J.P.Morgan

PRIVATE BANK

The Risks and Rewards of a Concentrated Stock Position

Latin America Edition

INVESTMENT PRODUCTS ARE: • NOT FDIC INSURED • NOT A DEPOSIT OR OTHER OBLIGATION OF, OR GUARANTEED BY, JPMORGAN CHASE BANK, N.A. OR ANY OF ITS AFFILIATES • SUBJECT TO INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF THE PRINCIPAL AMOUNT INVESTED

The “high risk, high reward” dilemma tends to be a controversial one. There are many ways to build wealth, but also many others to destroy it. Michael Cembalest’s influential paper, The Agony & the Ecstasy (updated most recently in 2021), explored the risk and rewards of holding concentrated positions for high net worth clients. After analyzing U.S. equity data for four decades, some key findings include:

- Over 40% of the companies that were ever part of the Russell 3000 index experienced some sort of “catastrophic stock price loss”, defined as a 70% price drop from its all-time peak with the stock failing to recover at least 60% from its historical lows.
- Close to 40% of the time, a single stock underperformed cash, with that number increasing to 66% when compared against a diversified index like the Russell 3000.
- Business failures were mostly out of management’s control and driven by structural shifts in sector/industry trends, including regulatory changes.
- After a very painful 2022, our colleagues in Asia and Europe replicated the analysis for their respective regions, reaching similar conclusions.

In Asia, findings show that in both Hong Kong and Singapore, between 1992 and 2022, a concentrated single stock position underperformed its main market index over 70% of the time, and nearly 76% of experienced a “catastrophic loss” as defined above.

In Europe, more than 60% of companies in the FTSE All-Share Index ex-Investments Trusts index between 1986 and 2022 underperformed their index, while over 40% were classified as “catastrophic loss”.

Building on this exercise, for Latin America we analyzed the MSCI EM Latin America Index. In this paper, we aim to quantify the risks of concentrated stock positions in the region, highlight several case studies, and examine strategies to manage concentrated portfolio risk.

A study of concentrated portfolio risks

From oil and mining to autos and manufacturing, Latin America's industries have created great fortunes, but success sometimes comes at a cost. From behemoths like Mexico and Brazil, to cautionary tales like Venezuela, as industries evolve and change, and public policies and administrations come and go, some companies have adapted and thrived, while others have struggled to survive and disappear.

We examined stocks across 7 countries (Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela), and same rule applies for them all: whether these experiences have been positive or negative, consequences have been magnified by the level of concentration held by an investor.

All in all, while concentrated stock positions can create substantial wealth, they also come with a probability of dramatic losses that can potentially derail the financial future you envision for you and your family. And, if there are any conclusions to be drawn out of 2022, is the fact that anything can happen. A global pandemic, an unforeseen war, elevated inflation, faltering growth, and rapidly tightening monetary conditions led to one of the worst performances we've seen across asset classes. That said, diversification proved its worth as it can help deliver stronger portfolio returns over the long term.

How likely is it to invest in a "losing" company?

History suggests the risks are elevated. We analyzed all historical constituents in the MSCI EM Latin America Index from January 1995 through March 2023 (as far back as data is publicly available) to try to answer this question for our region.

Just over 30% of all companies that were ever traded in the index experienced a "catastrophic price loss" where the stock declined 70% or more from peak levels and has not since recovered. In all sectors but utilities and energy, 20% or more of each sector's index constituents experienced catastrophic loss. In the consumer discretionary and health care sectors, upended by both endogenous and exogenous factors, pain has been especially acute.

A majority (44%) of stocks experiencing catastrophic loss tend to be mid-sized companies, a pertinent point for business owners and executives. Further, Colombia (43%) and Peru (39%), Latin America's smallest economies among the top five, held the majority of catastrophic losses, something that is not attributable to their relative size vs. the other countries represented in the index, but rather their lagging growth and volatile political regime.

As another way to think about concentration risk, consider how often an investor would have been better off owning cash, or the broader market, instead of the concentrated position. Based on our historical analysis, a concentrated position in a single stock would have experienced negative absolute returns roughly 26% of the time, underperforming a simple investment in cash. And around 51% of the time, a concentrated position in a single stock would have underperformed a diversified position in the MSCI EM Latin America Index.

Analysis of the MSCI EM LatAm Index, 1995-2023

Sector	% of stocks experiencing catastrophic loss	% of stocks experiencing negative absolute return	% of stocks experiencing negative excess returns vs Index
All	**30%**	**26%**	**51%**
Information Technology	25%	25%	50%
Energy	12%	6%	29%
Consumer Discretionary	53%	47%	65%
Health Care	50%	30%	40%
Communication Services	36%	30%	68%
Real Estate	0%	13%	38%
Industrials	39%	26%	57%
Materials	37%	22%	52%
Financials	21%	24%	40%
Consumer Staples	20%	22%	47%
Utilities	7%	14%	45%

Source: FactSet, Bloomberg Finance L.P., MSCI, J.P. Morgan Private Bank. Data as of April 2023.

