

Investment viewpoint

From static factors to dynamic styles

For professional investor use only

February 2022

Alexey Medvedev
Portfolio Manager

Laurent Joué
Senior Portfolio Manager

Originated from years of academic research, factors have been building blocks of the systematic equities for quite some time. While their historical track record looks impressive, the recent disappointing performance and violent rotations¹ have raised concerns about the future of factor investing.

The industry and academia has built a line of defence proposing several solutions. Some called for adopting the definition of factors to new realities, proposing, for example, revising book value to include intangibles. Recognising that factors may experience long periods of underperformance, some practitioners turned to timing of factors based on momentum, valuations or macro. Advances in machine learning led to the adoption of new techniques to systematic equities where machines learn the complex predictive relationships between stock attributes (such as Price-to-Book or Return-On-Equity) and their future returns directly skipping the middle man of factors.²

The main advantage of machine learning is its ability to discover more complex predictive patterns than those implied by factors. However, using such techniques requires a large amount of data that can only be obtained by looking far back in the history. This reliance on the past makes the strategy not very dynamic as it slowly responds to short-term changes in the market environment.

In this paper, we describe an alternative approach we call 'dynamic styles', that uses the same "low level" stock attributes to predict stock returns. However, instead of building complex predictive models, dynamic styles relies on traditional momentum signals yielding a much more dynamic strategy that can serve as a promising alternative to static factor investing.

¹ We discuss this in our recent paper "Getting Ready for Factor Rotations". All our research is accessible at <https://am.lombardodier.com/home/asset-classes/alternatives/alternative-risk-premia/alternative-risk-premia-research.html>.

² We have been one of the earlier adopters of this approach. See our paper "Machine Learning For the Prediction of Stock Returns".

Harvesting momentum in equity styles

The building blocks of dynamic styles are long-short style portfolios formed on single stock attributes and specific for each region and sector.

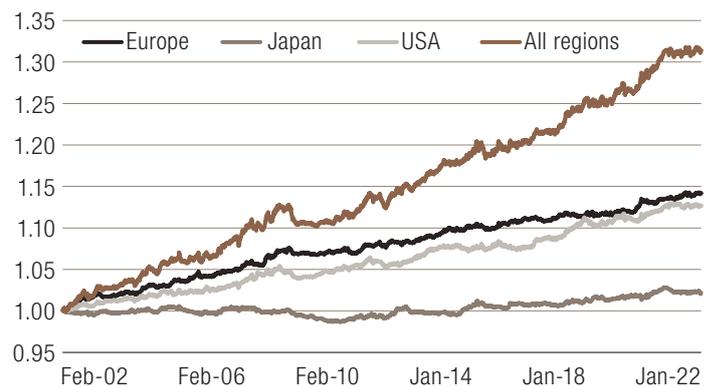
The universe of stocks is defined by the MSCI World index restricted to three major regions: USA, Europe and Japan. For each combination of GICS1 sector, region and stock attribute we form a unique style portfolio by allocating positive weights to the top half stocks with the largest attribute value, and negative weights to the bottom half. For example, for Price-to-Book ratio we form total 33=11×3 portfolios – one per each sector of each region. With such construction, we recognise that different styles may have different trends across regions and sectors. For example, value stocks may trend up in Industrials but not in Health Care. Using the same stock attributes as in our machine learning strategy,³ we build over 1500 different style portfolios.

In the same way as the CTA⁴ industry is taking directional exposures to futures based on recent trends, dynamic styles uses momentum signals to take exposures across style portfolios. At each rebalancing date, we score all the style portfolios according to their returns over several windows less than one year. While each return window has some predictive power, we found that combining several ones makes the model more robust. The scores are then used in a mean-variance optimisation where we seek to maximise the score of the final portfolio of style portfolios subject to a risk constraint.

Exhibit 1 shows the (gross) performance of the global portfolio rebalanced every end of month as well as its regional components. At each rebalancing, the portfolio is sized to have the ex-ante volatility of 1%. We observe that this strategy works well in USA and Europe but less so in Japan. Historically, Japan has been always challenging for factor investing, especially for Momentum.⁵

Dynamic styles uses the stock attributes that are also part of the definition of factors. Therefore, we can expect that the dynamic styles portfolio takes exposures to factors whose attributes are exhibiting strong momentum. As we observe from Exhibit 2, the portfolio indeed can take material factors exposures,⁶ which are not constant and tend to change signs over time with the exception of momentum that is always on the positive side. Although the dynamic styles portfolio is not formed directly on the stock momentum, it enters through the backdoor of the style momentum. Looking closely at the evolution of factors exposures, it is interesting to observe that the strategy naturally reduced the exposure to value over last several years but then started building it up since 2021 on the back of recent growth-value rotation.

EXHIBIT 1. PERFORMANCE OF DYNAMICS STYLES



Source: LOIM calculations. For illustrative purposes only. Past performance is not a guarantee of the future results.

