RISING CHOCOLATE COSTS

Fighting Inflation with Chemistry

Chocolate prices have increased significantly in recent years, largely driven by the sharp rise in cocoa costs. While energy, labour, transport, and packaging expenses have also fluctuated, cocoa is the largest contributor to raw material cost in chocolate production. This article explains how the chemicals industry is helping keep chocolate prices affordable.

Chocolate prices have increased dramatically over the past few years. As an example of this, a Cadbury Dairy Milk, a British staple, has increased 65% in price since 2021 to £1.53/100 grammes in late 2025. While there have clearly been changes in costs for all aspects of chocolate production, the main driver of increased chocolate prices is the cost of cocoa, which has soared over the past few years.

The significant increase in cocoa price in 2024/2025 has not only raised retail prices; it has begun altering the composition of the chocolate bar itself. Producers are adjusting ingredient ratios, substituting fats, increasing the use of functional additives, and investing in laboratory-grown alternatives. As a result, chocolate is increasingly shaped not just by agriculture, but by formulation science and chemistry. Whilst prices have dropped the changes in formulation are here to stay.

COCOA PRICE RISKS MEAN HIGHER CHOCOLATE PRICES

What goes into the price of your Easter chocolate?

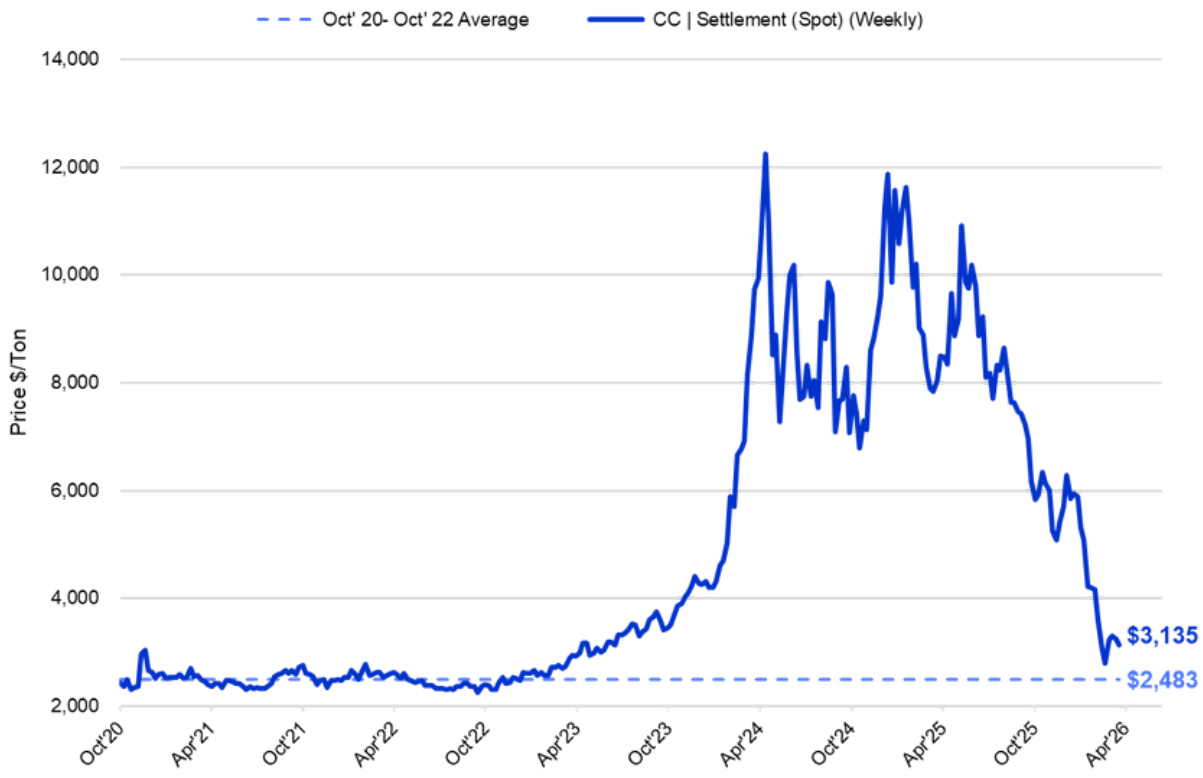
The price of a milk chocolate bar is driven mainly by cocoa, which represents 60% of raw material cost, the remainder coming from sugar, milk and other items added in for taste and/or ease of production. Retail prices reflect more than raw material costs alone, incorporating processing, packaging, energy and transport costs, labour, marketing, and the margins of both manufacturers and retailers.

