

# Milking it



**HOW MILK FORMULA  
COMPANIES  
ARE PUTTING PROFITS  
BEFORE SCIENCE**

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This report was researched and written by the Changing Markets Foundation in collaboration with independent researchers.

Published in October 2017.  
[www.changingmarkets.org](http://www.changingmarkets.org)

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## Executive Summary

*Infant and young child feeding is key to improving child survival and promoting healthy growth and development worldwide. Although the World Health Organization (WHO) strongly recommends breastfeeding as the optimal way of feeding infants, many women cannot or choose not to breastfeed their children. In those cases, parents are faced with an ever-increasing variety of milk formulas. This report represents the first investigation into the four largest manufacturers' (Nestlé, Danone, Mead Johnson Nutrition<sup>1</sup> and Abbott) cow's milk formula products for infants under 12 months old, and the price differences between them, across 14 global markets. It concludes that increasing product differentiation is not science-based, but instead informed by careful research into consumer preferences, guided by a desire to increase manufacturers' market share and profits. Finally, this report calls for an overhaul of the existing formula product range to ensure it is informed only by the best available science, and that formulas are as safe and nutritionally complete as possible.*

### Introduction

The WHO estimates that optimal breastfeeding could save the lives of 820,000 children under the age of five every year. On an individual level, a person's health later in life is crucially dependent on their nutrition during the first two years of their lives. Despite overwhelming evidence that breastfeeding provides many benefits (including optimal nutrition for infants), globally, only about 36% of babies under six months are exclusively breastfed.<sup>2</sup>

While some mothers choose not to breastfeed their children, many who want to breastfeed lack support from qualified lactation experts and supporters, as well as from their employers and communities. Moreover, the improper marketing activities of breastmilk substitute (BMS) manufacturers, which the International Baby Food Action Network (IBFAN) has reported for decades, continue to undermine breastfeeding.<sup>3</sup>

The market for milk formulas is highly profitable - currently worth 47 billion USD per year - and projected to increase by around 50% by 2020.<sup>4,5</sup> Milk formula is the fastest-growing packaged food product. Most of this growth is in Asia, with mainland China, Hong Kong, Indonesia and Vietnam projected to be the leading markets in terms of both total sales and projected growth. It is also a highly concentrated market, dominated by six major companies and their subsidiaries, for which breastmilk substitutes represent an important part of their portfolio. Therefore, it is not surprising that they are aggressively competing to increase their market shares, particularly in high-growth Asian countries, with product development playing a major role in this fight.<sup>6</sup>

The history of infant formula has been rife with scandals. Nestlé has been the subject of boycotts over many years because of its unethical marketing strategies to undermine breastfeeding, especially in developing countries, where formula feeding is strongly associated with increased mortality. Years of campaigning against such practices resulted in the adoption of the WHO's International Code of Marketing of Breastmilk Substitutes in 1981, but global adherence to it is mixed; many countries only partially incorporate it into their regulation. In any case, 36 years after its adoption, IBFAN continues to report regular breaches of the Code by all BMS companies. According to the Access to Nutrition Index 2016, Nestlé is now the most compliant with the Code; however, it received a score of just 36%, while Abbott and Mead Johnson Nutrition scored even lower at under 10%. Even when companies had policies in place to comply with the Code, they were found to breach them on the ground.

The range of BMSs being placed on the market has increased rapidly since the 1980s, when the first versions of formula for older children - 'follow-on formula'<sup>7</sup> - appeared. Non-governmental organisations (NGOs) have argued that such formulas were introduced to circumvent the WHO Code, and subsequent World Health Assembly (WHA) resolutions, as some countries only prohibited the advertising of infant formula.<sup>8,9</sup>

BMS manufacturers are also more frequently turning to another strategy: placing new or reformulated products onto the market that claim to be based on state-of-the-art science and compositionally ever closer to breastmilk. Wrapped in nice shiny packaging, the products' labelling often makes claims regarding their superior nutritional quality and/or their ability to help with common conditions, such as indigestion or general allergies.

### Key findings

In this report, we have reviewed over 400 products on sale in a variety of countries across the world from the top four infant formula manufacturers: Nestlé, Danone, Mead Johnson Nutrition and Abbott. Our study focused on the most popular types of cows'-milk-based powdered milk formula for infants under 12 months old in 14 markets: the US; the UK; Germany; France; Poland; Bulgaria; Spain; The Netherlands; mainland China and Hong Kong; Indonesia; Australia; New Zealand and South Africa. We excluded products marketed for children over 12 months old and very specialised products that deal with precise medical conditions. Here are the main findings of our investigation.

### 1. The nutritional composition of formula is guided by legislation or Codex compositional standards, but controls on its nutritional quality are largely dependent on industry self-regulation

- The composition of infant milks is regulated at different levels. A global trading standard, first set by Codex Alimentarius in the 1980s, sets minimum requirements for levels of macronutrients (carbohydrates, protein, etc.) and micronutrients (minerals, vitamins, etc.) in infant and follow-on formulas. The types and levels of nutrients in infant milks are broadly similar across legislatures of major markets, but required and/or permissible ingredients and labelling restrictions may vary.
- There is very little oversight of the nutritional composition and compliance with regulatory standards of infant milks sold around the world. Although infant milks are perceived as a highly controlled product, authorities are heavily reliant on industry self-regulation. Powdered infant milks are not sterile products, and the presence of pathogenic microorganisms (e.g. *Enterobacter sakazakii* and *Salmonella spp.*) has been regularly reported. Compliance with the nutritional compositional requirements or broader quality issues, however, are reported less frequently. This seems a significant oversight by government food safety regulators - particularly for infants under six months old, who rely solely on the formula for all their nutritional needs in a key phase of their development.

### 2. No clear scientific rationale underpinning product ranges

- Despite legal requirements on the nutritional composition for infant formula, follow-on formula and milks marketed as speciality products, the top four manufacturers have a large range; our research identified over 400 products. These include similar products being sold under their own and subsidiary brands as part of product differentiation strategies.
- Manufacturers are marketing an increasing range of products for different age groups (1-12 months, 1-6 months, 1-3 months, etc.); products with additional nutrients, which are not required by law, in the race to get 'closer than ever to breastmilk' (omega fatty acids such as DHA<sup>10</sup> and ARA,<sup>11</sup> prebiotics and probiotics, nucleotides, etc.); products claiming to solve general conditions (preventing allergies, promoting softer stools and better sleep, etc.); and products with raw ingredients and flavours to cater for wider consumer preferences and concerns (claiming to be free of genetically modified organisms (GMOs) or palm oil, or using organically sourced ingredients, vanilla flavouring, etc.).
- Nevertheless, companies are placing products with different formulations on different markets, which suggests that there is little nutritional science and few health considerations behind their product range. For example, Nestlé is the only company that sells products in all of the 14 markets investigated, with a total of 165 products. However, it is obvious that there are many variations in the composition of its most widely available NAN product range on different markets.
- Danone sells the most products (173 in total) amongst the companies reviewed in this study, while Mead Johnson sells 46 and Abbott sells 35.

### 3. Product differentiation as a way to raise prices and increase profit margins

- There is huge disparity in the cost of infant formula both within and between countries. The largest four companies are charging high prices for their so-called 'premium products' - especially in the growing Asian markets, where there is fierce competition for market share. For example, in Indonesia, the cost of the most expensive first infant formula we found on the market - Enfamil A+ (Mead Johnson

Nutrition) - is four and a half times that of the economy brand formula SGM Ananda Presinutri 1 (Danone). Comparatively, in the UK, the most expensive powdered infant formula we found (Aptamil Profutura 1) is more than one and a half times the price of the least expensive (Cow & Gate First Infant Milk 1), both of which are manufactured by Danone.

- Manufacturers charge very different prices in different countries for the same brand of infant formula. For example, Aptamil Profutura 1 (Danone) is on sale in the UK, Germany and China. In the UK, it costs 13 GBP per 800g (around 17 USD); in Germany, it costs nearly 20 EUR for 800g (around 24 USD); whereas in China, it costs 365 RMB for 900g (around 55 USD). This product is one of the most expensive powdered cow's-milk-based infant formulas available in the UK - yet it costs more than three times the price in China.
- Marketing of so-called premium products is having a significant financial impact on families, especially in Asian countries. In the UK, France and Germany, feeding a 2-3-month-old baby costs 1-3% of the average monthly salary; in Poland, it costs of 4-7% of the average monthly salary. But in China, buying so-called super-premium infant formula to feed a 2-3-month-old baby can cost up to nearly 40% of the average monthly salary, and even the lowest-priced foreign formula costs around 15% of the average monthly salary. In Indonesia, a parent on an average monthly salary could spend up to nearly three-quarters of their monthly income if they chose to buy Mead Johnson Nutrition's Enfamil A+ first infant formula.

## Conclusions and recommendations

This report exposes the lack of scientific underpinning behind the products BMS manufacturers put on different markets. Manufacturers are constantly placing new formula products on the market with a variety of different claims. Often, they claim that their products are informed by the 'latest developments in nutritional science'. However, the wide variety of products on sale within and between countries and the efforts of companies to push expensive premium products, especially to high-growth Asian markets, call such claims into question.

Our research shows that manufacturers behave very differently in different markets, and that often their products are closer to those of their direct competitors within the same market than their own products elsewhere. There is evidence that such decisions are primarily informed by market research instead of scientific or health considerations. We have identified companies' very sophisticated use of market research and social media to study consumer preferences in this area. Such research seems to be primarily focused on consumer affordability and willingness to pay, as there is no clear scientific justification for the very large price differences observed within brands on each market and also within brands across different countries.

For babies who are not breastfed, it is the responsibility of manufacturers and public food safety authorities to ensure breastmilk substitutes are as safe and nutritionally complete as possible, and that the development of such products is strictly based on science. Adequate nutrition in infant and young child feeding is critical for improving child survival, promoting healthy growth and development and preventing illness later in life. Instead of constant 'product innovation' for the sake of increasing their sales, this report calls for a comprehensive overhaul of infant milks being sold by BMS manufacturers so that only those based on unequivocal scientific advice and the highest quality of ingredients are sold.

The report also calls on authorities to ensure that the marketing and nutritional quality and completeness of products is regularly verified, and that any unjustified health claims are removed from products. Finally, governments should introduce and enforce national legislation that fully implements the WHO Code and WHA resolutions.

Chapter 1:

## Why this report?

Infant and young child feeding is key to improving child survival and promoting healthy growth and development worldwide. The first two years of a child's life are particularly important, as good nutrition during this period lowers morbidity and mortality, reduces the risk of chronic disease and fosters better development overall.<sup>1</sup>

The World Health Organization (WHO) strongly recommends breastfeeding due to its many benefits, including being the optimal way for infants to receive the nutrition they require during this vital period. But for a variety of reasons some mothers are unable to breastfeed, others choose not to breastfeed and some children do not have mothers to breastfeed them. Around 92 million children under six months of age - two out of three babies - are either formula-fed or fed a mixture of breastmilk and other foods.<sup>2</sup>

Breastmilk substitute (BMS) manufacturers have a significant responsibility for the health and development of non-breastfed infants. Manufacturers should be providing products that are both safe and as nutritionally complete as possible, and the development of such products should be strictly based on science. In addition, they should be respecting marketing restrictions on BMS products, as outlined in the WHO International Code of Marketing of Breast-milk Substitutes ('the Code').

### Box 1: Infant formula, follow-on formula and breastmilk substitutes

In this report:

**Infant formula** refers to milk formula products intended for preweaned infants, typically 0-6 months of age.

**Follow-on formula** refers to milk formula products intended for weaned infants, typically 6-12 months of age.

**Infant milks** covers both infant formula and follow-on formula, but not wider breastmilk substitutes (such as cereals).

**Breastmilk substitutes (BMS)** refers to any food for children up to three years being marketed or otherwise presented as a partial or total replacement for breastmilk, whether suitable for that purpose or not.

**Growing-up milks** refers to milk formula products for young children, typically 12 months to three years of age. (The term **toddler milks** is often used in the US. These are terms that companies use to distinguish between their product range).

**Specialised infant milks** are also referred to as **food for special medical purposes**.

**Milk formula** refers to the wider range of milk powders for all ages available on the market, including milks for pregnant women and senior citizens.

Yet, parents are faced with an ever-increasing variety of infant formulas, follow-on formulas and growing-up milks (see box 1) as manufacturers continue to place new products in this saturated market with no clear purpose, other than increasing their market share and bypassing marketing restrictions. As this report shows, public authorities are largely relying on industry self-regulation with regards to nutritional quality and the variety of products on the market.

This report represents the first investigation into the product range and price differences of infant formulas that the four largest BMS manufacturers (Nestlé, Danone, Mead Johnson Nutrition and Abbott) are placing on 14 global markets. It should be noted that, during the course of our research, Mead Johnson Nutrition was acquired by Reckitt Benckiser (RB). As a result of this transaction, Mead Johnson Nutrition is now a division of RB and has added brands such as Enfa and Nutramigen to RB's portfolio. For the purposes of this report we have continued to refer to Mead Johnson Nutrition, as these are the only BMS products owned by the parent company RB. The findings expose unprecedented product and pricing differentiation, calling into question companies' claims of being responsible and science-based.