Market cap at high	% of market cap threshold experiencing catastrophic loss	% share of total stocks experiencing catastrophic loss
Small	28%	32%
Mid	32%	44%
Large	30%	24%

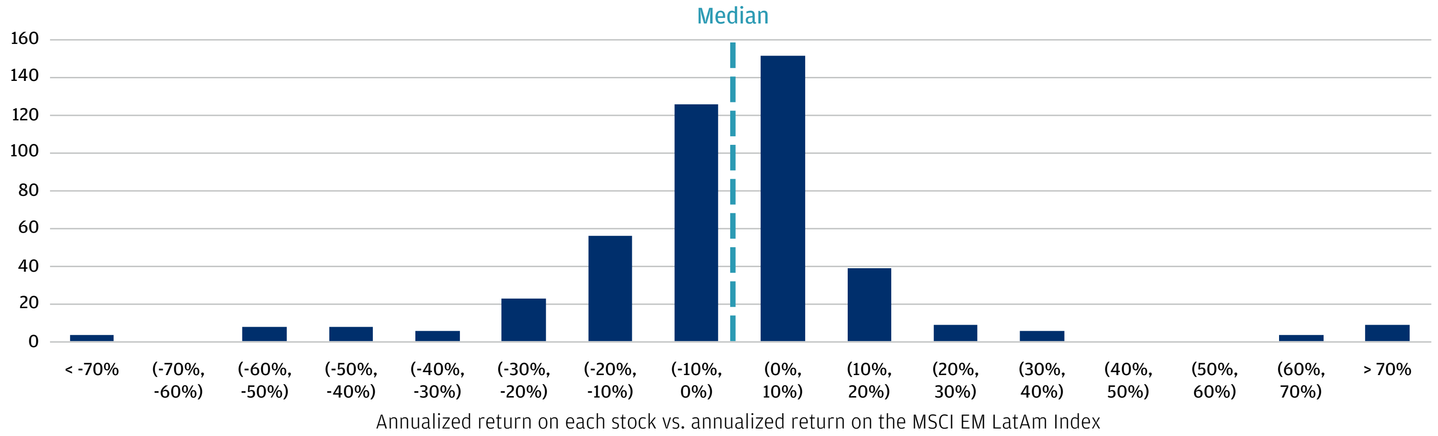
Source: FactSet, J.P. Morgan Private Bank. Data as of April 2023.
Note: Large >$10bn, Small <$2b, Mid between; ~13 companies with inaccessible market value data.

Sector	% of stocks experiencing catastrophic loss	% of stocks experiencing negative absolute return	% of stocks experiencing negative excess returns vs Index
All	**30%**	**26%**	**51%**
Brazil	33%	29%	49%
Mexico	33%	28%	41%
Argentina	6%	18%	35%
Peru	39%	13%	65%
Colombia	43%	29%	61%
Chile	22%	24%	81%
Venezuela	22%	11%	17%

Source: FactSet, Bloomberg Finance L.P., MSCI, J.P. Morgan Private Bank. Data as of April 2023.

Distribution of excess lifetime returns on individual stocks vs. MSCI EM LatAm Index, 1995-2023

Number of stocks



Source: FactSet, J.P. Morgan Private Bank. Data as of April 2023.

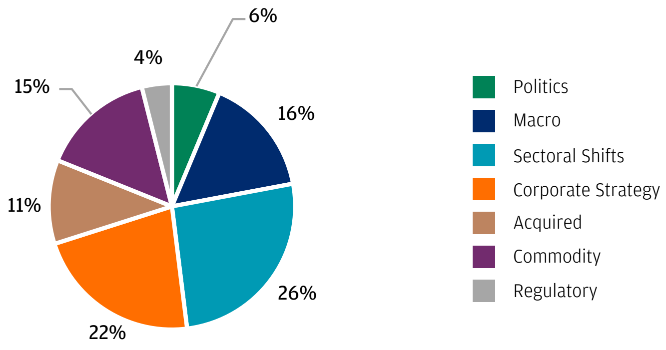
Finally, stocks with catastrophic losses experienced their declines over a prolonged period of time. In our analysis, it took on average around six years for these stocks' share prices to fall from their highs to their lows—demonstrating that the experience of wealth erosion can be a long, painful process.

What should I avoid?

While there are some companies who suffered due to poor management decisions, in reality, most of the corporate failures analyzed can be attributed to exogenous risks, such as macro dynamics, political / regulatory decisions and/or sectoral shifts. Sometimes the culprit is not adapting quickly enough to a changing environment or maybe the company is still in the transformation process and the recovery is yet to come. In such a case, the question then becomes whether investors are willing to wait it out or, given the elevated outlook for rates, the opportunity cost becomes too high.

An important caveat to be made here: drags tend to compound. While poor macro could be the catalyst that drags commodity prices, a materials company in the space suffers from both. In the case studies presented below we classify stocks by the first catalyst, though the consequence of such trigger could become a driver for the catastrophic loss on its own.

