2009 年 10 月 23 日

欧洲：投资组合策略

股市周期第一部分：确认周期的阶段

股市周期可以分为四个泾渭分明的阶段

股票市场的走势可以分成不同的周期。为了向投资者提供一个参考框架，我们的分析表明市场从一个高点走向下一个高点的过程可以分成四个泾渭分明的阶段，我们将这四个阶段分别定义为绝望、希望、增长和乐观。在这个系列研究报告的第一部分中，我们分析了每个阶段的经济背景和股市回报率的决定因素。在第二部分中，我们分析了资产、风格和行业表现。我们认为欧洲目前处于希望阶段，并在 2010 年初期进入增长阶段。

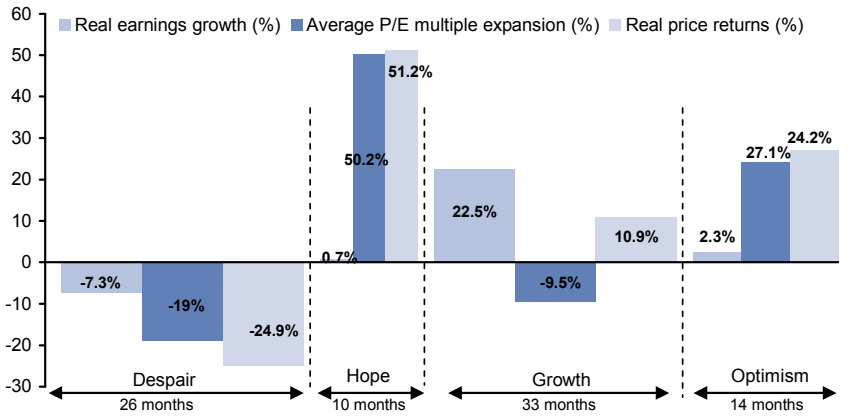
我们分析了何时盈利增长才会带来高回报

在增长阶段发生的大多数盈利增长并不能产生合理的回报，盈利增长只有在希望阶段被准确预见到时和投资者对乐观阶段的未来增长潜力感到过度乐观时才会带来高回报。增长阶段的盈利增速最高，但回报率在所有阶段中仅排在倒数第二位。

...将股市的不同阶段与经济周期联系在一起

周期的不同阶段与经济周期联系在一起。总的来说，绝望阶段往往伴随着经济衰退。在希望阶段，产出缺口触底而失业率见顶；在增长阶段，产出缺口和失业率均有显著改善。投资者要求的实际回报率在绝望和增长阶段上升，在希望和乐观阶段下降。

将回报率分成盈利增长和市盈率扩张



资料来源：Worldscope、Haver Analytics、Datastream、高盛全球经济、商品和策略研究

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Europe: Portfolio Strategy

The equity cycle part 1: Identifying the phases

The equity cycle is divided in 4 distinct phases

The equity market moves in cycles. In order to develop a frame of reference for investors, we show how the cycle from one peak of the market to the next is divided into four distinct phases, which we describe as: Despair, Hope, Growth and Optimism. Here, in Part I of this series, we analyze the economic context and the drivers of stock market returns for each phase. In Part II, we will analyze asset, style and sector performance. We believe Europe is currently in the Hope phase and will move into the Growth phase in the early part of 2010.

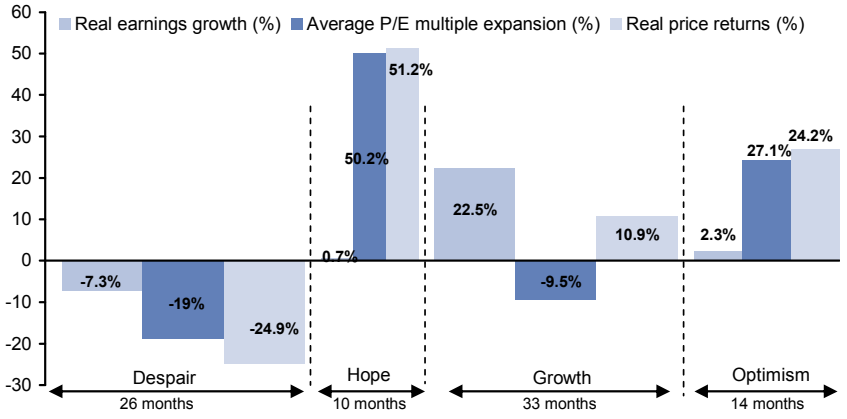
We analyze when earnings growth is paid for

Most earnings growth is not paid for when it occurs during the Growth phase, but when it is correctly anticipated during the Hope phase, and when investors get overly optimistic about the future growth potential during the Optimism phase. The Growth phase sees the highest rate of earnings growth, but the second lowest rate of return over the cycle.

…and tie these patterns to the economic cycle

The phases are related to the economy. Generally, the Despair phase is associated with a recession. The output gap troughs and the unemployment rate peaks during the Hope phase, while the Growth phase sees sharp improvements in both variables. Investors' real required return rises during the Despair and Growth phases and falls during the Hope and Optimism phases.

Decomposition of returns into earnings growth and P/E expansion



Source: Worldscope, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

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The four phases of the equity market cycle

The equity market moves in cycles. As the market moves away from the trough in March, it becomes increasingly important for investors to identify alternative points of reference, against which to think about potential investment strategies.[1]

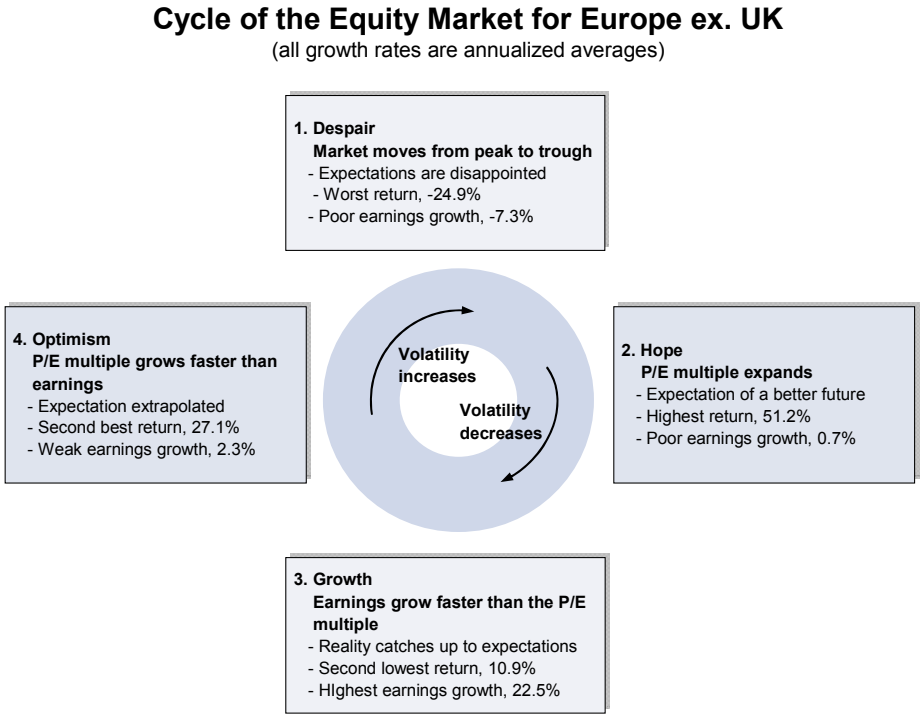
Here, we develop a framework of such reference points through out the cycle. We show how each of the five cycles from one peak of the market to the next since 1973 can be divided into four distinct phases, each with its own economic context, drivers of stock market returns and investment strategies.

Our analysis comes in two parts. In this report, Part I of the series, we identify the phases, discuss their relationship to the economic cycle, and most importantly show that earnings growth is only to a very limited extend paid for when it occurs. In Part II of the series we will show the systematic historical patterns of asset classes, styles and sector performance for each of the phases.

The division of the cycle into phases is illustrated in Exhibit 1. We identify the phases by determining the extent to which the index price performance is driven by actual profit growth and by "expectations", measured as changes in the P/E multiple. The four phases we define are:

1. **The Despair phase** is defined as the period where the market moves from its peak to its trough. This correction is mainly driven by P/E-multiple contraction as the market anticipates and reacts to a deteriorating macroeconomic environment and its implications in terms of lower future earnings.

Exhibit 1: The equity market moves in cycles



Source: Goldman Sachs Global ECS Research.

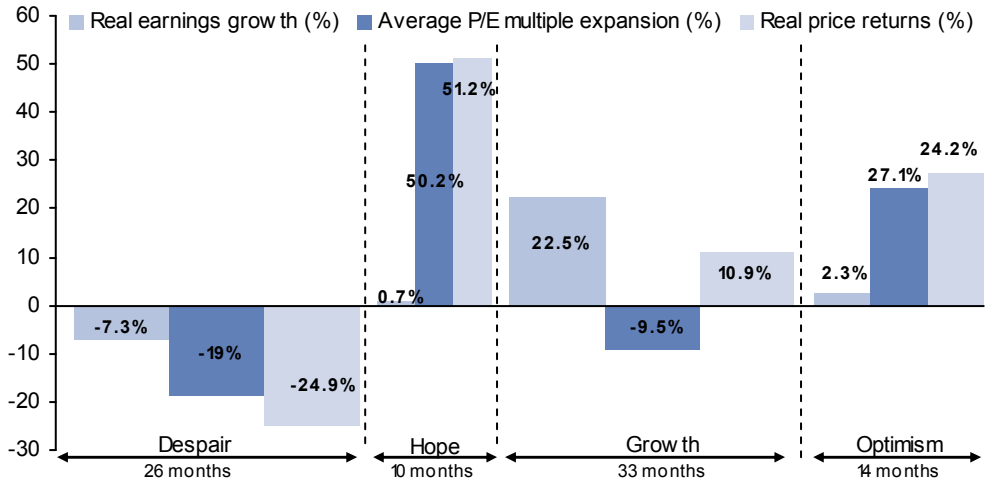
[1] We would like to thank Hanyi Lim for her contributions to this report.

2. **The Hope phase** is typically a short period (on average 10 months), where the market rebounds from its trough through multiple expansion. This occurs in anticipation of a forthcoming trough in the economic cycle as well as future profit growth and is leading to a local peak in the trailing P/E multiple. We define the end of the Hope phase as this local peak of the trailing P/E multiple.
3. **The Growth phase** is a typically longer period (on average 33 months), where earnings growth drives returns. We define the end of this period to be when multiple expansion again starts to provide a larger proportion of the returns than earnings growth.
4. **The Optimism phase** is the final part of the cycle, where returns driven by P/E-multiple expansion outpace earnings growth, thereby setting the stage for the next market correction.

The framework demonstrates that the relationship between earnings growth and price performance changes systematically over the cycle. While earnings growth is what fuels equity market performance over the very long run, most of the earnings growth is not paid for when it occurs but rather when it is correctly anticipated by investors in the Hope phase and when investors get overly optimistic about the potential for future growth during the Optimism phase.

Exhibit 2 illustrates this for Europe ex. UK. For each phase, it indicates the average length of the phase, the average annualized price return and how that is distributed between multiple expansion and earnings growth. While the Growth phase sees most of the growth in earnings, the price return mainly occurs in the Hope and Optimism phases.

