J.P.Morgan

Asia Pacific Equity Research
22 December 2023

Asia Banks Data Driven

Factor-driven investing: Vol 10

Data-Driven

We present Vol. 10 of our factor-based framework for picking bank stocks in Asia. Our most recent long/short portfolio held from Sep-23 to Nov-23 (link) outperformed AxJ banks by 4.6%. The strength was led by the short portfolio, which gained 7%, led by SCB, Bank of East Asia and Ping An. The long portfolio (-2%) underperformed a flat AxJ bank universe (+0.3%), dragged on by China Merchants Bank. Cumulative outperformance of our portfolios has reached 26% since Jun-21. We introduce our current portfolio starting Dec-23, with long and short holdings detailed below. Please see further portfolio details on pages 3-5.

- **Our previous portfolio** (Sep-23 to Nov-23) was based on the 'slowdown' economic stage, in which the model favored stocks with low credit costs and high RoA. Effectively, asset quality and better delivered returns led to outperformance in a slowdown state. For Dec-23, we have shifted to the 'expansion' economic stage, where back-tests suggest outperformance by banks with lower delivered cost/assets and higher delivered ROA in the last four quarters. This broadly suggests a bias toward names with better operating leverage across markets.
- **Longs:** We hold OWs on three of the eight stocks that screen as longs. **Ningbo**'s flexibility allows it to maintain a better ROE vs. peers. **Bandhan** benefits from a low-cost microfinance franchise. **ACB**'s valuations are supportive, given its large retail and SME portfolio, with manageable real estate exposure. We hold Neutrals on **KMB, Sinopac** and **BRI**, as we believe current valuations price in the earnings growth prospects for these names. We hold UWs on two stocks in the long portfolio. **DBS** is a quality franchise, but we worry about cyclical weakness and AQ risks. **Kakao Bank**'s platform business is not large enough to justify the valuation premiums, in our view.
- **Shorts:** Among names screening as shorts, we are UW on five out of eight stocks. Profitability at **YES** could remain challenging. **Bank of Beijing**'s performance remains weaker than CRB peers'. A deteriorating AQ outlook at **Bank of Shanghai** could hinder growth. **Hua Nan**'s limited earnings upside and unattractive dividend yields drive our UW rating. **OCBC**'s capital management appears to be fairly reflected in the price, and we do not see it as a meaningful stock driver. We are Neutral on **VCB** following outperformance vs. peers in the last year. We are OW on **BOB** (operating leverage and AQ-led) and **Minsheng** (PPoP growth-led).

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See page 14 for analyst certification and important disclosures, including non-US analyst disclosures.

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We would like to thank Kumar Vemuri and Ian Johnston of the CIB Applied AI & Machine Learning team for working with us to implement the factor model

Current recommended portfolio

Table 1: J.P. Morgan factor-based model picks (Dec'23-Feb'24)

Bank	Ticker	Position	Rating	Bank	Ticker	Position	Rating
Bank Of Ningbo Co Ltd -A	002142 CH Equity	L	OW	Yes Bank Ltd	YES IN Equity	S	UW
Bandhan Bank Ltd	BANDHAN IN Equity	L	OW	Bank Of Beijing Co Ltd -A	601169 CH Equity	S	UW
Asia Commercial Bank	ACB VN Equity	L	OW	Oversea-Chinese Banking Corp	OCBC SP Equity	S	UW
Kotak Mahindra Bank Ltd	KMB IN Equity	L	N	Bank Of Shanghai Co Ltd-A	601229 CH Equity	S	UW
Sinopac Financial Holdings	2890 TT Equity	L	N	Hua Nan Financial Holdings C	2880 TT Equity	S	UW
Bank Rakyat Indonesia Perser	BBRI IJ Equity	L	N	Bank For Foreign Trade Jsc	VCB VN Equity	S	N
Kakaobank Corp	323410 KS Equity	L	UW	Bank Of Baroda	BOB IN Equity	S	OW
Dbs Group Holdings Ltd	DBS SP Equity	L	UW	China Minsheng Banking Cor-H	1988 HK Equity	S	OW

Source: Bloomberg Finance L.P., J.P. Morgan.

Recent portfolio performance

Portfolio performance (Sep'23-Nov'23)

The latest portfolio based on our factor-driven model outperformed AxJ banks by 4.6%. For the Sep-23 to Nov-23 period, our long/short portfolio delivered a return of 4.9% vs. 0.3% for AxJ banks.

The outperformance was led by the short portfolio. Performance within portfolios was more dispersed.