Nearly 67% of catastrophic losses analyzed in LatAm were due to exogenous* factors

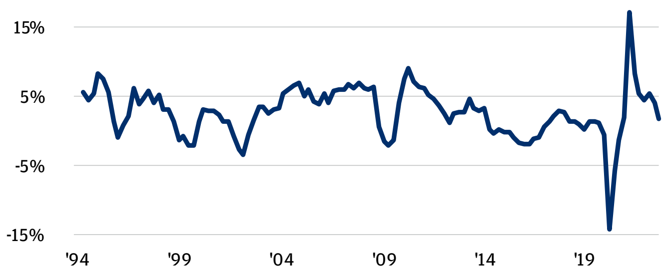


Source: Bloomberg Finance L.P., J.P. Morgan Private Bank. Data as of April 28, 2023.
*exogenous = Regulatory, Commoidty, Macro, Politics and Sectoral Shifts

Politics & Macro

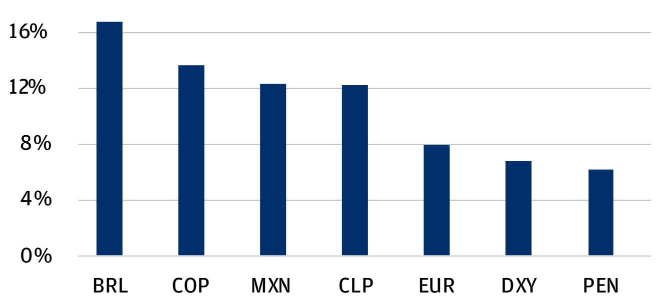
LatAm's modern economic history has been riddled by economic crisis mostly driven by poor public policy. In some cases, the impact has been extreme (e.g. Argentina and Venezuela) while in some others, it has been riding in waves (eg. Brazil or Colombia). Stability is not a word to use when describing our region, either politically or at a macro level.

GDP: Investability is a feature of investing in Latin America
GDP Latin America, QoQ



Source: Bloomberg Finance L.P. Data as of December 31, 2022.

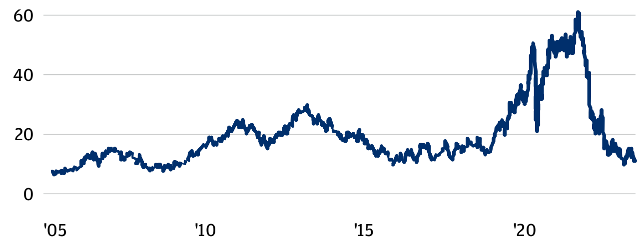
Latin American currencies tend to be quite volatile
Annualized standard deviation over the last 10yrs



Source: Bloomberg Finance L.P. Data as of April 2023.

From a company perspective, macro downturns have been the third most common reason for companies' catastrophic losses. As is to be expected, this is particularly relevant for companies in cyclical sectors such as Consumer Discretionary, Materials and Financials. In many cases, the macro downturns were just the spark needed to set fire to a company inflamed by debt or had grown too much too fast.

NATURA: poor post-pandemic economic environment and rising inflation and supply chain disruptions led to governance doubts
BRL

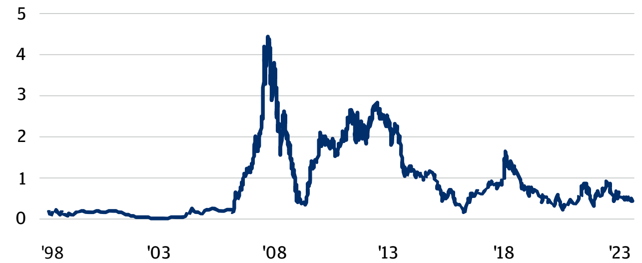


Source: Bloomberg Finance L.P. Data as of April 2023.

ALFA SAB: COVID 19 hit across all subsidiaries which ultimately forced the stock out of the MSCI
MXN

Source: Bloomberg Finance L.P. Data as of April 2023.

Volcan CIA: plummeting commodity prices and balance sheet struggles
PEN



Source: Bloomberg Finance L.P. Data as of April 2023.

All case studies are shown for illustrative purposes only and should not be relied upon as advice or interpreted as a recommendation.

Alpargatas: COVID 19 convexities coupled with diminished revenue by increasing costs

BRL

Source: Bloomberg Finance L.P. Data as of April 2023.

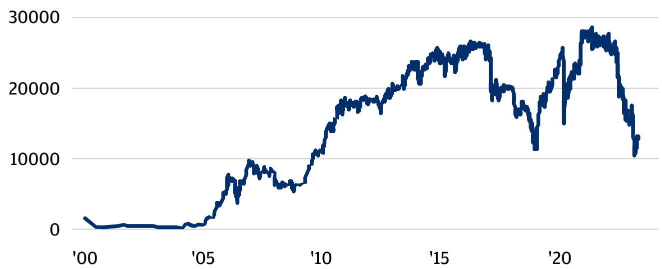
CEMEX: sales were dragged down post-GFC, while a weaker MXN and higher rates showed balance sheet struggles

MXN

Source: Bloomberg Finance L.P. Data as of April 2023.

Corp. Financiera Colombiana: irregularities on balance sheet and affiliation with Odebrecht

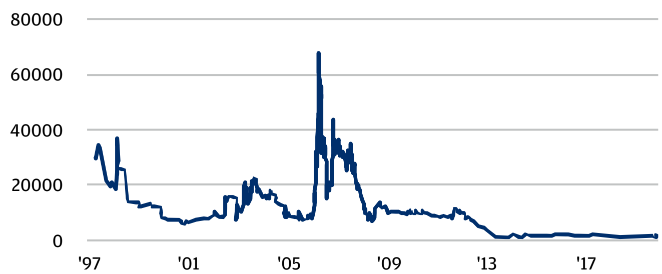
COP



Source: Bloomberg Finance L.P. Data as of April 2023.

