

# Efficiency in Expansion, Resilience in Recession

# A Cyclical Analysis of Osmosis' Resource Efficiency Factor

Resource Efficiency (RE) is a proprietary investment factor that identifies companies with strong profitability, low leverage, and high cash flow generation. Unlike traditional factors such as value or momentum, RE tends to perform well during slowdown, recession, and expansion when markets reward fundamentally strong businesses. However, the RE factor's performance is weaker during recovery phases, where cheap, high-beta stocks rally. The prolonged recovery and expansion since 2023 have presented challenges for RE, as economic shifts have favoured value and beta-driven stocks over quality-driven investments. Nevertheless, historical trends suggest that when fundamentals around financial discipline regain importance, RE remains a resilient and consistent performer across economic cycles.

#### Speed Read

- Economic cycles are categorized into four phases—recovery, expansion, slowdown, and recession—based on OECD data, with each phase occurring with similar frequency over time.
- Resource efficiency (RE) demonstrates strong performance in three out of the four economic cycles but tends to underperform during recoveries when cheaper stocks rally.
- Since 2023, the economy has been in a prolonged recovery and expansion phase, during which time RE has delivered its weakest performance, most likely because its quality-like defensive characteristics are less favoured in these conditions.
- Stock markets tend to perform best during recovery and expansion periods, while experiencing weaker returns during slowdown and recession phases.
- The value factor excels during recovery and expansion, whereas quality and defensive factors outperform during recessions.

# **Constant Shifts in the Economy**

#### From the lows of a recession to the highs of an expansion

Economic cycles are categorized into four distinct phases—recovery, expansion, slowdown, and recession—based on Organisation for Economic Co-operation and Development (OECD) Composite Leading Indicator (CLI) data.



We classify economic cycles using the short-term change and difference of the OECD CLI relative to its long-term average. Specifically, we use the level and the change derived from the indicator to determine the prevailing phase of the cycle. This methodology provides a systematic and data-driven approach to identifying turning points in the economy.

We define the level as the difference between the current CLI and its past 20-years average,

$$Level_t = CLI_t - \frac{1}{240} \sum_{i=t-239}^{t} CLI_t$$

The change is defined as the percent change over the past 3-month,

$$Change_t = \frac{CLI_t - CLI_{t-3}}{CLI_{t-3}}$$

Economic cycles are then categorized into four phases,

$$Economic Cycle_{t} = \begin{cases} Level_{t} < 0 \text{ and } Change_{t} \ge 0 = Recovery \\ Level_{t} \ge 0 \text{ and } Change_{t} \ge 0 = Expansion \\ Level_{t} \ge 0 \text{ and } Change_{t} < 0 = Slowdown \\ Level_{t} < 0 \text{ and } Change_{t} < 0 = Recession \end{cases}$$

Our economic analysis focuses on the developed world, covering the G7 collectively (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States), as well as the individual territories of the United States, Europe (Germany, France, Italy, and the UK), and Japan, with data extending back to 1980. This broad geographic scope ensures that our findings capture trends across major advanced economies, offering a comprehensive view of global economic cycles.

As shown in Figure 1, these phases occur with similar frequency over time, reflecting the natural ebb and flow of economic activity.





Figure 1. The graphs depict the proportions of four types of economic cycles, derived from the OECD Composite Leading Indicator (CLI), across the 'G7' (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States), the 'USA' (i.e., United States), 'EMEA' (France, Germany, Italy, and the UK), and 'JPN' (i.e., Japan). Note that while the economic cycles for 'EMEA' are derived from the CLI data of the four aforementioned European countries, the return data includes countries from both Europe and the Middle East. The analysis spans from 01/11/1981, to 31/12/2024. Source: OECD, Osmosis IM.

Figure 2 below illustrates the fluctuations in the OECD CLI over time, segmented by region and coloured according to the economic cycles defined earlier. The data reveals that the USA and EMEA largely move in sync with each other and therefore the broader G7 aggregate, while Japan exhibits more distinct behaviour, often deviating from the global trend.

## "Economic cycles follow a natural ebb and flow, transitioning through recovery, expansion, slowdown, and recession with similar frequency over time."



Figure 2. The graphs illustrate the time-series movement of the OECD Composite Leading Indicator (CLI) alongside the economic cycles derived from it across the 'G7' (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States), the 'USA' (i.e., United States), 'EMEA' (France, Germany, Italy, and the UK), and 'JPN' (i.e., Japan). The analysis spans from 01/11/1981 to 31/12/2024. Source: OECD, Osmosis IM.

The chart clearly highlights major recessions, such as the Global Financial Crisis (GFC, 2008-2009) and COVID-19 (2020), as well as less pronounced slowdowns and contractions, including the European Debt Crisis (2011-2012), the U.S. Taper Tantrum (2013), and the 2022 Energy Crisis. Similarly, we can observe periods of economic expansion, notably the post-GFC monetary stimulus (2010-2014), the post-COVID vaccine recovery (mid-2020 to late 2021) and the recent Magnificent 7 and AI-driven technology boom (late 2022 onwards).