Hua Nan led returns for the long portfolio, while CMB and Dah Sing Banking Group were key drags.

Strong performance of the short portfolio was led by SCB, Bank of East Asia and Ping An. Taishin was a drag in the short portfolio.

Table 2: Previous portfolio returns (Sep'23 to Nov'23)

Bank	Ticker	Position	Performance of position
Hong Leong Bank Berhad	HLBK MK Equity	L	-5%
Dah Sing Banking Group Ltd	2356 HK Equity	L	-5%
Hua Nan Financial Holdings C	2880 TT Equity	L	11%
Public Bank Berhad	PBK MK Equity	L	0%
Kb Financial Group Inc	105560 KS Equity	L	-1%
Kotak Mahindra Bank Ltd	KMB IN Equity	L	-1%
China Merchants Bank-H	3968 HK Equity	L	-12%
Dbs Group Holdings Ltd	DBS SP Equity	L	-4%
Ping An Bank Co Ltd-A	000001 CH Equity	S	12%
China Everbright Bank Co L-H	6818 HK Equity	S	1%
Taishin Financial Holding	2887 TT Equity	S	-5%
Malayan Banking Bhd	MAY MK Equity	S	2%
Scb X Pcl	SCB TB Equity	S	16%
Bank Of East Asia Ltd	23 HK Equity	S	15%
Vietnam Prosperity Jsc Bank	VPB VN Equity	S	9%
Industrial Bank Co Ltd -A	601166 CH Equity	S	6%
Long return			**-2.1%**
Short return			**7.1%**
Portfolio return			**4.9%**
AxJ Banks			**0.3%**

Source: Bloomberg Finance L.P., J.P. Morgan. 3M returns in USD. Past performance is not an indicator of future results.

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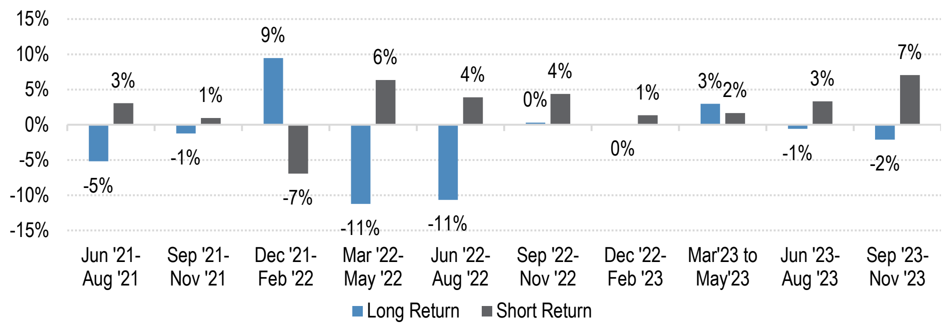
Performance since inception

Since the launch of our factor-based portfolios in Jun-21, the long/short portfolio has outperformed AxJ banks by ~26%. Our long/short portfolio gained 6% vs. the 20% decline for AxJ banks.

Our portfolio performance is based on our recommended portfolios from Jun-21 with an updated methodology from the Jun-23 portfolio onward (link).

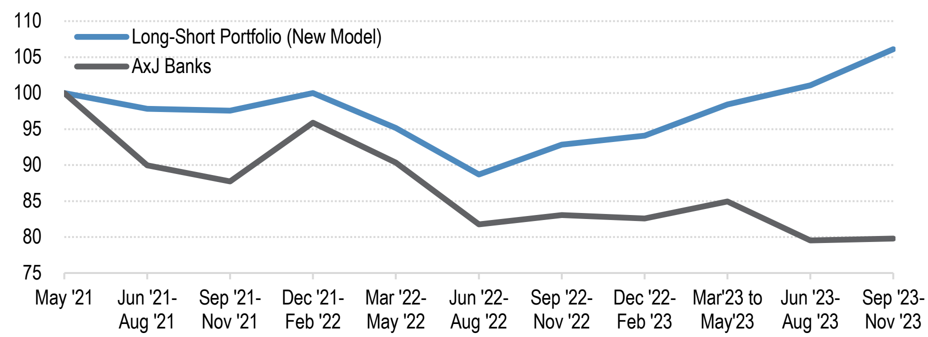
Figure 1: JPM Bank factor portfolio: L/S portfolio vs. AxJ banks



Source: J.P. Morgan and Bloomberg Finance L.P. Past performance is not an indicator of future results.