COLTEJER: trade tensions with Venezuela and U.S. concernes around labor rights led to bankruptcy

COP



Source: Bloomberg Finance L.P. Data as of April 2023.

On the political front, Venezuela serves as a cautionary tale. Public policy mismanagement, lack of institutional accountability, a fraudulent currency exchange system, no confidence on public or private sectors, and little to no institutional autonomy were some of the drivers behind one of the most aggressive capital flights we've ever seen.

There were two main issues that led to the demise of multiple companies here: hyperinflation coupled with a faulty currency exchange system and political risk – or better said, government confiscation, expropriation or nationalization.

Regarding the former, as Venezuela's hyperinflation got worse, profits got watered down. At the same time, Venezuela's official Bolivar (the one you can get through the official currency exchange system) depreciated, and the "black market" bolivar (the one accessible to the masses) devaluated even more – to the point where we're not even able to keep track of any profits made by any company.

Regarding the latter, expropriation or nationalization is a well-known risk in countries with authoritarian regimes. Here, the fact that the government could, all of the sudden, take your company away, led to a flight of private capital. And, perhaps even more important, companies that were well-established in Venezuela (such as Banco Mercantil), decided to divest all Venezuelan assets and stablish new LLCs or holdings abroad in an attempt to hedge themselves from a possible expropriation. While said companies were still profitable abroad, their profits in Venezuela and stock price plummeted.

Naturally, both of these issues led to arbitrage opportunities in the region, where investors were able to maximize their gains given the lack of authority or transparency.

While this might sound like an extreme scenario, Latin America is mostly governed by left-leaning administrations. While some seem more rational than others, one can never rule out negative surprises. Argentina, for one, has been struggling for a while. Now, with inflation surpassing the 100% YoY mark, and an official peso of ~230, while the "parallel" peso is trading at ~470, is not far from a Venezuela-type of scenario. In fact, while our analysis only points to 6% of the Argentinean stocks as "catastrophic losses", if we count in all ADRs, those numbers rise to ~24%. Why? The disconnect between the official dollar and the "parallel" one coupled with hyperinflation explain much of the driver here.

All case studies are shown for illustrative purposes only and should not be relied upon as advice or interpreted as a recommendation.

Commodity price declines

In a region where materials have historically represented an average of 21% of the index and an average of 80% of the trade balances of the major countries, commodity prices are bound to have had a significant impact on LatAm companies. Sharp commodity price declines explain 15% of the catastrophic losses in our analysis, namely in Brazil and Peru

Source: FactSet. Data as of October 2022. GBp is £0.01.

CSN: drop in commodity prices shed light on a highly levered balance sheet
BRL

Source: Bloomberg Finance L.P. Data as of April 2023.

Buenaventura: sharp gold pullback led to a decline on revenues
PEN

Source: Bloomberg Finance L.P. Data as of April 2023.

Regulatory changes

Changes to insurance premium caps and minimum wages for nurses, increased competition and aftershocks from the pandemic, added to more issues on the healthcare and insurance sectors in Brazil. Meanwhile, the Brazilian education sector suffered from changes to the government-run student loan program (FIES, in Portuguese) leading to questions on the sustainability of the fast-paced growth of companies in the sector in recent years. And, in 2020, the sector was further impacted by the COVID-19 pandemic through lower enrollments and margin contraction.

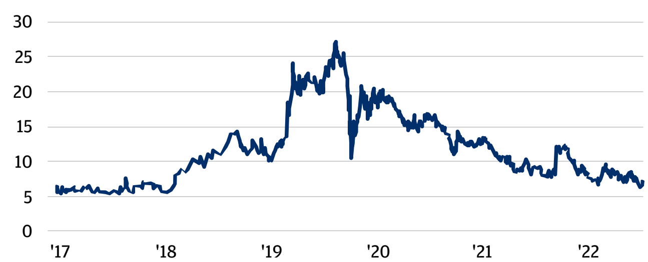
Cogna Brazil: changes to student loan and COVID 19 regulations
BRL

Source: FactSet. Data as of October 2022.

HAPVIDA: while M&A activity boosted stock prices, a shift on regulations led to higher costs and poor performance
BRL

Source: Bloomberg Finance L.P. Data as of April 2023.

Sul America: COVID 19 led to a massive losses, rising costs, and weak BRL
BRL



Source: Bloomberg Finance L.P. Data as of April 2023.

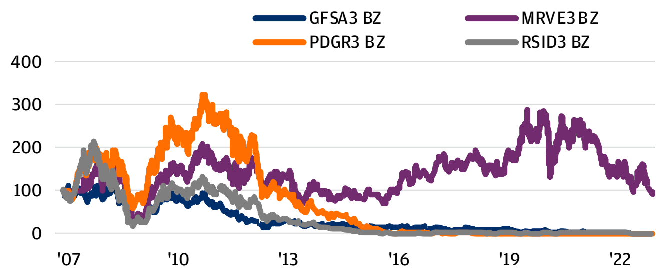
All case studies are shown for illustrative purposes only and should not be relied upon as advice or interpreted as a recommendation.