Exhibit 2: Decomposition of returns into earnings growth and multiple expansion
Annualized contributions to real price returns from real earnings growth and P/E expansion



Source: Worldscope, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

On our way from Hope to Growth

The European market is currently in the Hope phase. This phase typically lasts 10 months from the trough, seeing expansion of the multiple while LTM earnings are still declining. The range has been from 4 months in the short cycle in the late 1980s to 18 months in the cycle in the early 1980s. We expect earnings to decline 16% in 2009, yet the market is up 25% YTD and we expect the market to rise another 5% from here to our year-end target of 260.

We expect the market to switch into the Growth phase in the early part of 2010, as earnings growth picks up while our return target of 275 on a 12 month basis indicates only a modest rise in the index of 6% from our 260 year-end 2009 target.

Our prediction of the timing of the switch from Hope to Growth comes with significant uncertainty. On one hand, valuation at the trough of the market was very attractive. This could give room for a longer period of multiple expansion before the switch to the Growth phase occurs, consistent with the cycle in the early 1980s. On the other hand, given the concerns in the market about final demand recovery in developed economies, we could switch into the "show me the money" environment of the Growth phase relatively early.

Our forecast of the timing of the switch from Hope to Growth is based on the economic environment. There is no one economic indicator that precisely determines when the switch occurs, but the PMI and the unemployment rate have historically been useful indicators.

- **PMI:** In the last cycle the switch from Hope to Growth in Europe occurred around the time when the PMI passed 50. This is consistent with the US experience, where our data goes further back. Here a sustained switch into the ISM being above 50 has coincided with the switch to the growth phase in 3 out of 5 cycles. The European PMI is currently at 49.3, so we are around that level.
- **Unemployment:** In the cycles in the 1970s and early 1980s the unemployment rate peaked in the US before the market switched into the Growth phase. This relationship changed in the last two jobless recoveries, where the switch from Hope to Growth occurred at or slightly before the peak in the unemployment rate. In Europe the same picture emerges for the last two cycles where we have data. On our economists' forecasts the unemployment rate for Euroland will peak in the third quarter of 2010 at 10.5%, but reach 10.4% in the second quarter of 2010.

In sum, the PMI would suggest that the switch is likely to occur relatively soon, whereas the unemployment forecast would suggest the timing to be around the middle of the next year. This range is consistent with our forecasts for earnings and DJ Stoxx index returns. We believe the switch is most likely to occur in the first half of the range, which would give a slightly longer Hope phase than the historical average.

The phases can be interpreted in relationship to the economy

The phases are clearly linked to the economy. This allows for a clearer interpretation of the phases and helps in identifying when we are moving from one phase to the next.

The output gap falls in the Despair and Hope phase as output falls behind potential. The trough occurs between the middle and the end of the Hope Phase. In the Growth Phase the output gap increases as actual output growth outpaces potential growth.

We measure investors' forward-looking return requirements in terms of the Real Required Return (RRR) defined as the Equity Risk Premium plus the 10 year nominal bond yield minus five year historical average inflation. This measure generally increases in the Despair and Growth phases and decreases in the Hope and Optimism phases.

We interpret these movements in investors' forward-looking return requirements across the phases as follows:

- **During the Despair phase**, investors get increasingly concerned about future prospects, and therefore require an increasingly high future expected return for holding equities. This reaction happens against a backdrop of an increase in volatility, an increase in the output gap and in four out of five cycles the start of a recession during this phase in the US. This leads to lower P/E multiples and a falling market.
- **In the Hope phase**, an end to the crisis starts to be visible and this visibility caps the potential downside risk. Investors respond to the lower tail risk by accepting lower future expected returns. This drives up multiples and the market. While volatility is still high, it tends to fall towards the end of the Hope phase. In this phase investors essentially prepay for the expected recovery in earnings during the Growth phase.
- **In the beginning of the Growth phase**, investors have been through a period with high volatility. This is likely to make investors perceive equities as more risky and therefore less attractive. Investors have also already been paid for expected future earnings growth during the Hope phase, but the growth has yet to materialize. The output gap typically peaks some time during the Hope phase, but remains very high at the beginning of the Growth phase. The onset of the Growth phase is therefore a reasonable point in time for investors to question long-run growth expectations.

  These initial negatives tend to make investors less willing to pay for the earnings growth they see in the early stages of the Growth phase. This gives lower rates of return, which reinforces the negative picture of equities and makes investors less willing to pay for the improvements in fundamentals that they see on an ongoing basis. The result is that value in terms of expected future returns are rebuilt during the Growth phase as earnings growth outpaces returns, and volatility declines.

  Another likely driver of the higher real return requirements in the equity market that are built up during this phase is the increase in the real yield which is seen in bond markets.
- **Eventually, in the Optimism phase**, the built-up value becomes large enough to attract investors and to reverse the dynamic of poor returns keeping away investors despite strengthening fundamentals. In the Optimism phase, returns outpace earnings and expected future returns consequently decline. Towards the end of the phase volatility picks up as the sustainability of the high returns are being tested by the market.

In the next sections we develop these conclusions in more detail. First we show how investors pay for most of the earnings growth before it occurs in the Hope phase and after it occurs in the Optimism phase. We then cover each cycle in detail, showing the cut-offs we have chosen for the phases, and the performance of earnings growth and multiple expansion for the two markets (Europe ex UK and the UK) that we consider. We also

provide data on the US for illustrative purposes only. This allows us to test the robustness of our conclusions by showing that they are not driven by a Europe-specific factor or the lower frequency of earnings reports in Europe. Finally, we provide a more in depth analysis of the economic backdrop for the phases and, in an appendix, show how key economic variables have moved for each cycle.

Most earnings growth is not paid for when it occurs

In this section we aggregate the earnings growth and price return performance for each phase across the five cycles. There are three key conclusions:

- **The highest annualized returns occur during the Hope phase,** followed by the Optimism phase, the Growth phase and finally the Despair phase. This has been true in every cycle in the US and holds in all regions on average.
- **Actual profit growth and returns are surprisingly unsynchronized.** Almost the entire earnings growth for each region occurs during the growth phase, yet only 28%, 3% and -1% of the index real price return from the trough to the peak of the market accumulates during that phase, for Europe ex. UK, the UK and the US respectively.

  It is not surprising that the market rises in expectation of future earnings growth and that a part of the earnings growth in the Growth phase is therefore paid for during the Hope phase. But the degree to which this happens is surprising, leaving negative returns on average for the Growth phase in the US market, where the quarterly reporting of earnings allows us to make the most precise cut-off between the historical phases.
- **Real interest rates recover in the Growth phase in the US. In every cycle since 1973 the largest increase in the real interest rate occurred during the Growth phase.** In total across the five cycles, the real interest rate increased 10.2 percentage points during the Growth phase. In Europe the pattern has been much less clear. We believe this is partly due to the lower frequency of earnings data making the changes between phases less clear, and partly due to European equities pricing the US economic cycle to some extent.

The data are given in Exhibits 3-5. The aggregate section of each Exhibit shows the cumulative real price return, real earnings growth and P/E expansion. These are calculated by looking at the compound growth in each of the metrics over the 5 times each phase has occurred between the market peak in 1973 and the market peak in 2007.

As an example, Exhibit 3 shows that an investor, who invested in Europe ex UK from the beginning to the end of each Despair phase and earned a zero return in all other phases, would have earned a compounded real return of -95%, and have owned the index during periods of time where the compound real earnings growth (on an LTM basis) was -56%.

The proportion of return line shows how much of the compound return from the trough to the peak of the five cycles was earned in the Hope, Growth and Optimism phases respectively. Finally, the change in real interest rate line shows the sum over the five cycles, of the change in real interest rate from the beginning to the end of each phase. Some of these figures are then annualized in the lower section of the tables.

Exhibit 3: Decomposition of Europe ex UK equity market performance over the cycle

	Despair	Hope	Growth	Optimism
Average length (months)	25.7	9.9	32.5	14.3
Cumulative				
Real Price Return (%)	**-95.3**	**453.0**	**304.8**	**316.0**
Real Earnings Growth	-55.8	2.8	1456.1	14.6
P/E expansion	-89.5	438.2	-74.0	263.0
Proportion of Return (%)		42.2	28.4	29.4
Change in real interest rate (pp)	**-2.2**	**-4.5**	**-0.1**	**5.1**
Annualized				
Real Price Return (%)	-24.9	51.2	10.9	27.1
Real Earnings Growth	-7.3	0.7	22.5	2.3
Change in real interest rate (pp)	-0.2	-1.1	0.0	0.9

Source: Worldscope, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

Exhibit 4: Decomposition of UK equity market performance over the cycle

	Despair	Hope	Growth	Optimism
Average length (months)	21.4	17.1	27.5	16.7
Cumulative				
Real Price Return (%)	**-96.2**	**716.7**	**40.4**	**461.3**
Real Earnings Growth	-17.1	-42.8	687.5	16.5
P/E expansion	-95.5	1327.3	-82.2	381.8
Proportion of return (%)		58.8	3.3	37.9
Change in real interest rates (pp)	**12.0**	**-15.7**	**3.4**	**0.1**
Annualized				
Real Price Return (%)	-30.8	34.3	3.0	28.0
Real Earnings Growth	-2.1	-7.5	19.8	2.2
Change in real interest rates (pp)	1.3	-2.2	0.3	0.0

Source: Worldscope, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

Exhibit 5: Decomposition of US equity market performance over the cycle

	Despair	Hope	Growth	Optimism
Average length (months)	15.9	9.3	34.1	24.1
Cumulative				
Real Price Return (%)	**-92.9**	**392.3**	**-16.1**	**836.6**
Real Earnings Growth	-1.4	-21.4	441.5	-17.5
P/E expansion	-92.8	525.9	-84.5	1035.5
Proportion of return (%)		32.3	-1.3	69.0
Change in real interest rates (pp)	**-1.2**	**-5.0**	**10.2**	**-3.1**
Annualized				
Real Price Return (%)	-32.9	50.9	-1.2	24.9
Real Earnings Growth	-0.2	-6.0	12.6	-1.9
Change in real interest rates (pp)	-0.2	-1.3	0.7	-0.3

Source: Compustat, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

The 1970s cycle in charts: A tough cycle for equity markets

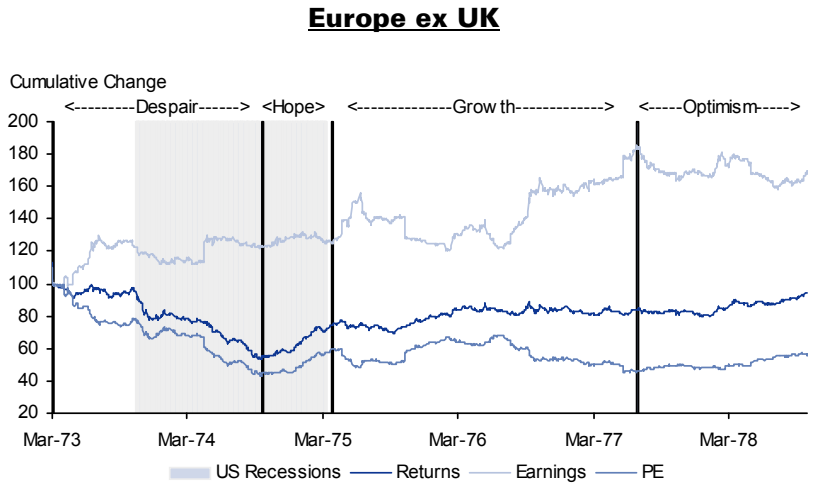
The cycle in the 1970s was the worst of the five cycles we consider in Continental Europe, the UK and the US from an equity market perspective. Multiple contraction over the cycle ranging from 42% in the UK to 52% in the US overpowered earnings growth and led to negative price returns over the cycle for all three markets.