*Milk formula on sale at an Indonesian supermarket. Copyright: Benedict Wermter*



## Chapter 2:

# The importance of infant and child feeding

Undernutrition is associated with 45% of child deaths - 2.7 million children - worldwide each year. Adequate nutrition in infant and young child feeding is vital for improving child survival and promoting healthy growth and development. The first two years of a child's life are especially critical, as poor nutrition at this stage not only increases the risk of death but also contributes to illness later in life. Good nutrition in a child's early life has a profound impact upon a child's overall development.<sup>3</sup>

There is scientific consensus and substantial evidence that breastfeeding provides the best possible nutrition for a child during the first critical stages of their development and gives protection from a range of infectious diseases. The WHO estimates that optimal breastfeeding could save the lives of 820,000 children under the age of five every year.<sup>4</sup> Infants who are not breastfed are 15 times more likely to die from pneumonia and 11 times more likely to die of diarrhoea than those who are exclusively breastfed for the first six months of life.<sup>5</sup> Breastmilk has been labelled '*not only a perfectly adapted nutritional supply for the infant, but probably the most specific personalised medicine that he or she is likely to receive*'.<sup>6</sup>

Recent studies examining the existing breadth of knowledge on breastfeeding show it conveys significant health benefits on both the mother and the child. Children who are breastfed have a lower risk of death, disease, obesity, dental problems and asthma, as well as higher intelligence, and there is growing evidence that breastfeeding could protect a child against diabetes later in life.<sup>7</sup> For mothers, breastfeeding prevents breast cancer, improves birth spacing and lowers the risk of ovarian cancer, type 2 diabetes and postnatal depression.<sup>8</sup>

For these reasons, the WHO and UNICEF recommend early initiation of breastfeeding (within one hour of birth), exclusive breastfeeding for the first six months of a child's life and the introduction of nutritionally adequate and safe foods at six months, together with continued breastfeeding, for up to or beyond two years of age.<sup>9</sup>

Despite the well-documented evidence and WHO recommendations on the benefits of breastfeeding, less than half of all newborn babies are put to the breast within an hour of birth,<sup>10</sup> and only one-third (36%) of babies under six months old are exclusively breastfed.<sup>11</sup> Nearly all women are biologically capable of breastfeeding, although the WHO identifies a small number of infant and maternal conditions that would medically prevent a mother from doing so.<sup>12</sup> Studies estimate that less than 5% of women are physically incapable of breastfeeding.<sup>13,14</sup>

The reasons for low rates of exclusive breastfeeding worldwide are more complex than biological inability. A wide range of factors, often outside an individual mother's control, can impact upon the decision to breastfeed or the continuation of breastfeeding. Save the Children identifies four main barriers to breastfeeding: community and cultural pressures, health worker shortages, lack of maternity legislation and big business.<sup>15</sup> Many women who plan to breastfeed are not adequately supported by healthcare professionals (such as doctors or lactation experts), partners, family members, employers or government policies. As UNICEF UK recognises, it is '*often a highly emotive subject because so many families have not breastfed, or have experienced the trauma of trying very hard to breastfeed and not succeeding*'.<sup>16</sup>

Health workers in developing and rich countries alike often influence decisions on infant feeding before and after birth.<sup>17</sup> The support of health workers is especially important when women face challenges with breastfeeding. However, substantial gaps in knowledge and skills to support breastfeeding exist at all levels of healthcare staff.<sup>18</sup> More than 60 countries also have a critical shortage of doctors, midwives and other healthcare workers. If babies are delivered without skilled assistance, then mothers are less likely to receive immediate help and advice on breastfeeding.<sup>19</sup>

Government policies on length of maternity leave and employment conditions are important. Short maternity leave leads to a fourfold increase in the likelihood of either not breastfeeding or stopping breastfeeding early.<sup>20</sup> Many women around the world cannot take time off work to breastfeed. For hundreds of millions of women, workplace conditions and lack of maternity protection mean breastfeeding is simply not a viable option.<sup>21</sup> For this reason, UNICEF emphasises that good nutrition in a child's first years is a collective effort, which 'requires government leadership and support from communities, workplaces and the health system to really make it work'.<sup>22</sup>

### Box 2: Unethical practices of BMS manufacturers

Unethical marketing practices from BMS manufacturers, which the International Baby Food Action Network (IBFAN) has reported for decades, continue to undermine women's confidence that they can breastfeed.<sup>23</sup> Through marketing, manufacturers heighten mothers' doubts by inferring that infant crying, fussiness and perceived hunger are due to an insufficient breastmilk supply, while emphasising that infant formula can solve these issues. Manufacturers influence behavioural control by enhancing beliefs that breastfeeding is difficult and portraying infant formula as equal to or better than breastmilk. Adverts suggesting higher intelligence and other benefits for a child's development can leave mothers feeling as though their breastmilk is inferior.<sup>24</sup> Studies from several countries have linked infant formula advertisements to decreased breastfeeding rates.<sup>25</sup>

While this report cannot investigate all the reasons why some families do not breastfeed their children, the fact is that a huge number of infants and children worldwide currently rely on infant formula to meet their nutritional needs in a critically formative period of their life. Around 92 million children under six months of age - two out of three babies - are either formula fed or fed a mixture of breastmilk and other foods.<sup>26</sup>

The composition of breastmilk changes continuously and therefore infant milks cannot imitate breastmilk. Moreover, formula does not include antibodies and other immune system substances, growth factors, hormones and other substances that help babies to grow and develop at an appropriate rate and protect them from illness.<sup>27</sup>

Given the shortcomings of formula feeding, it is very important that manufacturers provide the best possible formula to infants who are not breastfed. This means infant milks need to be safe for infants, free from pathological micro-organisms and as nutritionally complete as possible.

It is the responsibility of formula manufacturers to demonstrate the safety and suitability of their products based on generally accepted scientific evidence. In this context, the European Food Safety Authority (EFSA) advises that nutrients and substances essential for infants' growth and development

# THE IMPORTANCE OF INFANT AND CHILD FEEDING



Source: World Health Organisation



Optimal breastfeeding could save



**820,000**  
children deaths annually



In reality

**36%**

of infants 0-6 months are exclusively breastfed



**92** MILLION

Children under six months of age are either formula fed or fed a mixture of breastmilk and other foods



Suboptimal nutrition leads to



**155**  
MILLION  
stunted



**41**  
MILLION  
overweight



**52**  
MILLION  
wasted

## Past and present of infant formula

Table 1: Components of formula <sup>28</sup>

What?	Function	Typical source
<b>ENERGY</b>	Needed to maintain body mass, body composition and a level of physical activity consistent with long-term good health	Carbohydrates (main), fat and proteins
<b>PROTEIN</b>	Required to repair and maintain body tissue, producing hormones, antibodies and enzymes	Milk (cow & goat) or soy
<b>FAT</b>	Essential fatty acids for brain and eye development. Absorption of fat-soluble vitamins. Fat stored in the body reduces heat loss and protects body organs	Milk (cow & goat), vegetable oils (sunflower, rapeseed, palm, coconut, canola, soy, etc.), fish oil, egg, algae and fungi
<b>CARBOHYDRATES</b>	Energy	Lactose (cow & goat milk) and other sugars
<b>VITAMINS</b>	Essential for growth, development and normal body function. Many types, including vitamins A, C and D and folic acid	Various
<b>MINERALS</b>	Essential for growth, development and normal body function. Many types, including calcium, phosphorous, iron and zinc	Various
<b>OTHER SUBSTANCES</b>	Choline, inositol, L-carnitine, taurine, nucleotides and nucleosides, probiotics, etc.	Various

should be added to formula only in amounts that serve nutritional or other benefits.<sup>29</sup> In addition, EFSA judged some formula companies' attempts to imitate substances present in human milk alone as a too simplistic approach.<sup>30</sup> Instead, it recommended that composition of formula is informed by health and physiological outcomes observed in formula-fed infants.

To conclude, the composition of formula needs to be guided by science. Low or missing nutrients and other essential substances in formula might compromise the development and growth of infants. Equally, additions of amounts higher than needed or the inclusion of unnecessary substances may burden the infant's metabolism and/or other physiological functions. For example, too little phosphorous may not adequately maintain bone mass, while too much may contribute to bone loss. Too little iron can cause anemia, while too much may impair growth and increase the risk of infection.<sup>31</sup> Too much sodium can be problematic for infant kidneys.<sup>32</sup> Hence, milk formula manufacturers must take a more cautious approach towards the formulation of their products.

### 3.1. A short history of infant feeding

Before the introduction of infant formula and bottle-feeding in the mid-19<sup>th</sup> century, breastfeeding or wet-nursing were the main ways to feed a baby. When a mother died in childbirth, if she chose not to breastfeed or was unable to breastfeed for health-related reasons, babies were commonly fed by another lactating woman: a wet nurse. This practice was a lifesaver for these infants.

In some societies, wet-nursing was a well-organised profession providing means of employment for women and a way to extend networks and cement relationships. Yet in other contexts, the practice was problematic due to deep class and race divisions.<sup>33, 34</sup> Wet nurses often came from poor families, and left their own children at home to feed the children of more privileged families.<sup>35</sup> Another example is the historical role that many Black women played as wet nurses in slavery, when they were forced to breastfeed and nurture their owners' children to the detriment of their own babies.<sup>36</sup>

Wet-nursing continued as the most common alternative to a biological mother's breastmilk until the introduction of formula and bottle-feeding in the middle of the 19<sup>th</sup> century. However, before the development of formula, other forms of artificial feeding did exist. There is archaeological evidence that artificial bottles and nipples were used in a variety of societies as early as 2000 BC. Feeding devices were made from wood, ceramics or cows' horns, and in more recent times from pewter or silver, with rags and cloths used as a replacement nipple.<sup>37</sup>

Historically, artificial feeding involved replacing breastmilk with the most readily available animal milk; for example, sheep, goat, donkey, camel and (most commonly) cow.<sup>38</sup> Besides animal milk, other breastmilk replacements included bread soaked in water or milk, and sometimes cereals soaked in broth.<sup>39</sup> Nutritionally inadequate mixtures such as these continue to be responsible for many cases of disease and death of infants.

Despite similar appearances, cows' milk is not a suitable substitute for human breastmilk for several reasons. There are important differences in macronutrient composition: human breastmilk is richer in carbohydrate content, and lower in protein and mineral content. Cows' milk lacks the proper amounts of iron, vitamin C and other important nutrients that babies need. Despite having a similar fat content, breastmilk is predominantly made up of unsaturated fat, as opposed to the saturated fat found in cows' milk.<sup>40</sup> Infants are unable to digest cows' milk properly, and the differences in nutritional profile can either overburden the infant's organs (when nutrients are supplied in excess) or lead to severe nutritional deficiencies (where the nutrients are lacking).<sup>41</sup>

Migration and employment booms during the Industrial Revolution led to a huge increase in the number of infants being artificially fed. Rapid industrialisation across Europe and the US resulted in large numbers of families migrating to cities for work.

Low wages and the high cost of living in cities meant many women needed to work to support their families. Appalling employment conditions and long hours made it very difficult for most women to breastfeed their children. Some infants were looked after by wet nurses, who were often destitute peasant women, while others were fed home remedies. Issues of sterilisation, bacteria and proper storage of



Other brands of commercial formulas appear

Nestlé, Mellin's Food, etc. Basic recipe lacks essential vitamins and minerals.



Nestlé's Food

Most of today's brands of commercial infant formula appear on the market, including Mead Johnson, SMA, Abbott's Similac and Nutricia

Product development focuses on copying breastmilk macronutrient composition.

Infant formula takes over due to a combination of aggressive marketing, lower costs and increased medical approval

Product range expands vastly. Further vitamins, minerals and other substances are added to formula and more specialised products come onto the market i.e. anti-reflux, formulas for premature babies, etc.



The World Health Assembly adopts restrictions on the marketing of breastmilk substitutes (The Code) to protect breastfeeding and curtail inappropriate marketing practices. In addition, the Codex Alimentarius adopts a global standard for the nutritional composition of infant formula.

Product range booms

Infant formula companies flood the market with new products by making further adjustments to their existing recipes and adding further substances found in breastmilk.

Changing Markets' investigation found over 400 formula products in 14 markets.

1860-1900

1910-1940

1950-1970

CIRCA 1980

1990 AND BEYOND

1860 1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1977 1980 1981 1984 1990 2000 2010 2017

1867

1911

1919

1925

1950

1960

1970

1977

1981

1984

1990

2000

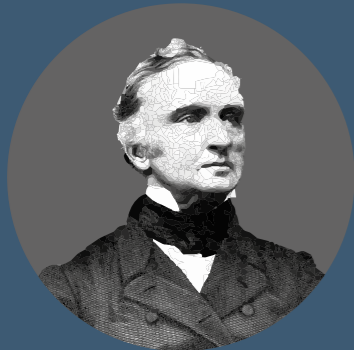
2010

2017

# A SHORT HISTORY OF INFANT FORMULA

Justus Von Liebig

Dr T.M.Rocht



First commercial formula appears in Europe

Liebig's soluble food for babies (1867) made from cow's milk, wheat and malt flour, and potassium bicarbonate.