Sectoral Shifts

The COVID 19 pandemic, e-everything, streaming… pick your poison. Companies are constantly hit by exogenous shocks, but when that change is a structural shift in their sector dynamics, their ability to adapt is really put to the test.

The Brazilian real estate sector suffered a massive blow during the GFC, dragged by plummeting demand on housing and interest rate hikes, effectively putting an end to what had been housing boom in the country and for which companies had accumulated massive debt. MRV managed to weather the storm for a few years as the company focused on low-income consumers. However, the pandemic and rising inflation led to its later demise as the Bolsonaro government refused to modify subsidy thresholds for subsidies under the Minha Casa Minha Vida program.

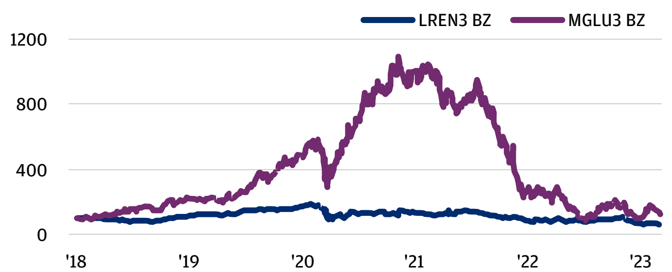
Brazilian homebuilders: banking on perennial growth is unsustainable
BRL



Source: Bloomberg Finance L.P. Data as of April 2023. *Stock prices are indexed to 100 as of January 2018 for comparison purposes.

The Brazilian retail sector was no stranger to the impact that the COVID-19 pandemic and lockdowns had for the global industry. Nonetheless, both failed to recover after the reopening as inflation drove costs higher.

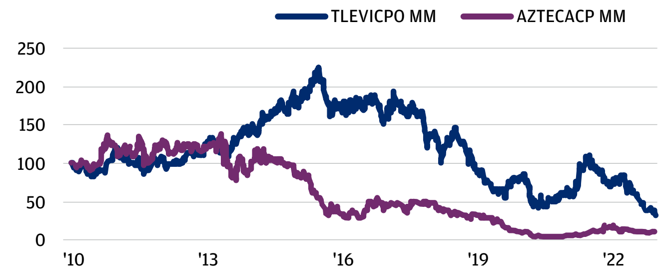
Brazilian retail: not immune to COVID 19
BRL



Source: Bloomberg Finance L.P. Data as of April 2023. *Stock prices are indexed to 100 as of January 2018 for comparison purposes.

Mexican broadcast and telecom operators Televisa and TV Azteca's ad revenue was severly impacted by the entrance of pay-TV operators, such as Netflix, who challenged the traditional TV model. Netflix started offering its services in LatAm in 2011 and by 2015 boasted over 5mn subscribers. Televisa was able to fend the pay-tv threat better than TV Azteca thanks to its diversified income stream, but that was not enough to make it immune to the global hit on ad revenues from the COVID-19 pandemic.

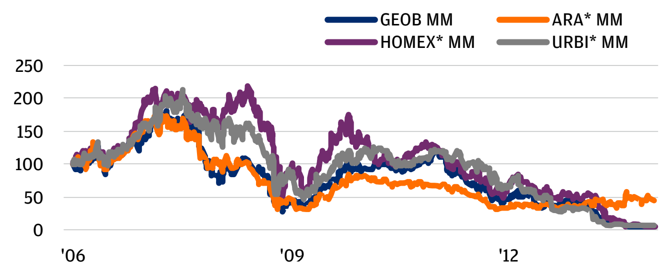
Mexico's telecom: here comes Netflix
MXN



Source: Bloomberg Finance L.P. Data as of April 2023. *Stock prices are indexed to 100 as of January 2010 for comparison purposes.

Mexican homebuilders benefitted from a growth wave throughout the early 2000's following a rise on demand as the government invested on affordable housing programs. Companies levered up to keep up with fast-paced growth, especially accumulating land bank that would be later rendered useless given changes to the housing subsidy law enacted by the incoming government of Pres. Pena Nieto in 2008. The crisis was aggravated by the GFC and MXN depreciation leading to unsustainable interest expense increases. A few years later, the industry staged a mild comeback that was thwarted by a shift in public subsidies towards apartment building in urban areas vs. single homes in rural communities.

Mexican homebuilders: shift on growth patterns, from rural to urban paths
MXN

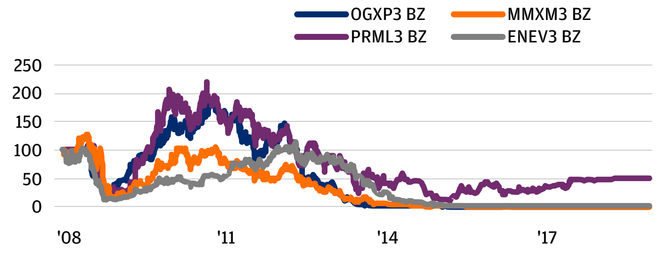


Source: Bloomberg Finance L.P. Data as of April 2023. *Stock prices are indexed to 100 as of January 2006 for comparison purposes.