The poor market performance reflected the large supply-side shock from higher oil prices and the inflationary process initiated by this shock getting out of control.

Generally cycles where the initial setback is driven by structural problems tend to have longer growth phases than other cycles, as it takes longer for investors to regain the confidence that makes them willing to pay more for earnings and therefore move the market into the optimism phase. This is particularly pronounced in the US where the growth phase in the 1970s was the longest on record.

The end of the cycle includes the first part of the double dip recession in the early 1980s for the US but not in Continental Europe and the UK. We have done this as the US index recovered enough between the two dips to make up the lost ground from the first dip, whereas this did not happen in Europe.

Exhibit 6: Division of the 1970s cycle into phases for Europe ex UK

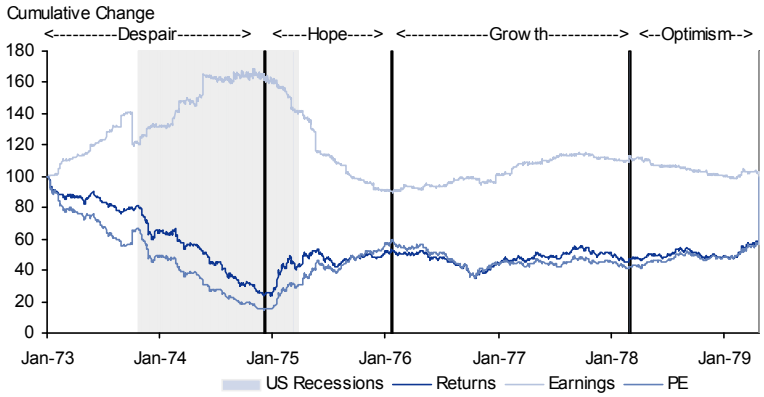


	Despair	Hope	Growth	Optimism
Start date	22/03/1973	07/10/1974	15/04/1975	15/07/1977
End date	07/10/1974	15/04/1975	15/07/1977	20/10/1978
Length (in months)	18.5	6.2	27.0	15.2
Real Return	-52.8	39.8	12.9	13.0
Real Earnings Growth	19.6	1.2	48.9	-8.8
P/E expansion	-60.5	38.1	-24.1	23.9
Proportion of return (%)		60.5	19.7	19.8
Annualized				
Real Return	-38.5	90.4	5.6	10.1
Earnings Growth	12.3	2.4	19.3	-7.0
Change in real interest rate (pp)	0.7	-2.0	-2.3	1.0

Source: Worldscope, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

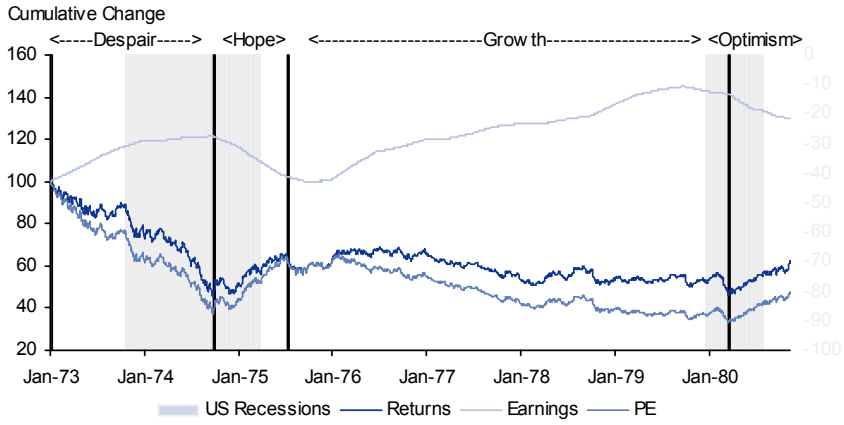
Exhibit 7: Division of the 1970s cycle into phases for the UK and US

United Kingdom



	Despair	Hope	Growth	Optimism
Start date	10/01/1973	12/12/1974	30/01/1976	09/03/1978
End date	12/12/1974	30/01/1976	09/03/1978	04/05/1979
Length (in months)	23.0	13.6	25.3	13.8
Real Return	-76.0	122.8	-13.4	29.9
Real Earnings Growth	66.1	-45.7	25.7	-9.0
P/E expansion	-85.6	310.3	-31.1	42.7
Proportion of return (%)		88.2	-9.6	21.5
Annualized				
Real Return	-52.5	102.6	-6.6	25.4
Earnings Growth	30.2	-41.6	11.4	-7.8
Change in real interest rate (pp)	2.0	-5.6	-2.1	0.9

United States



	Despair	Hope	Growth	Optimism
Start date	11/01/1973	03/10/1974	15/07/1975	27/03/1980
End date	03/10/1974	15/07/1975	27/03/1980	20/11/1980
Length (in months)	20.7	9.4	56.4	7.8
Real Return	-54.5	44.5	-29.4	34.2
Real Earnings Growth	21.4	-15.6	37.9	-8.1
P/E expansion	-62.5	71.3	-48.8	46.0
Proportion of return (%)		90.4	-59.7	69.3
Annualized				
Real Return	-36.6	60.3	-7.1	56.9
Earnings Growth	11.9	-19.5	7.1	-12.1
Change in real interest rate (pp)	0.7	-0.2	2.5	-0.9

Source: Worldscope, Compustat, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

The early 1980s: Markets recover as multiples expand

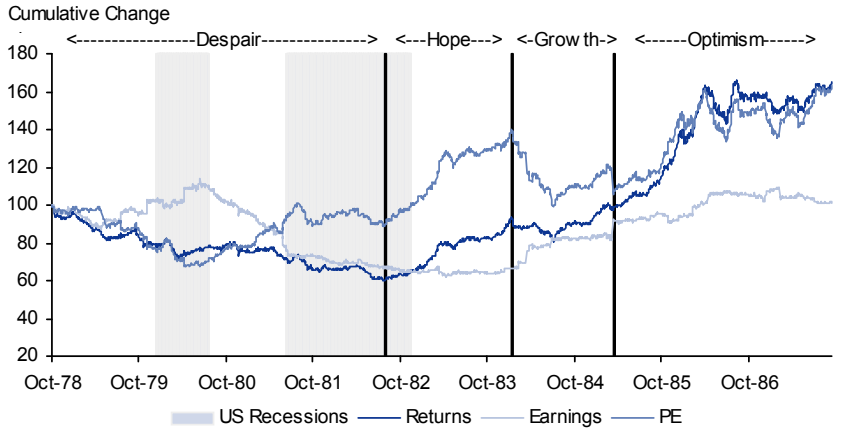
The cycle in the early 1980s was the second best in Continental Europe and the US only overshadowed by the bubble in the 1990s. In the UK it was the best of the five cycles. The strong performance was driven mainly by multiple expansion ranging from 58% in the UK to 112% in the US.

Real earnings growth in this cycle was the lowest of all five cycles in both Continental Europe and the US but the second highest in the UK. This disconnect between very strong price performance and weak real earnings growth in Continental Europe and the US suggests that even across cycles, investors do not necessarily pay for earnings growth when it occurs. The valuation at the outset matters significantly, as we have discussed in more detail in our March 23, 2009 report: "Forecasting returns: 'Fair Value' Part II".

The 1981 recession was caused by tightening of monetary policy in order to get inflation under control. It marks the initiation of a trend decline in real interest rates, which has lasted until today and driven P/E multiples higher in the process.

The growth phase was relatively short, consistent with the recession in the early part of the cycle being driven more by monetary policy tightening than large structural changes.

Exhibit 8: Division of the early 1980s cycle into phases for Europe ex UK

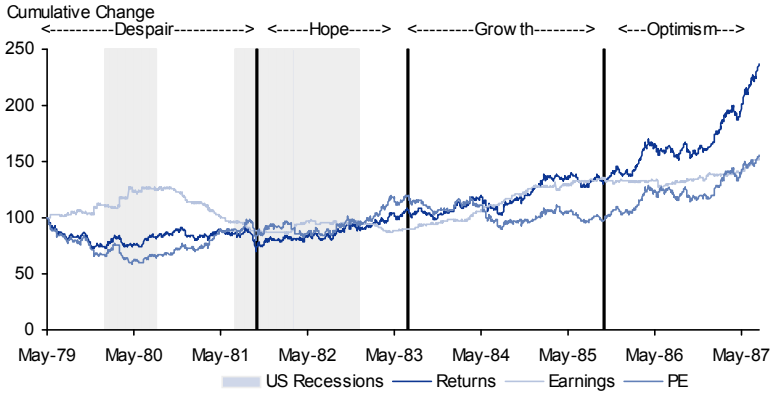


	Despair	Hope	Growth	Optimism
Start date	20/10/1978	17/08/1982	01/02/1984	01/04/1985
End date	17/08/1982	01/02/1984	01/04/1985	05/10/1987
Length (in months)	45.9	17.5	14.0	30.1
Real Return	-40.4	56.9	4.4	69.1
Real Earnings Growth	-33.1	-0.6	38.8	9.3
P/E expansion	-11.0	57.7	-24.8	54.8
Proportion of return (%)		43.6	3.3	53.0
Annualized				
Real Return	-12.7	36.1	3.7	23.3
Earnings Growth	-10.0	-0.4	32.6	3.6
Change in real interest rate (pp)	2.1	-0.5	-0.2	2.3

Source: Worldscope, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

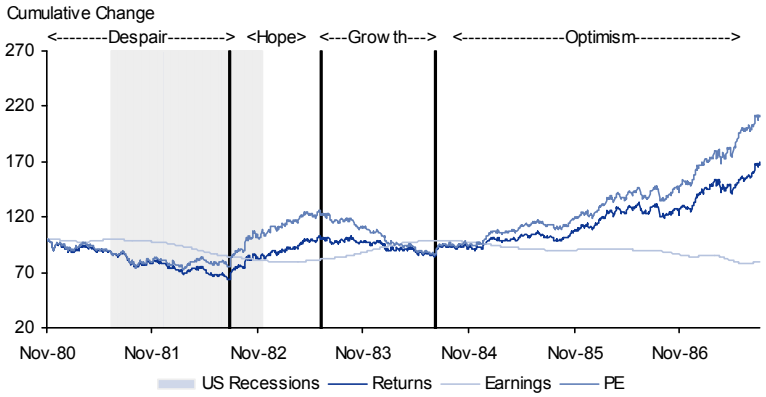
Exhibit 9: Division of the early 1980s cycle into phases for the UK and US

United Kingdom



	Despair	Hope	Growth	Optimism
Start date	04/05/1979	28/09/1981	24/06/1983	24/09/1985
End date	28/09/1981	24/06/1983	24/09/1985	16/07/1987
Length (in months)	28.9	20.8	27.1	21.7
Real Return	-29.5	53.0	21.5	83.4
Real Earnings Growth	-11.3	0.9	51.6	12.0
P/E expansion	-20.5	51.6	-19.9	63.7
Proportion of return (%)		33.6	13.6	52.8
Annualized				
Real Return	-13.5	27.8	9.0	39.9
Earnings Growth	-4.9	0.5	20.3	6.5
Change in real interest rate (pp)	2.4	-1.8	1.6	0.3