One notable regional difference is that Japan tends to experience longer-lasting slowdowns and recessions, with less vigorous recoveries and expansions compared to other developed markets. This persistent divergence underscores structural differences in economic momentum across regions.



Figure 3 below illustrates the progression of economic cycles across all major regions since January 2021. The G7 economies exhibit a well-defined pattern, transitioning from a post-COVID recovery into a broad expansion, followed by the 2022 slowdown and a high-interest-rate-driven recession, before moving back into recovery and expansion in 2023 and 2024 on the back of expectations of a soft landing. This pattern has largely been driven by the U.S., which has shown relatively clear cyclical shifts.

In contrast, EMEA has experienced slower and more prolonged cycles, reflecting a more measured recovery and expansion phase. Japan's economic path, however, is less clear-cut. While it initially showed signs of post-COVID recovery and expansion, this was followed by a prolonged slowdown, eventually leading to recession with no clear recovery, even as the rest of the world experienced strong economic growth.



Figure 3. The graphs illustrate the time-series movement of four types of economic cycles in recent years, derived from the OECD Composite Leading Indicator (CLI), across the 'G7' (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States), the 'USA' (i.e., United States), 'EMEA' (France, Germany, Italy, and the UK), and 'JPN' (i.e., Japan). Note that while the economic cycles for 'EMEA' are derived from the CLI data of the four aforementioned European countries, the return data includes countries from both Europe and the Middle East. The analysis spans from 01/01/2021 to 01/01/2025. Source: OECD, Osmosis IM.

# Validating Cycle Identification

A strong alignment between economic phases and market trends.

To assess whether our economic cycle classification effectively captures underlying market dynamics, we overlay stock market behaviour with economic cycles in Figure 4 below. The observed patterns align well with expectations—markets tend to trend upwards during recovery and expansion, while flattening out during slowdowns and declining during recessions. This reinforces the robustness of our cycle



identification methodology, as it corresponds closely with theoretical market behaviour across economic phases.

Cycle analysis offers a more nuanced view than a simple up/down market framework, as market performance drivers vary across economic phases, explaining why markets can even rise during recessions and fall during expansions. We explore these performance drivers in more detail later.



Figure 4. The graphs depict compounded regional market returns alongside economic cycles derived from the OECD Composite Leading Indicator (CLI). Regional market returns are calculated as the market capitalization-weighted average return, where market capitalization at time t and price return at time t+1 determine each stock's contribution within its respective region and country in the MSCI World (excluding tobacco). 'G7' returns are based on the entire MSCI World, while 'EMEA' returns reflect those of all countries in Europe and the Middle East. The analysis covers the period from 31/12/2005 to 31/12/2024. Source: OECD, Osmosis IM, FactSet.

Further validation comes from Figure 5, which presents market capitalisation-weighted average monthly stock returns across different economic cycles. As expected, returns are highest during recovery, followed by expansion, with the weakest performance observed during slowdown and recession. Notably, average returns are positive during recoveries and expansions, but turn negative during recessions, a trend that holds consistently across nearly all regions. Additionally, the widest confidence intervals are seen during recovery and recession, reflecting the heightened uncertainty and volatility typically associated with these transition phases.





Figure 5. The graphs depict the monthly average regional market returns for each economic cycle, as derived from the OECD Composite Leading Indicator (CLI). Regional market returns are calculated as the market capitalization-weighted average return, where market capitalization at time t and price return at time t+1 determine each stock's contribution within its respective region and country in the MSCI World (excluding tobacco). 'G7' returns are based on the entire MSCI World, while 'EMEA' returns reflect those of all countries in Europe and the Middle East. Error bars at the top of the columns indicate the 95% confidence interval of the mean. The analysis covers the period from 31/12/2005 to 31/12/2024. Source: OECD, Osmosis IM, FactSet.

# How Economic Cycles Shape Financial Markets

#### Value thrives in upturns, while defensive shields in downturns.

We define key equity factors using widely recognized financial metrics that capture distinct investment styles, aiming to keep our approach simple and transparent. While we acknowledge that there are many ways to define these factors, our methodology provides a straightforward and effective framework for analysing stock performance across economic cycles.

Value is measured by forward earnings-to-price, identifying stocks that trade at lower valuations relative to their expected future earnings. Momentum is based on the 12-month price return, excluding the most recent month, to account for short-term reversals while capturing longer-term price trends. Quality is assessed using return on equity (ROE), which captures a company's profitability relative to its equity base, reflecting its ability to generate profit for shareholders. Defensive stocks are identified by their low market beta, calculated over 36 months, selecting companies that tend to be less sensitive to overall market movements. Finally, Size is measured as the log of market capitalization, distinguishing between large and small companies based on their total market value.

