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Unscrambling correlation

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"DON'T put all your eggs in one basket" is the golden rule which, in a more sophisticated form, underpins much of modern investment theory. To minimise the possibility of losing the lot in one go, your eggs should be allocated to several baskets, so that if something happens to one, the rest are safe. This strategy works well, though, only if the baskets have different characteristics. If, when something happens to one basket, it also happens to the others, nothing is gained. Translated into investment theory, this means investors should aim to hold a portfolio of assets whose returns are not highly correlated.

The Economist was left with egg on its face when we looked at correlation in a recent Economics Focus ("All Fall Down", November 8th). This noted that, among nine big economies, stockmarket correlations have averaged around 0.5 since the 1960s. We translated this to mean that "for every 1% rise (or fall) in, say, American share prices, share prices in other markets will typically rise (fall) by 0.5%." Two weeks later, we published a missive from a reader aiming to set us straight ("Synchronisation", Letters, November 22nd). This provoked a barrage of correspondence from readers, all of which was perfectly correlated in agreeing that both our article and the letter were off the mark. The unanimity, alas, broke down when it came to saying precisely what "correlation" means.

We shall now endeavour to set the record straight. The letter we published was correct in pointing out that a correlation implies nothing about the relative returns likely to be generated by the assets or markets that are correlated. All it indicates is the extent to which two things typically move together. If two stockmarket indices always move linearly in the same direction at the same time, and the relative size of their movements is always the same, they have a perfect correlation of 1. If they always move in opposite directions, they have a correlation of -1.

So far, so good. Where our letter-writer went astray was his statement that "a correlation of 0.5 shows that 50% of the time the return of stockmarket A will be positively correlated with the return of stockmarket B, and 50% of the time it will not." This might be true in exceptional circumstances, but not in general.

So what exactly did we mean when we wrote that those nine stockmarkets have a correlation of 0.5? If the correlation is 0.5, only one quarter (0.5^2) of the variation in one market can be explained by the variation in the rest. Without extra information, it is not possible to say anything more precise than that. Exactly how often the markets move together depends not just on how highly they are correlated, but on how much the returns generated in each market typically vary from their long-run average. The crucial point is that with a correlation well below 1, it is still worth investors' trouble to diversify.