United States



	Despair	Hope	Growth	Optimism
Start date	20/11/1980	12/08/1982	22/06/1983	24/07/1984
End date	12/08/1982	22/06/1983	24/07/1984	25/08/1987
Length (in months)	20.7	10.3	13.1	37.1
Real Return	-37.0	63.1	-18.3	101.4
Real Earnings Growth	-15.5	-3.4	20.8	-19.1
P/E expansion	-25.5	68.9	-32.4	149.0
Proportion of return (%)		43.2	-12.5	69.4
Annualized				
Real Return	-23.5	76.6	-16.9	25.5
Earnings Growth	-9.3	-3.9	18.9	-6.6
Change in real interest rate (pp)	0.1	-1.9	3.4	-0.8

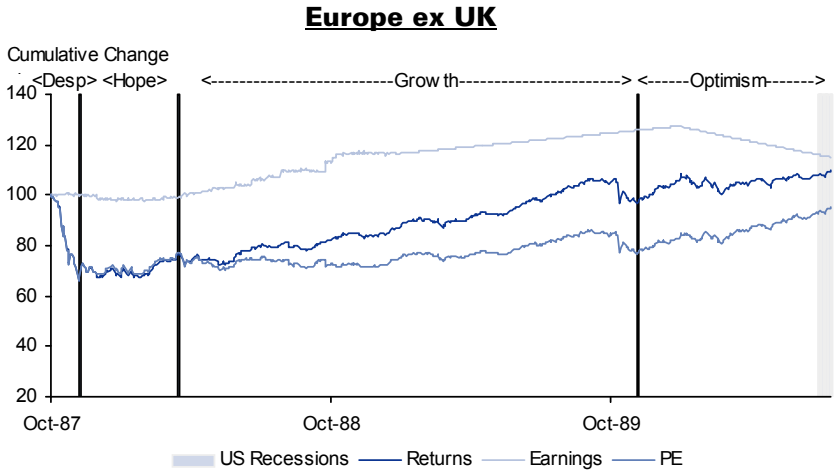
Source: Worldscope, Compustat, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

The late 1980s: A short atypical cycle with no recession

This cycle was driven by the stock market crash in 1987. It is atypical in that it is shorter (less than 3 years in all three markets) than the other cycles and does not see the initiation of a recession in the US during the despair phase.

We believe that this unusual cause of the cycle is the reason that the pattern of the phases while still present is significantly less pronounced in this cycle. In particular, the expansion of the P/E multiple in the Hope phase and the contraction in the Growth phase is unusually low, making the phases less clearly defined. In some ways this is not a true cycle, but rather an interim between the cycle of the early 1980s and the cycle of the 1990s.

Exhibit 10: Division of the late 1980s cycle into phases for Europe ex UK

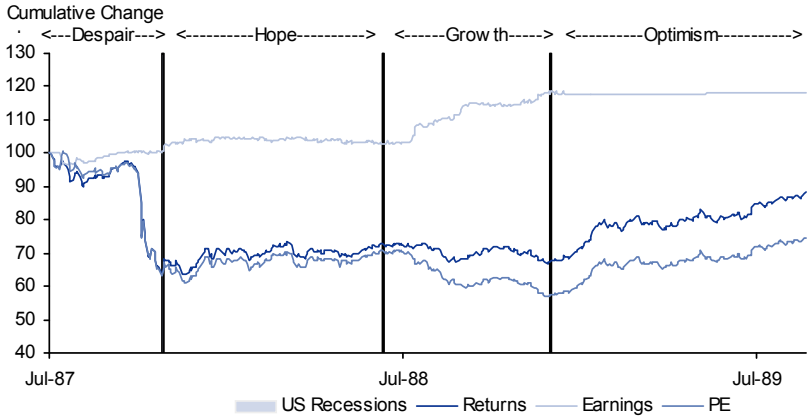


	Despair	Hope	Growth	Optimism
Start date	05/10/1987	10/11/1987	18/03/1988	07/11/1989
End date	10/11/1987	18/03/1988	07/11/1989	18/07/1990
Length (in months)	1.2	4.2	19.7	8.3
Real Return	-34.1	16.6	25.6	13.7
Real Earnings Growth	0.3	-1.1	26.8	-8.5
P/E expansion	-34.3	17.9	-1.0	24.2
Proportion of return (%)		29.7	45.8	24.5
Annualized				
Real Return	-98.5	54.4	14.9	20.3
Earnings Growth	2.9	-3.2	15.6	-12.0
Change in real interest rate (pp)	-0.3	-0.2	0.7	1.3

Source: Worldscope, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

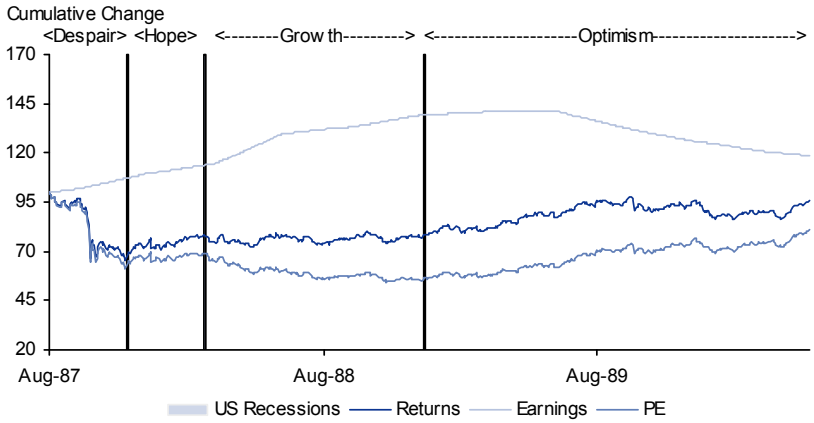
Exhibit 11: Division of the late 1980s cycle into phases for the UK and US

United Kingdom



	Despair	Hope	Growth	Optimism
Start date	16/07/1987	09/11/1987	24/06/1988	14/12/1988
End date	09/11/1987	24/06/1988	14/12/1988	05/09/1989
Length (in months)	3.8	7.5	5.7	8.7
Real Return	-36.6	14.7	-7.5	30.9
Real Earnings Growth	0.3	2.4	15.3	-0.4
P/E expansion	-36.8	12.0	-19.8	31.5
Proportion of return (%)		38.6	-19.8	81.3
Annualized				
Real Return	-76.1	24.5	-15.3	45.0
Earnings Growth	1.0	3.9	35.1	-0.6
Change in real interest rate (pp)	3.3	-1.0	1.4	-0.3

United States



	Despair	Hope	Growth	Optimism
Start date	25/08/1987	04/12/1987	17/03/1988	03/01/1989
End date	04/12/1987	17/03/1988	03/01/1989	04/06/1990
Length (in months)	3.3	3.4	9.6	17.0
Real Return	-34.3	19.8	-2.2	25.1
Real Earnings Growth	7.0	6.2	22.6	-14.9
P/E expansion	-38.6	12.8	-20.2	47.0
Proportion of return (%)		46.4	-5.1	58.7
Annualized				
Real Return	-78.1	88.5	-2.7	17.1
Earnings Growth	27.7	23.4	29.0	-10.8
Change in real interest rate (pp)	-0.1	-0.7	1.0	-0.9

Source: Worldscope, Compustat, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

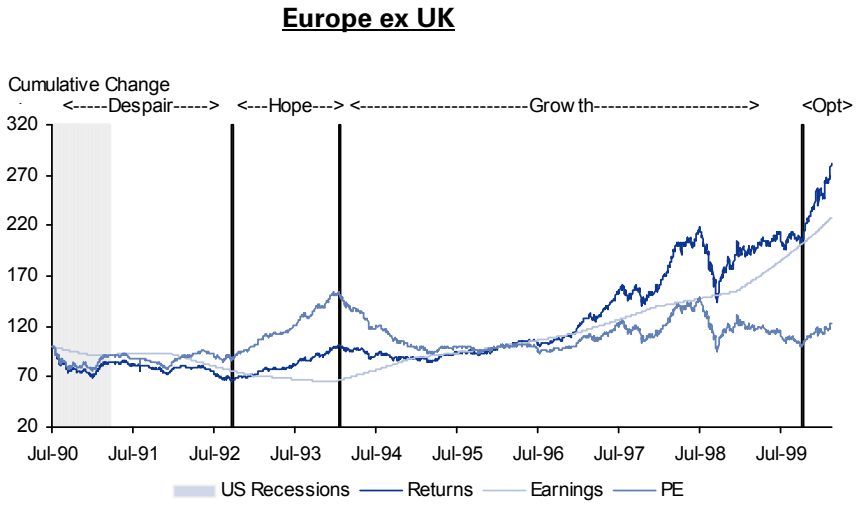
The 1990s: The path to the IT bubble

This is the strongest cycle in terms of both price performance and real earnings growth for both Continental Europe and the US. In the UK this is the second best cycle in terms of price return and the third in terms of real earnings growth

This cycle saw the longest Growth phase in Continental Europe and the second longest in the US and the UK as investors coped with the shock from the financial crisis of the early 1990s, the instability of the European Monetary System and the economic adjustments related to German reunification.

In all three markets the cycle was the second strongest in terms of P/E multiple expansion, as the dot-com valuation bubble gradually built up. This overvaluation set the stage for the subsequent close to 10 years of very poor equity market returns.

Exhibit 12: Division of the 1990s cycle into phases for Europe ex UK

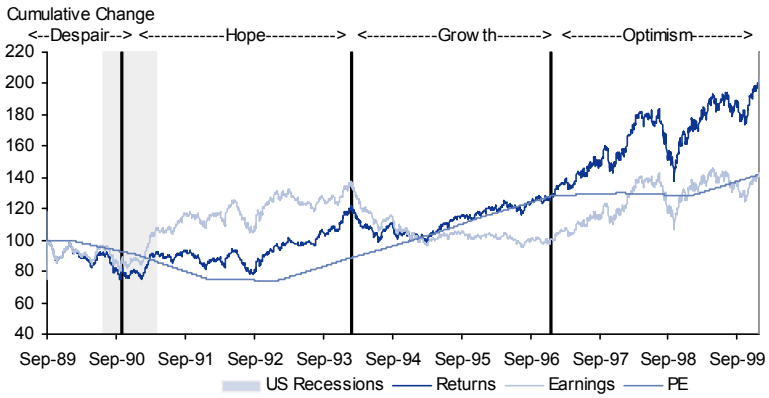


	Despair	Hope	Growth	Optimism
Start date	18/07/1990	05/10/1992	31/01/1994	18/10/1999
End date	05/10/1992	31/01/1994	18/10/1999	06/03/2000
Length (in months)	26.6	15.9	68.6	4.6
Real Return	-34.9	57.1	95.5	41.0
Real Earnings Growth	-23.8	-12.8	202.3	13.8
P/E expansion	-14.5	80.2	-35.3	23.9
Proportion of return (%)		29.5	49.3	21.2
Annualized				
Real Return	-17.6	40.7	12.4	145.1
Earnings Growth	-11.5	-9.9	21.4	40.2
Change in real interest rate (pp)	-3.2	-2.0	2.0	0.2