Our analysis of returns suggests that the outperformance was led by the short portfolio, which delivered a positive return of 27% over the period. On the other hand, long portfolio returns were -18%, which outperformed AxJ banks slightly over the period.

Figure 2: JPM Bank factor portfolio: Distribution of returns



Source: J.P. Morgan and Bloomberg Finance L.P. Past performance is not an indicator of future results.

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Current portfolio

We show the latest invested portfolio in Dec-23 in Table 3. This is based on the expansion in QMI state as of end-November. In this state, the relevant factors are cost/ assets and RoA change in four quarters, which result in our bank picks. Table 3 shows the details of the factors. The portfolio so far would have returned +1.4% MTD, slightly outperforming AxJ banks (+1.2%).

Note that our current portfolio is based on 3Q23 metrics, which may not yet be available for some companies. These companies are not included in the latest screen.

Table 3: Current portfolio (Dec'23 to Feb'24)

Bank	Ticker	Rank	Position	MTD Performance of position
Kotak Mahindra Bank Ltd	KMB IN Equity	67	L	4%
Bank Of Ningbo Co Ltd -A	002142 CH Equity	65	L	-13%
Sinopac Financial Holdings	2890 TT Equity	63	L	3%
Kakaobank Corp	323410 KS Equity	63	L	7%
Bandhan Bank Ltd	BANDHAN IN Equity	61	L	6%
Dbs Group Holdings Ltd	DBS SP Equity	59	L	-1%
Asia Commercial Bank	ACB VN Equity	59	L	5%
Bank Rakyat Indonesia Perser	BBRI IJ Equity	57	L	3%
Yes Bank Ltd	YES IN Equity	25	S	-6%
Bank Of Beijing Co Ltd -A	601169 CH Equity	23	S	2%
Bank Of Baroda	BOB IN Equity	23	S	-9%
Oversea-Chinese Banking Corp	OCBC SP Equity	22	S	1%
Bank Of Shanghai Co Ltd-A	601229 CH Equity	22	S	1%
China Minsheng Banking Cor-H	1988 HK Equity	22	S	2%
Bank For Foreign Trade Jsc	VCB VN Equity	17	S	5%
Hua Nan Financial Holdings C	2880 TT Equity	16	S	0%
Long return				**1.9%**
Short return				**-0.5%**
Portfolio return				**1.4%**
AxJ Banks return				**1.2%**

Source: Bloomberg Finance L.P., J.P. Morgan. Priced as of 20 Dec 2023. Latest performance in USD. Past performance is not an indicator of future results.

Table 4: JPM Bank factor weights

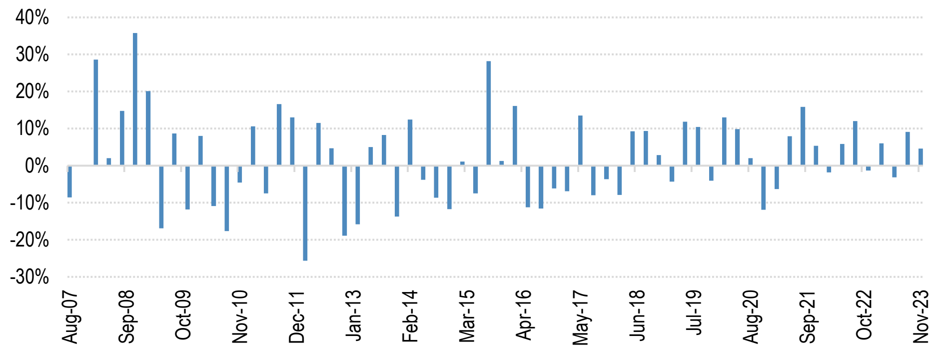
States	3M change in FY2 EPS	6M EPS revision	Cost/ Assets	Credit costs	EPS growth FY2-FY1	NPL ratio	NPLR Chg1Q	ROA 4Q	ROA	ROE 4Q
Contraction	-	0.312	-	-	0.330	-	-	-	-	0.358
Expansion	-	-	0.514	-	-	-	-	0.486	-	-
Recovery	-	-	-	-	-	0.509	0.491	-	-	-
Slowdown	0.323	-	-	0.362	-	-	-	-	0.315	-

Source: J.P. Morgan.

L/S factor model outperformed

We present back-testing results of our updated factor model portfolios. Our long/short picks, based on the factor model, outperformed by 5% in the last three months. The model outperformed by 17% in the last 12 months and by 111%/172% cumulatively over 5/10 years.