Each month, companies are ranked across the entire universe or region based on their normalized factor scores, which are adjusted within their respective Osmosis sectors. To construct factor portfolios, companies are grouped into terciles (top third, middle third, and bottom third) based on these rankings. The performance of each factor is assessed by calculating the equal-weighted long-short monthly returns, comparing the top third (high factor exposure) against the bottom third (low



factor exposure). Since each factor portfolio is constructed independently, a single company can exhibit exposure to multiple factors at once.

With these definitions in place, in Figure 6 below, we examine how each factor has performed across economic cycles.

## "Different factors respond uniquely to economic cycles, with value thriving in recoveries, quality providing resilience, and defensive factors excelling in downturns."



Figure 6. The graphs illustrate the monthly average long-short returns (top one-third minus bottom one-third) for each factor, based on factor scores calculated at the end of each month. Each factor is normalized within Osmosis sectors, and portfolios are equal-weighted. The error bars represent the 95% confidence interval of the mean. The universe consists of MSCI World (excluding tobacco), with economic cycles defined by the OECD Composite Leading Indicator (CLI) for the G7. The analysis spans from 31/12/2005 to 31/12/2024. Source: Osmosis IM, OECD, FactSet.

**Value**: The value factor performs particularly well during recovery, benefiting from a rally in cheap stocks and cyclical sectors. As the economy rebounds, central banks raise interest rates to prevent overheating, which makes earnings today more valuable than earnings in the distant future, favouring value stocks over growth. Recoveries also usually bring easier credit conditions, benefiting companies that were previously struggling with access to capital. Many value stocks have higher debt levels, so improving credit markets reduce their financial risk. This strength extends into expansion, though to a lesser degree. However, during recessions, value struggles as lower-quality, more indebted companies face greater financial pressure and investor caution.

**Quality**: The quality factor performs consistently across expansion, slowdown, and recession, benefiting from its resilience during periods of economic uncertainty and weaker growth. It comes into play particularly at the top of economic cycles, as slowing growth and rising recession risks drive



investors toward stable, profitable, less levered companies. However, it tends to lag during recoveries, as investors rotate into riskier, lower-quality stocks that benefit more from early-cycle rebounds.

**Defensive**: The defensive factor, measured by low market beta but also often associated with stable earnings, lower volatility, and less cyclical industries, perform best during recessions and remain strong in slowdowns, as investors prioritize stability amid economic uncertainty. However, they tend to underperform in recoveries and expansions, when riskier assets attract capital and cyclicals lead the market.

**Size**: The performance differential between large and small companies is less pronounced during recovery and expansion but becomes more distinct in slowdowns and recessions. Small caps, being more sensitive to economic conditions, tend to benefit early in recoveries as risk appetite increases. As the cycle matures, large caps gain strength due to their stronger balance sheets. The difference becomes more evident in slowdowns and recessions, where large caps outperform due to greater stability and financial strength, while small caps struggle with reduced financial flexibility.

**Momentum**: Momentum tends to perform best when market direction is most pronounced, thriving during strong recoveries and deep recessions, where clear upward or downward trends persist. However, its performance becomes more uncertain during transitional phases like slowdowns and late-stage expansions, as shifting market leadership and increased volatility can disrupt prevailing trends, making it harder for momentum strategies to sustain gains.

# Resource Efficiency: Key Across Cycles, Strongest in Fundamental Markets

Resilient sustainability: Efficiency with defensive qualities

So far, we have analysed the performance of traditional equity factors across economic cycles, but we have yet to examine Resource Efficiency (RE)—Osmosis's proprietary factor.

The RE factor scores are constructed monthly using data on carbon emissions, water consumption, and waste generation, which is collected and standardized by a team of environmental specialists. These scores are assessed within Osmosis sectors, allowing for a clear distinction between environmentally efficient, lower-impact companies and inefficient, higher-polluting ones.

Unlike conventional factors such as value, momentum, or quality, RE identifies companies with superior operational efficiency exhibiting characteristics that make it distinct in its behaviour across economic cycles. In this section, we explore how RE performs relative to these traditional factors, highlighting its strengths and weaknesses in different market environments.

RE identifies well-managed, robust, and sustainably efficient business models, typically characterized by strong profitability, low leverage, and high cash flow generation. These companies tend to reflect high-quality management teams and disciplined capital allocation. However, they are also slightly more expensive than their peers, meaning they do not align with traditional value stocks.



To measure the factor's performance, we use information coefficients, calculated as the correlation between the current factor score at a given point in time and its one-month-ahead return. This provides a forward-looking assessment of how well the factor predicts returns.