Corporate Management

And of course, there are those who simply took a wrong turn somewhere along the way.

Eike Batista's companies: on average, valuations dropped 112x from their peak as bad press continue to arise
BRL



Source: Bloomberg Finance L.P. Data as of April 2023. *Stock prices are indexed to 100 as of January 2008 for comparison purposes.

Grupo Exito: highly levered and a competitive environment led to further lossess
COP

Source: Bloomberg Finance L.P. Data as of April 2023.

Sonda: an agressive competitive environment led to an accelerated CAPEX cycle that depressed cash flow generation
CLP

Source: Bloomberg Finance L.P. Data as of April 2023.

ICA: once the largest infrastructure construction company in Mexico, balance sheet struggles ultimately led to a bankruptcy
MXN

Source: Bloomberg Finance L.P. Data as of April 2023.

Diversification is a time-tested approach

As shown above, concentration can lead to massive wealth creation, but unforeseeable events could destroy it in a whim. That said, diversification is key. The easiest path to get there is by selling out of a concentrated position and increase exposure elsewhere. However, for many investors, divesting of concentrated positions in a portfolio is simply not an option, be that for tax, personal, or even regulatory reasons. On those cases, there is a wide array of strategies that can help mitigate concentration risk. Some of these allow investors to monetize without selling their positions, creating liquidity to invest elsewhere, or simply hedging exposure to protect against unanticipated pullbacks. The best strategy will be one that adjusts to each investor's unique circumstances and adheres to their long-term goals.

Cembalest's 2021 report discusses each of these in more detail, yet for a tailored approach, please revert to your J.P. Morgan representative to discuss the best solution to fit address your specific needs.

All case studies are shown for illustrative purposes only and should not be relied upon as advice or interpreted as a recommendation.

Nur Cristiani—Head of Latin America Investment Strategy, J.P. Morgan Private Bank

Nur Cristiani is Head of Latin America Investment Strategy at J.P. Morgan's Private Bank. Her main responsibility is to drive the strategy narrative and communication efforts for the LatAm Private Bank and deliver our market insights to clients and investors. Before that, Nur was Mexico Equity Strategist at J.P. Morgan's Investment Bank for 10 years, being consistently ranked top 3 in Institutional Investor for Mexico Strategy. Before J.P. Morgan, Nur worked as an EM strategist for the Mexico Onshore Private Bank at Credit Suisse and as a portfolio manager for BBVA LatAm. She received the CFA® designation in 2009 after graduating from Actuarial Sciences. She's a strong advocate for women in finance and an active member in several internal and external organizations.

Federico Cuevas—Global Investment Strategist, J.P. Morgan Private Bank

Federico Cuevas, in partnership with asset class leaders and the Chief Investment Officer and team, is responsible for developing and communicating the firm's economic and market views and investment strategies to advisors and clients. He is also an author of Top Market Takeaways, the column that delivers the rundown of political and economic events to all advisor and clients. Federico started his career in Banco Santander in Madrid, Spain. He was formerly a member of the eCommerce team, supporting the Investment and Corporate Bank. He earned his B.A. in Economics from Universidad Metropolitana, and has a Master's of Science in Finance from University of Miami. He is originally from Caracas, Venezuela, and enjoys traveling and cooking in his free time.

IMPORTANT INFORMATON

Index definition

The MSCI Emerging Markets (EM) Latin America Index captures large and mid cap representation across five Emerging Markets (EM) countries in Latin America (Brazil, Chile, Colombia, Mexico and Peru). With 88 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

Key Risks

Diversification does not ensure a profit or protect against loss.

Investors should be cautious when holding a highly concentrated stock position, which is typically defined as any individual holding that constitutes more than 30% of overall investment holdings. Tax consequences, including the avoidance of capital gains through selling, do not eliminate the risks of overexposure to a particular company or business sector.

This material is for informational purposes only, and may inform you of certain products and services offered by J.P. Morgan's wealth management businesses, part of JPMorgan Chase & Co. ("JPM"). Products and services described, as well as associated fees, charges and interest rates, are subject to change in accordance with the applicable account agreements and may differ among geographic locations. Not all products and services are offered at all locations. J.P. Morgan is committed to making our products and services accessible to meet the financial services needs of all our clients. If you are a person with a disability and need additional support, please contact your J.P. Morgan team or email us at accessibility.support@jpmorgan.com for assistance. **Please read all Important Information.**

General Risks & Considerations

Any views, strategies or products discussed in this material may not be appropriate for all individuals and are subject to risks. **Investors may get back less than they invested, and past performance is not a reliable indicator of future results.** Asset allocation/diversification does not guarantee a profit or protect against loss. Nothing in this material should be relied upon in isolation for the purpose of making an investment decision. You are urged to consider carefully whether the services, products, asset classes (e.g., equities, fixed income, alternative investments, commodities, etc.) or strategies discussed are suitable to your needs. You must also consider the objectives, risks, charges and expenses associated with an investment service, product or strategy prior to making an investment decision. For this and more complete information, including discussion of your goals/situation, contact your J.P. Morgan team.