Figure 3: JPM factor model (L/S) quarterly performance vs. AxJ banks



Source: J.P. Morgan, Bloomberg Finance L.P. AxJ banks are J.P. Morgan coverage in USD, weighted by market cap. Past performance is not an indicator of future results.

Table 5: J.P. Morgan factor model vs. AxJ banks' absolute performance

	JPM Factor Model (New Model)	Bank Factor (LO) New Model	AxJ Banks	L-S o/p vs. AxJ	LO o/p vs. AxJ
3M	5%	-2%	0%	5%	-2%
12M	13%	0%	-4%	17%	4%
5Y	96%	17%	-15%	111%	32%
10Y	176%	91%	4%	172%	87%
Since inception	502%	249%	14%	488%	236%

Source: J.P. Morgan, Bloomberg Finance L.P. Performance is based on back-testing. Past performance is not an indicator of future results.

The return per unit risk of 1.86/1.88/1.17 over last 3/5/10 years suggests that the outputs do tend to add value to the investment process over longer periods. These are significantly higher than -0.30/-0.22/0.03 for the Asia ex Japan banks universe. Our long-only picks outperformed AxJ by 32%/87% over 5-/10-year periods.

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Table 6: Long/short factor model vs. AxJ banks' performance

	3M	12M	3Y	5Y	10Y
JPM Banks Factor Model (New Model)					
Returns (annualized)	21.3%	13.3%	15.5%	14.4%	10.7%
SD of returns		5.2%	8.4%	7.7%	9.2%
Risk adjusted return		2.57	1.86	1.88	1.17
Bank factor (LO) New Model					
Returns (annualized)	-10.4%	0.5%	5.1%	3.1%	6.7%
SD of returns		6.7%	16.2%	17.5%	16.0%
Risk adjusted return		0.07	0.32	0.18	0.42
AxJ Banks					
Returns (annualized)	-22.2%	-3.9%	-3.7%	-3.3%	0.4%
SD of returns		7.8%	12.5%	14.6%	16.7%
Risk adjusted return		(0.50)	(0.30)	(0.22)	0.03

Source: J.P. Morgan, Bloomberg Finance L.P. AxJ banks are J.P. Morgan coverage in USD, weighted by market cap. Past performance is not an indicator of future results.

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Data-driven investing for banks

Our broader methodology remains unchanged from the first volume (link). However, we have introduced changes from the Jun-23 portfolio onward. Please refer to link for a detailed discussion.

Our approach to portfolio allocation focuses on the **performance of banks using specific operating metrics**, along with traditional factors (value, quality, momentum, volatility and growth), to see if operating metrics enhance the performance. To adjust for different regulatory regimes, macroeconomic conditions and monetary policy across countries, we **normalize all the metrics by country averages**, assuming normal distribution for the factors.

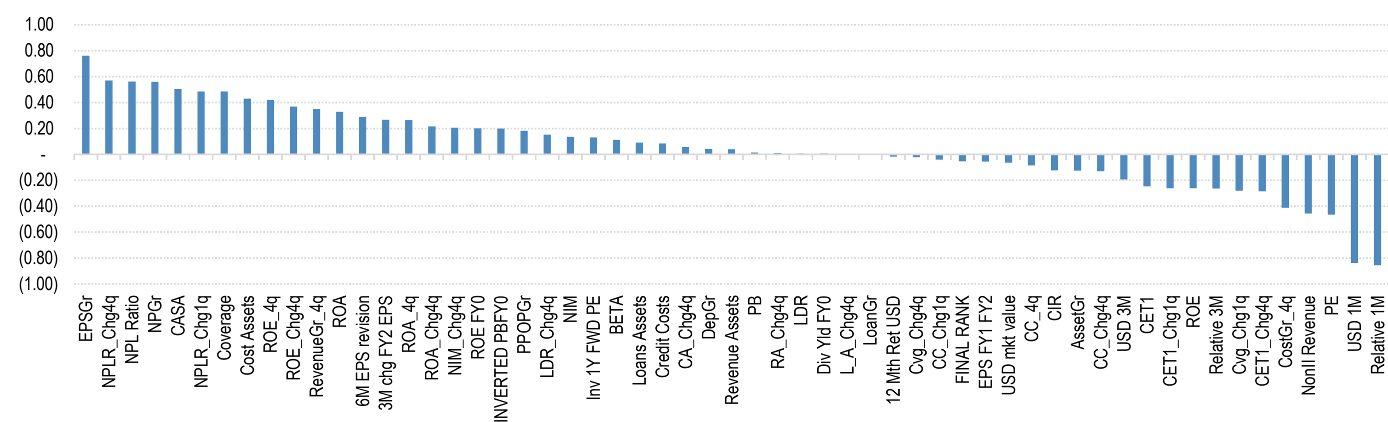
Our analysis detailed below suggests that combining normalized operating data with J.P. Morgan's QMI framework delivers outperformance relative to AxJ banks and reduces portfolio risk, based on data since 2007. **Our portfolio based on shifting factors using QMI would have delivered annualized average returns of 12% relative to 1% for AxJ banks, while taking lower risk (14% SD vs. 25%) since 2007.**