Timing of factors and more

How strong is dynamic styles at timing the factors? To answer this question, we computed the performance of the dynamic styles portfolio attributed to factor exposures. This attribution has been performed region by region using pure factor⁷ returns specific to each region. Exhibit 3 suggests that dynamic styles does a good job at timing of factors. This result is striking given that the direct timing of factors has not been found to be particularly successful.⁸

The factor timing does not seem to fully explain the performance of dynamic styles with the residual component adding value too. The residual contribution represents the performance of a factor-neutral long-short portfolio. Its long and short legs have the same exposure to each factor, however, achieved through a different mixture of attributes. We therefore can loosely interpret this residual as the effect of factor definitions.

Performance attribution shown Exhibit 3 summarises the two key characteristics of dynamic styles that distinguish this strategy from factor investing. The first characteristic is the ability to take both positive and negative exposures to factors. For example, we can be short in value while the factor-based portfolio are always long in this factor. The second characteristic is the flexibility in factor definitions. Modern factor investing employs a variety of factor definitions far more complex than the ones used in academic research. For example, we counted 35 different attributes used by the industry to define the 'quality' factor. The multitude of definitions adds to the uncertainty of factor performances and goes somewhat against the philosophy of factors as being sources of simple and robust risk premia. Dynamic styles effectively solves this dilemma through a bottom-up factor construction.

³ We keep only fundamentals attributes and exclude priced-based characteristics such as momentum, reversal, etc.

⁴ Commodity Trading Advisor.

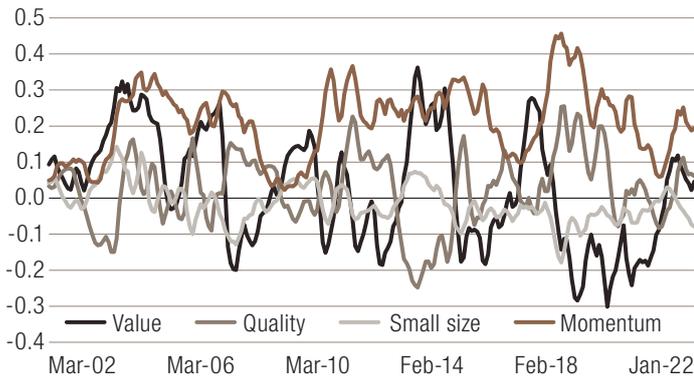
⁵ Asness C. 2011. "Momentum in Japan: The Exception That Proves the Rule." *Journal of Portfolio Management* 37(4): 67-75.

⁶ Factor exposures are measured by z-scores.

⁷ The details of on pure factor portfolio construction can be found in our paper "Our Approach to Factor Investing".

⁸ Bender J., X. Sun, R. Thomas, and V. Zdorovtsov. 2018. "The Promises and Pitfalls of Factor Timing." *Journal of Portfolio Management* 44(4): 79-92.

EXHIBIT 2. FACTOR EXPOSURES ARE CHANGING OVER TIME

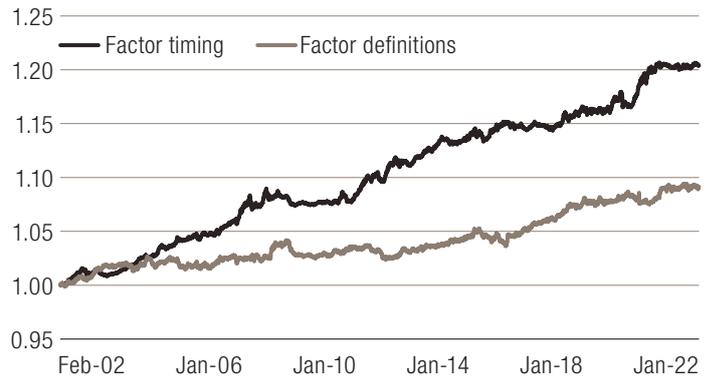


Source: LOIM calculations. The factor exposures are smoothed over three months. For illustrative purposes only.

Conclusion

In this note we presented a new systematic strategy. Dynamic styles takes advantage of momentum in equity styles recognising that styles can behave differently across sectors and regions. Dynamic styles uses the same “low level” stock attributes to characterise equity

EXHIBIT 3. THE STRATEGY IS GOOD BOTH AT FACTOR TIMING AND FACTOR DEFINITIONS



Source: LOIM calculations. For illustrative purposes only.

styles as the ones employed in our machine learning strategy. In our view, the reliance of dynamic styles on momentum only allows it to adopt much quicker to changing environment. Due to its dynamic nature, we consider this strategy a very promising alternative to factor investing.

IMPORTANT INFORMATION

For professional investor use only.

