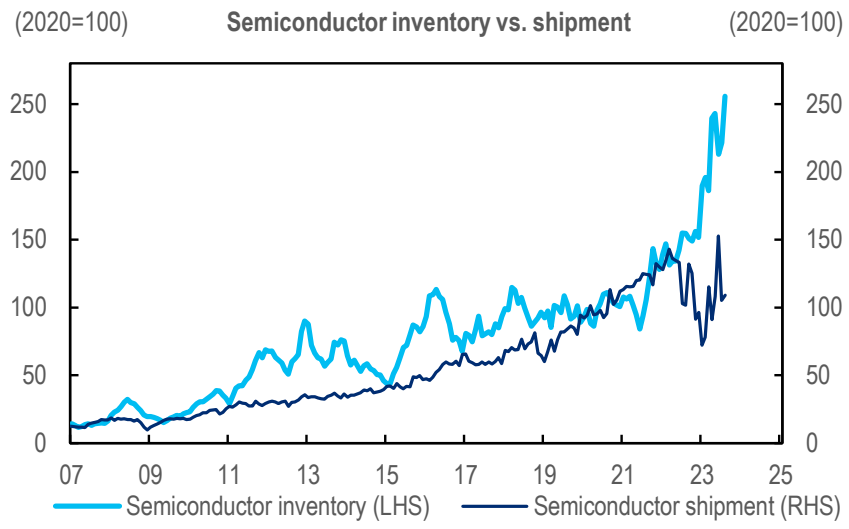
Manufacturing & Chip sector's inventory-to-shipment ratio



Source: Citi Research, CEIC

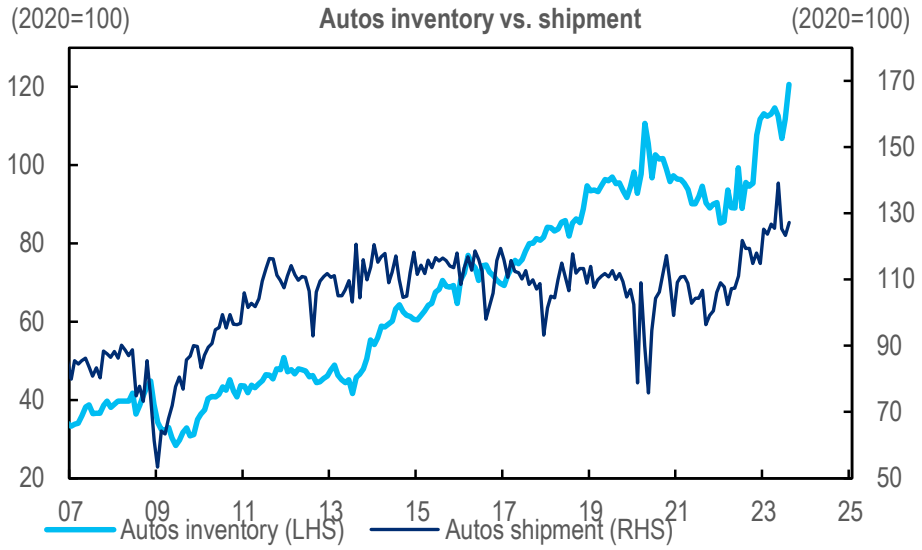
A delayed materialization of inventory destocking may limit the expansion of semiconductors and automobiles production for a while

Chip inventory vs. Chip shipment



Source: Citi Research, CEIC

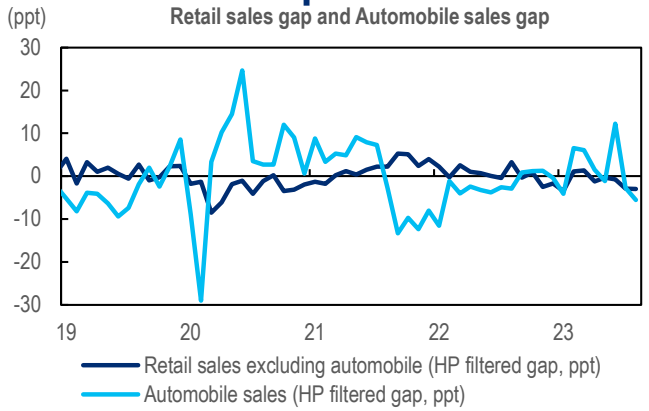
Auto inventory vs. Auto shipment



Source: Citi Research, CEIC

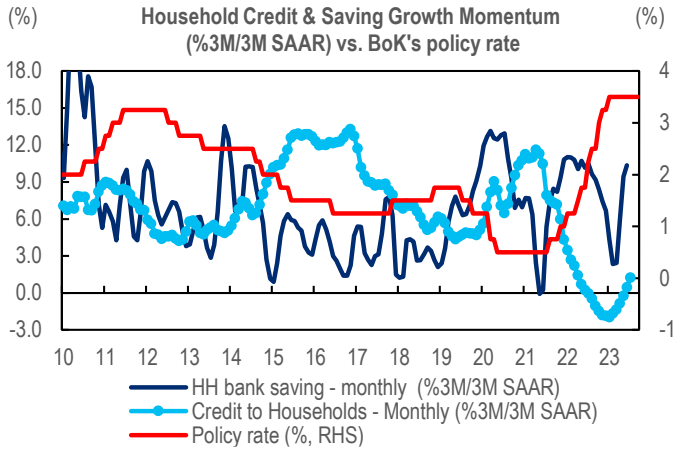
The upside risks from excessive saving, reopening and delayed auto purchases should gradually dissipate in 2H23.

Auto purchases



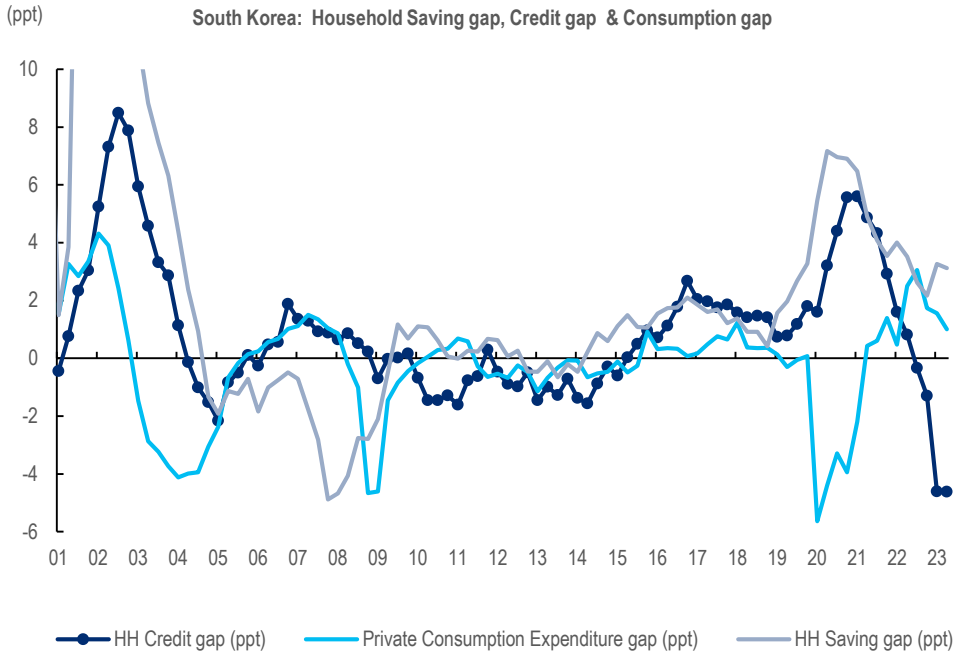
Source: Citi Research, CEIC

HH saving & credit momentum



Source: Citi Research, CEIC

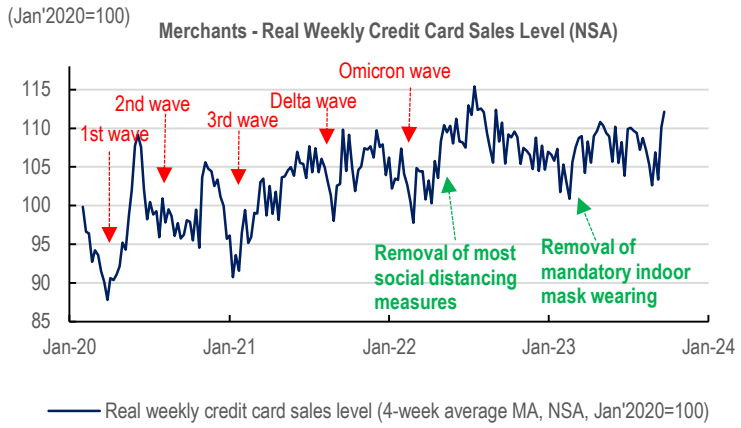
Some excessive savings may have been utilized for repayment of debt, effectively reducing the capacity of excessive spending



Source: Citi Research, CEIC

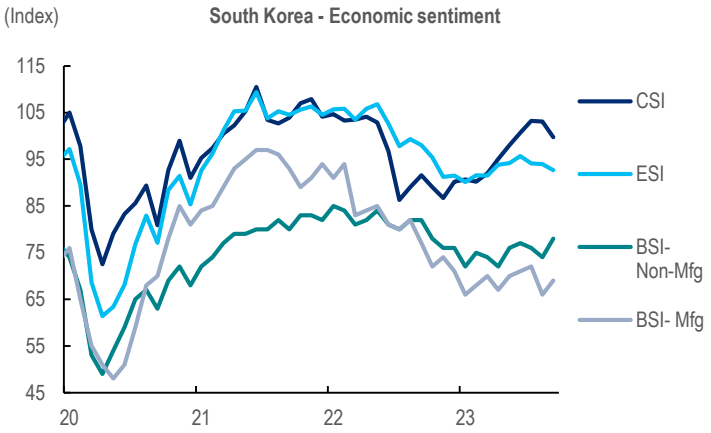
On the contrary, stabilizing inflation, robust consumer sentiment and a soft-landing of housing market should support consumption

Credit card sales



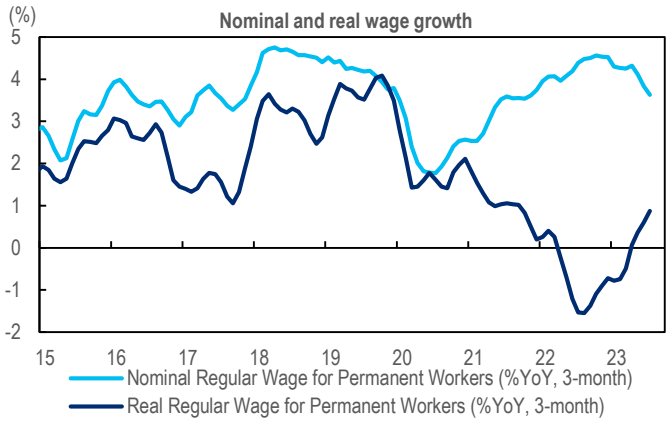
Source: Shinhan Card, KICC, KOSTAT, Citi Research

Consumer sentiment



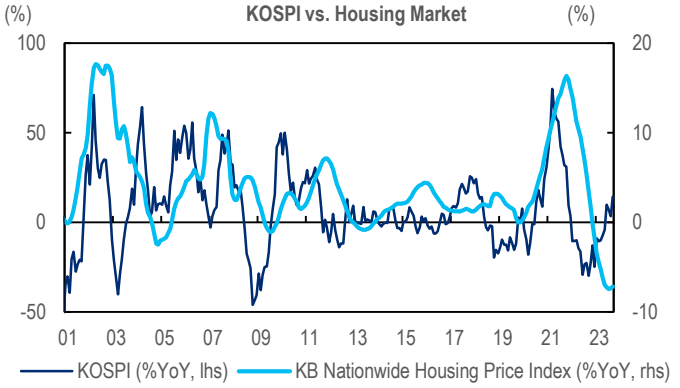
Source: CEIC, Citi Research

Real wage growth rebounds



Source: CEIC, Citi Research

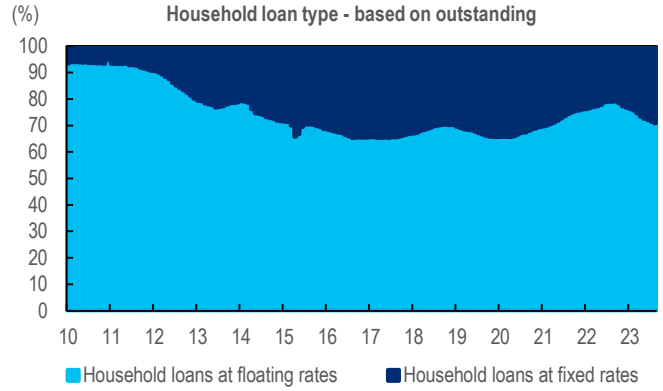
Negative wealth effects moderate



Source: CEIC, Citi Research

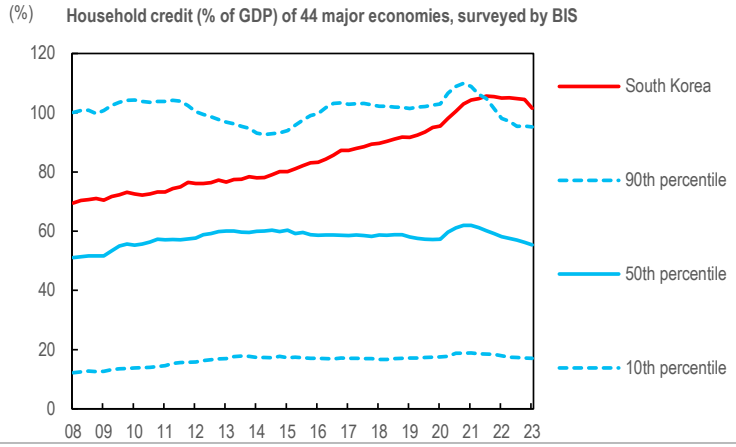
The government promoted lower bank lending rates to boost domestic demand and ensure a soft-landing for housing market