Historical test of individual factors

Our historical testing results show that bank-specific factors normalized by country are able to generate higher risk-adjusted returns than the AxJ banks. Some factors, like EPS growth, 4Q avg. NPL ratio change, NPL ratio and net profit growth, generate higher risk-adjusted returns relative to AxJ banks. This is shown by higher return per unit risk of factor being as high as 0.5-0.8 vs. 0.1 for AxJ Banks.

To back-test operating metrics, we use a methodology similar to the one described earlier for Style Investing analysis. We form **equal-weighted long/short portfolios and buy stocks that rank in the 85-95 percentile and short the 5-15 percentile**. Last, in order **to avoid forward-looking bias, we form the portfolio two months after the quarter-end date, by when the entire region would have reported**. We hold the portfolio for three months.

Figure 4: Return per unit risk of bank-specific factor



Source: J.P. Morgan.

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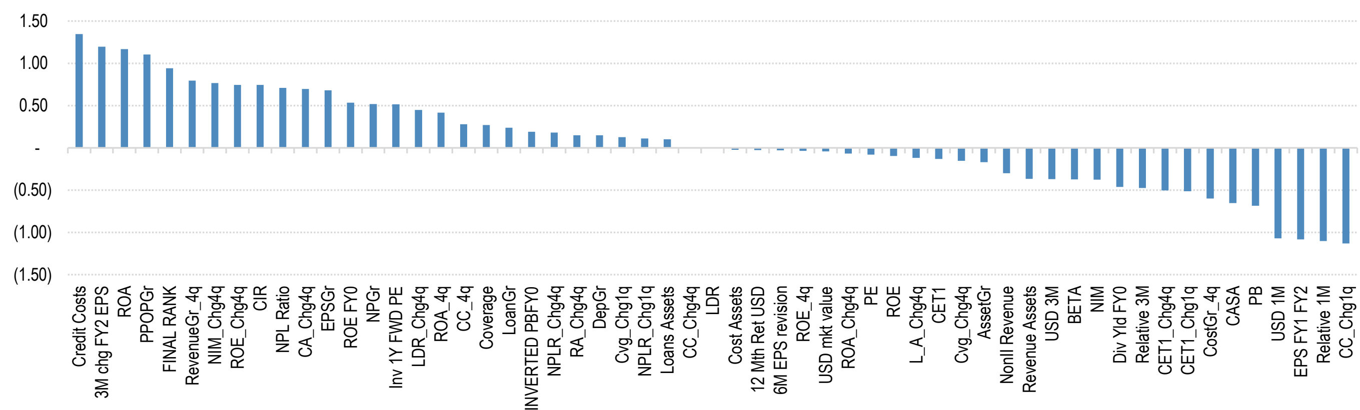
Combining factors with regime changes

Although bank-specific factors outperform AxJ, we extend this further by borrowing the concept of regime switching from J.P. Morgan's Style Investing Framework. We leverage the forward-looking power of J.P. Morgan's QMI to examine if switching between factors across states further enhances returns and lowers risk. Intuitively, this should work, as market preference for stocks shifts depending on business conditions and the macroeconomic outlook.

Confirming our intuitions, the results below show that the best-performing factors vary based on where we are in the cycle.

- **Slowdown: Credit costs, 3M EPS revisions (FY2) and ROA are the best-performing factors.** This suggests that the market prefers banks that are able to manage asset quality and earnings risk, while maintaining profitability.
- **Contraction: ROE (4 quarters), EPS growth (FY1 to FY2) and 6M EPS revision are the best-performing factors.** This suggests that the market prefers banks with strong profitability (RoA) in challenging times. Investors also prefer banks with better EPS growth and resilience.
- **Recovery: NPL ratio, 1Q change in NPL ratio and CASA are the best-performing factors.** This suggests shifts in focus to asset quality, with investors focusing on banks that have been able to manage asset quality. This provides a runway for growth. Historically, banks with low CASA have also done well in a recovery scenario; this likely reflects higher beta for these names.
- **Expansion: Cost/assets, RoA and RoE are the best-performing indicators.** Investors focus on banks that are delivering better-than-average returns. High-cost/asset banks have also performed well, as expansion could have signaled investments bearing fruit.