Clearly, prices for manufacturing, marketing and retailing chocolate have changed somewhat over time. However, when it comes to raw materials, milk and sugar prices are virtually flat, but cocoa prices have risen significantly.

Cocoa price increases

After a prolonged period of relative stability, during which cocoa prices traded largely within a range of approximately $2,400 to $2,600 per metric ton, prices of cocoa began to rise steadily with a sharp spike in 2024 when cocoa futures reached record levels (above $12,000 per metric ton). Since then, prices have remained elevated and volatile before easing in mid-2025, and are currently **30% above 2023 levels.**

Exhibit 1 – Historic Spot Price of Cocoa



Source: S&P Capital IQ, Natrium Capital

Why did cocoa prices rise so much?

Although cocoa originated in Central and South America, today roughly 70% of the world's cocoa is produced in West Africa. West African cocoa has undergone significant supply issues in 2023 and 2024 caused by myriad factors such as:

- Weather – In 2023, there were heavy rains and harsh Harmattan winds from the Sahara Desert, followed by droughts in 2024.
- Problems with the plant stock – Ageing cocoa trees combined with diseases such as black pod rot and swollen shoot virus severely damaged crops in the Ivory Coast and Ghana.
- Gold mining – Illegal small-scale gold mining, known as 'galamsey', expanded into cocoa-growing regions in Ghana, destroying farmland and diverting labour from cocoa cultivation, reducing supply.
- Wars – Localised conflicts and land disputes in cocoa regions of the Ivory Coast and Ghana disrupted farming and transport, preventing access to fields and delaying harvests, which tightened supply. **It remains to be seen if the current conflict in the Middle East will affect cocoa prices but it will continue to keep energy prices high for chocolate manufacturers.**

At the same time, global demand for chocolate remained strong and steadily growing, creating a pronounced imbalance between supply and demand. The initial price spike in 2024 was further intensified by market speculation, as hedge funds and investors increasingly bought cocoa futures contracts in anticipation of further price rises. This speculative activity created a feedback loop, pushing prices higher than the supply shortages alone would justify.

Why are chocolate prices still elevated despite a decrease in cocoa prices?

Despite cocoa prices falling below their previous peak, chocolate producers often hedge their cocoa purchases through long-term futures contracts. By locking in prices months, or even years in advance, manufacturers can manage the risk of volatile commodity markets and ensure cost predictability. **The gulf war has created a new inflationary dynamic that will maintain high prices for longer.**

Financial pressures on chocolate producers

As cocoa costs increased, chocolate producers have clearly had to adapt to the 'new normal' in order to stay afloat and meet investor expectations.

Some companies have had to close their doors as a result. Citing official government data, Bloomberg has reported that at least a dozen family-owned chocolatiers in Europe closed down in 2024. For example:

- Beech's Fine Chocolates (UK) – Founded in 1920, this long-standing family-run artisan chocolatier closed its factory in 2025 after more than a century of operation, citing escalating cocoa prices and operational costs.

- Franz Hauswirth – After decades of producing traditional confections, including popular Easter chocolates, this third-generation Austrian family business declared bankruptcy in late 2024 amid surging cocoa and input costs that squeezed margins and reduced demand.

- Marasu's Petit Fours – The bankruptcy of Marasu's Petit Fours is a recent example of how even large, well-established chocolatiers are under financial strain.

Remaining chocolate producers, both large and small, have survived by employing three main strategies:

- **Passing on increased costs to consumers** as exemplified by Cadbury's Dairy Milk 65% price increase to £1.53/100 grammes between 2021 and 2025.

- **Reducing product sizes.** For example Cadbury's Dairy Milk bars in 2021 were 200 grammes but today are only 180 grammes. This strategy, which is sometimes referred to as 'shrinkflation', means that consumers are less aware of the price increases.

