As Olympic athletes have shown, marginal improvements accumulated over time can deliver world-beating performance,” said Andrew Haldane in a speech on Monday, which is quite true. Mr Haldane, the Bank of England’s chief economist, went on to suggest that the productivity of companies in general would benefit from the same approach.

It’s a bold claim, made more so by the regrettable fact that the most celebrated exponents of “marginal gains”, Team Sky and British Cycling, have been in the headlines for the wrong reasons.

But Mr Haldane may have a point; he usually does. The marginal gains philosophy tries to turn innovation into a predictable process: tweak your activities, gather data, embrace what works and repeat. In British cycling such tweaks reportedly include rubbing alcohol on tyres to improve grip, electrically heated oversHORTS to maintain muscle temperature and a ban on bikini waxes to prevent saddle sores.

But the same basic approach — using quick-and-dirty experiments, or “A/B testing” — has paid dividends elsewhere. David Cameron’s Behavioural Insight Team, known unofficially as the “nudge unit”, has used simple randomised trials to improve the wording of tax demands and the advice
given to job seekers. Google tested 41 shades of blue for its advertising hyperlinks. Designers rolled
their eyes — then Google claimed that the experiment had netted an extra $200m in annual
revenue. As Mr Haldane says, marginal improvements can add up.

But can they add up to productivity gains for the economy as a whole? The question matters. There
is no economic topic more important than productivity, which in the long run determines whether
living standards surge or stagnate. Productivity growth has been disappointing for more than 40
years, particularly disastrous since the financial crisis, and worse in the UK than in most other rich
nations. The idea that developed economies can A/B test their way back to brisk productivity
growth is a seductive one.

An alternative view is that what’s really lacking is a different kind of innovation: the long shot.
Unlike marginal gains, long shots usually fail, but can pay off spectacularly enough to overlook 100
failures. The marginal gain is a heated pair of overshorts, the long shot is the Fosbury Flop. If the
marginal gain is a text message nudging you to finish a course of antibiotics, the long shot is the
development of penicillin. Marginal gains give us zippier web pages; long shots gave us the
internet.

These two types of innovation complement each other. Long shot innovations open up new
territories; marginal improvements colonise them. The 1870s saw revolutionary breakthroughs in
electricity generation and distribution but the dynamo didn’t make much impact on productivity
until the 1920s. To take advantage of electric motors, manufacturers needed to rework production
lines, redesign factories and retrain workers. Without these marginal improvements the
technological breakthrough was of little use.

The latest evidence suggests Mr Haldane is right to remind us of the importance of marginal gains.
In 2016 economists Daniel Garcia-Macia, Chang-Tai Hsieh and Peter Klenow sought to quantify
different kinds of innovation in the US economy. They concluded that most productivity growth
came from existing companies improving existing products, rather than new businesses or
products. That was true in the 1980s and still is. In the UK, as Mr Haldane observes, leading
companies have been improving their productivity, while typical ones have not. That suggests a
problem not with the long shots at the frontier of innovation but with the details of everyday
management.

Yet two questions remain. One is why so many businesses lag far behind the frontier. A research
programme led by economists Nicholas Bloom and John Van Reenen has tried to quantify
management practices, and has found that many countries have a long tail of poorly managed
companies. The culprit may be a lack of competition: vigorous competition tends to raise
management quality by spurring improvements and by punishing incompetents with bankruptcy.
It’s no coincidence that the philosophy of marginal gains is popular in the unforgiving arena of elite
sport.
But the second question is why productivity growth has been so disappointing. A/B testing has never been easier or more fashionable, after all.

The obvious answer is that the long shots matter, too. In almost every field except computing, we've hoped for revolutionary breakthroughs and they haven't yet happened. Google may A/B test its way to greater profits but the company's success has been built on a leap forward in search technology in the late 1990s, and even more fundamentally on the publicly funded efforts to develop the web and the internet.

In a data-driven world, it's easy to fall back on a strategy of looking for marginal gains alone, avoiding the risky, unquantifiable research. Over time, the marginal gains will surely materialise. I'm not so sure that the long shots will take care of themselves.

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