Physicians do not trust commercial formulas

They prescribe recipes tailored to infants (i.e. Harvard's "Rocht percentage method"). These involve the dilution of fresh cow's milk (i.e. lowering protein content) and the addition of cream (i.e. increasing fat content) and sugar in precise amounts.



First major recipe adjustments are made. These include changes to the types of carbohydrates and fats used, and the fortification of formulas with minerals and vitamins.



The majority of parents continue to feed their children with cheaper evaporated milk formulas and provide additional supplementation with vitamins and iron.



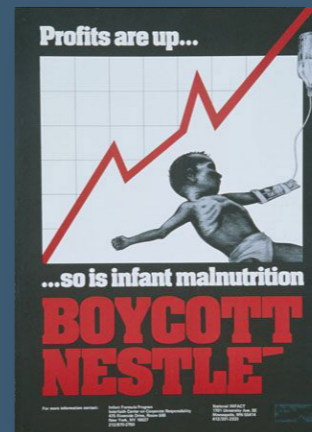
First specialist formulas are developed, including soy-based formula and hydrolysed proteins.



Breastfeeding rates reach an all time low in industrialised countries.

Nestlé Boycott starts

A boycott on Nestlé products is launched in response to their aggressive marketing of formulas and associated severe impacts in infant health, particularly in developing countries.



Formula versions for older children ("follow-on formula", "growing up milks") are developed.

Companies develop a number of additional formulas claiming to help tackling standard conditions such as indigestion, better sleep, etc. and responding to additional consumers' concerns such as GMO-free or aluminium-free.



animal milk were also not widely understood: *'children were hand-fed using unsanitary pap boats or hard-to-clean bottles, and often being fed cows' milk gone bad'*.<sup>42</sup>

Due to the inadequacy of animal milk and the multiple issues with poor sanitation, artificial feeding was not a reliable practice and very few infants fed on non-human milks survived.<sup>43</sup> In some places, as many as a third of infants died before their fifth birthday. These high infant mortality rates led to an increased interest in the question of infant feeding during the second half of the 19<sup>th</sup> century.<sup>44</sup>

During that time, advances were made in infant feeding devices, including the introduction of glass bottles and (in 1845) the Indian rubber nipple.<sup>45</sup> Major scientific developments – including the improvement of general sanitation and pasteurisation of milk, as well as a better understanding of compositional differences between human milk and cows' milk – led to the development of the first commercial infant formulas.<sup>46</sup>

### 3.2. The making of infant formula

Over the years (and up until the present day), infant formula recipe changes have attempted to copy the composition of human breastmilk, which is the gold standard in infant nutrition. The recipes of the first commercial formulas were relatively simple; they used cows' milk, adding water to lower protein and mineral content and flour to increase carbohydrate content.<sup>47</sup>

In the 1860s, the first commercially available infant formula was produced and patented by Justus von Liebig. It consisted of cows' milk, wheat flour, malt flour and potassium bicarbonate. This formula was first sold in a liquid form and then in a powdered form, and became popular across Europe and the US.<sup>48</sup>

In the 1870s, Nestlé's Infant Food was developed. This was similarly made from cows' milk, wheat flour, malt and sugar – but, unlike Liebig's formula, it only required the addition of water rather than heated cows' milk.<sup>49</sup> During this time, a variety of commercial infant formulas became rapidly available; by 1887, there were 27 patented brands.<sup>50</sup>

Evaporated milk, developed by John B. Myerling in 1885, also became commonly used for infant feeding. Commercially funded studies conducted in the 1920s showed that babies who were fed evaporated milk had the same growth as breastfed infants. This reassurance, along with its easy transportation and low cost, ensured evaporated milk remained a popular choice and continued to be recommended by healthcare professionals until the mid-20<sup>th</sup> century.<sup>51</sup>

Although evaporated milk and early formulas enabled an infant to gain weight, they lacked vital nutrients such as specific proteins, vitamins and minerals. Despite a decrease in negative impacts on non-breastfed infants, there were still huge health issues – including deaths – from undernourishment, rickets, scurvy and bacterial infections, and physicians became concerned about the quality of mass-produced infant foods.<sup>52</sup> For this reason, formulas were seen primarily as emergency sustenance for babies that would otherwise starve.<sup>53</sup>

Thomas Rotch, a paediatrician in the US in the 1890s, began to use mathematical formulas to adjust the percentages of fat, protein and carbohydrates in cows' milk. These mathematical formulas were then adjusted to the needs of each individual baby, taking into account weight, energy and information about a baby's stools.<sup>54</sup> Before this, physicians were relatively unconcerned with birth and infant feeding practices.<sup>55</sup> As the mother needed to return to the physician regularly to have the complex formula adjusted for her child, this became an ideal way for physicians to earn both money and respect in the realm of infant feeding practices.<sup>56</sup>

As doctors began to lose income and prestige to the popularity of commercial formulas that could be

prepared at home, manufacturers of infant food and evaporated milk found bottle-feeding highly profitable. Manufacturers realised that building relationships with healthcare professionals and harnessing medical approval for their products could be beneficial for business. Meanwhile, doctors increasingly understood they needed to be involved with commercial manufacturers to maintain their status and reap financial rewards from the lucrative area of infant feeding.<sup>57</sup>

Infant formula manufacturers began to advertise directly to doctors and healthcare professionals. Manufacturers began the effective practice of providing their infant formulas for use in hospitals to feed newborn babies. In *'an unholy alliance'*, the medical profession gave endorsements for commercial infant formulas; these formulas were distributed without instructions, instead advising mothers to seek the advice of their doctor before using the product.<sup>58</sup>

By the 1970s, breastfeeding reached an all-time low in industrialised countries as infant formula brands became well-known and regarded by parents as safe, convenient and medically approved.<sup>59</sup> Society placed increased importance on scientific and medical expertise; in addition to manufacturers' aggressive and effective advertising, this led to the widespread belief that *'medically directed artificial infant feeding was equal to, if not better than, breastfeeding'*.<sup>60</sup>

Today, the process of producing infant formula is still defined by ongoing modification of the 'formula'. Manufacturers of BMSs continue to adjust the recipes of their existing products, as well as adding further substances found in breastmilk, in an attempt to imitate the composition of human breastmilk more closely.<sup>61</sup>

### 3.3 The global infant formula market and its growth

The market for milk formulas is large and profitable. Globally, it is currently worth 47 billion USD per year, and the value of sales is projected to increase significantly in the run up to 2020.<sup>62</sup> Milk formulas are also one of the fastest growing packaged food products. Between 2011 and 2016, this meant an increase of 13 billion USD in absolute terms.<sup>63</sup> The industry is not only expanding at a rapid pace but also appears resilient to global downward trends.<sup>64</sup>

This huge growth is primarily driven by emerging markets in the Asia Pacific region, which account for 30 billion USD, or two-thirds of total global sales. Markets such as China, Hong Kong, Indonesia and Vietnam are vitally important for milk formula sales, as they are responsible for almost all projected growth until 2020.<sup>65</sup>

China is the largest and the fastest growing formula market, with 46% of the total share in 2015. Sales of milk formulas in China alone are worth more than double those in US and Western Europe combined. Combined sales in Asia Pacific countries other than China are also very significant and equal to sales in US and Western Europe together.<sup>66</sup>

Several factors are driving the increasing sales of milk formulas in South East Asia, including rapid urbanisation and high birth rates leading to the largest populations of children aged 0–4 years in the world. Many countries such as China also have relatively low breastfeeding rates. Active promotion through advertising has led many parents to believe that infant formula is a better, healthier alternative to breastmilk.<sup>67</sup>

Outside Asia, the US is the second-largest market for milk formulas.<sup>68</sup> In the US, mothers face barriers to breastfeeding due to inadequate maternity leave, and there are no legal measures which prohibit the advertising of breastmilk substitutes.<sup>69</sup> Generally, trends in sales of milk formulas in developed markets are more static than those in emerging markets.

The industry relies on stable income streams from developed markets and focuses heavily on emerging markets for growth.<sup>70</sup> It is perhaps not surprising that companies compete aggressively to increase their market share, especially in the lucrative Asian countries.<sup>71</sup> There is no doubt that the global milk formula market offers profit-making potential for the companies involved.



Formula trading. Copyright: Benedict Wermter

### Box 3: The Chinese preference for premium infant milks and the international implications

As the Chinese middle class has grown, so has the Chinese preference for 'premium' infant milks. Despite the relaxation of the one-child policy in 2015, its emotional legacy remains; many parents still choose to have only one child, on whom they are willing to spend significant sums because of the 'investment' the child represents.<sup>72</sup> For example, a 2017 Mintel survey identified that 75% of Chinese bottle-feeding mothers chose organic infant milk. Explaining their choice, around half agreed that they were 'willing to pay more for their baby's food'.<sup>73</sup>

Although Chinese brands are widely available, Chinese parents prefer foreign brands. The 2017 Mintel survey found that 65% of Chinese bottle-feeding mothers had used foreign brands in the previous six months, with figures higher in international cities such as Shanghai and Guangzhou.

This preference stems from both the premium image of foreign brands and food safety concerns with domestic brands. Nestlé is now a leading brand in China with its top-selling products, including S-26 and the super-premium brand ILLUMA. Other foreign companies that have gained a foothold in the Chinese infant formula market include Mead Johnson, Abbott, Wyeth and FrieslandCampina.<sup>74</sup>

Chinese parents, however, pay a hefty price for foreign brands sold in the country, as shown in the price analysis in Chapter 6. In 2013, a Chinese government price-fixing probe resulted in fines and companies agreeing to lower prices; however, prices still remain up to double that of the same product in many other countries.<sup>75</sup>

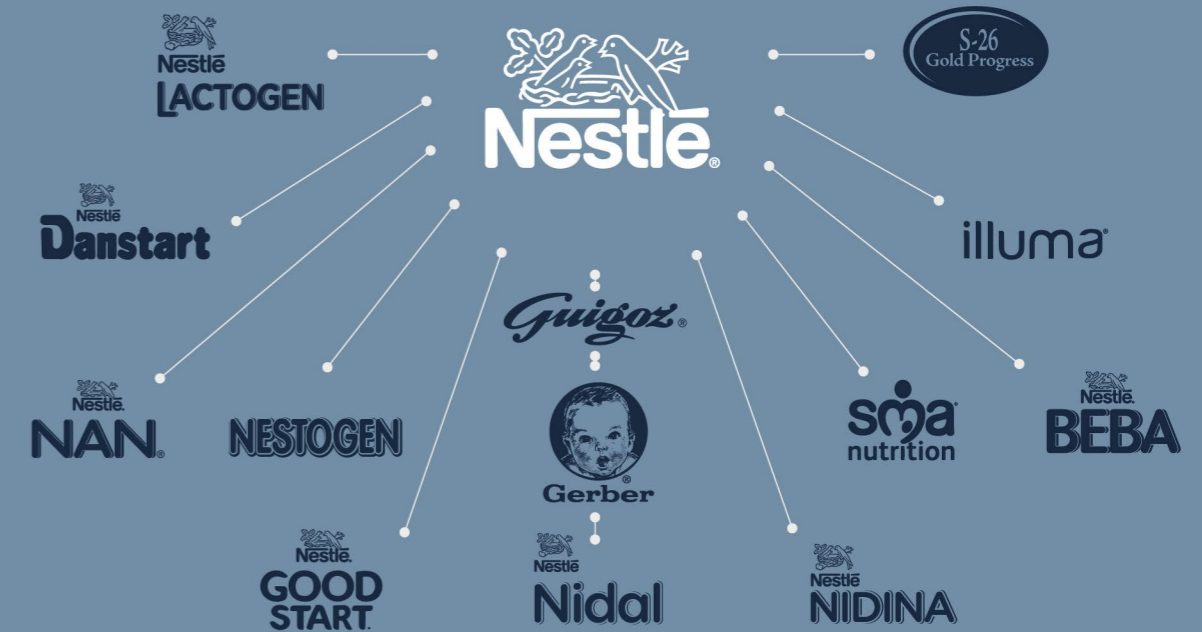
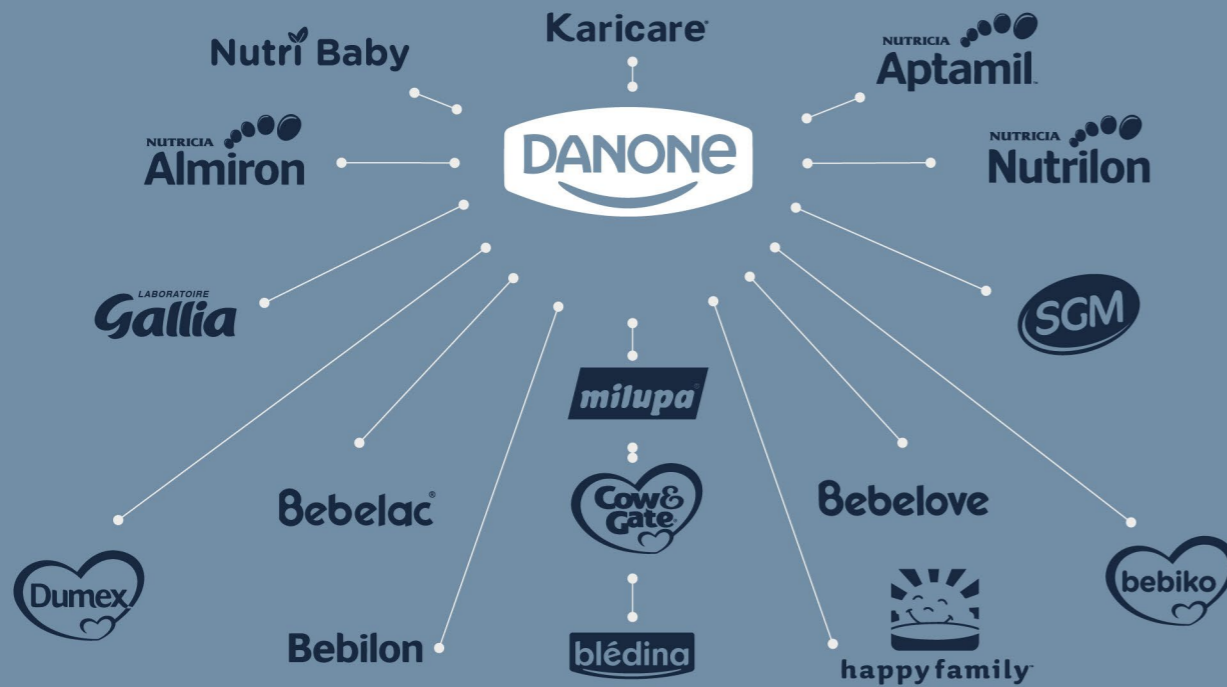
Unsurprisingly, Chinese parents have begun buying infant milks abroad, in person or via e-commerce. The trade in infant milks has also contributed to the daigou phenomenon: a channel of commerce between mainland Chinese buyers and overseas professional shoppers. Daigous buy all kinds of luxury products at cheaper prices and then either send them via post in small shipments or bring them repacked in suitcases to avoid import tariffs.<sup>76</sup> The value of the daigou trade is enormous. In 2014, it was estimated to be between 55 and 75 billion RMB, nearly half what the brands themselves sell through mainland stores.<sup>77</sup>