- **Changing chocolate recipes.** In this strategy, sometimes referred to as 'skimpflation', producers use other products to reduce the amount of cocoa used and, therefore, reduce the cost.

HOW ARE CHOCOLATE RECIPES CHANGING?

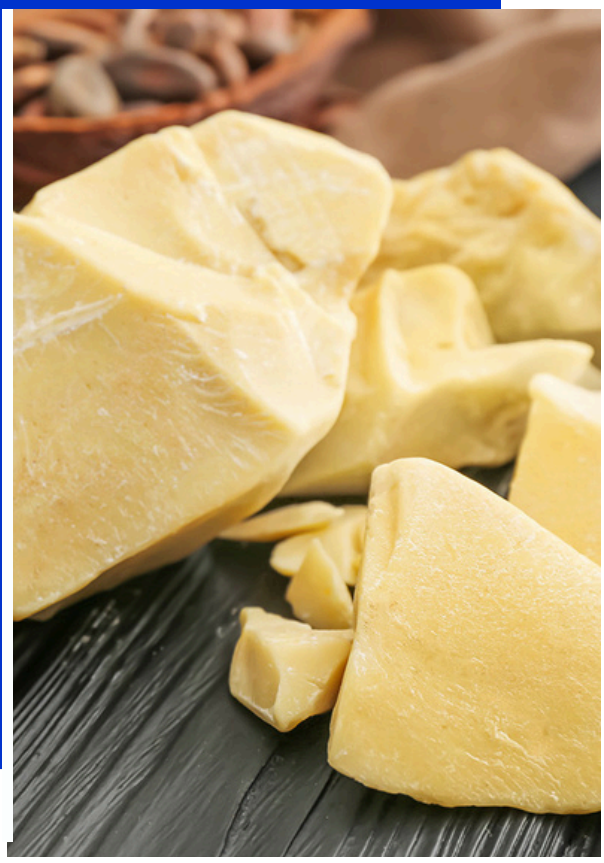
Adjusting milk and sugar ratios

To compensate for rising cocoa prices, producers are fine-tuning milk solids and sugar content. Slight adjustments help preserve sweetness, creaminess, and overall mouthfeel, allowing chocolate bars to taste familiar even when cocoa content is reduced. These changes maintain the sensory experience while reducing reliance on expensive cocoa.

Adding bulking agents and flavour enhancers

Some chocolatiers also incorporate fillers or bulking agents such as rice flour, maltodextrin, or other starches. These ingredients increase the volume of the product while lowering the proportion of cocoa, which helps control costs. When blended carefully, fillers maintain the structure, bite, and mouthfeel of the chocolate, making the adjustment subtle enough that consumers often do not notice the change.

At the same time, producers add flavour enhancers such as vanilla, chocolate essence, or other additives to ensure the chocolate still tastes rich, despite reduced cocoa. Stabilisers and texture modifiers, including hydrocolloids and gums, are also used to maintain snap, creaminess, and melting behaviour. Together, these adjustments preserve both the sensory qualities and manufacturability of the chocolate.



Replacing cocoa butter with cocoa butter equivalents (CBEs)

To reduce costs while maintaining texture and flavour, chocolate formulators increasingly replace natural cocoa butter with CBEs, fats derived from palm, shea, or mango kernel oils. These substitutes replicate the molecular arrangement of the primary triglycerides found in chocolate but differ subtly in stereochemistry and chain length, shifting melting points by several degrees and altering rheology (flow). These minor differences slightly change how the chocolate melts and flows, but CBEs are designed to preserve the familiar texture, snap, and mouthfeel of traditional chocolate while offering a cheaper and more stable alternative.

In the case of McVitie's Penguin (and Club) bars, owner Pladis has reduced the proportion of cocoa-derived ingredients in the coating so that it is now described as a ‘chocolate flavour coating’. Penguin bars now can no longer officially be classed as ‘chocolate’ under UK and EU standards because of their reduced cocoa content and modified fat composition.