This document is issued by Lombard Odier Funds (Europe) S.A. a Luxembourg based public limited company (SA), having its registered office at 291, route d'Arlon, 1150 Luxembourg, Grand Duchy of Luxembourg, authorised and regulated by the CSSF as a Management Company within the meaning of EU Directive 2009/65/EC, as amended; and within the meaning of the EU Directive 2011/61/EU on Alternative Investment Fund Managers (AIFMD). The purpose of the Management Company is the creation, promotion, administration, management and the marketing of Luxembourg and foreign UCITS, alternative investment funds ("AIFs") and other regulated funds, collective investment vehicles or other investment vehicles, as well as the offering of portfolio management and investment advisory services. This document is provided for informational purposes only and does not constitute an offer or a recommendation to purchase or sell any security or service. It is not intended for distribution, publication, or use in any jurisdiction where such distribution, publication, or use would be unlawful. This document does not contain personalized recommendations or advice and is not intended to substitute any professional advice on investment in financial products. Before entering into any transaction, an investor should consider carefully the suitability of a transaction to his/her particular circumstances and, where necessary, obtain independent professional advice in respect of risks, as well as any legal, regulatory, credit, tax, and accounting consequences. This document is the property of LOIM and is addressed to its recipients exclusively for their personal use. It may not be reproduced (in whole or in part), transmitted, modified, or used for any other purpose without the prior written permission of LOIM. The contents of this document are intended for persons who are sophisticated investment professionals and who are either authorised or regulated to operate in the financial markets or persons who have been vetted by LOIM as having the expertise, experience and knowledge of the investment matters set out in this document and in respect of whom LOIM has received an assurance that they are capable of making their own investment decisions and understanding the risks involved in making investments of the type included in this document or other persons that LOIM has expressly confirmed as being appropriate recipients of this document. If you are not a person falling within the above categories you are kindly asked to either return this document to LOIM or to destroy it and are expressly warned that you must not rely upon its contents or have regard to any of the matters set out in this document in relation to investment matters and must not transmit this document to any other person. This document contains the opinions of LOIM, as at the date of issue. The information and analysis contained herein are based on sources believed to be reliable. However, LOIM does not guarantee the timeliness, accuracy, or completeness of the information contained in this document, nor does it accept any liability for any loss or damage resulting from its use. All information and opinions as well as the prices indicated may change without notice. Neither this document nor any copy thereof may be sent, taken into, or distributed in the United States of America, any of its territories or possessions or areas subject to its jurisdiction, or to or for the benefit of a United States Person. For this purpose, the term "United States Person" shall mean any citizen, national or resident of the United States of America, partnership organized or existing in any state, territory or possession of the United States of America, a corporation organized under the laws of the United States or of any state, territory or possession thereof, or

any estate or trust that is subject to United States Federal income tax regardless of the source of its income. Source of the figures: Unless otherwise stated, figures are prepared by LOIM. Singapore: This marketing communication has been approved for use by Lombard Odier (Singapore) Ltd for the general information of accredited investors and other persons in accordance with the conditions specified in Sections 275 and 305 of the Securities and Futures Act (Chapter 289). Recipients in Singapore should contact Lombard Odier (Singapore) Ltd, an exempt financial adviser under the Financial Advisers Act (Chapter 110) and a merchant bank regulated and supervised by the Monetary Authority of Singapore, in respect of any matters arising from, or in connection with this marketing communication. The recipients of this marketing communication represent and warrant that they are accredited investors and other persons as defined in the Securities and Futures Act (Chapter 289). This advertisement has not been reviewed by the Monetary Authority of Singapore. Hong Kong: This marketing communication has been approved for use by Lombard Odier (Hong Kong) Limited, a licensed entity regulated and supervised by the Securities and Futures Commission in Hong Kong for the general information of professional investors and other persons in accordance with the Securities and Futures Ordinance (Chapter 571) of the laws of Hong Kong. Important information on benchmarks Any benchmarks/indices cited herein are provided for information purposes only. No benchmark/index is directly comparable to the investment objectives, strategy or universe of a fund. The performance of a benchmark shall not be indicative of past or future performance of any fund. It should not be assumed that the relevant fund will invest in any specific securities that comprise any index, nor should it be understood to mean that there is a correlation between such fund's returns and any index returns. Models may be misspecified, badly implemented or may become inoperative when significant changes take place in the financial markets or in the organization. Such a model could unduly influence portfolio management and expose to losses. Emerging markets securities may be less liquid and more volatile and are subject to a number of additional risks including, but not limited to, currency fluctuations and political instability. The strategy may include the use of derivatives. Derivatives often involve a high degree of financial risk because a relatively small movement in the price of the underlying security or benchmark may result in a disproportionately large movement in the price of the derivative and are not suitable for all investors. No representation regarding the suitability of these instruments and strategies for a particular investor is made. LOIM does not provide accounting, tax or legal advice. Although certain information has been obtained from public sources believed to be reliable, without independent verification, we cannot guarantee its accuracy or the completeness of all information available from public sources. Views and opinions expressed are for informational purposes only and do not constitute a recommendation by LOIM to buy, sell or hold any security. Views and opinions are current as of the date of this presentation and may be subject to change. They should not be construed as investment advice. No part of this material may be (i) copied, photocopied or duplicated in any form, by any means, or (ii) distributed to any person that is not an employee, officer, director, or authorised agent of the recipient, without Lombard Odier Funds (Europe) S.A. prior consent.

©2022 Lombard Odier IM. All rights reserved.