71% of floating rate household loans



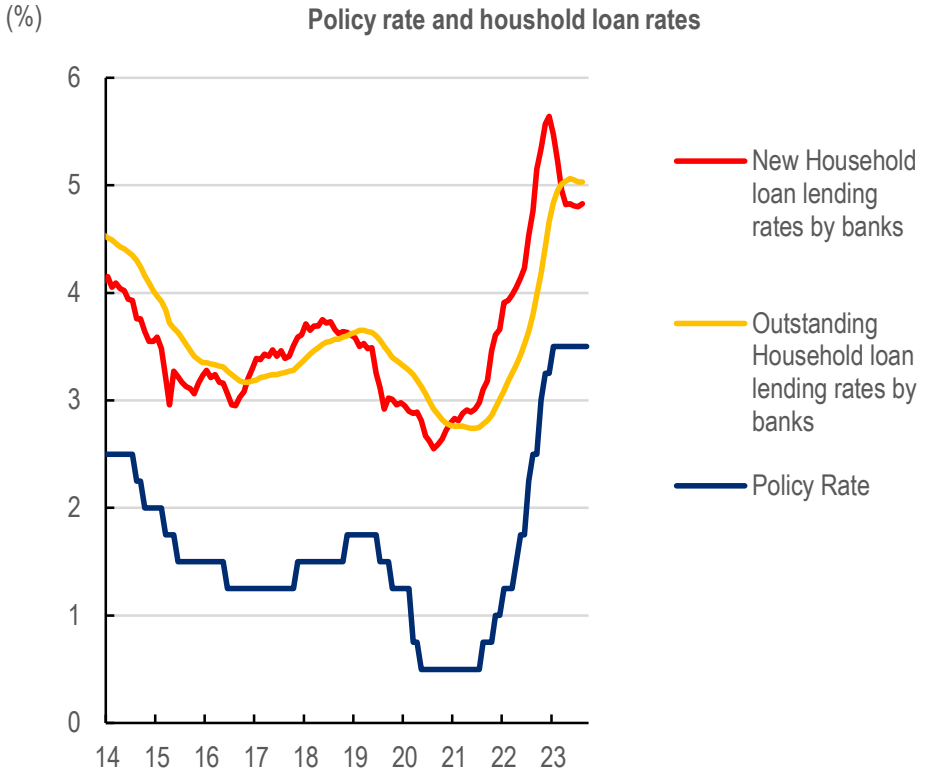
Source: Citi Research, CEIC

Korea's household credit to GDP ratio is even higher than the 90th percentile



Source: Citi Research, Haver

The pressure has distorted monetary policy's transmission mechanism to dovish-side

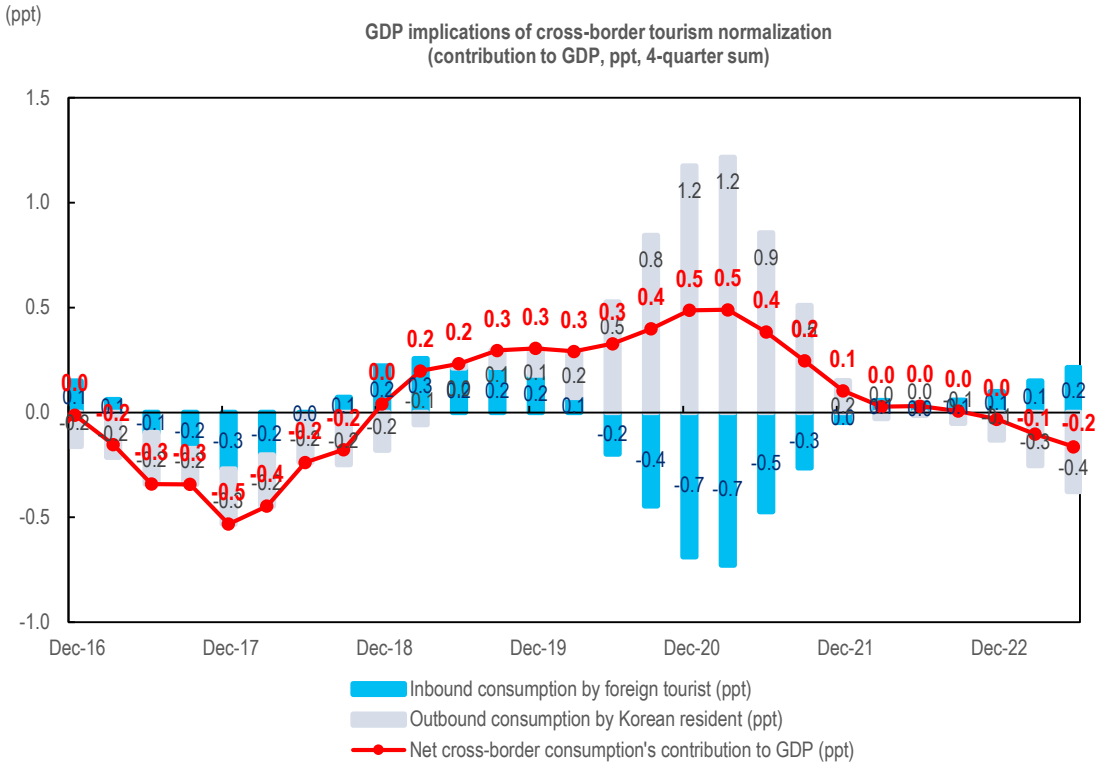


Source: Citi Research, CEIC

Early normalization of outbound cross-border tourism

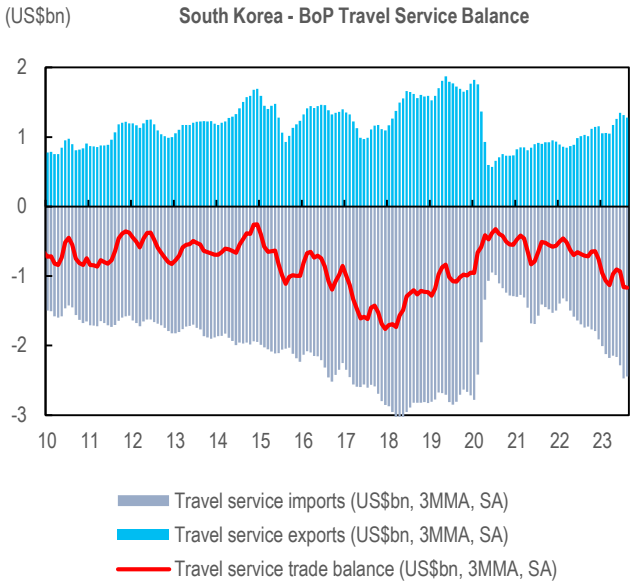
compared to inbound tourism should generate negative impact on net exports in 2023E

The normalization of cross-border tourism to bring around -0.3ppt ~ -0.5ppt contribution to Korea's annual GDP growth over 2023-2024.



Source: Citi Research, CEIC

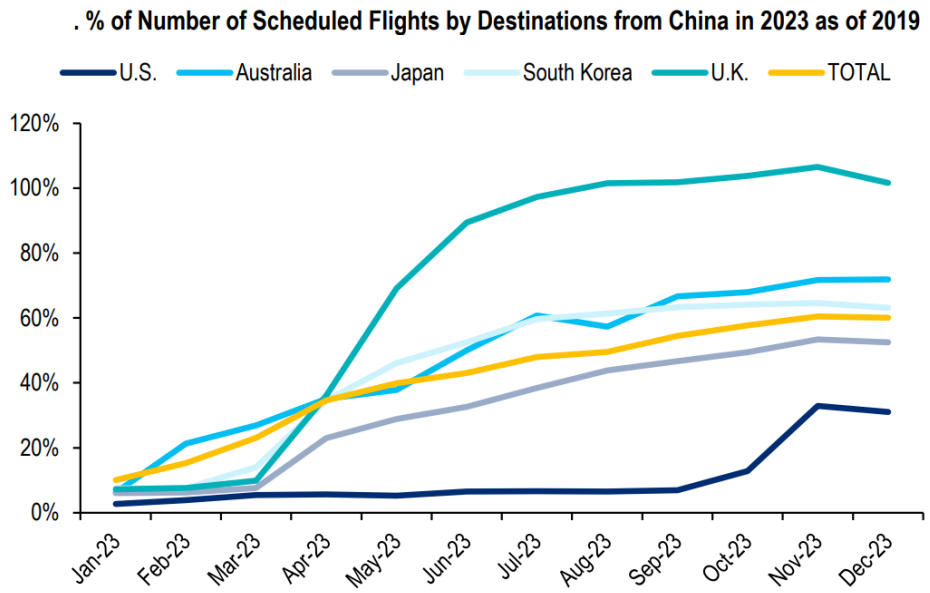
Structural travel service trade deficit



Source: Citi Research, CEIC

The gradual normalization of **China's Korea-bound group tourism** could generate around +0.10ppt ~ +0.15ppt contribution to Korea's GDP growth over 2023-24

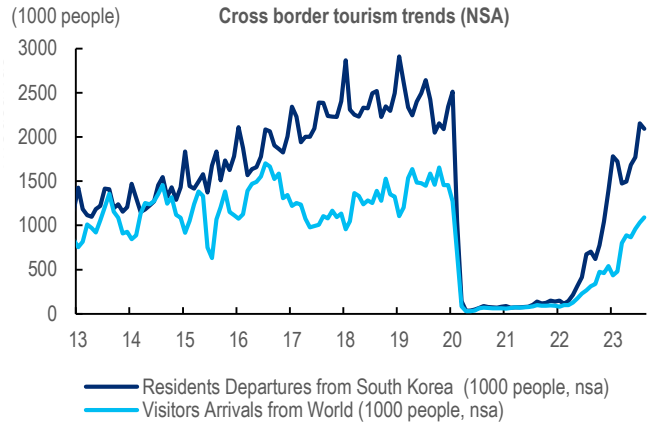
We expect a gradual normalization of China's Korea-bound group tourism as **larger demand could be constrained by limited capacity**



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Diio MI, Citi Research

Early normalization of outbound cross-border tourism

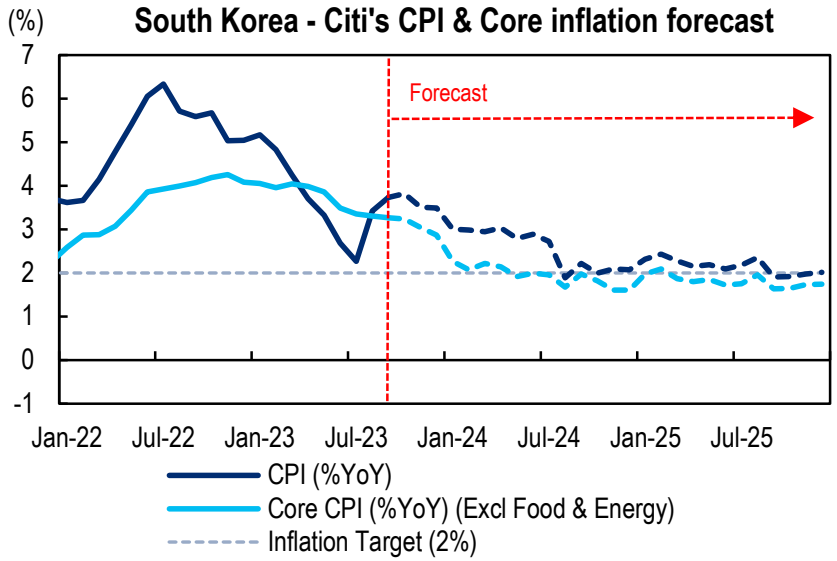


Source: Citi Research, CEIC

Source: Citi Research, CEIC

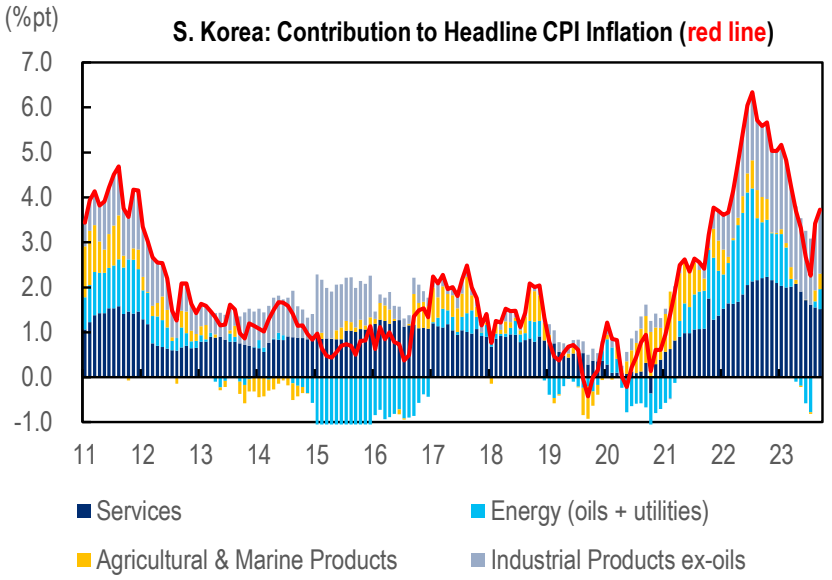
We now revise up our 2023E-2024E CPI inflation by 0.1ppt to 3.7% and 2.5%, respectively. We also raise our 2024E core CPI inflation by 0.1ppt to 1.9% by factoring in the second round impact of supply-side inflation. **CPI inflation will likely fall to mid-to-low 2%YoY from 3Q24, in our view.**

