Table 9.3 Comparison of historical simulation using absolute and relative returns.

	Historical data			Historical simulation	
	Initial rate	**Final rate**	**Change**	**Initial**	**Simulated**
Absolute	3.0%	3.6%	0.6%	1.0%	1.6%
Relative	3.0%	3.6%	20%	1.0%	1.2%
Absolute	4.0%	3.2%	–0.8%	1.0%	0.2%
Relative	4.0%	3.2%	–20%	1.0%	0.8%

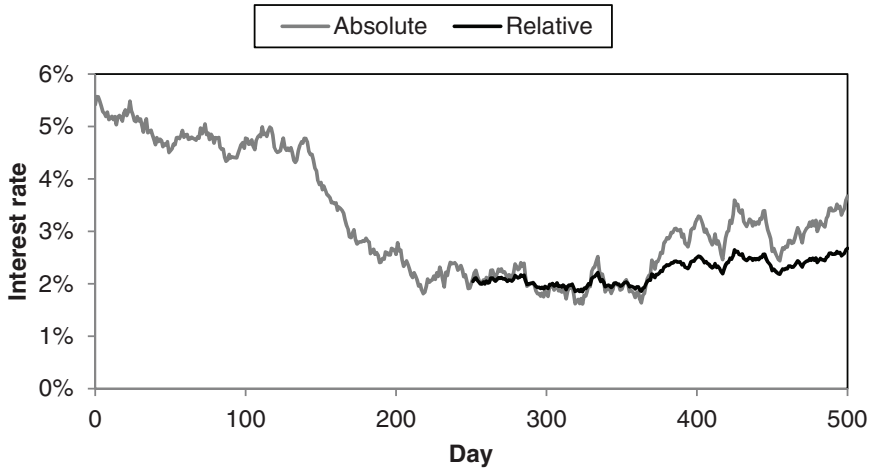

Figure 9.5 Illustration of historical simulation for an interest rate process using absolute and relative scenarios. The simulation begins at the 250-day point.

environment, where rates are 1%, this would translate into quite a small upwards move to only 1.2%. If instead the absolute rate change were used, then the equivalent move would be to 1.6%. This is illustrated in Table 9.3, which shows two different scenarios. It is also worth noting that absolute returns may produce negative interest rates (which may be unrealistically large) whilst relative returns cannot (unless interest rates themselves become negative).

Whether absolute or relative scenarios are most appropriate depends on the current rates regime. Absolute moves are more conservative in a falling interest rate environment as illustrated in Figure 9.5. On the other hand, the reverse will be true during a period of rising rates. This is a well-known problem in the area of interest rate models where behaviour can move between normal (absolute shifts) and log-normal (relative shifts).

9.3.5 Procyclicality

In relation to VAR models, the concept of procyclicality will potentially cause VAR to be high in crisis periods but low in stable periods. This is now a well-known problem as it encourages high leverage in bullish market environments, leading to sudden and extreme crises. Strong procyclicality of initial margins is clearly problematic since it could lead to dangerously low initial margin requirements during good economic periods. To have an idea