Figure 5: Slowdown State: Return per unit risk of bank-specific factor



Source: J.P. Morgan.

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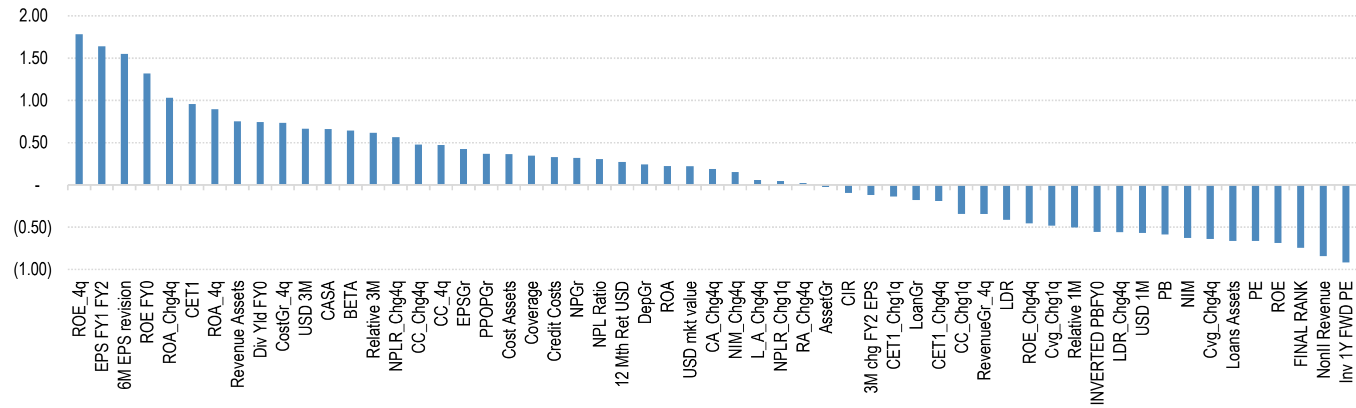
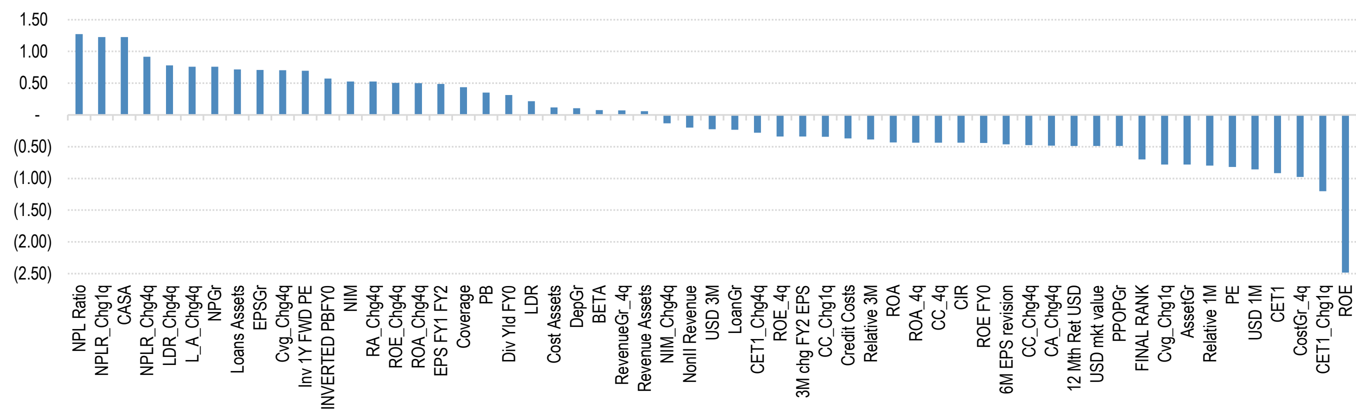
Figure 6: Contraction State: Return per unit risk of bank-specific factor