We expect CPI inflation to moderate to 3.7% in 2023E (vs. 2022: 5.1%)



Source: CEIC, Citi Research Estimates

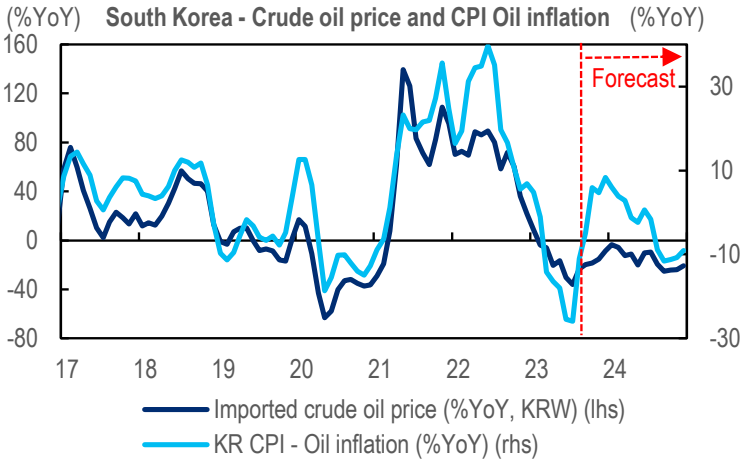
A likely stabilization of the demand-side factors



Source: CEIC, Citi Research

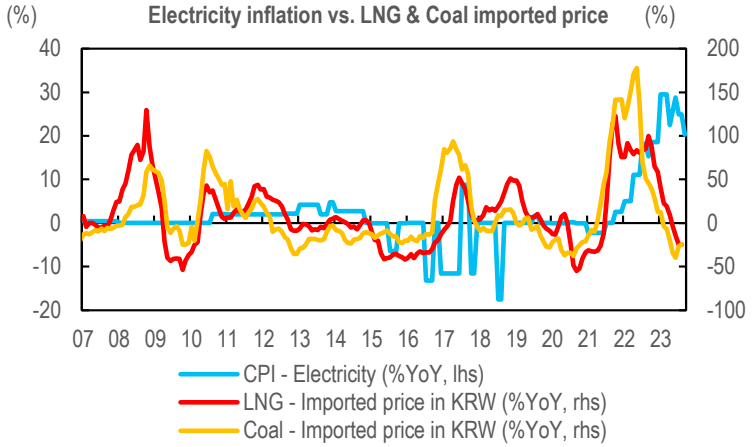
On the supply side, we assume no electricity and gas price hikes until the legislative elections in April'24

Oil inflation



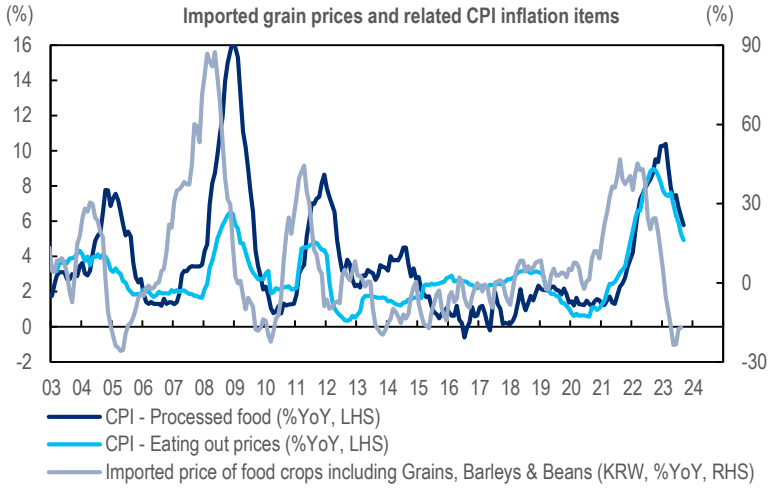
Source: CEIC, Citi Research Estimates

Electricity tariff inflation



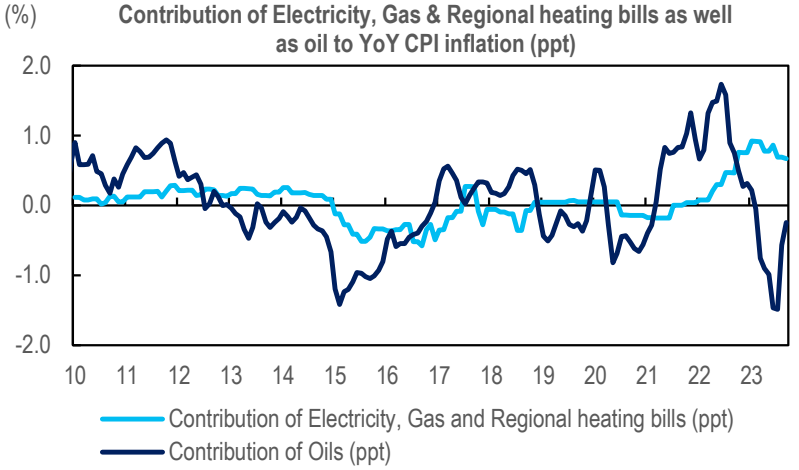
Source: CEIC, Citi Research

Grain inflation



Source: CEIC, Citi Research

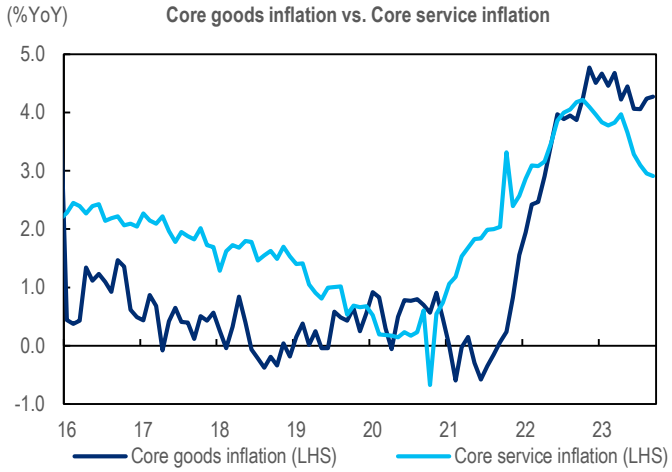
Oil & gas-related inflation contribution



Source: CEIC, Citi Research Estimates

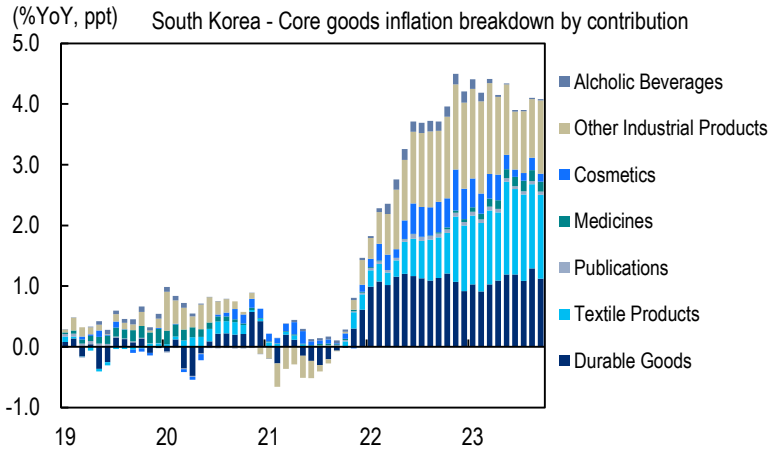
Core goods inflation is likely to fall further from the peak in November'22

Core goods vs. core service inflation



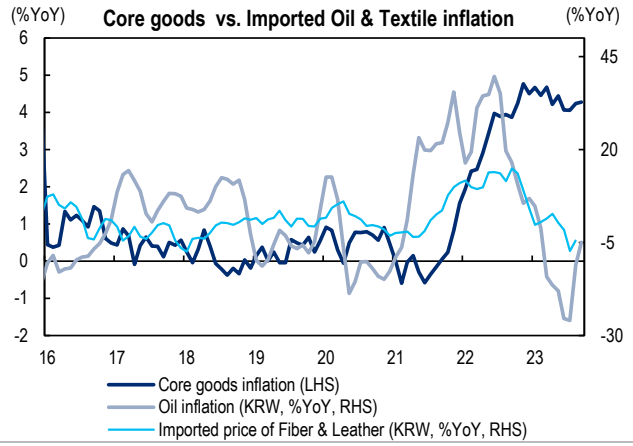
Source: CEIC, Citi Research

Breakdown of core goods inflation



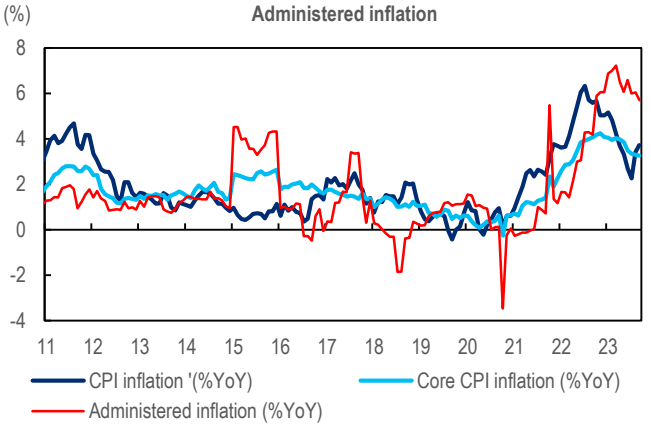
Source: CEIC, Citi Research

Raw material prices such as oil and fiber prices



Source: CEIC, Citi Research

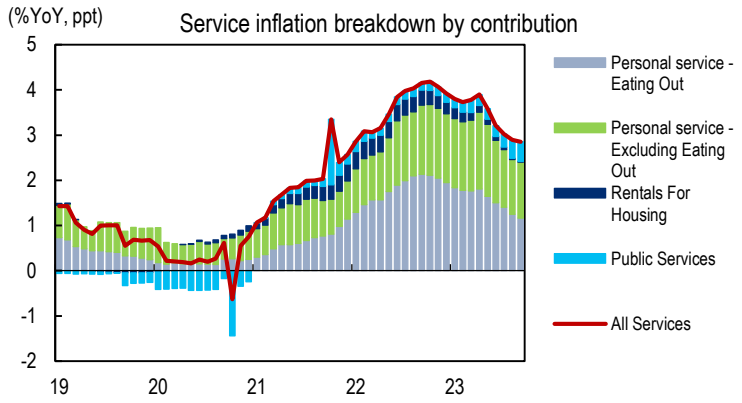
Administered inflation



Source: CEIC, Citi Research

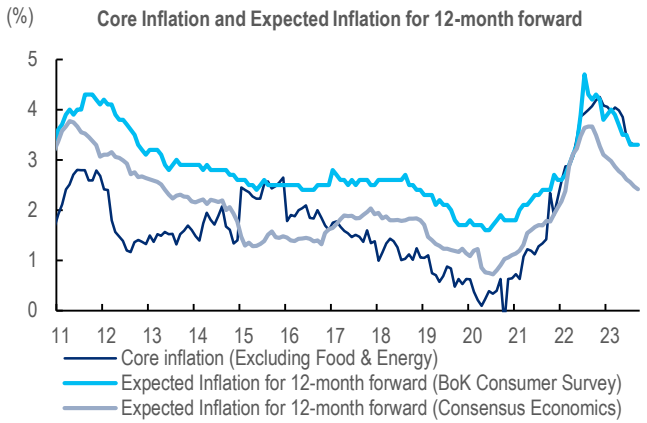
Core services inflation is estimated to decline from the peak in October'22

Core services breakdown



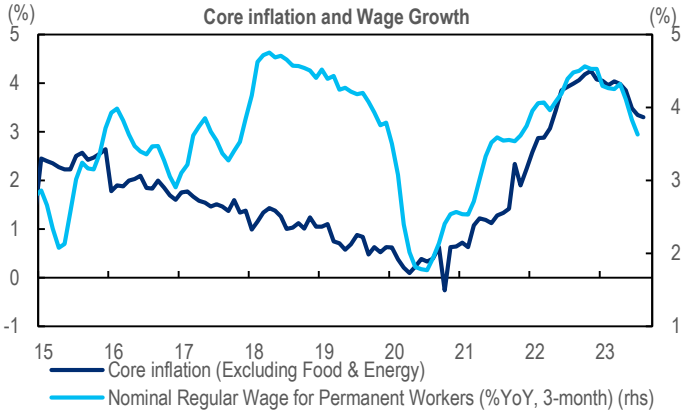
Source: CEIC, Citi Research

Inflation expectations peak-out



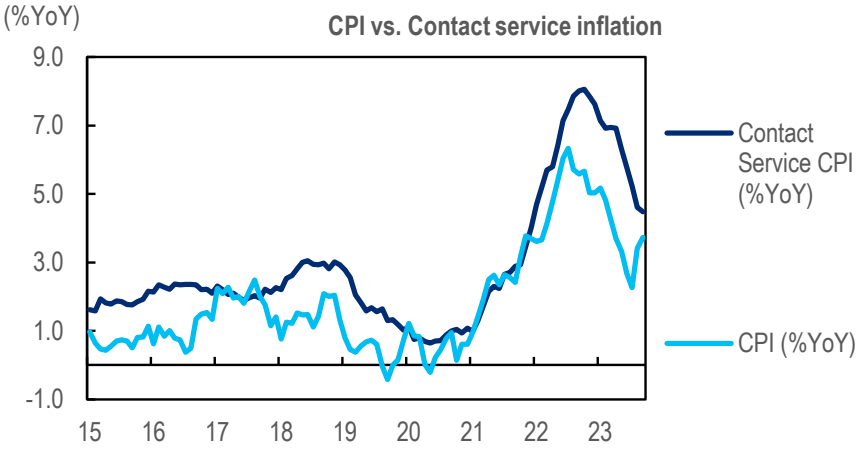
Source: CEIC, Consensus Economics, Citi Research