#### "Resource Efficiency performs well when fundamentals drive markets but struggles in recovery phases, where high-beta and cheap stocks dominate."

Figure 7 shows that RE performs well across three out of the four economic cycles but tends to underperform during recovery, when deep value stocks—heavily discounted relative to its expected earnings—experience the strongest rallies. Given its quality-like defensive characteristics, RE performs particularly well during slowdown and recession, benefiting from investors' preference for resilient, well-run businesses. Additionally, RE can perform strongly during expansions, when at the top of economic cycles, the market returns to rewarding fundamentals as slowing growth and rising recession risks drive investors back to more profitable, high-cash-flow companies.



Figure 7. The graphs illustrate the monthly average long-short returns (top one-third minus bottom one-third) for the Resource Efficiency factor, based on factor scores calculated at the end of each month. Each factor score is normalized within Osmosis sectors, and portfolios are equal-weighted. The universe consists of MSCI World (excluding tobacco), with economic cycles defined by the OECD Composite Leading Indicator (CLI) for the G7. While the G7 time series begins in 2005, regional data starts from 31/12/2009 due to data limitations, as breaking down by region and efficiency profile results in smaller portfolio sizes. The analysis ends on 31/12/2024. Source: Osmosis IM, OECD, FactSet.

The factor's performance patterns over time are evident in Figure 8. RE's troughs tend to be deepest during recovery periods. Given that we smooth out short-term performance fluctuations using a 12-



month moving average, the lowest point in performance is likely to occur at the transition from recession to recovery, when market dynamics shift sharply, favouring high-beta and cheap stocks over fundamentally strong companies. The factor stabilizes during expansion and tends to peak toward the end of expansion, through slowdown, and into recession, when fundamentals regain prominence in driving stock performance.

Since 2023, the global economy has experienced a prolonged recovery and expansion phase, during which value stocks have significantly outperformed while RE has struggled. This trend underscores how RE's quality and defensive attributes make it less favoured in environments where risk appetite and cyclical value plays dominate. The extended recovery and expansion seen in 2023 and 2024 has exemplified this pattern, with RE experiencing one of its weakest relative performances in recent years.



Figure 8. Notes. We calculate monthly Information Coefficients (ICs) as the correlation between Resource Efficiency factor scores at time t and stock returns at t+1 for companies in the MSCI World (excluding financials and tobacco) that report sufficient environmental data. The left axis of the figure displays the OECD Composite Leading Indicator (CLI), while the right axis shows the 12-month moving average of monthly ICs. The time series begins on 31/12/2005, with the first IC values available at the beginning of 2006 and the first 12-month moving average value available on 31/12/2006. The period extends through 31/12/2024. The CLI series is color-coded to reflect economic cycles. The grey area indicates +/- 6-month periods around the last day of each Recovery Phase, which marks the transition from recovery to expansion. Source: Osmosis IM, OECD, FactSet. Data as of February 2025.

The latest period, spanning from 2023 to the end of 2024, has been particularly notable as it marks the longest recovery phase on record since 1980, as shown in Figure 9 below. This prolonged recovery has extended the period during which high-beta and cheap stocks have outperformed, creating a challenging environment for factors like Resource Efficiency that rely on fundamentals being rewarded. Historically, recoveries have been shorter-lived, with quicker transitions into expansion, but the persistence of this cycle has delayed the typical stabilization and resurgence of fundamentally strong factors.

This extended recovery phase may be partly attributed to the increasing frequency of monetary and fiscal interventions by governments, a trend that has become more pronounced over the past decade. The large-scale liquidity injections and stimulus measures implemented in the aftermath of COVID-19 provided unprecedented support to markets and the economy, likely extending their effects well beyond the initial crisis period. These interventions have helped sustain risk appetite and may be a key factor in the overheating of the economy as highlighted by the inflation crisis in 2022 and the prolonged recovery observed thereafter through 2023 and 2024.





Figure 9. Notes. The bar chart shows the number of consecutive months for each economic cycle defined based on the OECD Composite Leading Indicator (CLI) for the G7. The analysis covers the period from 01/01/1981 to 01/01/2025. Source: OECD.

# Conclusion

#### Resource Efficiency: A Resilient Performer in Fundamentals-Driven Markets

Resource Efficiency (RE) has demonstrated resilience across most economic cycles, excelling during periods when markets reward strong fundamentals. Its focus on well-managed, high-quality, and sustainably efficient businesses allows it to perform well during slowdown, recession, and expansion, particularly when profitability and cash flow generation drive investor preferences. However, during recovery phases, when value and high-beta stocks rally—often fuelled by economic stimulus rather than fundamentals—RE tends to lag. The prolonged recovery and expansion since 2023 have been a challenging backdrop, but history shows that when markets shift back to prioritizing robust business models over speculative momentum, RE stands out as a strong and consistent performer.



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