Source: Worldscope, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

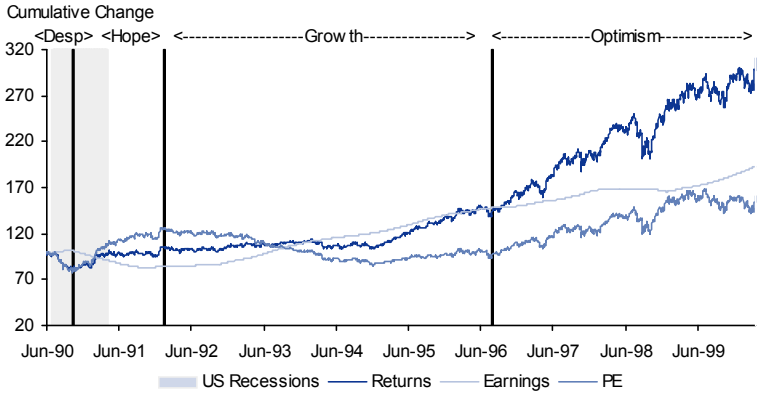
Exhibit 13: Division of the 1990s cycle into phases for the UK and US

United Kingdom



	Despair	Hope	Growth	Optimism
Start date	05/09/1989	28/09/1990	02/02/1994	17/12/1996
End date	28/09/1990	02/02/1994	17/12/1996	30/12/1999
Length (in months)	12.8	40.2	34.5	36.4
Real Return	-25.2	62.9	2.9	62.5
Real Earnings Growth	-7.1	-4.5	44.1	11.2
P/E expansion	-19.5	70.6	-28.6	46.2
Proportion of return (%)		49.0	2.3	48.7
Annualized				
Real Return	-23.9	15.7	1.0	17.3
Earnings Growth	-6.7	-1.4	13.6	3.5
Change in real interest rate (pp)	1.6	-1.7	1.2	-0.5

United States



	Despair	Hope	Growth	Optimism
Start date	04/06/1990	11/10/1990	15/01/1992	24/07/1996
End date	11/10/1990	15/01/1992	24/07/1996	23/03/2000
Length (in months)	4.2	15.2	54.3	44.0
Real Return	-21.2	34.9	30.3	124.5
Real Earnings Growth	1.8	-17.5	76.5	30.3
P/E expansion	-22.6	63.6	-26.2	72.3
Proportion of return (%)		18.4	16.0	65.6
Annualized				
Real Return	-49.1	26.8	6.0	24.7
Earnings Growth	5.1	-14.2	13.4	7.5
Change in real interest rate (pp)	0.4	-2.0	1.3	-0.1

Source: Worldscope, Compustat, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

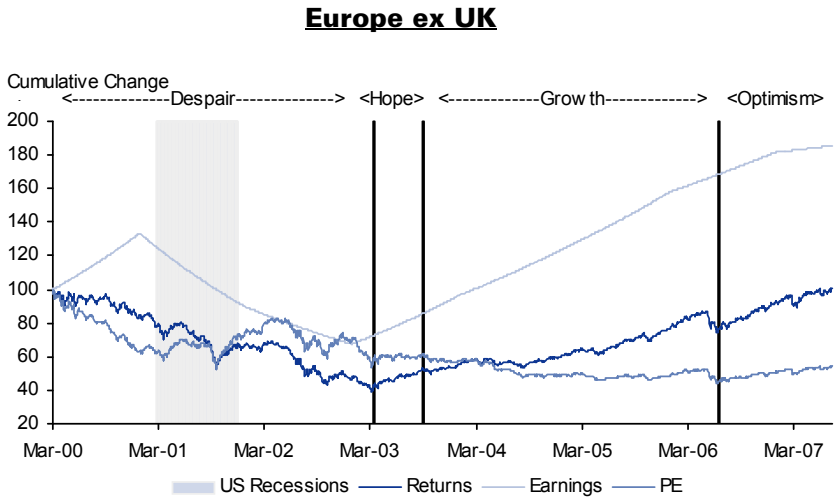
From 2000 to 2007: Strong earnings but poor returns

This is the second best cycle in terms of earnings growth for all three regions, yet it offered the second worst returns in Continental Europe and the US and the third worst in the UK.

This is a reflection of the inflated valuation at the outset of the cycle and again emphasizes that earnings growth is not necessarily paid for when it occurs.

The strong profit growth in this cycle was partly driven by very strong earnings in the financial sector driven by higher leverage and partly by a widespread increase in margins, driven by globalisation.

Exhibit 14: Division of the 2000-2007 cycle into phases for Europe ex UK

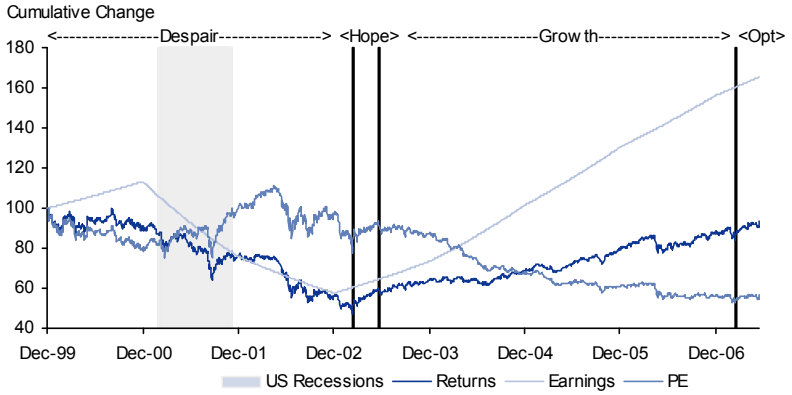


	Despair	Hope	Growth	Optimism
Start date	06/03/2000	12/03/2003	03/09/2003	13/06/2006
End date	12/03/2003	03/09/2003	13/06/2006	16/07/2007
Length (in months)	36.2	5.8	33.3	13.1
Real Return	-61.5	37.7	39.9	35.8
Real Earnings Growth	-27.7	18.4	96.3	10.3
P/E expansion	-46.8	16.2	-28.7	23.1
Proportion of return (%)		33.2	35.2	31.6
Annualized				
Real Return	-27.1	94.8	12.8	32.4
Earnings Growth	-10.2	42.3	27.5	9.4
Change in real interest rate (pp)	-1.5	0.2	-0.4	0.2

Source: Worldscope, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

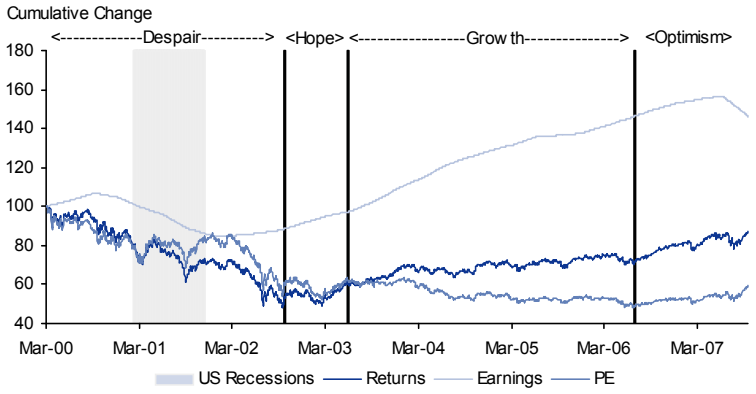
Exhibit 15: Division of the 2000-2007 cycle into phases for the UK and US

United Kingdom



	Despair	Hope	Growth	Optimism
Start date	30/12/1999	12/03/2003	18/06/2003	14/03/2007
End date	12/03/2003	18/06/2003	14/03/2007	15/06/2007
Length (in months)	38.4	3.2	44.9	3.1
Real Return	-53.1	28.2	40.3	10.7
Real Earnings Growth	-39.7	6.7	148.8	3.2
P/E expansion	-22.3	20.1	-43.6	7.3
Proportion of return (%)		35.6	50.8	13.5
Annualized				
Real Return	-21.1	152.5	9.5	49.2
Earnings Growth	-14.6	27.5	27.6	13.2
Change in real interest rate (pp)	-0.1	0.1	0.0	1.1

United States



	Despair	Hope	Growth	Optimism
Start date	23/03/2000	09/10/2002	17/06/2003	17/07/2006
End date	09/10/2002	17/06/2003	17/07/2006	09/10/2007
Length (in months)	30.6	8.3	37.0	14.8
Real Return	-52.2	29.2	14.2	23.5
Real Earnings Growth	-11.8	10.2	50.2	0.1
P/E expansion	-45.8	17.2	-24.0	23.3
Proportion of return (%)		43.6	21.3	35.1
Annualized				
Real Return	-25.2	45.1	4.4	18.7
Earnings Growth	-4.8	15.2	14.1	0.1
Change in real interest rate (pp)	-2.4	-0.2	1.9	-0.4

Source: Worldscope, Compustat, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

The link to the macro economy

The four phases of the cycle of the equity market are systematically related to the macroeconomic cycle. The next pages give more detail but our broad conclusions (from which there are several exceptions) are as follows:

- **In the Despair phase, the economic environment deteriorates and the fall in the stock market is an early indicator of this:** The output gap first rises but then begins to fall, as the economy weakens. Unemployment rises as well as initial claims. The ISM and the PMI are falling. Volatility increases and typically peaks at the end of the phase. There are no robust patterns in the real bond yield. The RRR rises as investors demand higher compensation for future risk as described in the introduction.
- **In the Hope phase, economic indicators tend to reach their worst levels and the stock market rebounds in expectation of future improvements:** The output gap continues to fall and normally troughs very close to the end of the Hope phase. Both unemployment and initial claims peak in the Hope phase, but initial claims peak first. The ISM troughs. Volatility declines from the peak it reached at the initiation of the Hope phase. The real bond yield falls. The RRR falls as investors start to pay for expected future earnings growth.
- **In the Growth phase, the economy recovers but stock market performance is weaker:** The output gap rises, often sharply as realized economic growth outpaces the long-run potential. The majority of the decline in the unemployment rate occurs in this phase and initial claims decline. The ISM normally peaks in this phase. Volatility continues its decline in the first part of the phase but starts to pick up again at the later stages of the phase. The real bond yield rises. The RRR rises in the early parts of the phase and often all the way to the end of the phase.
- **In the Optimism phase, the limits of the economy are tested and stock market performance is strong until the limit is found with the initiation of the next Despair phase:** The behaviour of the output gap is mixed. Unemployment continues to decline and initial claims level out. The ISM moderates from its peak in the Growth phase. Volatility continues the increase that began in the Growth phase. The real bond yield has a relatively flat profile and the RRR declines as stock market returns outpace earnings growth.

As mentioned above there are several examples of exceptions from these broad patterns and we therefore provide more detailed data below. Exhibits 16-18 give a detailed summary of the variables that we find the most interesting in this context along with a more detailed discussion of exceptions. The exhibits cover the realized volatility for each phase in each cycle, the change in the output gap and the change in the real required return from the beginning to the end of each phase, respectively. We define real required returns (RRR) as the 10 year nominal government bond yield plus the implied equity risk premium minus expected inflation (measured as the five year historical average inflation).

The appendix then shows the behaviour of these three variables as well as the real interest rate, the ISM (for the US)/ the PMI (for Continental Europe), the unemployment rate and initial claims data in graphical form.