Wage inflation peak-out



Source: CEIC, Citi Research

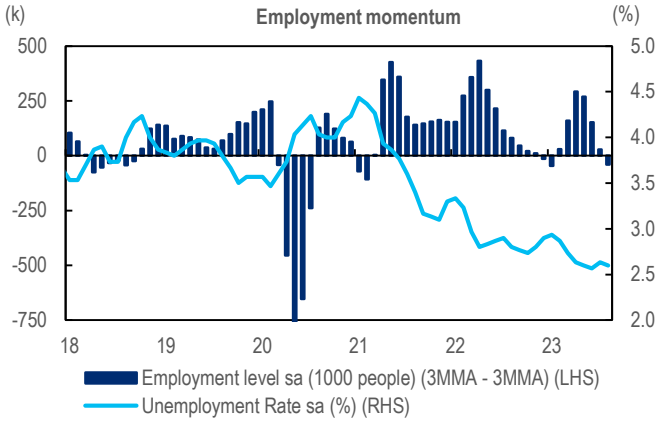
Contact-services inflation peak-out



Source: CEIC, Citi Research

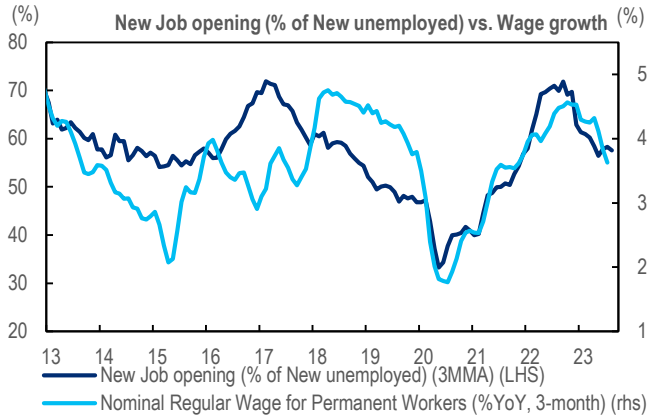
We continue to believe **wage growth will moderate** this year amid weak private job demand and robust labor supply

Unemployment rate at 2.4%sa



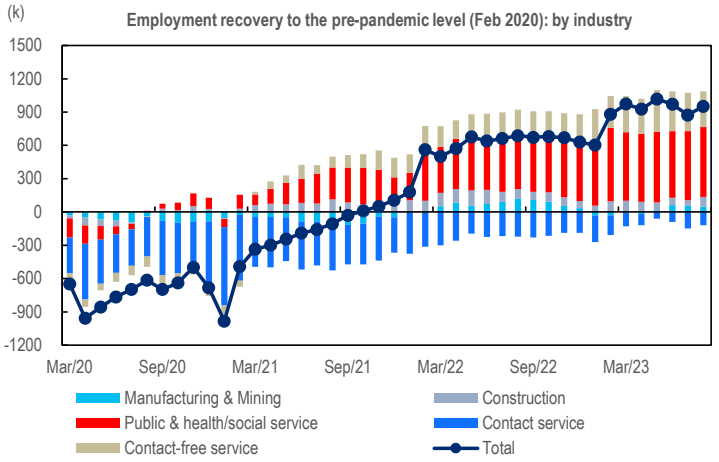
Source: Citi Research, CEIC

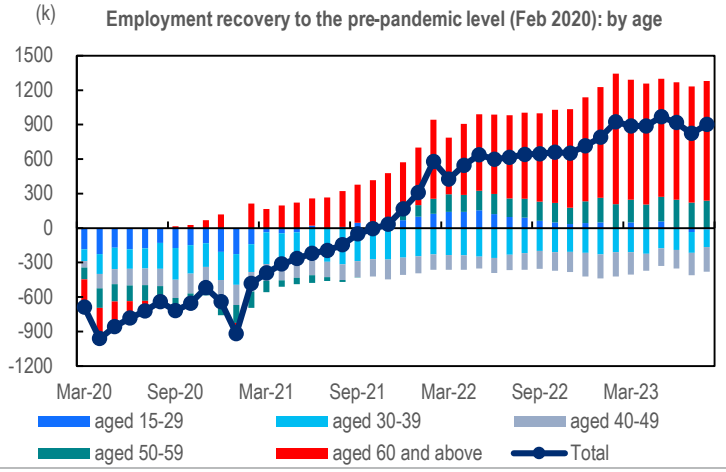
New job opening (% of new unemployed)



Source: Citi Research, CEIC

The government's temporary job programs for the elderly (aged 60 & above) in 'public & health/social service'.

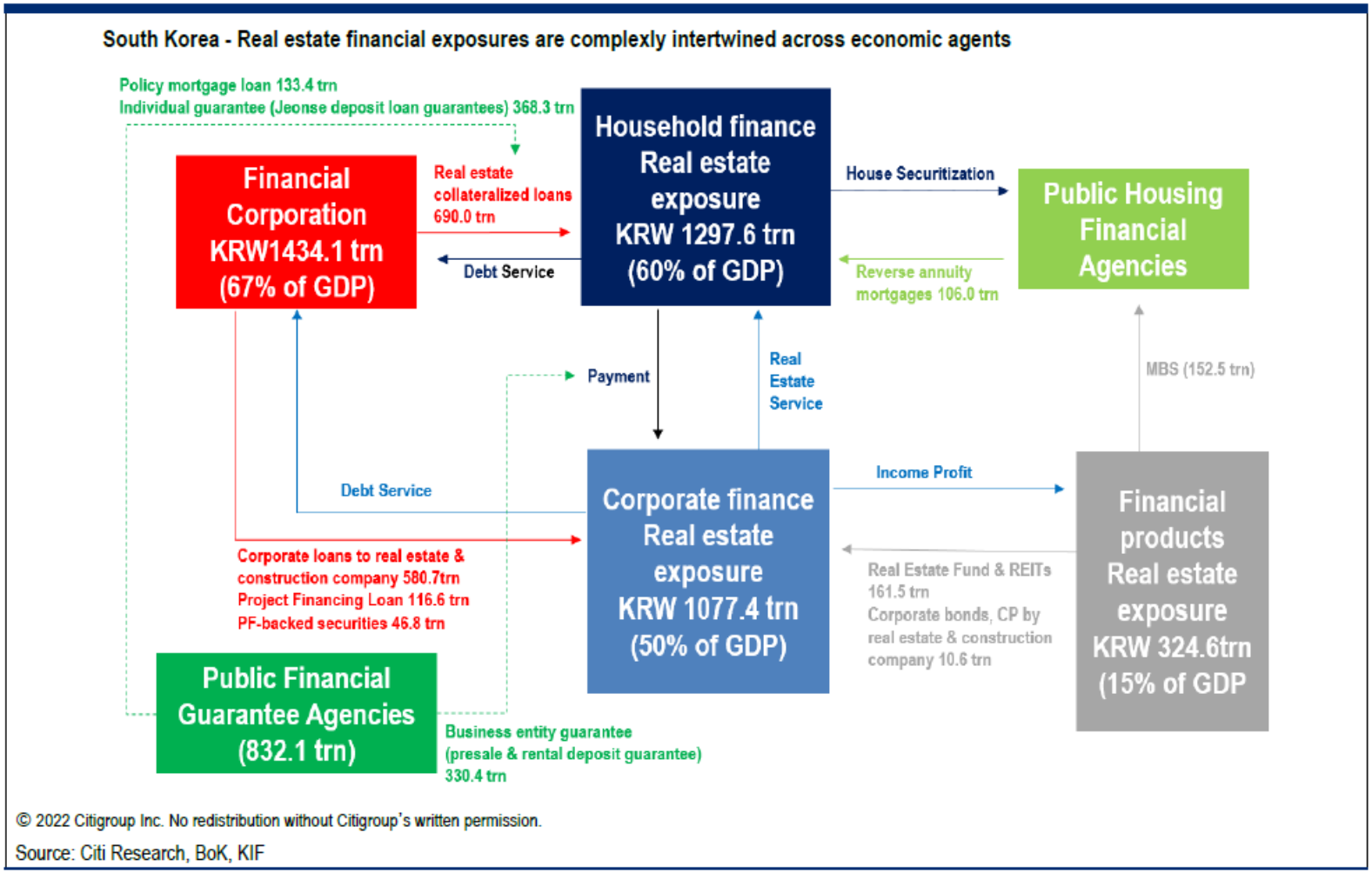




Source: Citi Research, CEIC

We believe the government's policy actions will ensure: **1) soft-landing of the housing market;** and **2) orderly restructuring** of REPF loans, the construction sector and NBFIs

The focus is likely to be on restructuring of Real Estate Project Financing (REPF) exposure (around 10% of GDP) rather than the entire real estate financial exposure (125% of GDP).



© 2022 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Citi Research, BoK, KIF

Bridge loans in REPF at greater risk; Securitization into PF ABCP could transmit credit risks

Real estate Project Financing in three stages

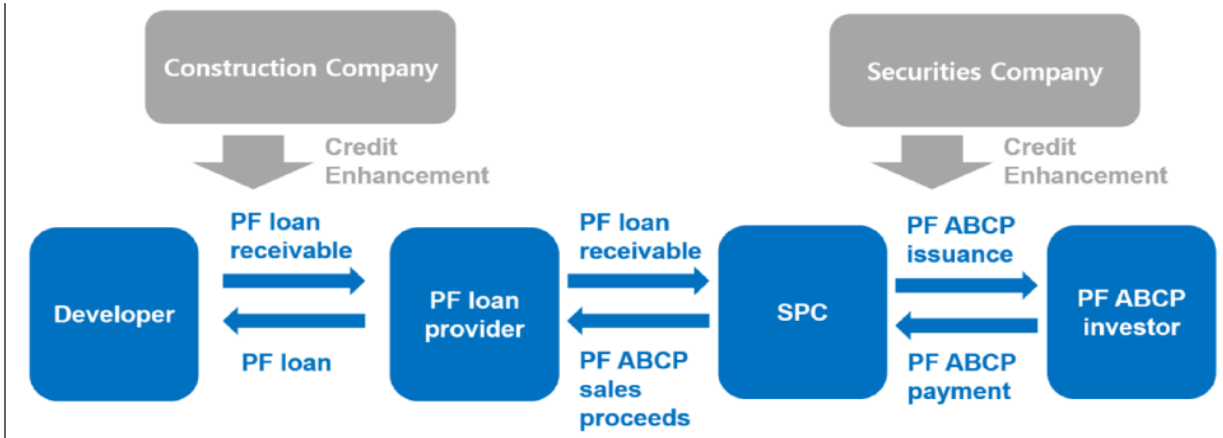
Stage	Stage 1: Before starting construction	Stage 2: Construction	Stage 3: After finishing construction
PF Usage & Main activities	Purchase land, secure permit and select constructor	Start construction and sell apartment to households	Move in by households
PF Supply	**Bridge loan**	**Main Project Financing**	**Collective loans & other collateralized loans**
PF Key feature	More than 10% interest rates & below 1-year maturity bridge loans from non-banking industry due to high risks of securing construction permit	Below 10% interest rates & 3-5 years maturity PF loans from both banking & non-banking industry.	Both banking and non-banking industry provide loans to households at lower interest rates due to lower risks
PF Securitization		Securitization of PF loan to PF ABCP (Asset-Backed Commercial Paper) & PF ABSTB (Asset-Backed Short-Term Bond) happens at this stage	
PF Financial institution	Securities, asset management, mutual finance, saving banks and 'credit cards, lease & installment finance'	Institutional investors (bank, insurance, pension), mutual finance, saving banks and Credit cards, Lease & Installment finance	Bank, saving bank, mutual finance and insurance

© 2022 Citigroup Inc. No redistribution without Citigroup's written permission.