In 2013, the Hong Kong government intervened to address the constant flow of traders and tourists buying formula at reduced prices, which resulted in shortages. Travellers attempting to leave the territory with more than 1.8kg of formula now face penalties of up to 500,000 HKD (64,000 USD) and up to two years in prison. Despite these measures, more people were arrested for smuggling infant milk than drugs<sup>78</sup> and in 2014 alone there were over 5,000 prosecutions.<sup>79</sup> This has also resulted in sophisticated daigou operations being established elsewhere, especially in Australia. Many retailers in Australia, New Zealand, the UK and Germany now restrict purchases of infant milks to between two and four tins a day.<sup>80,81</sup>

Author: Lucy Michaels

# A HIGHLY CONCENTRATED INDUSTRY

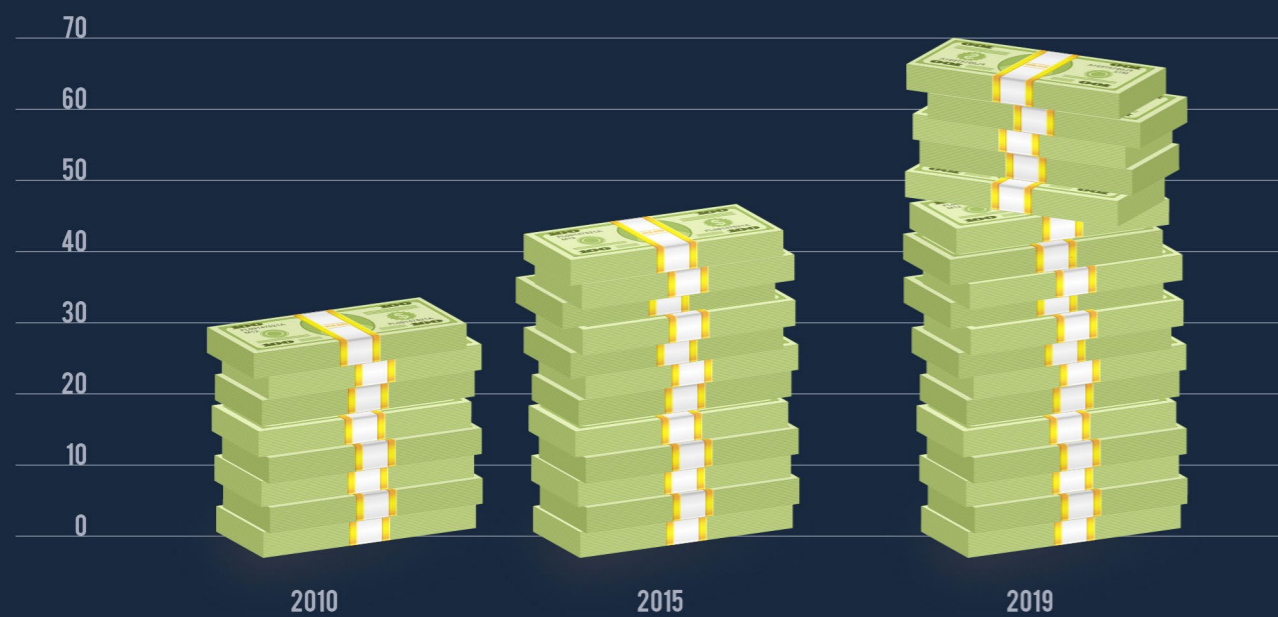
Brands that come under the 4 biggest companies



## MILK FORMULA SALES

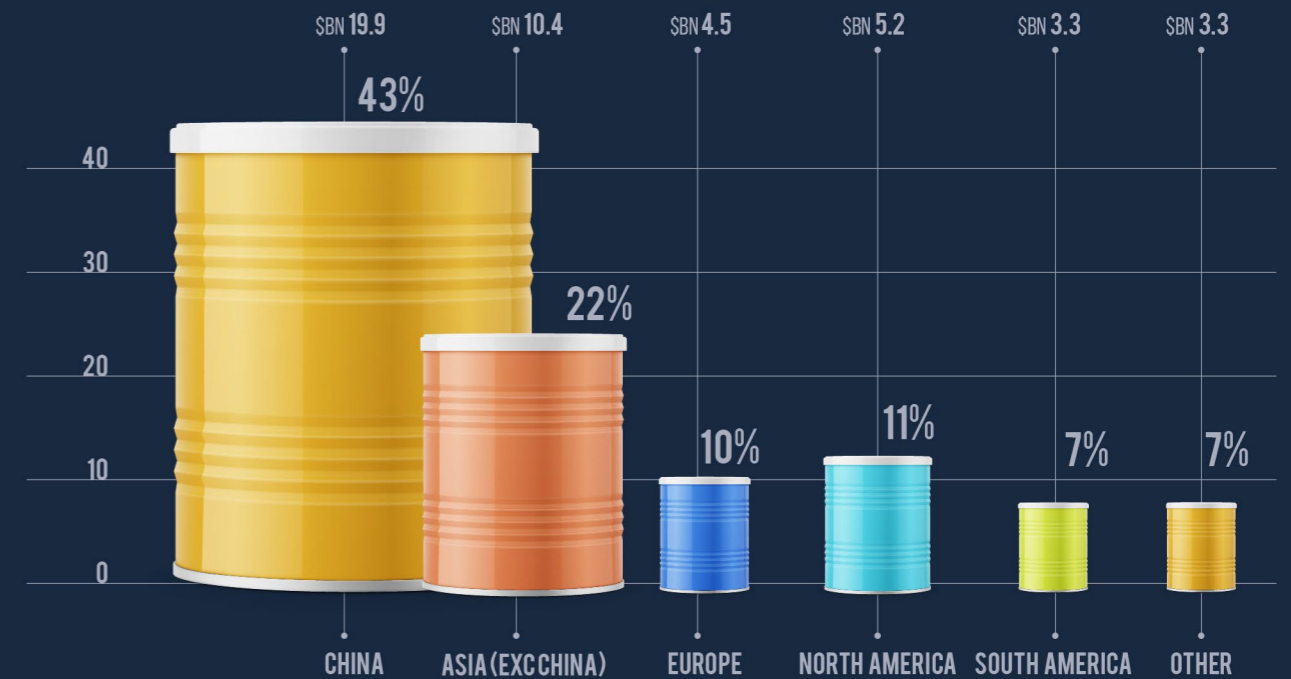
MILK FORMULA SALES (USD BILLIONS)

Source: Euromonitor International



% MILK FORMULA SALES BY REGION (2015)

Source: Euromonitor International



## The infant formula industry

### 4.1. A highly concentrated industry

In addition to being a large and highly profitable arena, the market for infant milks is highly concentrated in the hands of six major international companies and their subsidiaries: Nestlé, Danone, Mead Johnson (now RB), Abbott, FrieslandCampina and Heinz.

Nestlé is the leading company; it has a strong presence worldwide and occupies over one-fifth (22%) of the global market share. Our research found that Nestlé and its subsidiaries own at least 13 different brands of mainstream infant milks globally. Nestlé's performance is driven by its dominance of fastest growing markets including the Asia Pacific region (20% sales), Latin America (50% sales) and Middle East and Africa regions (30% sales) in 2015.<sup>82</sup>

Together, the top five companies - Nestlé, Danone, Mead Johnson (now RB), Abbott and FrieslandCampina - accounted for 60% of global sales of milk formula in 2015.<sup>83</sup> Markets with the fastest growth - such as China, Hong Kong, Indonesia and Vietnam - have become the focal point of fierce competition between international players as they strive for an increasing share of formula sales.<sup>84</sup>

It is estimated that the industry spends 10-15% of its global sales on marketing and promoting milk formula each year. This is around 4-6 billion USD - a figure comparable to the WHO's annual budget.<sup>85</sup> The market for milk formulas is projected to reach over 70 billion USD by 2019.<sup>86</sup> Companies compete aggressively to increase their market shares within this highly lucrative market, and product development plays a major role in this fight.<sup>87</sup>

#### Box 4: Billion-dollar baby: A strategic sector for dairy market growth

In 2013, the UN's FAO valued the total production of 770 billion litres of milk at 328 billion USD, making milk the top agricultural commodity in value terms globally.<sup>88</sup> Top exporters of milk and dairy products include New Zealand, European Union (EU), the US, Australia and Argentina.<sup>89</sup>

The global dairy markets have recently been subject to high price volatility due to an excess of production at a global scale. In 2015, a perfect storm - a combination of a Russian import ban on Western dairy products, the abolition of milk production quotas in the European market and excess stocks of milk powder in the Chinese market - was blamed for a dramatic fall in milk prices, which had major consequences for dairy farmers and led to protests.<sup>90</sup>

Matching supply with demand for all products to ensure value across the supply chain is maintained and price volatility reduced is seen as the major challenge for the dairy industry.<sup>91</sup> In this context, major producing regions like the EU, New Zealand and the US are increasingly relying on growing consumption in South East Asia, where domestic dairy production is low.



Worker at a milk formula factory

Moreover, the dairy industry is focusing on the sales of value added products. China's demand for imported dairy products, including formula, continues to grow in the shadow of recent domestic safety scandals (see box 7). In the words of the New Zealand Economic Development Minister: 'A kilo of infant formula is worth ten times the value of a kilo of milk powder, so it's obvious which product New Zealand should be selling.'<sup>92</sup>

While New Zealand, Australia and the US are the biggest exporters of cheese to China,<sup>93</sup> Europeans are taking the lead in exploiting opportunities of products such as infant formula; total exports rose by 13.4% between January and May 2017.<sup>94</sup> The Netherlands and Ireland already account for around 50% of total infant formula exports to China,<sup>95</sup> making it their most important export product to the Asian giant.<sup>96</sup>

Ireland in particular is embracing the infant formula market as a major strategic source of economic growth following the abolition of milk quotas. Ireland has become a hub for infant formula manufacturers, hosting major processing facilities from Wyatt (Nestlé), Danone and Abbott. It already produces around 20% of the world's infant formula, worth approximately 1 billion EUR.<sup>97</sup>

Moreover, Ireland has a strategy of promoting itself among Chinese consumers as a pure and green island. This strategic move, informed by a careful study of Chinese consumer preferences conducted by the Irish Food Board,<sup>98</sup> is already paying off. Ireland overtook New Zealand as the second exporter of infant formula products to China in 2015.<sup>99</sup> Although Ireland remains well behind the Netherlands in terms of overall infant formula exports to China, Irish exports are benefiting from higher per-ton prices at 3,000 USD per ton.

## 4.2 A history of unethical practices

The huge success and growth of the infant milks market cannot be separated from companies' aggressive marketing tactics and unethical practices, not only throughout history but also in the present day.