Realized volatility is high in the Despair and Hope phases and low in the Growth and Optimism phases. The key exception here is the high volatility realized in the Optimism phase in the IT bubble. The link between volatility and the cycle has recently been explored in detail by our options team (See "A macro model of volatility across the business cycle", August 19, 2009). Exhibit 16 shows the realized volatility over each phase, which is what matters for the ex-post Sharpe Ratio. The appendix then shows a rolling realized volatility over a window of 60 trading days centred around the day at which the realized volatility is measured. This is useful to study the time series dynamic and identifying gradual changes in volatility during a given phase.

Exhibit 16: Realized Volatility across the cycles
Realized volatility for each phase by market

Europe Ex UK

Cycles	Despair	Hope	Growth	Optimism
Mar 1973 - Oct 1978	13%	14%	10%	8%
Oct 1978 - Oct 1987	10	11	9	12
Oct 1987 - Jul 1990	50	19	11	10
Jul 1990 - Mar 2000	14	10	14	17
Mar 2000 - Oct 2007	22	19	11	11
Average	22	15	11	11
Median	14	14	11	11

United Kingdom

Cycles	Despair	Hope	Growth	Optimism
Jan 1973 - May 1979	21%	33%	17%	14%
May 1979 - Jul 1987	15	16	12	12
Jul 1987 - Sept 1989	39	17	11	11
Sept 1989 - Dec 1999	13	12	10	16
Dec 1999 - Jun 2007	21	22	11	10
Average	22	20	12	13
Median	21	17	11	12

United States

Cycles	Despair	Hope	Growth	Optimism
Jan 1973 - Nov 1980	18%	20%	12%	16%
Nov 1980 - Aug 1987	14	19	12	13
Aug 1987 - Jun 1990	57	25	15	13
Jun 1990 - Mar 2000	19	14	10	19
Mar 2000 - Oct 2007	23	22	11	13
Average	26	20	12	15
Median	19	20	12	13

Source: Worldscope, Compustat, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

The output gap declines in the Despair and Hope phases. This is followed by a rise in the Growth phase. The 1987-1990 cycle is the exception from this pattern, as it was more driven by the collapse in stock markets in 1987 than by the real economy. Another exception is the Hope phase in the early 1980s. Here the output gap first fell, but then rebounded from the trough before the end of the Hope phase, such that the move from the beginning to the end of the phase became positive. The results in the Optimism phase are mixed, but on average the output gap still rises.

Exhibit 17: Changes in Output Gap over the cycle
Changes in the output gap (pp) from the beginning to the end of each phase by market

Europe Ex UK

Cycles	Despair	Hope	Growth	Optimism
Mar 1973 - Oct 1978	-0.1	-3.2	1.6	0.5
Oct 1978 - Oct 1987	-0.8	0.6	-0.6	-0.4
Oct 1987 - Jul 1990	0.3	0.1	1.2	0.4
Jul 1990 - Mar 2000	-0.5	-1.9	1.4	0.8
Mar 2000 - Jul 2007	-1.6	-0.4	1.6	1.5
Average	**-0.5**	**-1.0**	**1.1**	**0.6**

United Kingdom

Cycles	Despair	Hope	Growth	Optimism
Jan 1973 - Nov 1980	-0.8	-1.7	2.1	2.2
Nov 1980 - Aug 1987	-4.3	0.9	0.0	0.8
Aug 1987 - Jun 1990	1.1	0.7	0.8	-0.4
Jun 1990 - Mar 2000	-1.3	-2.1	0.9	0.7
Mar 2000 - Oct 2007	-1.3	0.2	2.0	0.4
Average	**-1.3**	**-0.4**	**1.2**	**0.7**

United States

Cycles	Despair	Hope	Growth	Optimism
Jan 1973 - Nov 1980	-4.0	-3.3	4.4	-2.6
Nov 1980 - Aug 1987	-3.6	0.5	4.6	0.4
Aug 1987 - Jun 1990	0.7	0.0	0.7	-0.4
Jun 1990 - Mar 2000	-1.0	-2.4	3.5	3.7
Mar 2000 - Oct 2007	-5.1	-1.0	2.2	-0.3
Average	**-2.6**	**-1.2**	**3.1**	**0.2**

Source: Worldscope, Compustat, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

The Real Required Return (RRR) increases in the Despair phase, declines in the Hope phase, generally increases again in the Growth phase, and finally declines in the Optimism phase. There are a few exceptions to this pattern:

- In the Growth phase in the 1990-2000 cycle, the RRR decreased in the US and Europe ex. UK. This is due to the exceptionally strong earnings growth in that cycle for those regions, leading to a longer than usual period where earnings growth is the key driver of equity returns. Therefore the RRR rises in the early part of that phase and declines towards the end of it, leading to a decrease from the beginning to the end of the phase.
- The 2000-2007 cycle on the other hand is genuinely different in Europe ex. UK and the UK seeing the RRR falling from the initiation of the Growth phase. This might be a counter reaction to the exceptionally large increases in the RRR in a time of modest shock to economic growth as the bubble deflated in the Despair phase of that cycle.
- The last exception is the negligibly small increase in the RRR in the Optimism phase in Europe in the 1987-1990 cycle.

Exhibit 18: Changes in Real Required Return over the cycle
Change in the RRR (pp) from the beginning to the end of each phase by market

Europe ex UK

Cycles	Despair	Hope	Growth	Optimism
Oct 1987 - Jul 1990	NA	NA	NA	0.1
Jul 1990 - Mar 2000	2.5	-2.8	-1.2	-0.9
Mar 2000 - Jul 2007	3.7	-0.9	-0.7	-0.3
Average	**3.1**	**-1.9**	**-1.0**	**-0.6**

United Kingdom

Cycles	Despair	Hope	Growth	Optimism
Jun 1990 - Mar 2000	1.3	-2.0	0.5	-2.2
Mar 2000 - Oct 2007	3.6	-0.6	-0.8	-0.2
Average	**2.5**	**-1.3**	**-0.2**	**-1.2**

United States

Cycles	Despair	Hope	Growth	Optimism
Nov 1980 - Aug 1987	NA	-1.7	1.5	-2.8
Aug 1987 - Jun 1990	1.6	-0.5	0.3	-0.9
Jun 1990 - Mar 2000	0.8	-1.3	-0.3	-1.9
Mar 2000 - Oct 2007	2.1	-0.5	0.2	-0.3
Average	**1.5**	**-0.7**	**0.1**	**-1.0**

Source: Worldscope, Compustat, Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

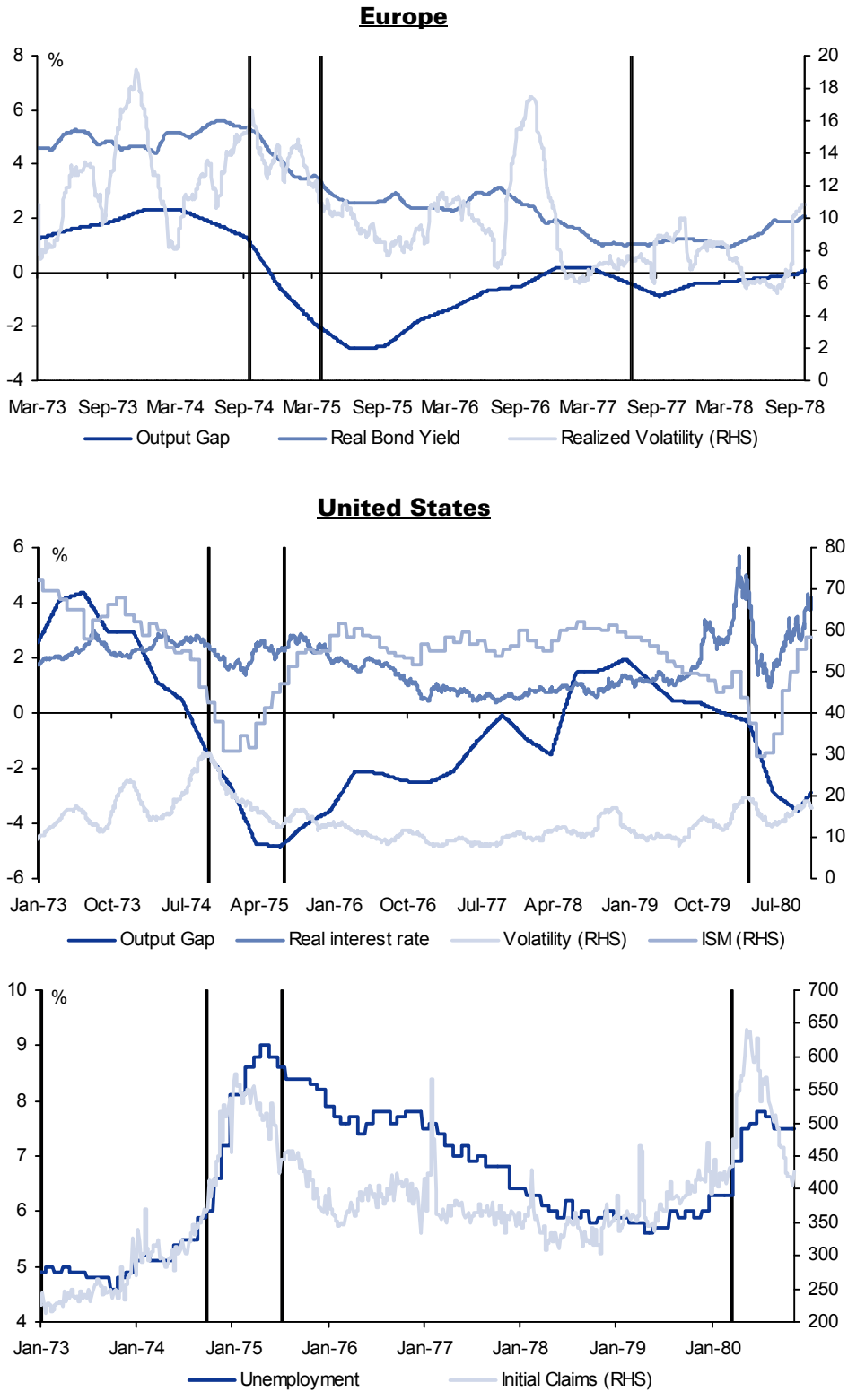
Appendix: Economic variables by cycle

The charts below show the time series of seven economic variables to the extent they were available for the US and Continental Europe for each of the five cycles. As more data becomes available in Europe in the last two cycles, we have two charts for both Europe and for the US for each of the last two cycles but only one chart for Europe for the cycles before that. The variables are:

- **The output gap:** This is calculated as (realized real output – potential real output)/potential real output. Where potential real output is as reported by the Congressional Budget Office for the US, and the trend from an HP filtering of realized real output for Continental Europe.
- **The real bond yield:** Is measured as the 10 year Treasury yield minus 5 year average historical inflation for the US and as 10 year German government bonds minus 5 year historical average inflation in Germany.
- **The realized volatility:** Is measured as realized volatility over 60 trading days centered around the day at which the volatility is calculated. It therefore uses data that was not historically available to calculate the volatility. We do this in order for the measure to give a less lagged picture of uncertainty.
- **The ISM/PMI:** We use the ISM for the US and the PMI for Continental Europe. But we only have the latter for one cycle.
- **Unemployment rate and initial claims:** For Continental Europe we only have the unemployment rate, and here we use the seasonally adjusted data for the Euro Area 16. This measure is only available for the last two cycles.
- **The RRR:** The real required return (RRR) is our proprietary measure of the real discount rate that is build into the equity market. It is the real discount rate which makes the theoretical value of the equity market from our GS DDM dividend discount model equal to the observed market price. Please see our March 23, 2009 report "Forecasting Returns: 'Fair Value' Part II" for details.