Note: The is based on Table 6 of Jeong-Ju Kim's 'Real estate PF crisis: assessing the cause and policy response', November 2022, Construction & Economy Research Institute of Korea

Source: Citi Research, CERIK

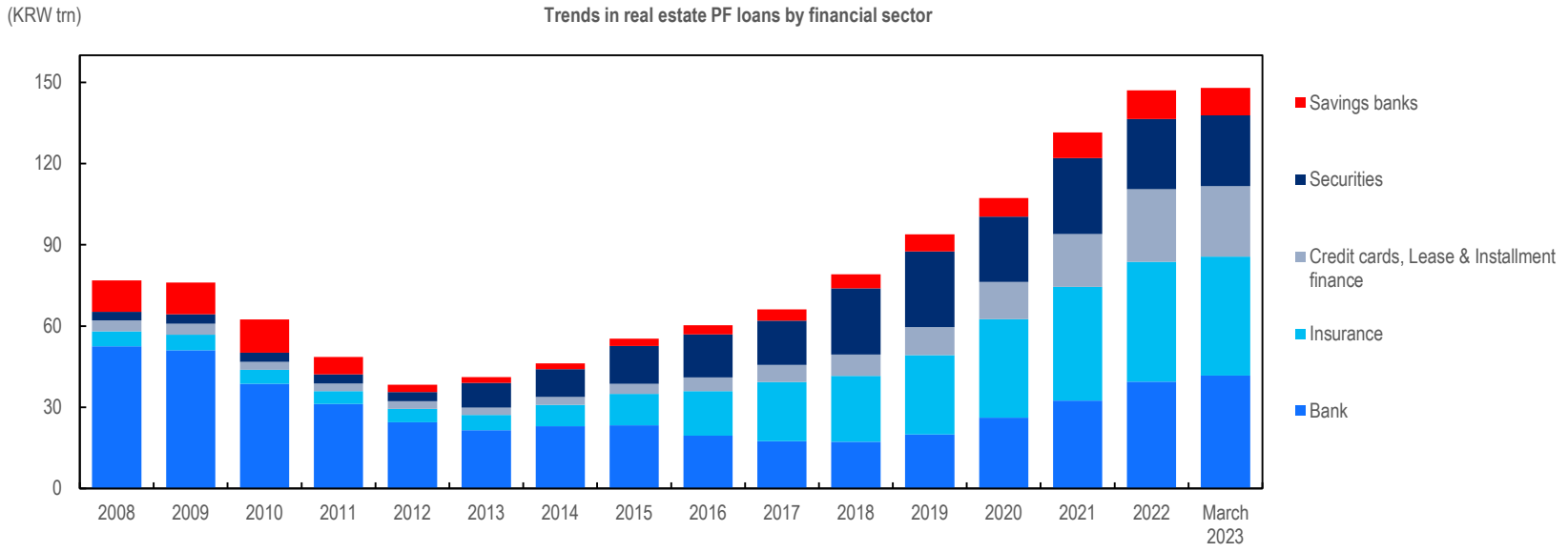
In practice, construction and securities companies tend to provide credit enhancement



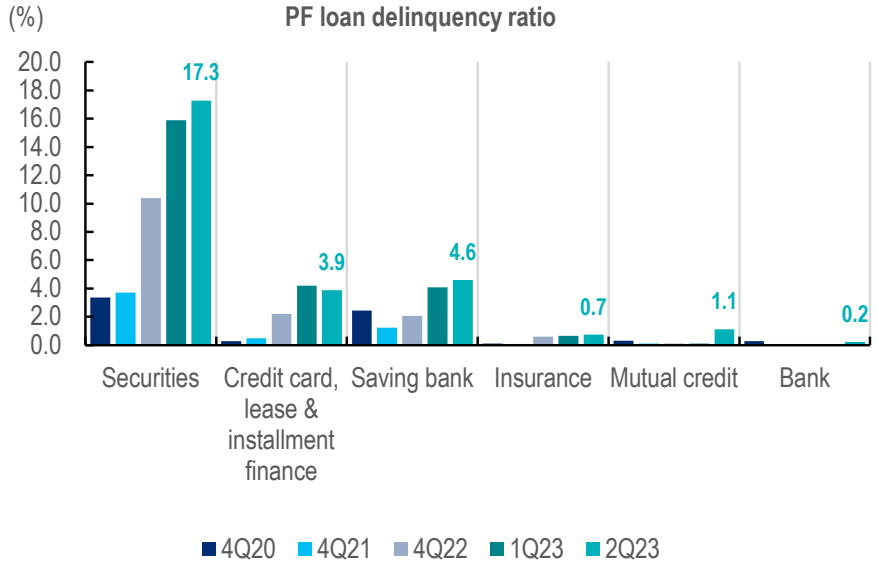
© 2022 Citigroup Inc. No redistribution without Citigroup's written permission.

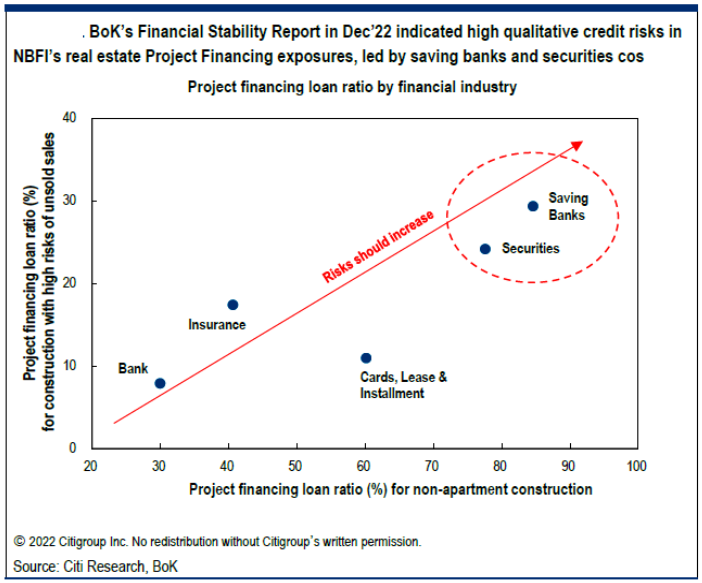
Source: Citi Research, Korea Capital Market Institute

Small- and medium-sized cos in non-banking sector at risk



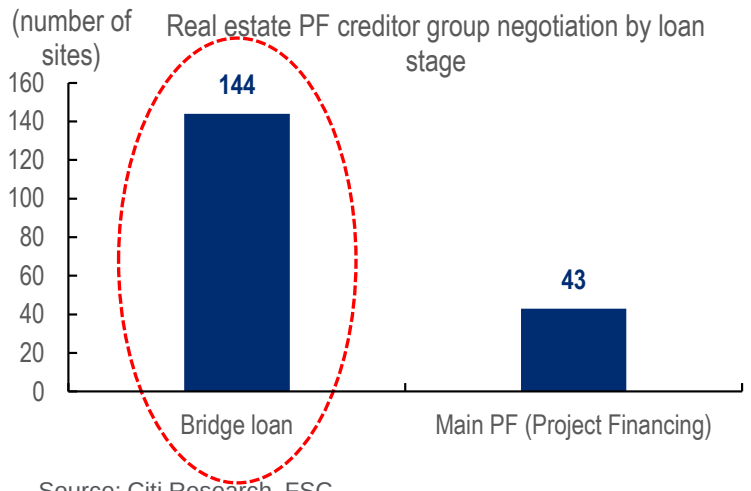
Source: Citi Research, FSS, BOK



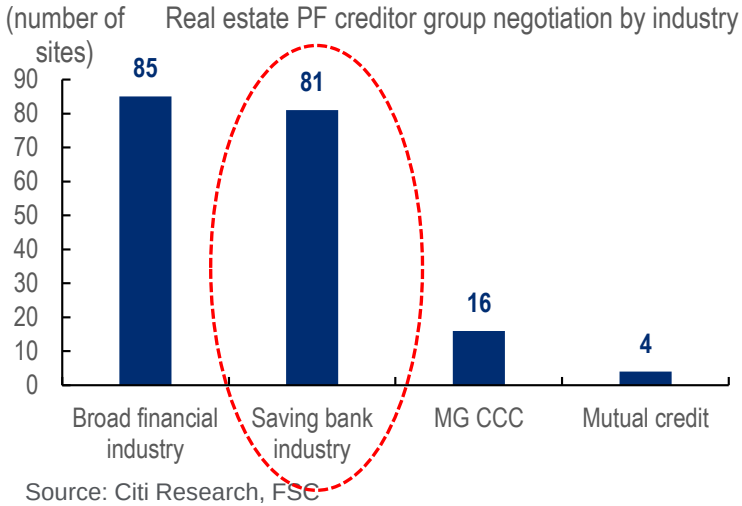


Source: Citi Research, FSS, BOK

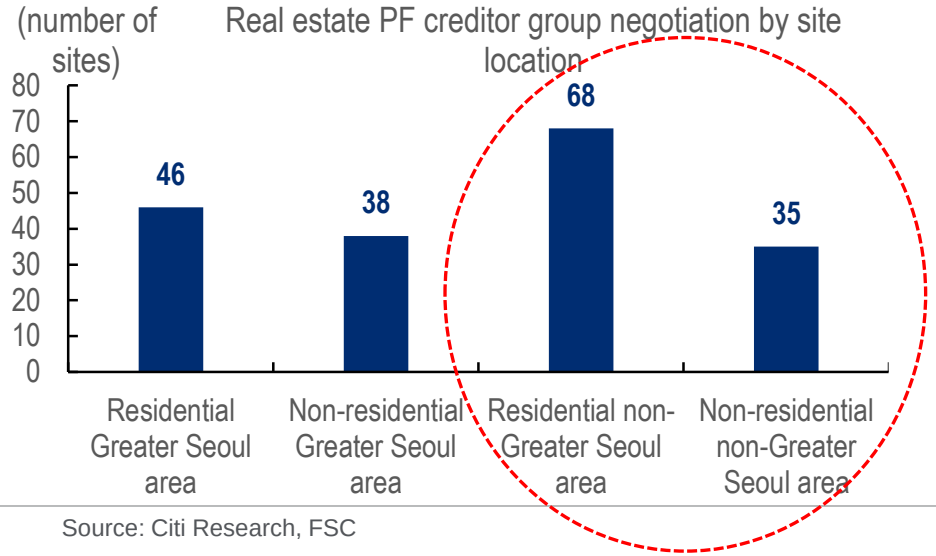
As of August'23, real estate PF creditor groups manage a total 187 sites. 152 sites have received financial support such as maturity extension and deferred interest payment. 35 sites are under negotiations with creditor groups



Source: Citi Research, FSC



Source: Citi Research, FSC



Source: Citi Research, FSC

For smooth restructuring, the government is likely to utilize KDIC, KAMCO and policy banks

After a selection process of REPF-related construction sites, real estate PF inter-creditors are likely to pursue orderly restructuring of REPF, which could eventually hit the construction sector and NBFIs. We believe the **systemic risk between banking and non-banking sectors should be less** given the banking sector's limited credit risk exposure

We think Korean Saving Bank Restructuring in 2011-13 is similar to current situation: [1] deterioration in REPF loans and [2] limited systemic risk to banking sector

	The Asian Financial Crisis in 1997-1998	Korean Credit Card Crisis in 2002-2004	Korean Saving Bank Restructuring in 2011-2013
Troubled debt	**Corporate debt, Short-term external debt**	**Credit card debt (Household debt)**	**Real estate Project Financing loan**
Restructuring	15 banks out of total 30 banks at end-1997 were either closed or acquired. 860 NBFIs out of total 2,070 NBFIs at end-1997 were either closed or acquired. Specifically, 135 saving banks out of total 231 saving banks at end-1997 were either closed or acquired	5 major credit card companies were merged or acquired	30 saving banks out of total 105 saving banks at end-2010 were acquired to others
Rescue	**In 1997-2004, around KRW185trn (30% of GDP) was injected** by KDIC (Korea Deposit Insurance Corporation) 107trn, KAMCO (Korea Asset Management Corporation) KRW39trn, The government KRW18trn and BoK 0.9trn.	LG credit card under the conglomerate group was sold to Shinhan banking group in late 2006 thanks to creditor group's management, led by a policy bank. For LG credit card, the creditor group and the conglomerate group spent KRW4.65trn for recapitalization (mostly via Dept-Equity-Swap) and KRW5.8trn for liquidity supports. **KRW10.45trn was 1% of GDP in 2004**	**KDIC (Korea Deposit Insurance Corporation) injected KRW27trn (2% of GDP).** KAMCO (Korea Asset Management Corporation) purchased real estate Project Financing loan KRW7.4trm (1% of GDP).
Implication to systematic risk	The government utilized KDIC (Korea Deposit Insurance Corporation) and KAMCO (Korea Asset Management Corporation) for financial industry-wide restructuring as **the systematic risk contagion occurred across banking sector and non-banking sector.**	Although **the systematic risk contagion to banking sector has been limited**, banking sector effectively rescued the troubled credit card companies on the back of a policy bank's support	Although **the systematic risk contagion between banking sector and non-banking sector did not materialize**, banking sector and other NBFIs eventually acquired troubled saving banks amid KDIC-driven saving bank industry restructuring.

© 2022 Citigroup Inc. No redistribution without Citigroup's written permission.

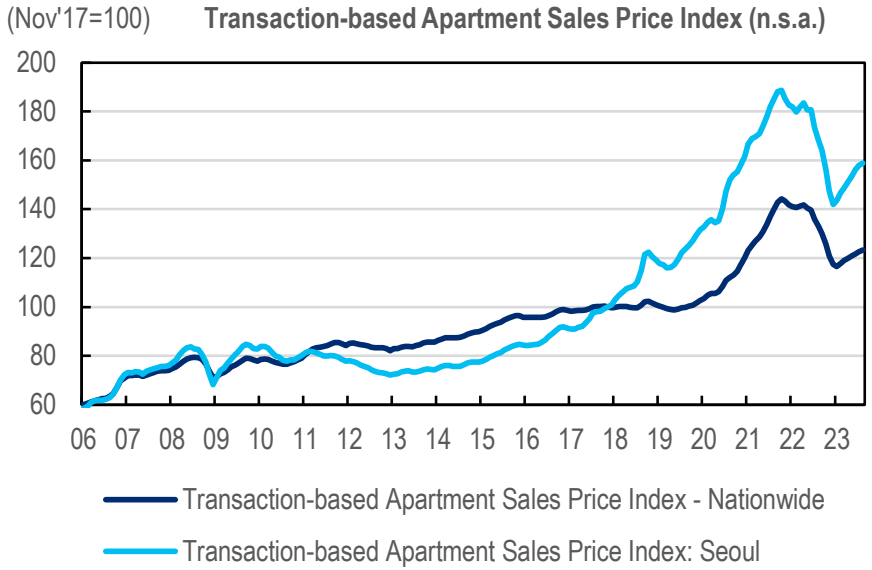
Source: Citi Research

Stronger-than-expected housing market recovery

Transaction-based apartment prices in Seoul have strongly rebounded by 11.9% in January'23-August'23 following a sharp correction (-24.8%) November'21-December'22.