The history of infant formula is rife with well-documented scandals. During the 20<sup>th</sup> century, due to a persuasive mixture of determined marketing and medical endorsement, there was a surge in popularity of infant formula across Europe and the US. As a result, breastfeeding rates declined significantly by the 1970s.<sup>100</sup>

Although concerns about the high rates of illness and death in bottle-fed babies had been voiced as early as the 1930s, in the 1970s more people began to speak out on the importance of infant nutrition. In 1973, *New Internationalist* published an interview highlighting problems with the increasing trend of formula feeding.<sup>101</sup> Several movements began to raise public awareness of the importance and benefits of breastfeeding.

Against this backdrop, and as birth rates in industrialised countries began to decline, formula manufacturers had already turned to developing markets in Africa, Asia and Latin America in search of new opportunities to sell infant formula and reap greater financial rewards.

In 1974, War on Want published *The Baby Killer* report, which investigated the sale of infant formula in developing countries. The report exposed the unethical tactics employed by manufacturers to promote infant formula across Africa, Asia and Latin America, which led to the deaths of numerous babies due to malnutrition, incorrect preparation or because the formula was mixed with contaminated water.<sup>102</sup>

Campaigners highlighted how Nestlé created a need for infant formula where none existed, convinced consumers that its products were indispensable and linked products to desirable status, all while providing

free samples. Soon after, a global boycott of Nestlé was launched, which demanded the company stop its unethical marketing strategies.

### Box 5: International Nestlé boycott

In 1977, campaigners started an international boycott of Nestlé products because of the company's aggressive and unethical marketing of BMSs in developing countries. At the time, Nestlé held 49% of the international market, nearly all of which was in developing countries.<sup>103</sup> The campaign began in the US, led by the Infant Formula Action Coalition (INFACT), but quickly expanded to Europe, Canada, Australia and New Zealand.

Nestlé responded to the boycott of its products with a countercampaign to control the damage to their reputation. Nestlé's initial strategy was to attack campaigners for being communists.<sup>104</sup> This included donating money to a research centre, which funded a writer to produce a critical report on the boycott campaign for *Fortune* magazine. That report was never written, but an article was published in *Fortune* that served the same purpose. Titled 'The Corporation Haters', it referred to the religious groups involved in the boycott as 'Marxists marching under the banner of Christ'.<sup>105</sup> Nestlé also denied any wrongdoing, arguing that poverty was the problem, not infant formula.<sup>106</sup>

In 1979, the WHO and UNICEF convened an international meeting of 150 participants to discuss infant feeding practices and the development of an international marketing code. Participants included representatives from national governments, UN agencies, NGOs, the infant food industry and experts on infant feeding. The International Baby Food Action Group (IBFAN) was formed by the campaign groups at this meeting.

In 1981, after the high-profile demands of the boycott and sustained pressure from campaigners, the World Health Assembly (WHA) adopted the International Code of Marketing of Breastmilk Substitutes ('the Code').

In 1984, the first boycott was officially suspended as Nestlé finally gave in to demands and pledged to adhere to the Code and reform its practices. However, despite promises, the company continued to violate the Code. The boycott was restarted four years later when it was discovered that Nestlé was providing large quantities of free infant formula samples to hospitals, especially in developing countries.<sup>107</sup>

IBFAN and its partner organisations, such as Baby Milk Action in the UK, continue to monitor the practices of Nestlé and other baby food manufacturers, report on violations of the Code, work to strengthen regulations to hold manufacturers to account and campaign against harmful practices. The Nestlé boycott has been cancelled and renewed based on scrutiny of the company's practices.<sup>108</sup>

In 2004, an IBFAN report uncovered 2,000 violations of the Code in 69 countries, with Nestlé responsible for more violations than any other of the big 16 baby food companies and 14 bottle companies.<sup>109</sup>

In recent years, Nestlé have changed tactics and aim to be perceived as leading the way in implementing the WHO Code. Nestlé cites its inclusion in the responsible investment index FTSE4Good in 2011 as an example of their leadership in this space.<sup>110</sup>

Baby Milk Action says that Nestlé continues systematic violations of the Code and, as the largest company in the infant milk sector, Nestlé not only sets the precedent for other companies to follow but 'also takes the lead in undermining regulations implementing the marketing standards'.<sup>111</sup>

#### 4.2.1. WHO Marketing Code 1981

Years of global campaigning resulted in the adoption of WHO International Code of Marketing of Breast-milk Substitutes ('the Code') in 1981. The Code aims to '*contribute to the provision of safe and adequate nutrition for infants, by the protection and promotion of breastfeeding, and by ensuring the proper use of breastmilk substitutes*'.<sup>112</sup>

The WHA has subsequently passed several resolutions that augment the Code, clarifying and extending its scope and application. Some of the Code's articles relate to governments, some to BMS manufacturers and some to healthcare providers.<sup>113</sup> Together, these provide a vital international policy framework for breastfeeding promotion, and prohibit the marketing of breastmilk substitutes.<sup>114</sup>

The Code and WHA resolutions cover all breastmilk substitutes; that is, any products that could be marketed in a way that suggests they are able to replace breastfeeding. This includes formula for infants and toddlers, bottles, teats and related feeding equipment. The Code also sets out comprehensive requirements for labelling and information on infant feeding.<sup>115</sup>

The Code makes it very clear that companies are prohibited from promoting breastmilk substitutes in hospitals, shops or directly to the general public. This includes giving out free samples or gifts, or subsidising supplies to hospitals. It also forbids companies from advertising their products to health workers and providing misinformation, or any information that is not scientific and factual, and forbids companies from having direct contact with mothers.<sup>116</sup>

While the Code and subsequent WHA resolutions are intended as a minimum requirement in all countries, they are non-binding; countries need to adopt their own legislation to give them legal effect.<sup>117</sup>

#### 4.2.2. Implementing the Code

By 2016, 39 countries had implemented the Code and WHA resolutions through comprehensive legislation. Armenia, Bolivia, Kosovo, Kuwait and Vietnam are five recent entrants to this category (since 2014); they introduced strong, innovative laws that set good precedents for other countries in their regions.<sup>118</sup>

Another 31 countries have implemented many, but not all, provisions of the Code as legally enforceable measures. Sixty-five countries (including EU member states) have legal measures that contain only a few aspects of the Code, while 12 countries have implemented the entire Code as a voluntary measure or national health policy. The US continues to be one of the few countries with no provisions in law.<sup>119</sup>

The International Code Documentation Centre (ICDC) seeks to implement the Code and ensure the rights of parents to make infant feeding decisions free from commercial pressures.<sup>120</sup> The ICDC has supported the development of the majority of these national measures, and has witnessed governments' efforts to protect breastfeeding in the face of strong opposition from industry.

Despite these successes, many countries still lack full legal protection from BMS marketing practices, or lack effective monitoring and implementation programs that ensure companies are complying with the Code. Supervising compliance with and recording violations of the Code is left to NGOs, especially the ICDC and IBFAN, while companies who breach the regulations continue their practices and have little incentive to stop.

#### 4.2.3. All manufacturers still breach the Code

Thirty-six years after the adoption of the Code, some BMS manufacturers claim they have policies in place that indicate their compliance - yet, without exception, all BMS manufacturers still regularly breach its requirements.

According to the Access to Nutrition Foundation's BMS Index (ATNI), Nestlé is now the most compliant with the Code; yet, Nestlé received an abysmal 36% score. Nestlé was followed by Danone (31%), FrieslandCampina (24%) and Heinz (17%). Abbott and Mead Johnson each scored under 10%.<sup>121</sup> The BMS Index evaluated companies' performance in two ways: on whether the company had robust BMS marketing policies and management systems; and through an 'in-country' assessment of marketing practices. The total score is an average of the two assessments.

Even when companies have policies in place, they are often much weaker than international standards. Furthermore, the Access to Nutrition Foundation's research in Indonesia and Vietnam highlighted that companies consistently breach their own policies in practice. As such, company policies alone are not a reliable indication of, or an effective mechanism for, preventing the marketing of BMSs.<sup>122</sup>

Additionally, the ATNI found that no BMS companies apply their policies consistently across all markets, as recommended by the Code. Companies apply their policies more loosely in lower-risk countries than higher-risk countries (those that have 'more than ten per 1,000 under-five mortality rate' or 'more than 2% acute malnutrition in under-fives', according to data from UNICEF), and more loosely to products for older children than younger ones.<sup>123</sup>

#### 4.2.4. Marketing tactics

BMS companies use a variety of different strategies to promote their products: from marketing to doctors and healthcare professionals to providing free samples and directly targeting mothers via social media.

Companies know that healthcare professionals strongly influence mothers' feeding decisions; as a result, they deliberately seek to market and distribute their products within hospitals and healthcare settings around the world. Tactics include providing hospitals with equipment emblazoned with the infant formula brand and company logo, providing free samples of formula for hospitals to distribute in discharge packs for new mothers, sponsoring health professional associations and conferences or offering doctors and nurses other gifts and incentives.<sup>124, 125</sup> Free samples are problematic because once a woman starts to use formula her own supply of breastmilk reduces, creating a cycle where more formula is then required to fulfil the needs of her baby. These activities have been documented in a variety of countries, including China; India; Indonesia; the Philippines; Ukraine, Burkina Faso and other countries in West and Central Africa.<sup>126</sup> In the US, the practice of providing free infant formula to new mothers as they leave hospital is very common; a 2010 survey of over 3,000 hospitals revealed that 91% distributed infant formula in discharge packs sponsored by BMS companies.<sup>127</sup>

Infant formula manufacturers have also been involved in designing hospital infrastructure, creating wards that placed distance between mothers and their babies: a practice that disrupts breastfeeding. Abbott Laboratories helped design at least 200 maternity departments in US hospitals, and are still involved with hospital design in countries in Africa and Asia through the organisation Design 4 Others.<sup>128</sup>

Companies also deploy a range of direct-to-consumer marketing tactics, including advertising on television and websites, offering reward programmes, conducting home visits to new mothers and establishing infant feeding advice hotlines. Product packaging and labelling on formulas deliberately use words and pictures that idealise artificial feeding. Adverts misleadingly portray formula as equal to or better than breastmilk, and present artificial feeding as an aspirational lifestyle choice. In the Philippines,

# Profile on four biggest companies

Source: Access to Nutrition Foundation

## Milking it - HOW MILK FORMULA COMPANIES ARE PUTTING PROFITS BEFORE SCIENCE



HQ: Vevey, Switzerland

Total sales: \$88bn

Milk formula products market share: (22%).

Global market leader.



Owned by Reckitt Benckiser.

HQ: Slough UK

Total sales: \$8.8bn

Milk formula products market share: (14%).

Focus on US and Asia.



HQ: Paris, France

Total sales: \$23.1bn

Milk formula products market share (12%).

Focus on Europe (market leader) and Asia.



HQ: Abbott Park (IL), US

Total sales: \$20.8bn

Milk formula products market share: (9%).

Strong focus on US (market leader) and Asia.

Policy Commitments on the Marketing of BMS products

Policy covers	Product Category	Nestlé	Mead Johnson	DANONE	Abbott
Policy covers	Infant Formula	!	!	✓	✓
	Follow-on formula	!	!	!	!
	Complementary Foods	!	!	!	!
	Growing-up Milk	✗	✗	✗	✗
Policy is followed even if legislation is weaker		✓	Some Cases	Some Cases	Some Cases
Policy acknowledges	The Code	✓	✓	✓	✓
	Subsequent WHA Resolutions	✓	✗	✓	✗
Policy supports	Breastfeeding until 6 months	✓	✓	✓	✓
	No complementary foods until 6 months	✓	✓	✓	✓
	Breastfeeding until 2 years and beyond	✓	✗	✗	✗

research in 2011 found that 59% of mothers recalled an infant formula advertisement, and formula use was more common among mothers who saw the advert than mothers who did not. In China, 40% of mothers who had recently delivered a baby reported receiving free samples of infant formula, the majority of which came directly from company representatives.<sup>129</sup>

More recently, highly personalised and sophisticated digital marketing has emerged as a new tactic (see box 6). This has become an effective way for companies to reach mothers directly and remain inconspicuous to those trying to monitor compliance with the WHO Code. Digital marketing includes targeted YouTube videos; social outreach on Facebook, Instagram and Twitter; sponsored posts on parenting blogs; personalised emails, apps and online communities. Mobile devices and widespread use of social media enable BMS companies to reach women early in their pregnancy and continuously target them throughout their pregnancy and beyond. Furthermore, sophisticated digital marketing strategies assist companies in aligning with parents' hopes and dreams for their children, emphasising positive values such as 'freedom from judgement' and cleverly tapping into the emotional and psychological aspects of parenting.<sup>130</sup>

The booming BMS product range continues to expand, as companies deploy tactics such as product differentiation and marketing breastfeeding supplementation formulas to compete for an increased share of the market.<sup>131</sup> The range of infant formula products on the market has increased since the 1980s, when the first versions of formula for older infants and young children appeared, labelled as 'follow-on formula', 'toddler formula' or 'growing-up milk', in response to market saturation. NGOs have argued that such formulas were introduced to circumvent the WHO Code and its prohibition of marketing, as some countries only prohibited the advertising of formula for younger infants.<sup>132</sup>

BMS manufacturers are also turning to another strategy: flooding the market with new products, which claim to be based on state-of-the-art science and compositionally ever close to breastmilk while also coming in a nice shiny box, emblazoned with (often unproven) health claims on the superior nutritional quality of the product or its ability to solve common infant behaviours (colic, reflux, crying, stomach upsets etc.).<sup>133</sup>

## ATNI BMS ranking:



Included in the FTSE4 Good index (2011)

Nestlé's BMS marketing practices in Indonesia and Vietnam were deemed poor (17%), suggesting there is little difference with other companies on the ground. Worst score on inappropriate marketing of BMS products within healthcare system.