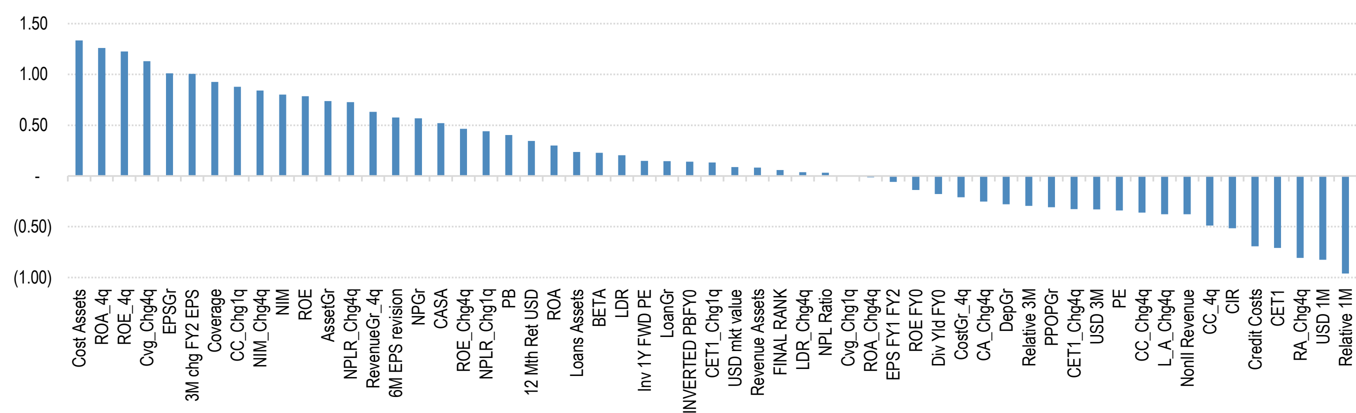
Source: J.P. Morgan.

Figure 7: Recovery State: Return per unit risk of bank-specific factor



Source: J.P. Morgan.

Figure 8: Expansion State: Return per unit risk of bank-specific factor



Source: J.P. Morgan.

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Portfolio strategy

Building on the insight that regime-based factor selection adds to performance, we use the factors shown in the table below to create long/short portfolios. We back-test portfolios using factors generating the highest Sharpe ratios (generally close to or higher than 1) to determine the best-performing factors.

Table 7: JPM Bank factor weights

States	3M change in FY2 EPS	6M EPS revision	Cost/ Assets	Credit costs	EPS growth FY2-FY1	NPL ratio	NPLR Chg1Q	ROA 4Q	ROA	ROE 4Q
Contraction	-	0.312	-	-	0.330	-	-	-	-	0.358
Expansion	-	-	0.514	-	-	-	-	0.486	-	-
Recovery	-	-	-	-	-	0.509	0.491	-	-	-
Slowdown	0.323	-	-	0.362	-	-	-	-	0.315	-

Source: J.P. Morgan.

The back-testing performance shows that this method would have delivered risk-adjusted returns of 0.88, materially superior to 0.03 for AxJ banks. The portfolio delivers a materially higher average return of 11.9% annualized (vs. 0.8% for AxJ banks), while keeping the overall volatility materially lower (14% vs. 25% ann).

As Figure 10 shows, our portfolio would have delivered much more stable performance since 2007. Our portfolio loses 9% in the worst quarter (vs. 37% for AxJ Banks) and gains 34% in the best quarter (vs. 51% for AxJ Banks).

Table 8: Portfolio Statistics

	JPM Bank Factor (L-S) New Model	JPM Bank factor (LO) New Model	JPM AxJ Banks
Ann Average Return	11.9%	8.1%	0.8%
Ann SD	13.5%	30.9%	25.4%
Return per unit risk	0.88	0.26	0.03
Worst Qtr	-9.3%	-44.6%	-36.5%
Best Qtr	33.6%	88.1%	50.5%

Source: Bloomberg Finance L.P., J.P. Morgan.

Our back-testing of long-only portfolios likewise shows evidence of outperformance. Since 2007, the long-only portfolio has returned 8.1% annually on average, higher than Asia ex Japan banks (0.8%). However, the long-only portfolio exhibited higher risk (31% SD, higher vs. AxJ banks), which leads to lower return per unit of risk at 0.26 vs. 0.88 for the long/short portfolio.