Non-Reliance

Certain information contained in this material is believed to be reliable; however, JPM does not represent or warrant its accuracy, reliability or completeness, or accept any liability for any loss or damage (whether direct or indirect) arising out of the use of all or any part of this material. No representation or warranty should be made with regard to any computations, graphs, tables, diagrams or commentary in this material, which are provided for illustration/reference purposes only. The views, opinions, estimates and strategies expressed in this material constitute our judgment based on current market conditions and are subject to change without notice. JPM assumes no duty to update any information in this material in the event that such information changes. Views, opinions, estimates and strategies expressed herein may differ from those expressed by other areas of JPM, views expressed for other purposes or in other contexts, and **this material should not be regarded as a research report.** Any projected results and risks are based solely on hypothetical examples cited, and actual results and risks will vary depending on specific circumstances. Forward-looking statements should not be considered as guarantees or predictions of future events.

Nothing in this document shall be construed as giving rise to any duty of care owed to, or advisory relationship with, you or any third party. Nothing in this document shall be regarded as an offer, solicitation, recommendation or advice (whether financial, accounting, legal, tax or other) given by J.P. Morgan and/or its officers or employees, irrespective of whether or not such communication was given at your request. J.P. Morgan and its affiliates and employees do not provide tax, legal or accounting advice. You should consult your own tax, legal and accounting advisors before engaging in any financial transactions.

LEGAL ENTITY, BRAND & REGULATORY INFORMATION

In the **United States**, bank deposit accounts and related services, such as checking, savings and bank lending, are offered by **JPMorgan Chase Bank, N.A.** Member FDIC.

JPMorgan Chase Bank, N.A. and its affiliates (collectively **"JPMCB"**) offer investment products, which may include bank-managed investment accounts and custody, as part of its trust and fiduciary services. Other investment products and services, such as brokerage and advisory accounts, are offered through **J.P. Morgan Securities LLC ("JPMS")**, a member of FINRA and SIPC. Annuities are made available through Chase Insurance Agency, Inc. (CIA), a licensed insurance agency, doing business as Chase Insurance Agency Services, Inc. in Florida. JPMCB and JPMS and CIA are affiliated companies under the common control of JPM. Products not available in all states.

In **Germany**, this material is issued by **J.P. Morgan SE**, with its registered office at Taunustor 1 (TaunusTurm), 60310 Frankfurt am Main, Germany, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB). In **Luxembourg**, this material is issued by **J.P. Morgan SE—Luxembourg Branch**, with registered office at European Bank and Business Centre, 6 route de Treves, L-2633, Senningerberg, Luxembourg, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB); J.P. Morgan SE—Luxembourg Branch is also supervised by the Commission de Surveillance du Secteur Financier (CSSF); registered under R.C.S Luxembourg B255938. In the **United Kingdom**, this material is issued by **J.P. Morgan SE—London Branch**, registered office at 25 Bank Street, Canary Wharf, London E14 5JP, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB); J.P. Morgan SE—London Branch is also supervised by the Financial Conduct Authority and Prudential Regulation Authority. In **Spain**, this material is distributed by **J.P. Morgan SE, Sucursal en España**, with registered office at Paseo de la Castellana, 31, 28046 Madrid, Spain, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB); J.P. Morgan SE, Sucursal en España is also supervised by the Spanish Securities Market Commission (CNMV); registered with Bank of Spain as a branch of J.P. Morgan SE under code 1567. In **Italy**, this material is distributed by **J.P. Morgan SE—Milan Branch**, with its registered office at Via Cordusio, n.3, Milan 20123, Italy, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB); J.P. Morgan SE—Milan Branch is also supervised by Bank of Italy and the Commissione Nazionale per le Società e la Borsa (CONSOB); registered with Bank of Italy as a branch of J.P. Morgan SE under code 8076; Milan Chamber of Commerce Registered Number: REA MI 2536325. In the **Netherlands**, this material is distributed by **J.P. Morgan SE—Amsterdam Branch**, with registered office at World Trade Centre, Tower B, Strawinskylaan 1135, 1077 XX, Amsterdam, The Netherlands, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB); J.P. Morgan SE—Amsterdam Branch is also supervised by De Nederlandsche Bank (DNB) and the Autoriteit Financiële Markten (AFM) in the Netherlands. Registered with the Kamer van Koophandel as a branch of J.P. Morgan SE under registration number 72610220. In **Denmark**, this material is distributed by **J.P. Morgan SE—Copenhagen Branch, filial af J.P. Morgan SE, Tyskland**, with registered office at Kalvebod Brygge 39-41, 1560 København V, Denmark, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB); J.P. Morgan SE—Copenhagen Branch, filial af J.P. Morgan SE, Tyskland is also supervised by Finanstilsynet (Danish FSA) and is registered with Finanstilsynet as a branch of J.P. Morgan SE under code 29010. In **Sweden**, this material is distributed by **J.P. Morgan SE—Stockholm Bankfilial**, with registered office at Hamngatan 15, Stockholm, 11147, Sweden, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB);

J.P. Morgan SE—Stockholm Bankfilial is also supervised by Finansinspektionen (Swedish FSA); registered with Finansinspektionen as a branch of J.P. Morgan SE. In **France**, this material is distributed by **JPMorgan Chase Bank, N.A.—Paris Branch**, registered office at 14, Place Vendome, Paris 75001, France, registered at the Registry of the Commercial Court of Paris under number 712 041 334 and licensed by the Autorité de contrôle prudentiel et de resolution (ACPR) and supervised by the ACPR and the Autorité des Marchés Financiers. In **Switzerland**, this material is distributed by **J.P. Morgan (Suisse) SA**, with registered address at rue du Rhône, 35, 1204, Geneva, Switzerland, which is authorized and supervised by the Swiss Financial Market Supervisory Authority (FINMA) as a bank and a securities dealer in Switzerland.