Recently acquired by Reckitt Benckiser, who is included in FTSE4Good – BMS practices under assessment

Mead Johnson received the worst score of any BMS company (5%). This is because the poor alignment of its policies with the Code (10%) as well as a high rate of non-compliance of its marketing practices on the ground in Indonesia and Vietnam (0% score).

FTSE4Good Index (2016)

Danone's BMS marketing practices in Indonesia and Vietnam were deemed poor (17%), suggesting there is little difference with other companies on the ground. Worst score on complying with rules regarding the provision of information to mothers and pregnant women as well as the labelling of BMS products.

Abbott received a very low score from the ATNI (7%). This is because the poor alignment of its policies with the Code (14%) as well as a high rate of non-compliance of its marketing practices on the ground in Indonesia and Vietnam (0% score).

Reality Check

! High risk countries only



## Box 6:

### Social listening and the art of persuasion

A young mother fills in a short online survey to enter a draw for free baby goodies. Another joins a mother and baby club promising discount vouchers and daily 'how your baby is growing' information sent directly to her phone.

Still another joins a mother and baby 'community', where likeminded 'friends' can talk to each other about their experiences and take part in free live chats with nutritionists, midwives and doctors. Still others spend their free time scrolling through pages of nutritional advice, information and products, casually signing up to newsletters for alerts of upcoming sales.

Today more than ever before, women use the internet to exercise what they see as control and independence. Free from the pushy middleman in a physical shop, they can make their own choices in their own time.

What most don't realise is that every keystroke, interaction and piece of personal information is being collected, analysed and used to shape not only their online experience but also their perceptions of motherhood as a whole.

In the marketing world, this is known as **social listening**.

#### Instant analysis

With social listening, the demographic information that once would have taken months to collect is available instantaneously. Companies actively mine this data to tweak their online presence to increase reach, engagement and ultimately sales.

The Code expressly forbids manufacturers of infant formula from reaching out directly to mothers to promote their products. But social listening gives companies an entirely new set of tools, which use deeply effective emotional hooks to subtly steer woman towards a brand and its products.

It's not called 'selling' anymore, it's a 'brand conversation'; and marketers aren't salespeople, they're 'friends' taking part in the mother's 'journey'. In the online world, companies rarely need to mention infant formula anymore to gain a customer's trust and make a sale.

*'Digital is the way to manage the brands in the future. The relationship, brand conversation through the digital media, is so powerful that it has an impact, even before print or television advertising happens',* notes Patrice Bula, Nestlé EVP, Strategic Business Units, Marketing.<sup>134</sup>

Nestlé's Digital Acceleration Team, which began as a central listening post in the company's headquarters in Vevey, Switzerland, now has

satellite stations worldwide. The company refers to the information gleaned as 'digital vitamins'<sup>135</sup> that help boost its performance.

Because women are less guarded among 'friends' in their online 'communities', they are often more open about what they think and feel, like and dislike. What they may not realise is that some of the other mothers are paid to be there.

Danone Nutricia Early Life Nutrition, for instance, has a team of mothers who act as community managers on its websites:

*'We support those looking for advice and friendship in the social media framework. There is no shame in asking a "stupid question" to a friendly supporter, a fellow mother on Facebook',* says Susie Clark, Managing Director of the social engagement agency that helped put the mother/managers in place.<sup>136</sup>

#### More mums online

The digitisation of our lives has had a significant impact on how we talk about, learn about and share information around motherhood and breastfeeding. More than half of all women responding to one US survey said they intended to share their birth experience online in real time.<sup>137</sup> Moreover, time online increases after the birth; 44% of US women spend more time online after a new baby is born,<sup>138</sup> and increasingly new mothers are seeking breastfeeding information and support online.<sup>139</sup>

In China, the world's biggest baby market, more than 90% of mothers shop online using a smartphone.<sup>140</sup> Convenience is major motivating factor, but faster payments, discounts offered to smartphone users and force of habit are also major motivators for staying online.

Few, if any, would be aware of the way that social listening is used to create near-addictive online experiences. Immersive web platforms with plenty of colour and movement, sound and games and subtle 'rewards' help distract mother from the spin, keeping them plugged in and brand-loyal.

#### Speaking their language

Social listening also helps companies speak to mothers in their own language. Knowing, for example, that 'LB' means little boy or 'DD' means darling daughter is invaluable when engaging online or in message forums.<sup>141</sup>

Understanding language also helps companies tailor their marketing language from country to country to make it more compelling. As one data-mining company employed by Danone noted, when parents in China talk about a child's difficulty digesting formula,



Image Source: [http://www.nestle.com/asset-library/documents/library/presentations/investors\\_events/investor-seminar-2016/nis-2016-11.pdf](http://www.nestle.com/asset-library/documents/library/presentations/investors_events/investor-seminar-2016/nis-2016-11.pdf)

there are echoes of traditional Chinese medicine.<sup>142</sup>

*'For the brand looking to engage consumers, they have to use the [market's] consumer language ... In China, people talk about "internal heat" ... In other countries for instance, Germany talks about colour.'*

#### A new frontier

Data mining on social media provides insights that cannot be gleaned through traditional focus groups, and the methods that companies use are constantly evolving. The newest tool is emotions analytics (EA), which uses emotion recognition software to analyse facial expressions and listens to language and tone through social media.

Multinationals like Procter & Gamble, Unilever, Coca-Cola and Danone are already engaged in this process and see it as the 'next frontier' of big data.

Many are actively preparing for the time when face recognition software is embedded into apps and devices – it's already in many televisions – opening up new dimensions of subtle sales spin.<sup>143</sup>

Wearable tech, for example, could be used to track users' moods and target customers with ads when they are most likely to buy. For example, according to a study by Yahoo, reaching consumers when they're feeling 'upbeat' could increase the general effectiveness of

advertising by 24% and that of digital advertising by 40%.<sup>144</sup>

But as Danone's strategy and insights manager, Alex Ward-Booth, notes: *'you mustn't be able to see the spinning underneath, or how it is trying to push you in a certain direction, or it becomes too transactional.'*<sup>145</sup>

#### Mothers need protection

The impact this data mining has on infant feeding trends worldwide is a cause for concern.<sup>146 147</sup>

In 2006, the WHO concluded that *'a decision on whether to use infant formula and, if so, which product and how, should not depend upon the effectiveness of commercial advertising'*.<sup>148</sup>

A decade later, in May 2016, an editorial in medical journal *The Lancet*<sup>149</sup> urged a complete ban on social media channels:

*'From tobacco, to sugar, to formula milk, the most vulnerable suffer when commercial interests collide with public health ... Robust advertising regulation – covering all milk products for children up to three years, and banning social media promotion – is the next step to protect them.'*

*Author: Pat Thomas*

## SPOTLIGHT on Nestlé's problematic track record on food safety and science



### Nestlé's science claims vs. reality

Nestlé proudly claims to be a science-based company, with a broad purpose to 'enhance the quality of life and contribute to a healthier future'.<sup>150</sup> Nestlé owns the following subsidiary companies, which help to communicate its image of science-led nutrition.

- The Nestlé Institute of Health Sciences helps strengthen Nestlé's position as the world's leading nutrition, health and wellness company. Its vision is to develop 'nutritional solutions for the maintenance of health' that have 'strong scientific underpinning and clinical proof'.<sup>151</sup>
- The Nestlé Health Science Company was formed in 2011 to advance the role of nutrition in healthcare. The company says it invests in 'innovation and leveraging leading edge science'. It has access to the research of Nestlé Institute of Health Sciences, and the expertise of the wider Nestlé Group.<sup>152</sup>
- Nestlé Nutrition Institute shares leading science-based information and education with healthcare professionals, scientists and other stakeholders across the world. The Institute was established in 1981 with the goal of fostering 'science for better nutrition'.<sup>153</sup>

According to Nestlé's 2016 Annual Report, the company's nutrition and health platforms enable it to develop products that meet specific needs of different parts of the population, and to help address issues the world faces.<sup>154</sup>

Nestlé also has a corporate social responsibility framework, *Creating Shared Value*, which outlines its ambitions to:<sup>155</sup>

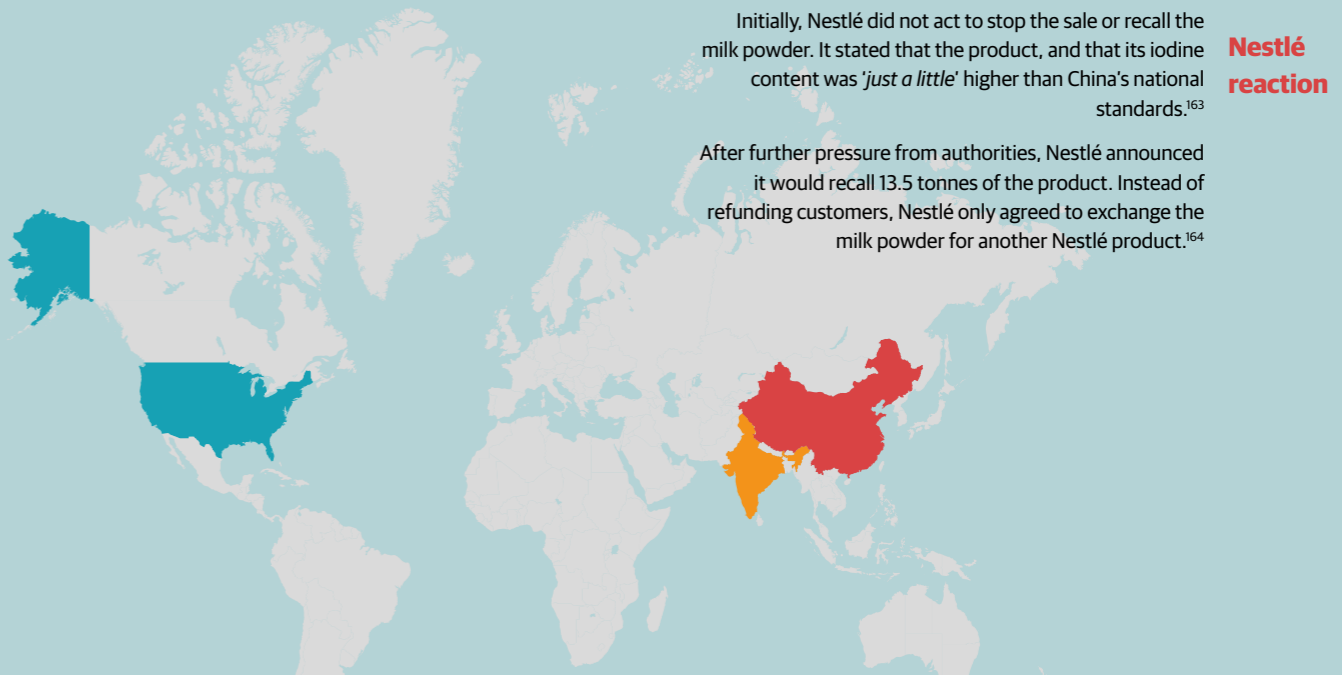
- **Enable healthier and happier lives:** helping 50 million children lead healthier lives;
- **Help develop thriving, resilient communities:** helping to improve 30 million livelihoods in communities directly connected to our business activities;
- **Steward resources for future generations:** striving for zero environmental impact in our operations.

But our research showed that Nestlé has a long history of irresponsible practices and scandals that directly contradict this science-driven narrative. The company's unethical marketing of BMS products, which led to a multiyear boycott, were explained earlier; this section exposes several recent food safety scandals that have implicated the company. Nestlé's track record and reactions to such scandals paint a bleak picture, and call into question their claims to be science-based and concerned about the health and wellbeing of their customers.

In addition to food safety scandals and unethical marketing practices, several accounts of child labour in Nestlé's supply chains directly undermine their commitment to helping children lead healthier and happier lives.<sup>156</sup> Furthermore, Nestlé's approach to environmental sustainability and commitment to developing thriving communities is undermined by their approach to privatisation of public commons. Bottled water is one example of how Nestlé has created an artificial product to replace a naturally available resource that is under increasing pressure due to scarcity and pollution. Many parallels could be drawn between Nestlé's approach to water and its approach to breastmilk substitutes.



### Nestlé's major food safety incidents



2005  
China

Nestlé milk powder formula sold in China for children age 3+ years was found to have levels of iodine much higher than the national safety standard. Excess iodine can lead to thyroid dysfunction.