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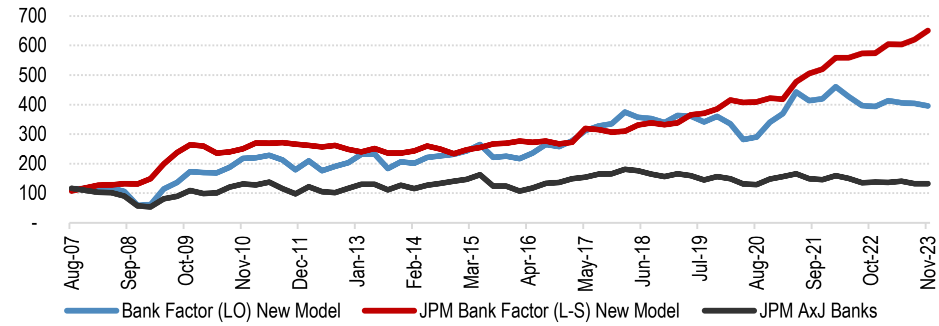
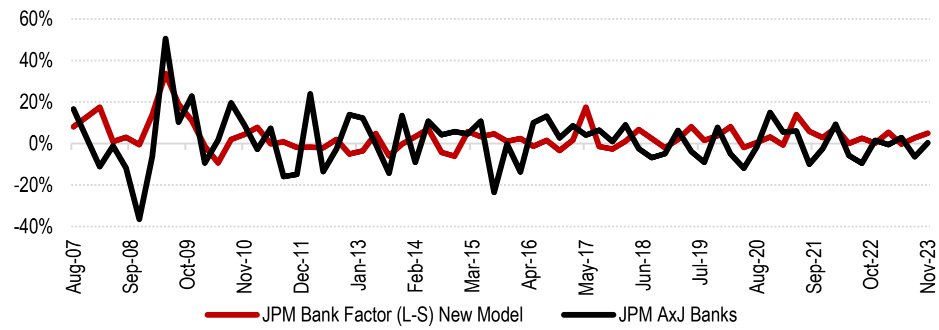
Figure 9: JPM Bank Factor vs. AxJ Banks: Cumulative Performance (Aug'07=100)



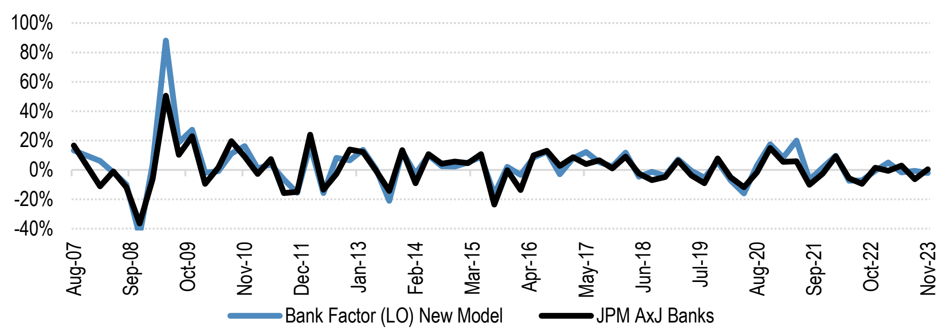
Source: Bloomberg Finance L.P., Company data, J.P. Morgan.

Figure 10: JPM Bank Factor (L/S) vs. AxJ Banks: Quarterly Performance (since Aug'07)



Source: Bloomberg Finance L.P., Company data, J.P. Morgan.

Figure 11: JPM Bank Factor (LO) vs. AxJ Banks: Quarterly Performance (since Aug'07)



Source: Bloomberg Finance L.P., Company data, J.P. Morgan.

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Figure 12: Asia Quantitative Macro Index

Source: J.P. Morgan.

Companies Discussed in This Report (all prices in this report as of market close on 21 December 2023, unless otherwise indicated)
Asia Commercial Bank(ACB.HM/D23,250.00/OW), Bandhan Bank(BANH.NS/Rs238.25/OW), Bank Rakyat Indonesia(BBRI.JK/Rp5,575/N), Bank of Baroda(BOB.NS/Rs224.85/OW), Bank of Beijing - A(601169.SS/Rmb4.40/UW), Bank of Ningbo - A(002142.SZ/Rmb19.89/OW), Bank of Shanghai - A(601229.SS/Rmb5.89/UW), China Minsheng Banking - H(1988.HK/HK$2.59/OW), DBS Group Holdings(DBSM.SI/S$31.67/UW), Hua Nan FHC(2880.TW/NT$21.85/UW), Kakao Bank(323410.KS/W27,500/UW), Kotak Mahindra Bank(KTKM.NS/Rs1,852.70/N), OCBC Bank(OCBC.SI/S$12.43/UW), Sinopac Financial Holdings(2890.TW/NT$19.30/N), Vietcombank(VCB.HM/D80,900.00/N), Yes Bank(YESB.NS/Rs21.15/UW)

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