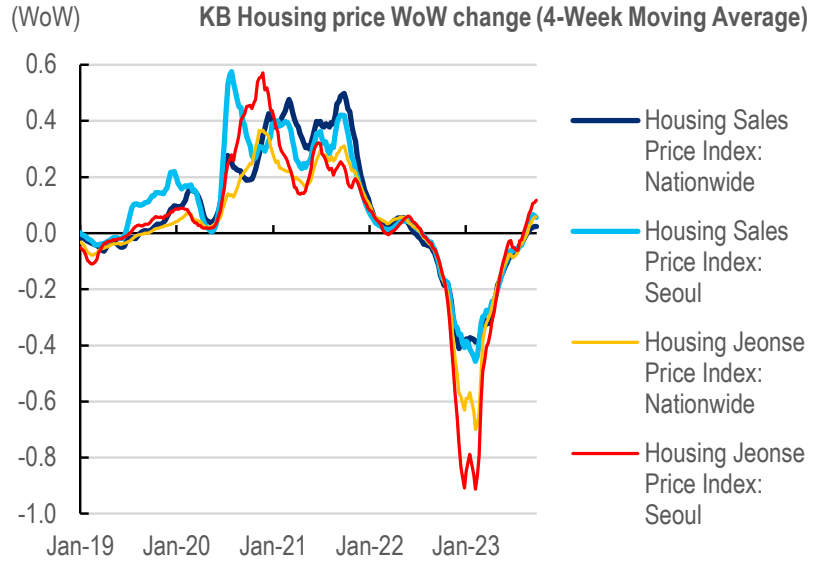
We still expect Seoul transaction-based apartment prices to rise slowly but gradually, while national transaction-based apartment prices will likely remain relatively flat until the end of 2023

Seoul transaction-based apartment prices are likely to rise slowly



Source: Citi Research, CEIC

A rebound in sales & rental prices

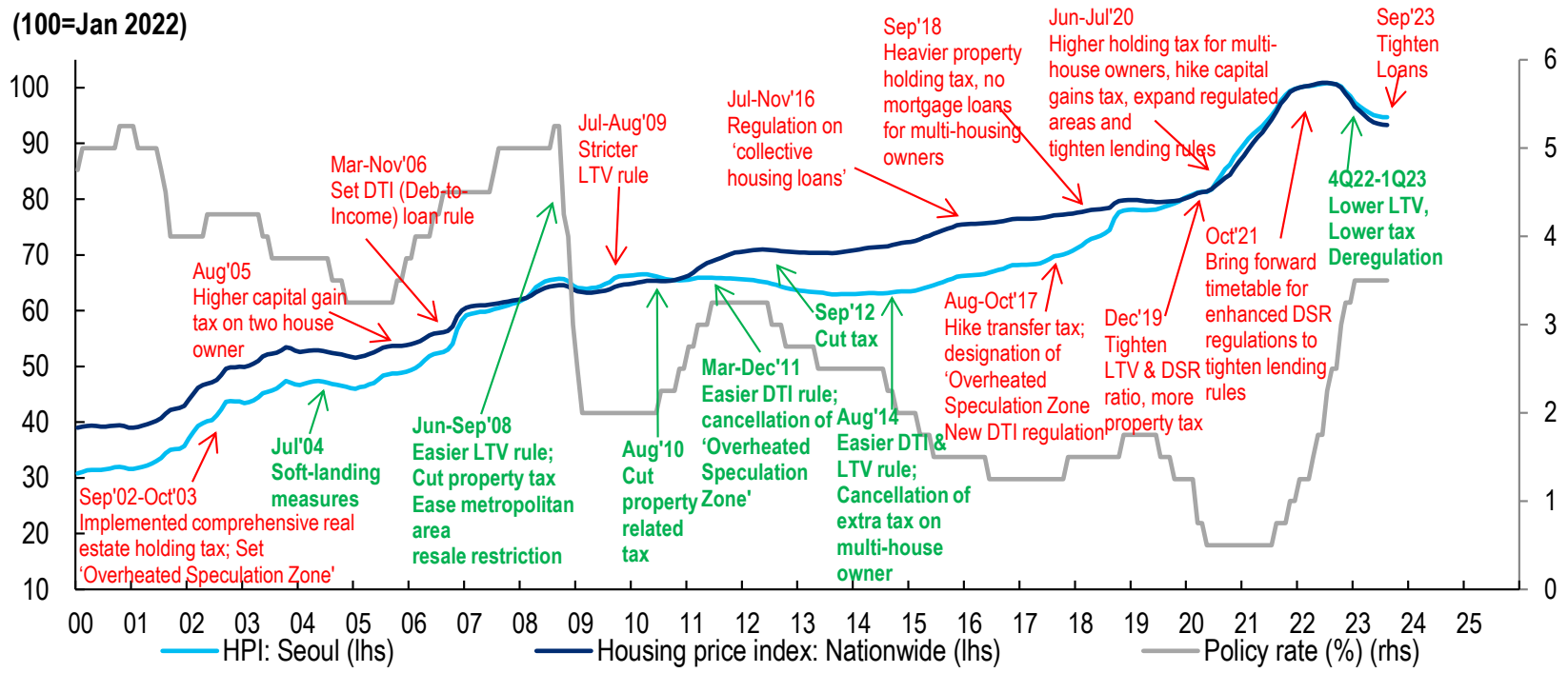


Source: Citi Research, CEIC

For soft landing of the housing market, the government conducted in 4Q22-1Q23 (1) easing in macro prudential measures such as LTV or DSR; (2) cutting taxation; and (3) deregulating reconstruction.

In Sep'23, the FSC released micro household debt tightening measures by removing several loopholes of DSR

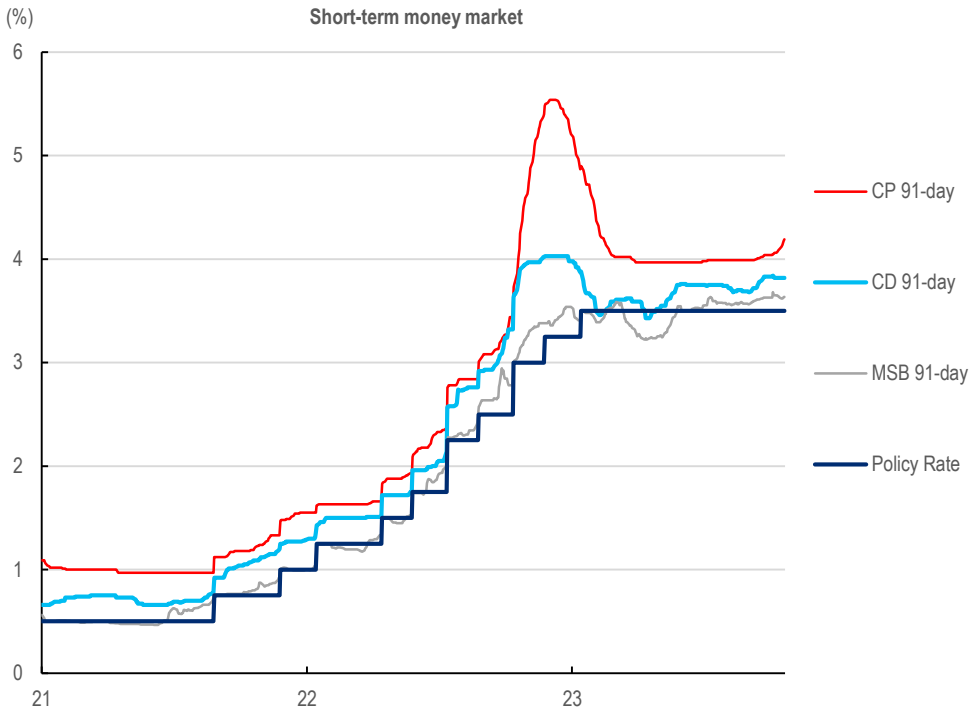
Macro prudential measures



Source: Citi Research, CEIC

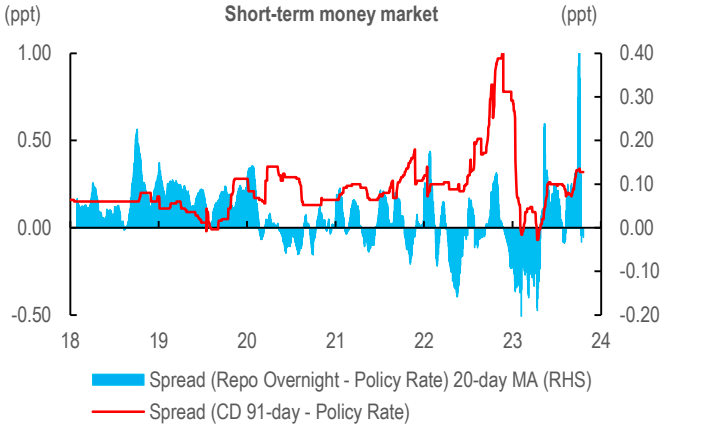
Tight liquidity conditions could persist in 4Q23. However, policy response will likely prevent a liquidity crisis in 4Q23 by recycling stabilization measures from 4Q22.

Short-term money market



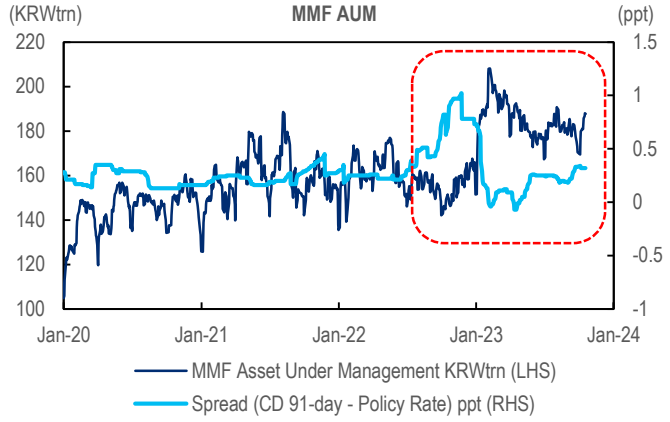
Source: Citi Research, Bloomberg

Liquidity in repo overnight market



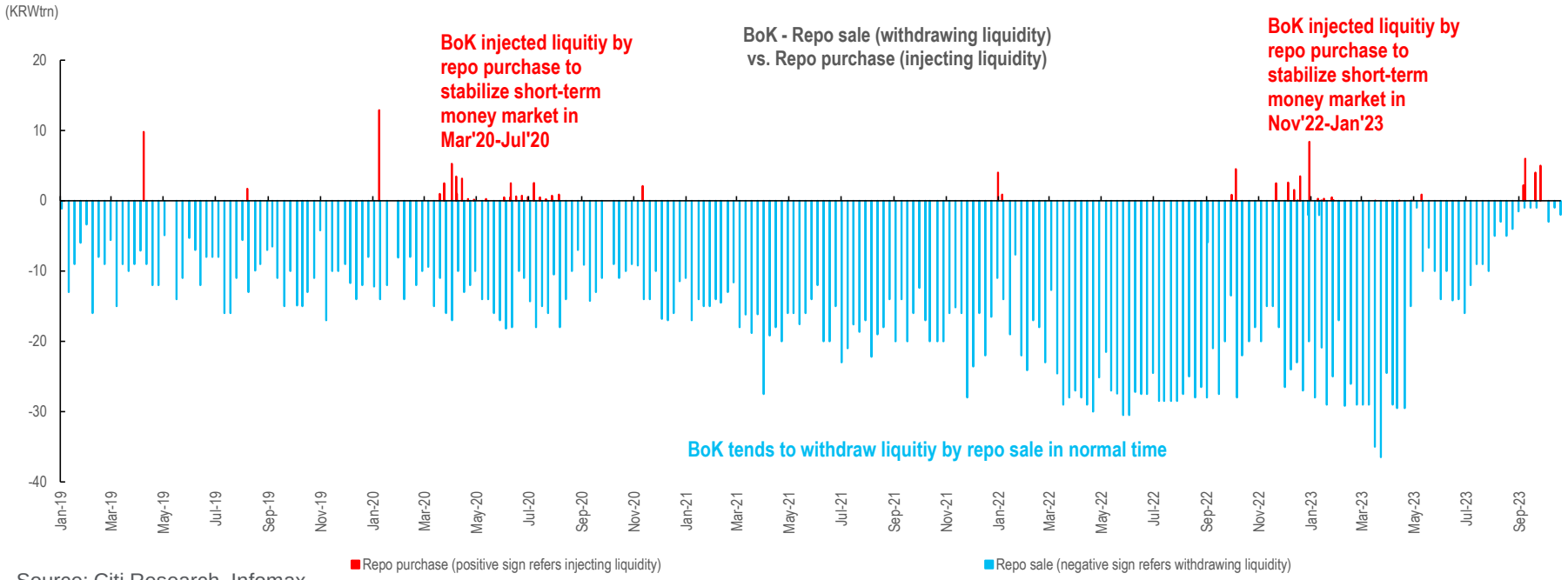
Source: Citi Research, Bloomberg

MMF AUM & Spread



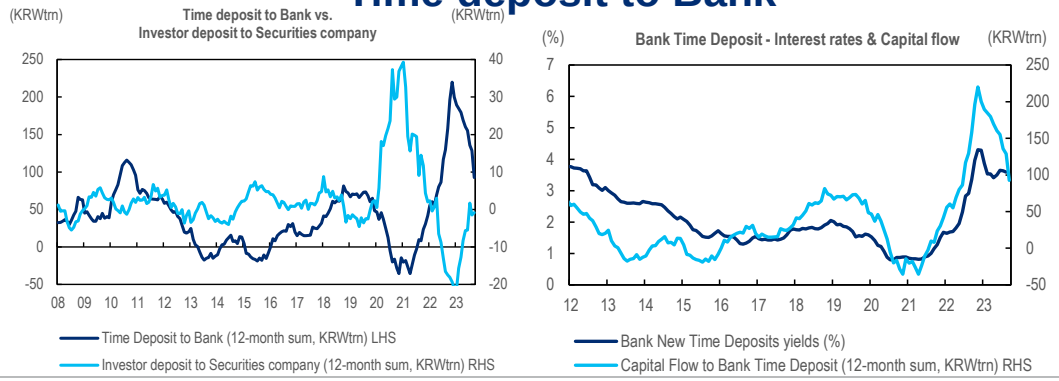
Source: Citi Research, Bloomberg, KOFIA

BoK could keep ample liquidity via: [1] larger repo purchases, [2] smaller repo sales; [3] smaller deposits to the monetary stabilization account term deposit); and [4] smaller net issuance of monetary stabilization bonds