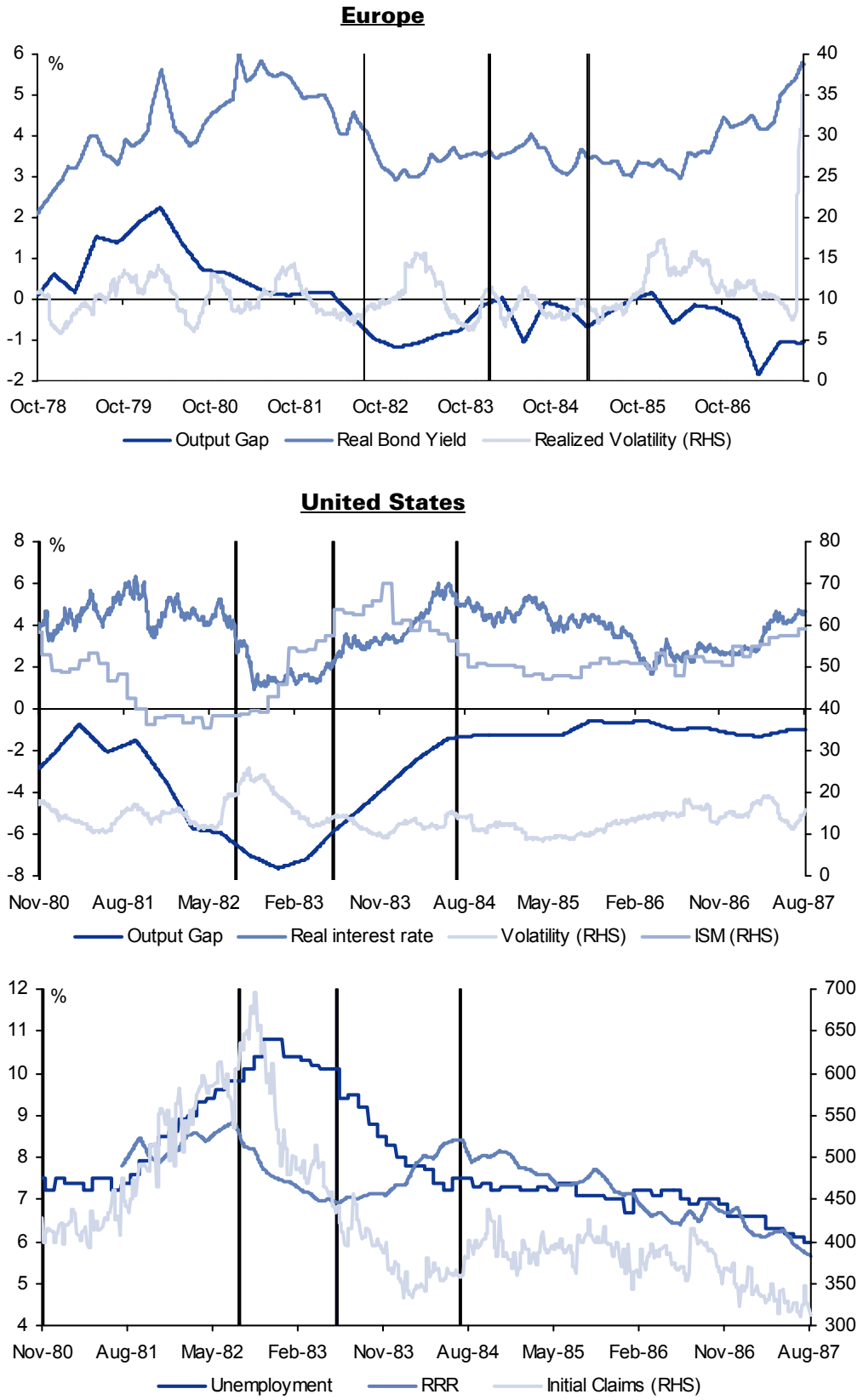
We have generally used interpolation between data points when data was not available at a daily frequency. The only exception to this rule is the ISM/PMI, initial claims and unemployment data, where we keep the latest observed value until the next data point becomes available.

Exhibit 19: The 1970s cycle in charts. See page 22 for a description of the variables



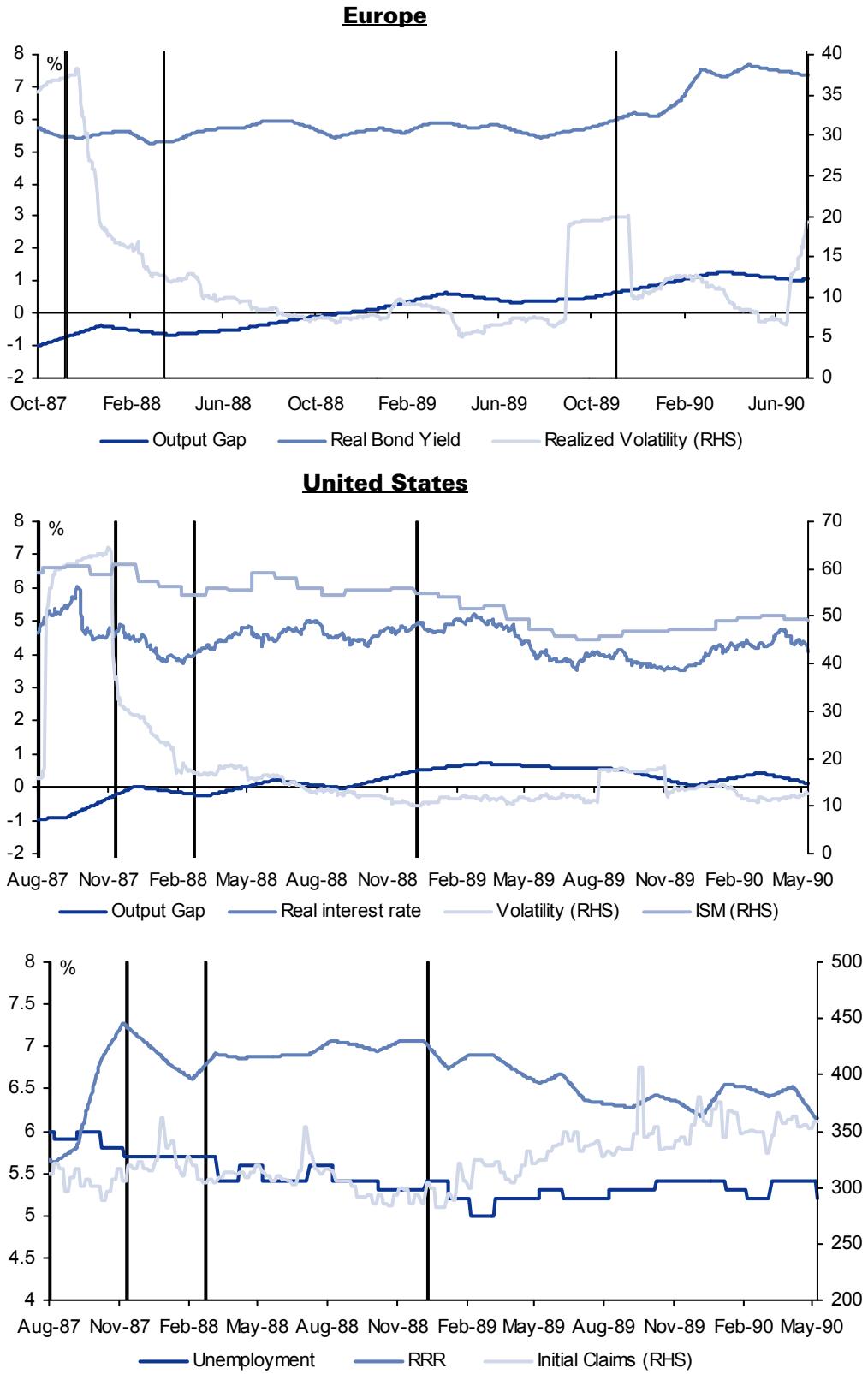
Source: Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

Exhibit 20: The early 1980s in charts. See page 22 for a description of the variables



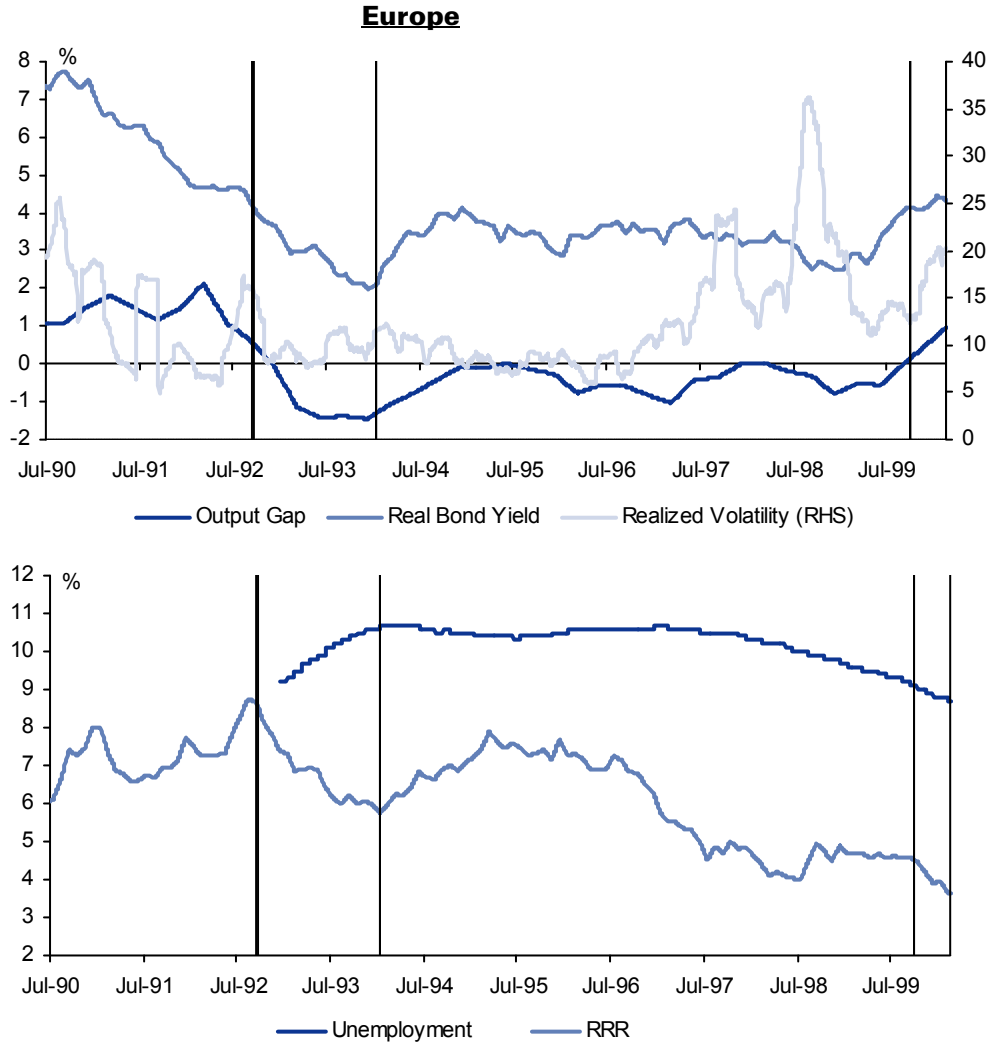
Source: Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