Instead of relying primarily on cocoa butter and cocoa solids from the cocoa bean, the reformulated coating uses a lower percentage of cocoa mass, combined with cheaper vegetable fats such as palm oil fractions or shea-based CBEs. These fats are significantly less expensive than cocoa butter because they are derived from higher-yield crops and are less exposed to West African climate volatility; they trade at a fraction of cocoa butter's recent record prices.

Increasing use of emulsifiers

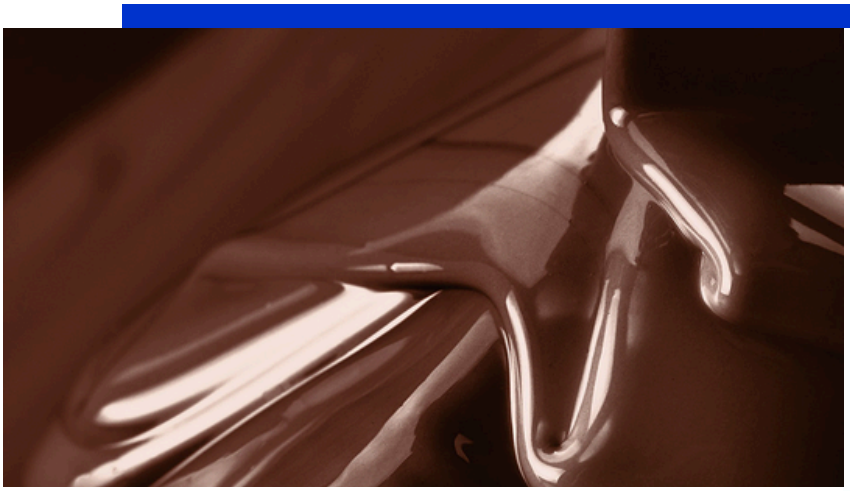
To preserve texture and taste, the fat blend is stabilised with emulsifiers (such as lecithin or polyglycerol polyricinoleate (PGPR)) and reinforced with chocolate flavourings.

Emulsifiers are used more liberally to stabilise these reformulated CBE systems, controlling viscosity and recreating the lubricating behaviour of true chocolate. The result is a coating that behaves similarly in manufacturing and delivers a comparable sensory profile, but at a materially lower raw material cost. This approach gives manufacturers greater flexibility to refine formulations without compromising performance. It also supports more resilient production, helping maintain quality and cost efficiency even as ingredient prices or supplies shift.

Lab-grown chocolate

Simultaneously, food scientists are developing lab-grown chocolate, produced not from harvested beans but from cultured cocoa cells. These bioreactor-grown cells synthesise lipids and flavour precursors similar to those in natural cocoa, though their metabolic pathways differ slightly, resulting in a distinct balance of polyphenols and volatile aromatics. The goal is to replicate the signature emulsion, crystalline network, and texture of traditional chocolate while reducing dependence on natural cocoa.

Several major chocolate companies are investing in this technology: Mondelez has backed the Israeli startup Celleste Bio, Barry Callebaut is partnering with Zurich University of Applied Sciences, and Meiji supports the US startup California Cultured. Lab-grown cocoa is cheaper, more scalable, and less climate-sensitive than tree-grown cocoa.



However, no startup has yet gained regulatory approval, and replicating the full flavour complexity generated during natural fermentation and roasting, including Maillard and enzymatic reactions, remains a formidable challenge. Companies currently see lab-grown cocoa as a supplement to, rather than a replacement for, traditional cocoa, offering a potential hedge against price volatility, disease, and climate-related supply risks.

CONCLUSION

The rise in cocoa price since 2023 has changed what goes into a bar of chocolate. Faced with persistently higher cocoa costs, manufacturers have responded through reformulation: adjusting milk and sugar balances, incorporating fillers, replacing cocoa butter with chemically similar fat systems, increasing reliance on emulsifiers and stabilisers, and exploring lab-grown cocoa technologies.

These adaptations demonstrate that chocolate is evolving from a product defined primarily by cocoa content to one increasingly defined by ingredient engineering. The chemistry of fats, emulsification, texture control, and flavour enhancement now plays a central role in maintaining the sensory qualities consumers expect at a manageable cost.

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