This communication is an advertisement for the purposes of the Markets in Financial Instruments Directive (MIFID II) and the Swiss Financial Services Act (FINSA). Investors should not subscribe for or purchase any financial instruments referred to in this advertisement except on the basis of information contained in any applicable legal documentation, which is or shall be made available in the relevant jurisdictions (as required).

In **Hong Kong**, this material is distributed by **JPMCB, Hong Kong branch**. JPMCB, Hong Kong branch is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission of Hong Kong. In Hong Kong, we will cease to use your personal data for our marketing purposes without charge if you so request. In **Singapore**, this material is distributed by **JPMCB, Singapore branch**. JPMCB, Singapore branch is regulated by the Monetary Authority of Singapore. Dealing and advisory services and discretionary investment management services are provided to you by JPMCB, Hong Kong/Singapore branch (as notified to you). Banking and custody services are provided to you by JPMCB Singapore Branch. The contents of this document have not been reviewed by any regulatory authority in Hong Kong, Singapore or any other jurisdictions. You are advised to exercise caution in relation to this document. If you are in any doubt about any of the contents of this document, you should obtain independent professional advice. For materials which constitute product advertisement under the Securities and Futures Act and the Financial Advisers Act, this advertisement has not been reviewed by the Monetary Authority of Singapore. JPMorgan Chase Bank, N.A. is a national banking association chartered under the laws of the United States, and as a body corporate, its shareholder's liability is limited.

With respect to countries in **Latin America**, the distribution of this material may be restricted in certain jurisdictions. We may offer and/or sell to you securities or other financial instruments which may not be registered under, and are not the subject of a public offering under, the securities or other financial regulatory laws of your home country. Such securities or instruments are offered and/or sold to you on a private basis only. Any communication by us to you regarding such securities or instruments, including without limitation the delivery of a prospectus, term sheet or other offering document, is not intended by us as an offer to sell or a solicitation of an offer to buy any securities or instruments in any jurisdiction in which such an offer or a solicitation is unlawful. Furthermore, such securities or instruments may be subject to certain regulatory and/or contractual restrictions on subsequent transfer by you, and you are solely responsible for ascertaining and complying with such restrictions. To the extent this content makes reference to a fund, the Fund may not be publicly offered in any Latin American country, without previous registration of such fund's securities in compliance with the laws of the corresponding jurisdiction.

JPMorgan Chase Bank, N.A. (JPMCBNA) (ABN 43 074 112 011/AFS Licence No: 238367) is regulated by the Australian Securities and Investment Commission and the Australian Prudential Regulation Authority. Material provided by JPMCBNA in Australia is to "wholesale clients" only. For the purposes of this paragraph the term "wholesale client" has the meaning given in section 761G of the Corporations Act 2001 (Cth). Please inform us if you are not a Wholesale Client now or if you cease to be a Wholesale Client at any time in the future.

JPMS is a registered foreign company (overseas) (ARBN 109293610) incorporated in Delaware, U.S.A. Under Australian financial services licensing requirements, carrying on a financial services business in Australia requires a financial service provider, such as J.P. Morgan Securities LLC (JPMS), to hold an Australian Financial Services Licence (AFSL), unless an exemption applies. **JPMS is exempt from the requirement to hold an AFSL under the Corporations Act 2001 (Cth) (Act) in respect of financial services it provides to you, and is regulated by the SEC, FINRA and CFTC under U.S. laws, which differ from Australian laws.** Material provided by JPMS in Australia is to "wholesale clients" only. The information provided in this material is not intended to be, and must not be, distributed or passed on, directly or indirectly, to any other class of persons in Australia. For the purposes of this paragraph the term "wholesale client" has the meaning given in section 761G of the Act. Please inform us immediately if you are not a Wholesale Client now or if you cease to be a Wholesale Client at any time in the future.

This material has not been prepared specifically for Australian investors. It:

- May contain references to dollar amounts which are not Australian dollars;
- May contain financial information which is not prepared in accordance with Australian law or practices;
- May not address risks associated with investment in foreign currency denominated investments; and
- Does not address Australian tax issues.

References to "J.P. Morgan" are to JPM, its subsidiaries and affiliates worldwide. "J.P. Morgan Private References to "J.P. Morgan" are to JPM, its subsidiaries and affiliates worldwide. "J.P. Morgan Private Bank" is the brand name for the private banking business conducted by JPM. This material is intended for your personal use and should not be circulated to or used by any other person, or duplicated for non-personal use, without our permission. If you have any questions or no longer wish to receive these communications, please contact your J.P. Morgan team.