Exhibit 21: The late 1980s in charts. See page 22 for a description of the variables



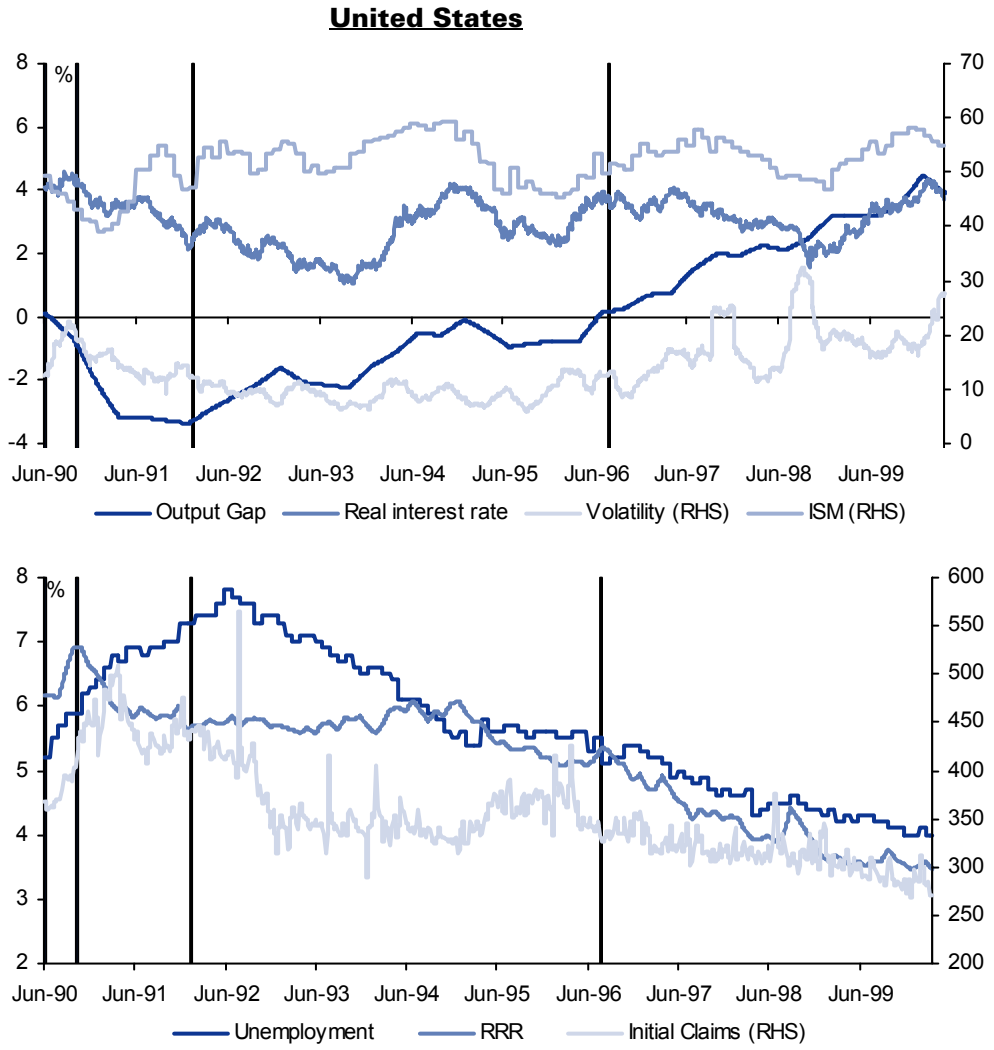
Source: Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

Exhibit 22: The 1990s in charts. See page 22 for a description of the variables



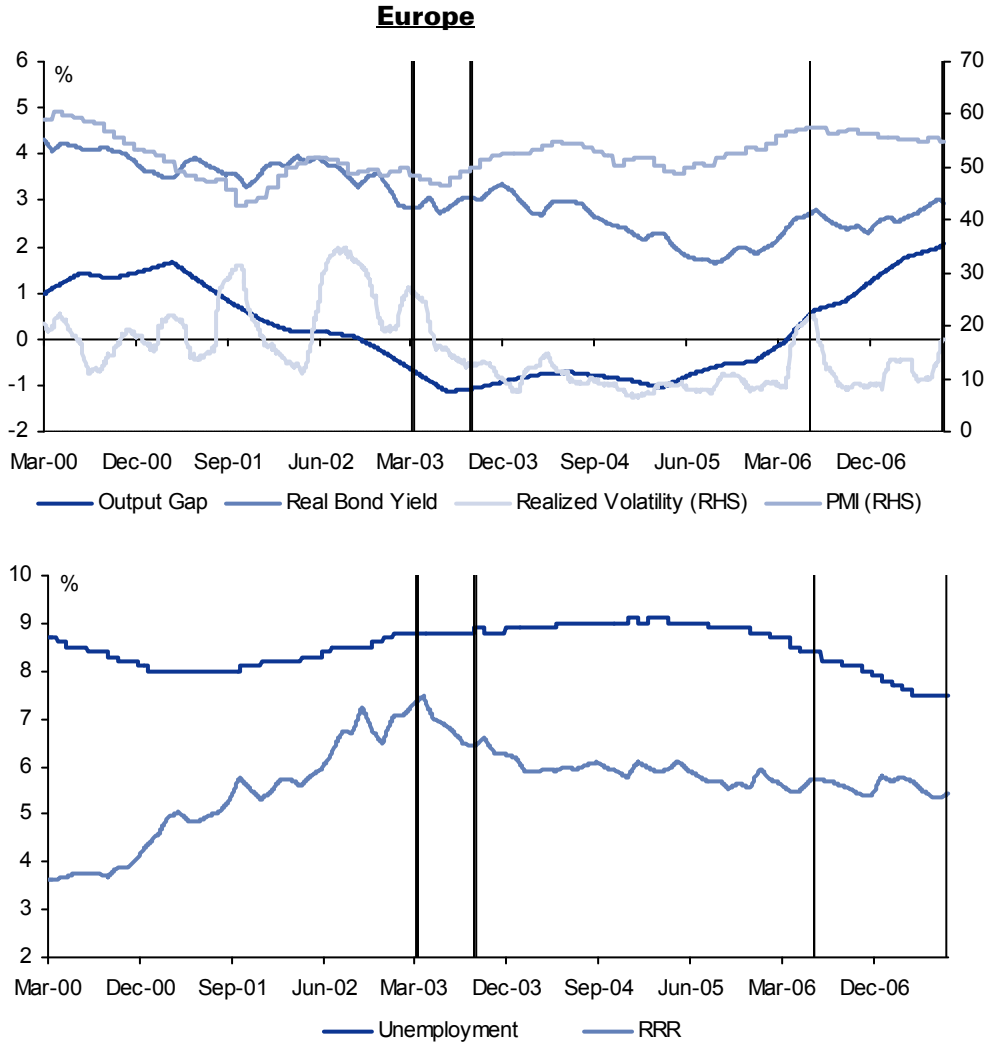
Source: Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

Exhibit 23: The 1990s in charts. See page 22 for a description of the variables



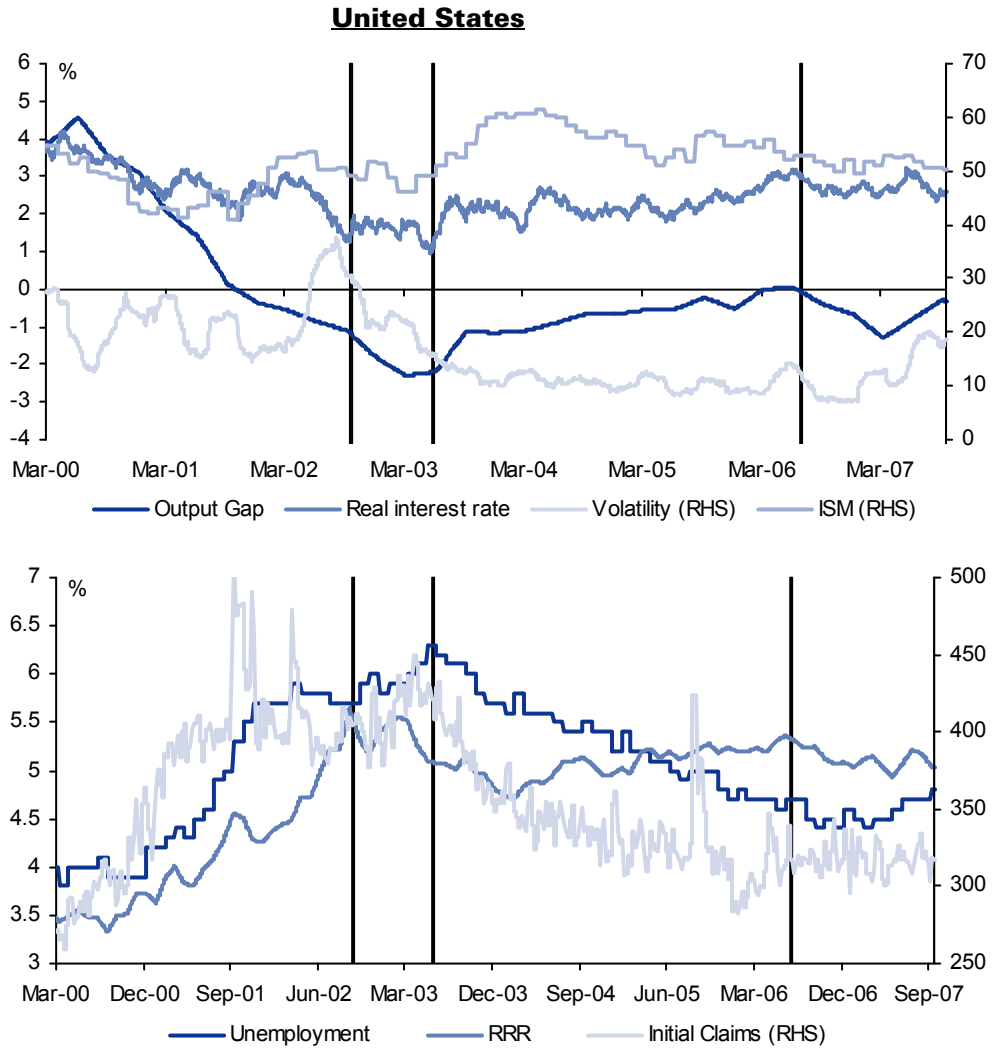
Source: Haver Analytics, Goldman Sachs Global ECS Research.

Exhibit 24: The 00s in charts. See page 22 for a description of the variables



Source: Haver Analytics, Datastream, Goldman Sachs Global ECS Research.

Exhibit 25: The 00s in charts. See page 22 for a description of the variables



Source: Haver Analytics, Goldman Sachs Global ECS Research.

Reg AC

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