Source: Citi Research, Infomax

Time deposit to Bank

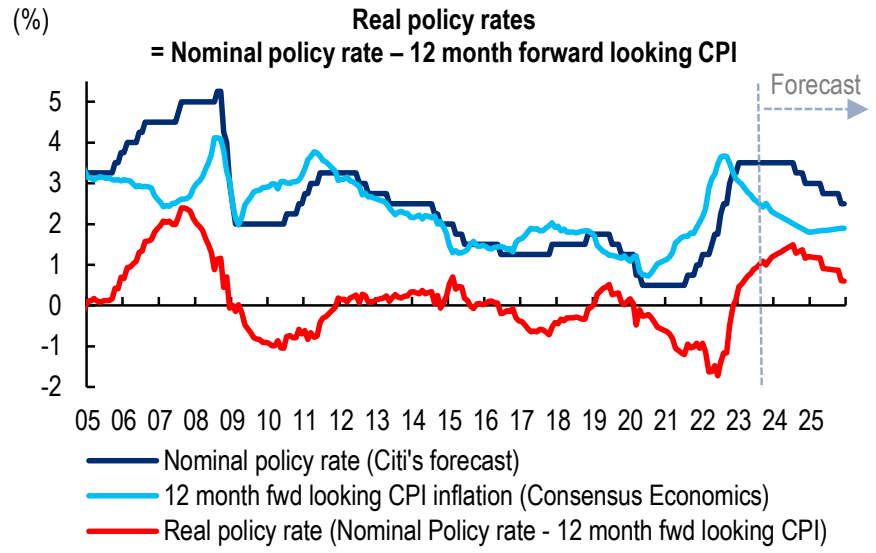


Source: Citi Research, CEIC

We delayed our call for the beginning of BoK's rate cutting cycle to August'24 (vs. previous: May'24) due to two factors: (1) upward revision of our 2023E-2024E inflation; and (2) Citi US economists' delay of Fed's rate cut start to July'24.

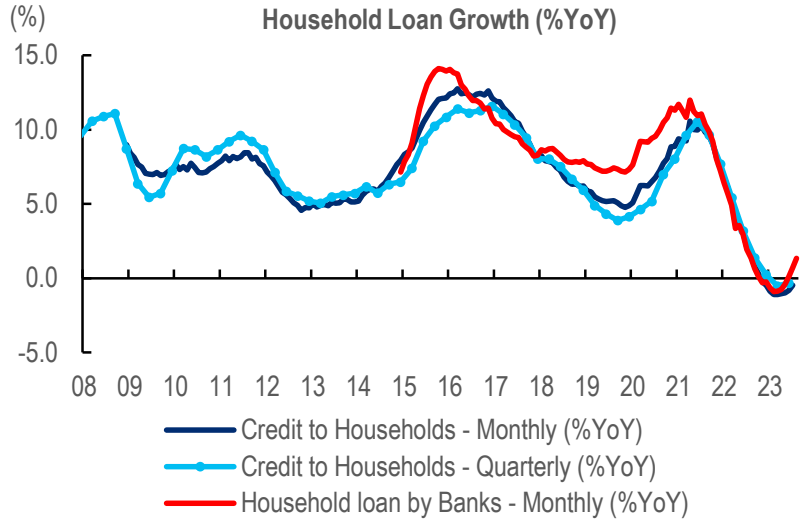
We expect BoK to deliver a 25bps cut in August'24, November'24, May'25 and November'25 towards 2.50% terminal rate.

Positive Real Policy Rate



Source: Citi Research Estimates, CEIC

Household debt may expand further in 2H23 due to belated micro tightening



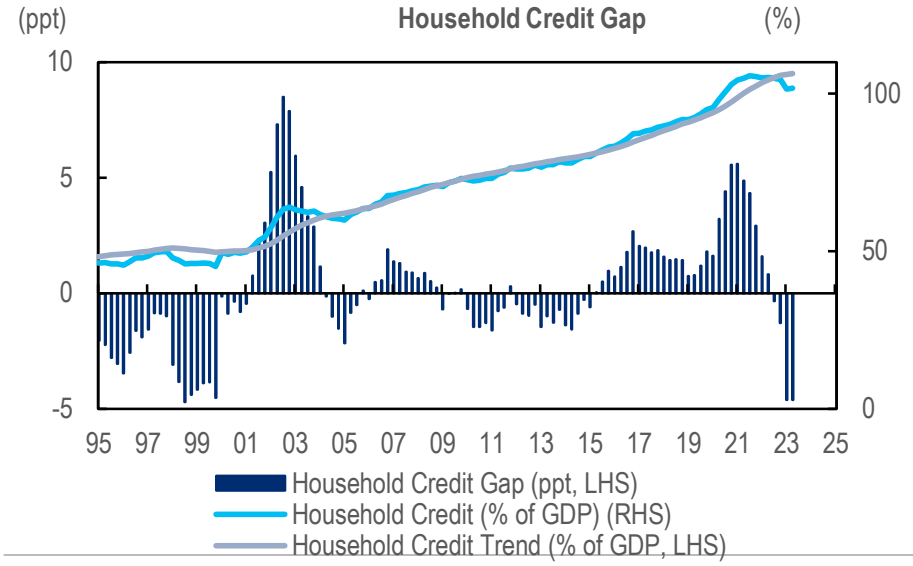
Source: Citi Research, BoK

BoK may keep ‘wait-and-see’ stance on time-lagged impact of the government’s micro policies on household debt

To manage household debt and domestic retail oil prices, the government’s micro policies should be utilized instead of BoK’s macro policy.
Recent stabilization of core inflation should maintain BoK’s ‘wait-and-see’ stance on inflation longer.

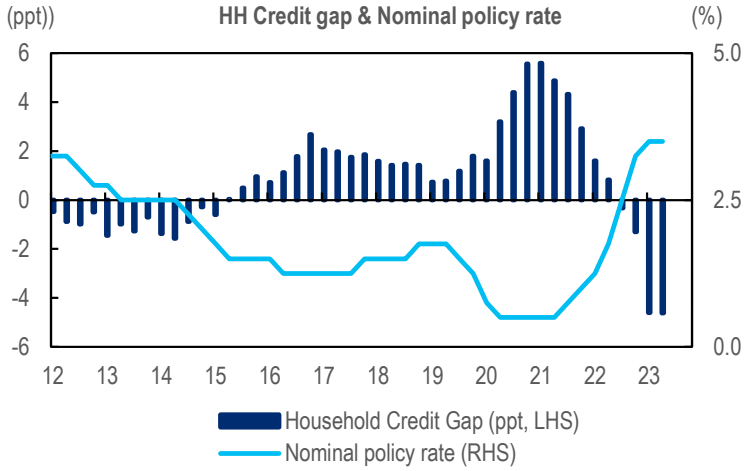
In the long term, BoK may prefer a gradual fall of household debt to 80% of GDP from current above 100% of GDP.

BoK may pursue a stabilization of household debt to GDP ratio



Source: Citi Research, CEIC

Household credit gap tends to widen positively when nominal policy rate falls below 2.50% levels



Source: Citi Research, CEIC

BoK's policy rate and KTB yields

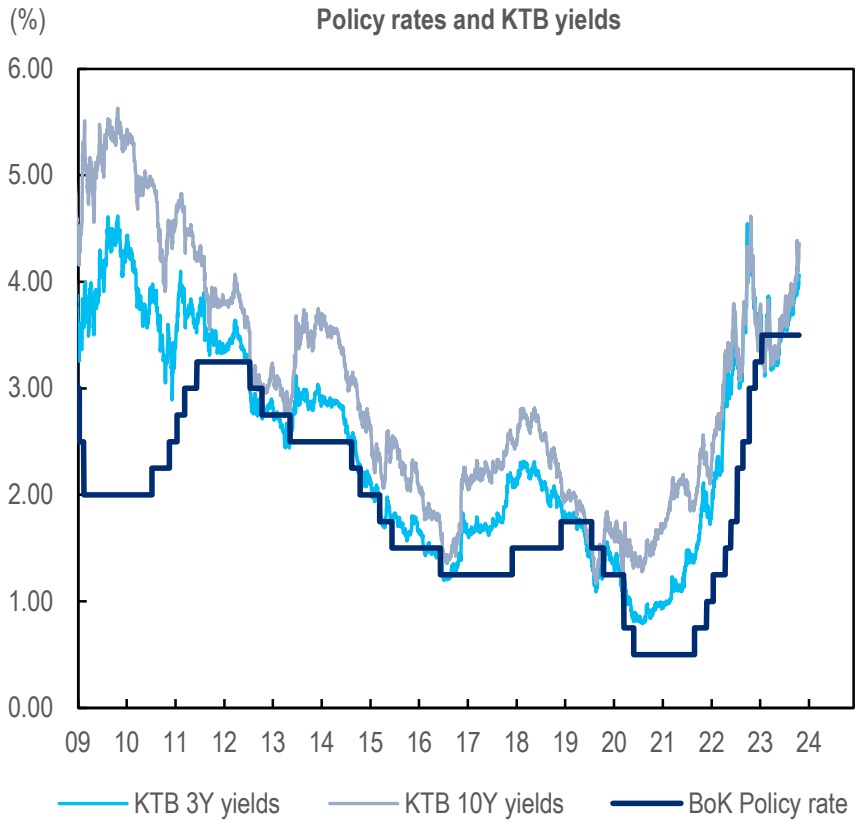
KTB 3-year yields: 4.55% on Sep 26th 2022 -> 3.12% on Feb 3rd 2023 -> 4.14% on Oct 4th

KTB 10-year yields: 4.62% on Oct 21st 2022 -> 3.16% on Feb 3rd 2023 -> 4.39% on Oct 4th

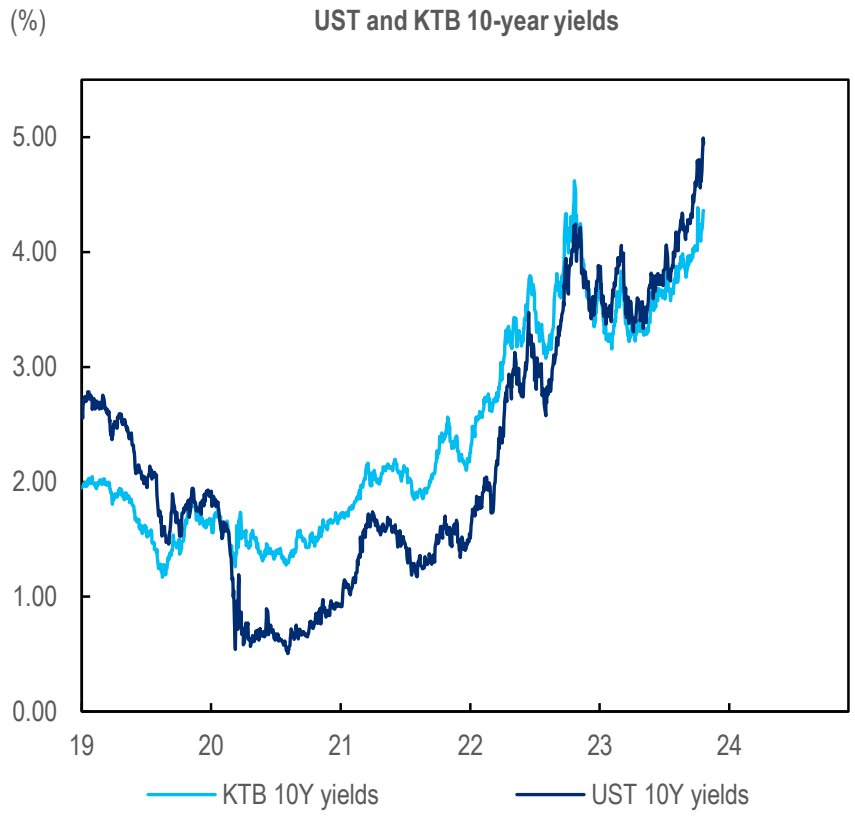
-> 3.80% in Dec 2023E

UST 10-year yields: 4.24% on Oct 24th 2022 -> 3.39% on Feb 3rd 2023 -> 4.99% on Oct 19th

-> 3.65% in Dec 2023E



Source: Bloomberg, Citi Research



Source: Bloomberg, Citi Research

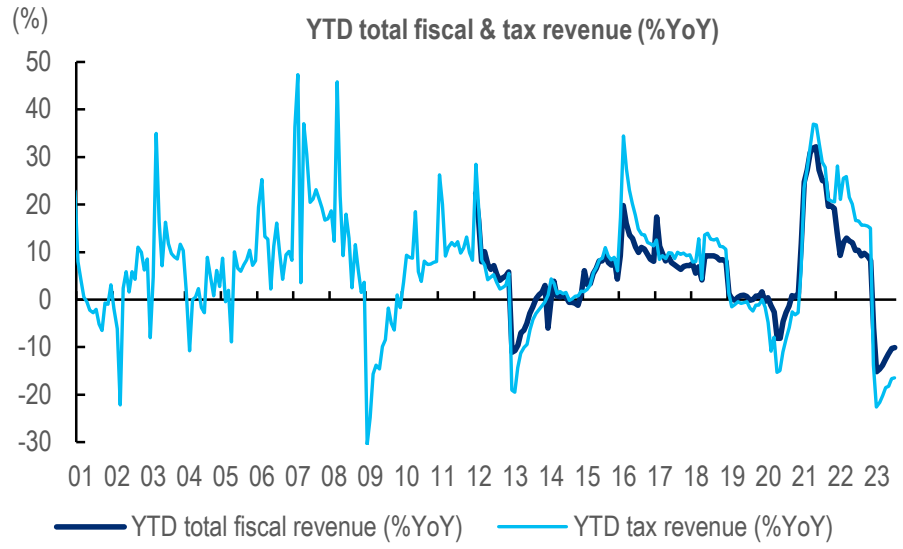
Questions on the Credibility of Prudent Fiscal Stance

Amid a significant tax revenue shortfall, the MoEF's potential utilization of the Public Capital Management Fund and the FX Stabilization Fund was reported (Yonhap Infomax, September 3rd). The MoEF may confirm these unconventional policy tools when it officially unveils re-estimation of 2023 budget in the middle of September'23.