Details

Initially, Nestlé did not act to stop the sale or recall the milk powder. It stated that the product, and that its iodine content was 'just a little' higher than China's national standards.<sup>163</sup>

Nestlé  
reaction

After further pressure from authorities, Nestlé announced it would recall 13.5 tonnes of the product. Instead of refunding customers, Nestlé only agreed to exchange the milk powder for another Nestlé product.<sup>164</sup>



Details

United States  
2009

An outbreak of E. coli food poisoning in the US was linked to refrigerated cookie dough produced by Nestlé at a factory in Danville, Virginia. 76 people became seriously ill, of whom 35 were hospitalised, after eating the cookie dough raw.<sup>160</sup>

Nestlé had failed to identify risks of E. coli with the raw material, and had failed to properly communicate the risks of eating the products raw, while this practice was known and reported in the scientific literature.<sup>161</sup>

Nestlé  
reaction

The company recalled all Toll House cookie dough products.

It transpired that the Nestlé factory in question had previously refused to give inspectors from the federal Food and Drug Administration (FDA) access to internal records relating to matters such as pest control, environmental testing and consumer complaints.<sup>162</sup>



Details

India  
2014-2015

An Indian government laboratory test found monosodium glutamate (MSG) in packets of Nestlé Maggi noodles labelled 'MSG-free', as well as seven times the permissible level of lead – over 1,000 times more lead than the company claimed was in the product.

A further 30 Indian government laboratory tests confirmed elevated levels of lead in Maggi noodle packets.

Significant exposure to lead causes wide-ranging and serious health effects, particularly in children.

India's central food regulator, the Food Safety and Standards Authority of India (FSSAI), pronounced Nestlé Maggi noodles 'unsafe and hazardous for human consumption'.<sup>157</sup>

Nestlé  
reaction

Nestlé denied the initial claim that MSG was present in Maggi noodles. This resulted in further testing where unsafe levels of lead were found in 30 government laboratory tests.

Nestlé first statement on the matter announced that there was 'no order to recall Maggi Noodles being sold' and that the product was 'safe to eat'.

Later, Nestlé issued a short statement: 'In spite of Maggi noodles being safe, Nestlé India decides to take the product off shelves.'

India's central food regulator, the FSSAI, was concerned by Nestlé's insistence on the safety of the products and announced a temporary ban on the manufacture, sale and distribution of Maggi noodles.

The scandal resulted in a five-month ban on sales of Nestlé Maggi noodles in India and local retailers refusing to stock the product.

Nestlé burned 50 million USD worth of noodles,<sup>158</sup> and the overall cost of the food safety incident to the company was estimated to be 250 to 500 million USD.<sup>159</sup>

## Nestlé promotion of unhealthy foods



### Brazil and other countries in Latin America, Asia and Africa

#### Ongoing

##### Details

Western food companies, including Nestlé, are aggressively expanding their business in developing countries like Brazil. Their practices are overturning traditional diets and contributing to widespread obesity and health problems.

Nestlé has expanded its direct sales in Brazil as part of a broader strategy to deliver Western-style processed food and sugary drinks to the most isolated areas of Latin America, Africa and Asia. Nestlé aims to grow into a quarter of a million households in Brazil's hardest-to-reach areas.

In the last ten years, Brazil's obesity rate has nearly doubled to 20%, and the proportion of people who are overweight has nearly tripled to 58%. Each year, 300,000 people are diagnosed with type 2 diabetes, a condition strongly linked with obesity.<sup>165</sup>

##### Nestlé reaction

Nestlé executives say their products have helped alleviate hunger and provided crucial nutrients, and that the company has reduced the salt, fat and sugar content of thousands of items to make them healthier.

Comments from Nestlé's Head of Food Research and Development suggest the company did not foresee that obesity would be a negative side effect of making cheap, processed food widely available. Since developing markets provide Nestlé with 42% of its sales, it does not appear to be changing its strategy of expanding sales of processed food and sugary drinks into these emerging markets.

Mark Schneider, Chief Executive of Nestlé, recently told investors: 'At a time when some of the growth is more subdued in established economies, I think that strong emerging-market posture is going to be a winning position'.<sup>166</sup>



### UK 2015

##### Details

The UK Advertising Standards Authority ordered Nestlé to stop presenting its Nesquik chocolate milk powder as a healthy breakfast.

Nestlé used the slogan 'for a great start to the day', despite the product being very high in sugar.

This was the second time the Children's Food Campaign had to raise the issue and force Nestlé to change its advertising of Nesquik in the UK because it 'encouraged poor nutritional habits'.<sup>167</sup>

##### Nestlé reaction

Nestlé said it was 'disappointed' with the ruling but would no longer use the claim, to avoid any further 'ambiguity' over the health merits of the product.<sup>168</sup>



### Nestlé's privatisation of public commons: Water example

Perhaps the biggest issue underlying Nestlé's water sales division is their practice of extracting a public resource and selling it at a profit to people who may not have the financial resources to buy it. This was reflected in the statement of former Nestlé CEO Peter Brabeck, who claimed that water was not a human right,<sup>171</sup> despite the UN recognising 'the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights'.<sup>172</sup>

Nestlé has faced protests against its attempts to increase the amount of water extracted across the US - from drought-stricken California and Texas to Wisconsin, Maine and even protected national forests.<sup>173</sup> Today, there are thousands of bottled water companies worldwide - but in terms of sales, Nestlé is the biggest globally.<sup>174</sup> Yet the company pipes water out of San Bernardino National Forest for just 524 USD per year,<sup>175</sup> and extracts groundwater from Ewart, Michigan for the low sum of 200 USD per year.<sup>176</sup>

Nestlé has been criticised for exploiting chronic water shortages and widespread lack of access to clean drinking water across Africa, while simultaneously extracting water and selling bottled water there.<sup>177</sup> The most recent example is Nestlé's new water facility in Nigeria.<sup>178</sup> This has been met with anger; water shortages have killed more people across the country than militant group Boko Haram, and public water sources are dwindling in the face of a UN-condemned water privatisation bill.<sup>179</sup>

It has been argued that Nestlé have been preparing for water shortages for decades. In a 1994 interview with *The New York Times*, Nestlé's former CEO, Helmut Maucher, said: 'Springs are like petroleum. You can always build a chocolate factory. But springs you have or you don't have'.<sup>180</sup>

***In conclusion, our research found numerous examples of Nestlé flouting its responsibility and putting profits above everything, including its own commitments to science and sustainability. Recent examples provide little indication that the company is behaving in a safe and responsible manner towards children, communities and the environment. Furthermore, Nestlé is the biggest player when it comes to infant milks, with the largest share of the market and products present in all countries we have investigated. As the next chapter will show, Nestlé's profit-driven attitude makes it the leader in product differentiation, and it sells some of the most expensive products found on the market.***

## Nestlé's misleading labelling of food and drinks



### 2017 United states

##### Details

Consumers have called the marketing of Nestlé's Poland Spring Water a 'colossal fraud' in a class action lawsuit.

Despite marketing the water as '100% Natural Spring Water', the claimants allege that there are no natural springs at the eight sites at which the company collects and bottles its water.

The claimants suggest that the 'products all contain ordinary groundwater that the defendant collects from wells it drilled in saturated plains or valleys where the water table is within a few feet of the earth's surface' - essentially, that the 'natural springs' from which the water is collected are manmade.

Even worse, the claim states the conditions surrounding the water collection sites are 'near a present or former human waste dump, refuse pit, landfill, ash pile, salt mound, farm where pesticides were previously used, fish hatchery or toxic petroleum dump site'.<sup>169</sup>

##### Nestlé reaction

A spokesperson for Nestlé Waters North America stated: 'Poland Spring is 100% spring water. It meets the U.S. Food and Drug Administration regulations defining spring water ... as well as all federal and state regulations governing spring water collection, good manufacturing practices, product quality and labelling'.<sup>170</sup>

Chapter 5:

Our research into the product range



5.1. Methodology

The range of infant milks available on the market has significantly grown over the last two decades. Manufacturers claim to be selling tens of different products targeting the 'specific nutrition needs of babies and young children'.<sup>181</sup> These include products aimed at infants and young children at different stages of development; premium products made from 'higher quality ingredients'<sup>182</sup> or containing 'unique blends' of nutrients<sup>183</sup>; even products containing different flavourings. Moreover, a proliferation of products intended to help with specific needs is being put on the market. Beyond the range of medical products aimed at infants with diagnosed medical conditions (such as cows' milk protein allergy), some products are intended to help with more general issues, such as excessive hunger or preventing the development of a wide range of allergies.

The research presented here focused on understanding the behaviour of manufacturers in different countries around the world. We sought to address the following research questions:

- Are manufacturers placing different products on the market in different countries?
- Are there significant differences across the nutritional composition or ingredients of their products in different countries?
- What claims are being made?
- What impacts do these claims have on retail prices?

We have researched these questions in the light of the fact that nutritional composition of infant formula is guided by the Codex, a global standard that defines the necessary levels of nutrients in formulas. Infant formula is a very defined product, which calls into question the number of products available from the same manufacturers on different markets.

Given the broad range of products that we found, we decided to limit our research to products from the top four manufacturers (Nestlé, Danone, Mead Johnson and Abbott) and their subsidiaries, which were placed on the consolidated and emerging infant formula markets in a number of countries, including the US, the EU (UK, Germany, France, Poland, Bulgaria, Spain and The Netherlands), South East Asia (mainland China and Hong Kong, Indonesia), Africa (South Africa) and Oceania (Australia and New Zealand). We have included product information made available by manufacturers online or on the product package - or, when this was not possible, from online retailers.

In terms of the range of products included in our analysis, we have attempted to focus our research on the most common powder infant milks, made from cows' milk for infants under 12 months. Moreover, we have tried to exclude those products designed for infants suffering from diagnosed medical conditions - although making such decision has often been challenging, given the extensive range of *borderline* products that aim to help with broader conditions.

**Table 2: Breakdown of the number of powdered infant milks found in 14 markets from the four largest BMS companies**

	Nestlé	Danone	Mead Johnson	Abbott	Total
<b>US</b>	6	2	9	14	31
<b>UK</b>	7	13	0	3	23
<b>Spain</b>	12	13	5	0	30
<b>France</b>	18	19	0	0	37
<b>Netherlands</b>	3	13	0	0	16
<b>Germany</b>	17	19	0	0	36
<b>Poland</b>	10	21	5	0	36
<b>Bulgaria</b>	8	11	0	0	19
<b>Australia</b>	17	11	0	0	28
<b>New Zealand</b>	8	11	0	0	19
<b>Indonesia</b>	13	16	5	2	36
<b>China</b>	14	12	11	9	46
<b>Hong Kong</b>	13	12	10	5	40
<b>South Africa</b>	19	0	1	2	22
<b>TOTAL</b>	<b>165</b>	<b>173</b>	<b>46</b>	<b>35</b>	<b>419</b>

The research took place over between April and September 2017. We worked with local experts in different countries, and conducted internet research. While we tried to include, to the best of our knowledge, all the products that fell within the scope, the research was not without limitations. This is such a saturated market, with so many products being constantly added and removed from the market, that it is easy to miss products. While the research focused on popular products available at retail level, there may be additional varieties only available online. In addition, the unclear separation between products for special medical purposes and conventional products makes it sometimes difficult to classify these, so we had to rely on our best judgement.

## 5.2. A thousand products against one standard?

### 5.2.1. The Codex and how it works

Although the market for infant milks is being globalised at an unprecedented pace, there is no binding global legislation on the nutritional composition of such products. Instead, a number of voluntary global standards for the formulation of infant<sup>184</sup> and follow-on<sup>185</sup> formulas, and subsequent updates, have been in place since the 1980s. These were set by the Codex Alimentarius Commission (a joint intergovernmental body of the FAO and the WHO) in the 1960s. Delegations from most countries (members), representatives of industry associations and NGOs (observers) take part in discussions to develop such standards.

These standards set minimum and maximum levels for essential macronutrients (such as carbohydrates and fats) and micronutrients (such as vitamins and minerals) that must be in formula. They also provide recommendations for additives that may be used, contaminants to be avoided, hygiene, labelling and other quality control measures.

The aim of the Codex is to 'create harmonised international food standards to protect the health of consumers and ensure fair trade practices worldwide'.<sup>186</sup> However, NGOs have raised concerns regarding a lack of transparency, and industry representatives' excessive influence often results in trade and economic matters taking precedence over health protection concerns.<sup>187</sup> For example, at a 2014 meeting of the Nutrition Committee (CCNFSDU), IBFAN reported the attendance of over 120 representatives of food and related industries (50 of whom were part of country delegations) out of a total 299 participants. In contrast, only seven infant feeding health advocates from NGOs were present.<sup>188</sup>

While voluntary, Codex standards are often used as the basis for national legislation.<sup>189</sup> As such, the composition standards in the legislation of the regions researched conformed with the Codex recommendations. Given the similarities between the standards for infant and follow-on formula, some countries do not differentiate between these products in their legislation.

Nevertheless, within the Codex parameters, manufacturers and regulators can choose the ingredients they include in BMSs to provide the necessary nutrients. In addition, manufacturers often add synthetic versions of substances present in breastmilk to their products, including the aforementioned fatty acids, prebiotics, probiotics and nucleotides. These are the differences that largely drive manufacturers' product differentiation and associated claims.