Potential utilization of unconventional fiscal policy could raise questions on the credibility of the Yoon administration's prudent fiscal stance, in our view. Although extra revenue from the unconventional sources could temporarily mitigate the downside risks to economic growth from potential fiscal cliff in 4Q23, the government could suffer from KRW-funding demand from the public funds (e.g. KRW-denominated FX stabilization bonds in 2024) in future.

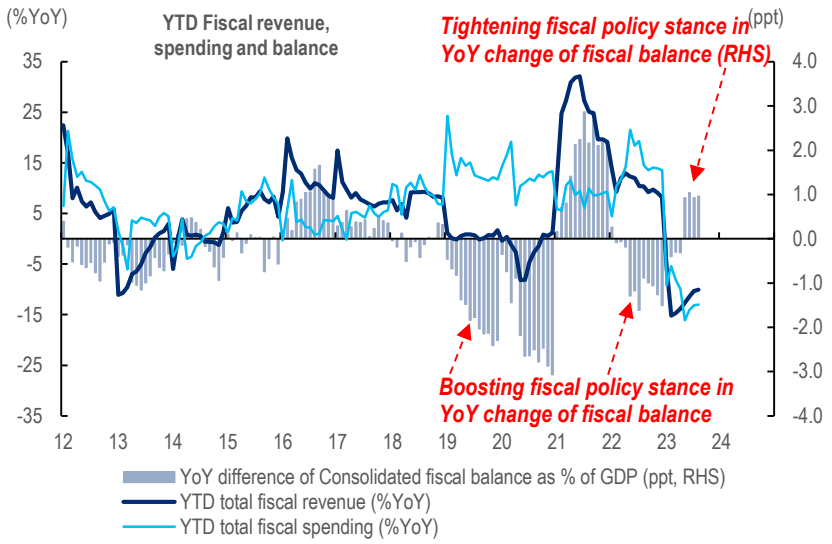
Recent unconventional fiscal policy discussion as well as the mildly expansionary 2024 budget proposal appear to reflect **the dilemma between prudent fiscal stance and weak economic growth ahead of the South Korean legislative election in April 2024**.

The lowest tax revenue growth since 2009



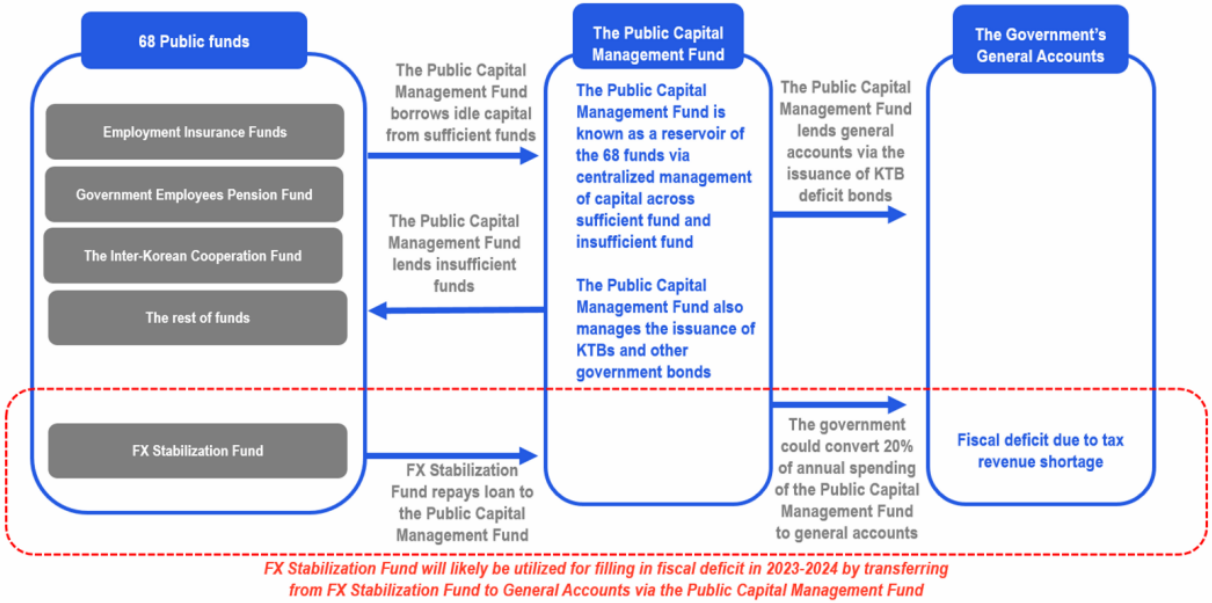
Source: MoEF, Citi Research

Tightening fiscal policy stance



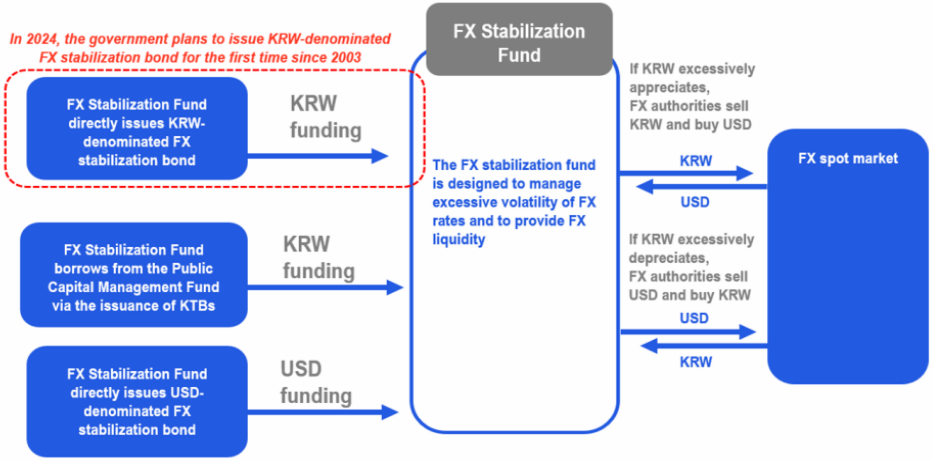
Source: MoEF, Citi Research

The MoEF's unconventional fiscal policy



© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Citi Research, Hankook Ilbo, Yonhap News, National Assembly Budget Office

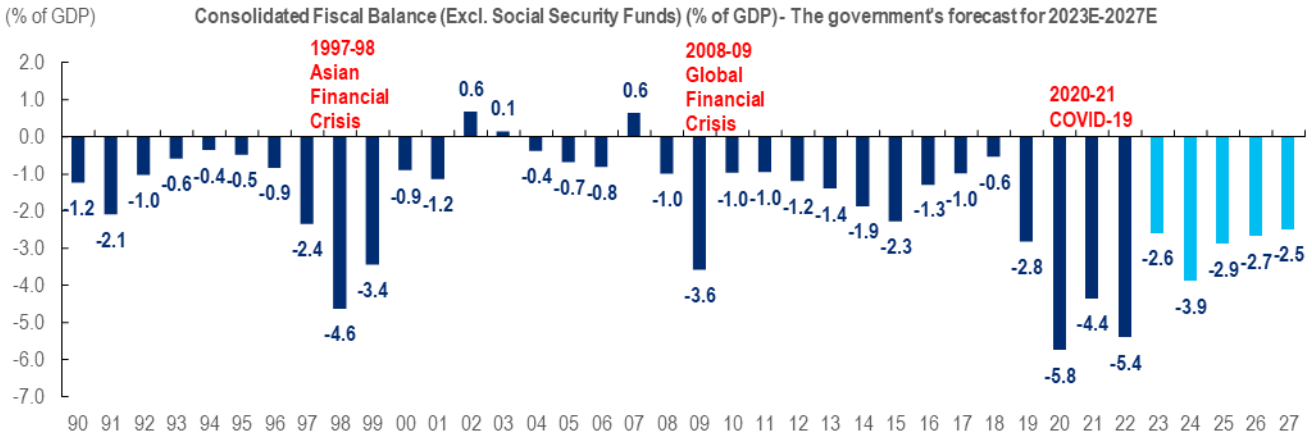


© 2023 Citigroup Inc. No redistribution without Citigroup's written permission.

Source: Citi Research, National Assembly Budget Office

The Yoon administration's fiscal stance shifts to **mildly expansionary in 2024** from a drastic tightening stance in 2023.

Consolidated Fiscal Deficit (excluding social security funds) (% of GDP)



Source: Citi Research, MoEF's plan, CEIC

Citi's Fiscal Forecast

(Unit: KRW trn)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E	2026E	2027E
Total Revenue	323.0	341.8	351.9	356.4	371.8	401.8	430.6	465.3	473.1	478.8	570.5	617.5	589.7	600.0	612.0	624.2	636.7
(% YoY)		5.8	3.0	1.3	4.3	8.1	7.2	8.1	1.7	1.2	19.2	8.2	-4.5	1.7	2.0	2.0	2.0
Total Spending	304.4	323.3	337.7	347.9	372	384.9	406.6	434.1	485.1	549.9	601	682.4	627.1	652.7	646.2	657.8	669.0
(% YoY)		6.2	4.5	3.0	6.9	3.5	5.6	6.8	11.7	13.4	9.3	13.5	-8.1	4.1	-1.0	1.8	1.7
Consolidated Fiscal Balance (Excl. SSF)	-13.5	-17.4	-21.1	-29.5	-38.0	-22.7	-18.5	-10.6	-54.4	-112.0	-90.6	-117.0	-82.5	-97.3	-77.9	-76.8	-83.5
(% to GDP)	**-1.0**	**-1.2**	**-1.4**	**-1.9**	**-2.3**	**-1.3**	**-1.0**	**-0.6**	**-2.8**	**-5.8**	**-4.4**	**-5.4**	**-3.7**	**-4.2**	**-3.2**	**-3.1**	**-3.2**
Consolidated Fiscal Balance	18.6	18.5	14.2	8.5	-0.2	16.9	24.0	31.2	-12.0	-71.1	-30.5	-64.6	-37.4	-52.7	-34.2	-33.6	-32.3
(% to GDP)	**1.3**	**1.3**	**0.9**	**0.5**	**0.0**	**1.0**	**1.3**	**1.6**	**-0.6**	**-3.7**	**-1.5**	**-3.0**	**-1.7**	**-2.3**	**-1.4**	**-1.3**	**-1.2**
Consolidated Primary Balance	37.5	37.6	33.0	27.9	19.5	36.6	42.8	49.9	4.7	-53.8	-12.3	-44.5	-12.6	-24.3	-2.7	0.8	6.4
(% to GDP)	**2.7**	**2.6**	**2.2**	**1.8**	**1.2**	**2.1**	**2.3**	**2.6**	**0.2**	**-2.8**	**-0.6**	**-2.1**	**-0.6**	**-1.0**	**-0.1**	**0.0**	**0.2**
National Debt (D1)	420.5	443.1	489.8	533.2	591.5	626.9	660.2	680.5	723.2	846.6	970.7	1067.7	1126.2	1193.5	1271.4	1348.2	1431.6
(% to GDP)	**30.3**	**30.8**	**32.6**	**34.1**	**35.7**	**36.0**	**36.0**	**35.8**	**37.6**	**43.6**	**46.7**	**49.4**	**50.3**	**51.2**	**52.4**	**53.8**	**55.3**
General Government Debt (D2)	459.2	504.6	565.6	620.6	676.2	717.5	735.2	759.7	810.7	945.1	1066.2	1183.2	1241.7	1309.0	1386.9	1463.7	1547.1
(% to GDP)	**33.1**	**35.0**	**37.7**	**39.7**	**40.8**	**41.2**	**40.1**	**40.0**	**42.1**	**48.7**	**51.3**	**54.7**	**55.4**	**56.2**	**57.2**	**58.4**	**59.8**

Source: Citi Research Estimates, MoEF, CEIC