### 5.2.2. Who is checking the products?

Despite the Codex standard and regulations on the safety and composition of infant milks, concerns have been expressed about how little monitoring and testing of such products is being conducted by public authorities.<sup>190</sup> Our research highlights that routine testing of infant milks for safety, particularly in relation to nutrient composition, is largely left to manufacturers.

How infant milks are made, what they are made from and how they are stored, distributed and used can significantly compromise their safety. For example, toxic chemicals present in the environment (such as arsenic, fluoride or lead) can be found in formula if the ingredients used in its production become contaminated at source. Other toxic compounds, such as aluminium and bisphenol can leach into the formula from containers and feeding bottles. In addition, powdered formula is not a sterile product, so it needs to be made up at a sufficiently high temperature to kill any bacteria present.<sup>191</sup>

Nevertheless, contamination represents most of the testing that food authorities are conducting. Even this often only happens after babies become sick from a particular infant formula. Our review of information in the public domain revealed that over 100 such cases have been reported in a variety of sources, including official government datasets, media articles and NGO websites. More than half of these related to microbiological contamination of products (56%), particularly *Enterobacter sakazakii* and *Salmonella spp.* Other cases included reports of adulteration; fraudulent formula products being placed on the market; the presence of radioactive materials, toxins, drugs and other dangerous chemical contaminants; the presence of insects and foreign objects, such as metal pieces; falsified labels; etc.

### Box 7: When checks fail: Chinese melamine contamination scandal

The most notorious food safety scandal involving milk formula products took place in China in 2008. Batches of infant formula products from the Chinese brand Sanlu, partly owned by New Zealand's Fonterra, were found to be contaminated with melamine: an industrial chemical used in the production of plastics, fertilisers and concrete. This was only the tip of the iceberg; traces of melamine were found in products from 22 Chinese dairy companies – one in five of the country's dairy suppliers.<sup>192</sup> As recently as 2010, there have been further reports of tainted milk products being found in dairy plants in China.<sup>193</sup>

Suppliers were deliberately adding melamine to milk because it is rich in nitrogen, which gives diluted products the appearance of a higher protein content than they actually contain.<sup>194</sup> Ingesting melamine can cause kidney stones and kidney failure, and is a particular risk to infants.

Melamine-contaminated food products were also reported to be found in several foreign brands. For example, Hong Kong identified that a number of products from Cadbury's, Heinz and Nestlé<sup>195</sup> tested positive for melamine. Nevertheless, Nestlé's press release rejected any association of its products with melamine contamination. In addition, it stated that, '*melamine is found throughout the food chain across the world in minute traces which do not represent any health risk for consumers*'.<sup>196</sup>

The health and economic toll of the scandal was huge. In total, an estimated 300,000 cases of illness and six deaths of babies were thought to have been victims of contaminated products.<sup>197</sup> Chinese products were recalled in many countries, and import bans put in place. Many of those involved in the scandal suffered the consequences. For example, Sanlu Group went bust and two executives received death penalty, while many others were charged for their involvement in the contamination of products.<sup>198</sup>

Despite the Chinese government's significant efforts to strengthen regulation of dairy products, Chinese consumers' trust in domestic brands remains low. This has led to very high demand for imported products, for which consumers are prepared to pay high prices; in turn, this has stimulated illegal activity, such as the smuggling of infant milks into China.

Armed with global partners and slick marketing, Chinese firms now want to challenge the dominance of international brands with '100% imported' brand labels and competitive prices.<sup>199</sup> This has led to Chinese companies investing in processing plants in Oceania, Europe and the US.<sup>200</sup> Some experts say China's milk powder companies can eventually take back their market share from international companies, if they avoid further scandal and maintain safety standards.<sup>201</sup>

In contrast, only 15 incidents involving the nutritional composition of formula were found during the same period. This suggests that routine tests for nutritional composition are much less frequent than those for contamination. The most comprehensive official testing in this area seems to have been conducted by Hong Kong safety authorities; they tested the nutritional composition of hundreds of products in 2012-2013 (although they only looked at the content of the products, not the efficacy of the nutrients). Many products were found to be non-compliant with Codex nutrient standards, including multiple samples of products from Japanese, South Korean and New Zealand brands, which – very worryingly – included low levels of iodine.<sup>202,203</sup>

This is an important oversight. Inadequate nutrient composition can have severe health impacts on infants. For example, in Israel in 2003, several infants who had been fed the same formula died due to a lack of vitamin B1.<sup>204</sup> It is in this context that the First Steps Nutrition Trust has raised concerns as to how little consideration is given to nutritional composition at the point of sale. While the ingredients stated on product labels mostly complied with legislative requirements in the countries investigated for this research, it is important to note that what is on the label may not be present in the product. For this reason, routine testing of the nutritional quality of BMS products should become common practice for national food authorities.

## 5.3. Milking it

### 5.3.1. Product differentiation as key to increasing sales

As we have shown, the sale of infant milks is a very profitable and highly competitive industry. In this context, product differentiation and innovation are key tools in the fight for market share among manufacturers. Market analysts have identified two major trends in this area: towards improved convenience products, and towards nutritional science.<sup>205</sup>

The latter trend seems to be manifesting in various ways. For example, substances present in breastmilk – such as omega oils, prebiotics and probiotics – are being added to *standard* composition (i.e. nutrients required by law) of BMSs. Manufacturers are also replacing key ingredients with alternatives that are desirable to more conscious consumers (100% lactose, organic, GMO-free, palm-oil free, etc.).

There is also a trend towards *medicalising* infant formula; manufacturers are developing an increasing number of over-the-counter products that claim to address general conditions in infants (constipation, indigestion, etc.).<sup>206</sup> Such products are in addition to the highly specialised medical products available on prescription to treat serious, medically diagnosed illnesses, which affect a small proportion of the infant population.

In both cases, these so-called improvements in compositional changes and their associated health benefits are used as key selling points in marketing such products. These are compelling arguments, as parents who choose to bottle-feed their children are prepared to pay more for any formula, based on the assumption that they are getting the best possible alternative to breastmilk.

This is translating into clear profits for companies, with fortified milk formula further fuelling market growth. For example, the market for milk formula fortified with omega-3 acids (such alpha-linoleic and docosahexaenoic (DHA) acids) grew by 11 billion USD to a total of 24 billion USD from 2007-2012.<sup>207</sup> Other key ingredients in terms of value are prebiotics and probiotics; sales of milk formula enriched with these products totalled 12 billion USD and 5 billion USD respectively.<sup>208</sup>

**Box 8: Milking it with luxury products: Baby Nespresso machine**

In 2011, Nestlé first launched its BabyNes infant milk dispenser in Switzerland, which uses a machine and capsule system similar to its Nespresso coffee makers.

In doing this, Nestlé offered a luxury product that tapped into consumer preferences for convenience items by offering the advantage of individually packaged powdered infant milks for babies and toddlers in age-specific servings. There are six types of age-appropriate BabyNes capsules available, aimed at babies aged 1-36 months, each with its own specific nutritional formula.<sup>209</sup>

After its successful launch, BabyNes also became available in China, Hong Kong, France and the US. The machines sell for 249 Swiss francs (CHF) (248 USD) and capsules cost 49-55 CHF for a pack of 26 - roughly double the cost of standard powdered infant milk in Switzerland.<sup>210</sup>

The IBFAN called BabyNes 'a product for the rich', and raised concerns about contamination from using an incorrect temperature of water to make the milk. Patti Rundall of Baby Milk Action said, 'the powder in the capsule should be added to water at 70 degrees. How can this be done and cooled in 1 minute?'<sup>211</sup>

This is another example of how Nestlé is manipulating parents into believing that infant feeding is a luxury lifestyle event that is accompanied by high-end, aspirational products.

**5.3.2. Product differentiation: Science vs other considerations**

Our product review has identified a number of key variations that underpin current manufacturers' product ranges. The sheer number and diversity of products available in different countries clearly shows that BMS manufacturers are not basing their product ranges on science. In this section we explain the major factors behind product differentiation (i.e. specific age of the infant), the nutritional composition and ingredients used in premium products and the specific conditions for which different products exist.

**5.3.2.1. Different age groups**

Differentiation according to age is one of the largest drivers of infant formula product proliferation for products aimed at healthy infants.

The most common product division is between formula products aimed at bottle-fed infants who have not been weaned (typically under 6 months) and those who have (typically 6-12 months, as children can be fed cows' milk after that). The former milks are normally referred to as starter or infant formulas, and the latter as follow-up or follow-on formulas. Two separate nutritional standards for minimum composition requirements of these products currently exist under the Codex,<sup>212</sup> and their composition has been regulated separately in certain regions, such as the EU.<sup>213</sup>

Nevertheless, the compositional difference between the two standards is minimal, and so does not in itself provide a rationale for the different range of products on the market. Indeed, health experts such as the WHO have questioned the need for follow-on formula products, which appeared on the market in 1980s.<sup>214</sup> In the UK, the National Health Service (NHS) advises mothers that 'there are no proven benefits

associated with switching to follow-on formula at six months'.<sup>215</sup>

It is unclear what other factors may be driving such product range. Our review shows that standard infant formula products targeting babies at different stages of development are being placed on different markets by the same manufacturer. For example, across the countries studied, Mead Johnson's Enfamil product range include a range of products for newborns (0-3 months), preweaning infants (0-6 months), weaning infants (6-12 months) and pretoddlers (9-18 months), despite also offering a product for all infants (0-12 months).

**Table 3: Case study: Age-group variation of Enfamil products**

Age group	Examples
0-3 months	Enfamil Premium Newborn (US)
0-6 months	Enfamil Premium 1 (Spain/Poland)
0-12 months	Enfamil Infant (US)
6-12 months	Enfamil Premium 2 (Spain/Poland)
9-18 months	Enfagrow Toddler Transition (US)

Moreover, there are differences within same product brand in the same legislature. For example, within the EU countries reviewed, Nestlé and Danone's standard product ranges are divided into two products in the UK, France, Spain, Poland and Bulgaria (stage 1/infant formula: 0-6 months and stage 2/follow-on formula: 6-12 months), but further subdivided in the Netherlands and Germany (stage 1: 0-6 months, stage 2: 6-10 months and stage 3: 10-12 months). The fact that such divisions seem determined by the country in which the products are placed suggests they are market-driven, not science-based.

Another factor thought to be influencing manufacturers' decisions is the existence (or lack thereof) of legal marketing restrictions that affect certain categories of formula products. This is because, although the WHO Code applies to all breastmilk substitutes until 36 months of age, most countries only partially apply such restrictions in the law. Follow-on formulas seem more common in countries with advertising restrictions on preweaning formulas. For example, all standard Abbott products in the Similac range in the US, where no legislative marketing restrictions exist, are aimed at 0-12-month-olds; but infant and follow-on versions of these formulas exist in the UK, China (mainland and Hong Kong), Indonesia and South Africa.



**Box 9: Milking it: Milk formulas from cradle to grave**

To compete in the very profitable infant milks market, companies cleverly hook customers with a broad range of milk formula products that will take consumers from the cradle to the grave. These tactics are especially targeted at Asian countries: the biggest growth markets for BMSs.

Companies find numerous ways to compete in the lucrative market and multiple approaches to unethically manoeuvre around the Code, which aims to eliminate the irresponsible marketing of infant foods. Chameleon companies encourage pregnant mothers to buy special milk formulas during pregnancy, which helps to establish brand loyalty and familiarity with using formulas long before their infant is born.

Manufacturers produce milk formulas for children of various age ranges. These products use the same branding and packaging as the formulas from birth, boosting brand loyalty and enabling cross-promotion and exaggerated claims in countries where legislation prohibits the marketing of formula for infants. Powdered milk products have been developed for children up to 12 years old. Given that children can drink cows' milk from the age of one onwards, the WHO states that follow-on formulas are unnecessary products<sup>216</sup> but NGOs highlight how they are useful for the companies in promoting their brands and establishing a widespread culture of milk formula consumption.<sup>217</sup>

Grandparents often take great pride in their grandchildren, and in many families they are responsible for assisting the parents with childcare. Nestlé's research in Spain showed that 70% of Spanish grandparents spend time with their grandchildren daily.<sup>218</sup> Grandparents can be very influential over infant and child feeding choices. Companies have a solution: providing milk formula for senior citizens. This not only helps to boost brand loyalty (therefore selling more formula products for infants and children) but also opens up potential growth opportunities in senior nutrition.

Companies cash in on every opportunity they can find, targeting a wide range of people with special milk formula products, like the milk formula enriched with vitamin D on sale in Indonesia for women who wear the hijab.



### 5.3.2.2. 'Premium' products: 'Better' ingredients

Existing Codex standards include detailed specifications of minimum nutritional requirements for formula products, but are much more general on the sources of such nutrients; for example, the types of sugars

**Table 4: Examples of claims driving product differentiation**

Claim	Products
Organic	<b>Abbott</b> (US): Similac Organic and Pure Bliss <b>Abbott</b> (mainland China and Hong Kong): Eleva Organic <b>Nestlé</b> (Hong Kong): Wyeth Iluma Organic
GMO-free	<b>Abbott</b> (US): There are non-GMO variations of most Similac products <b>Nestlé</b> (US): Gerber formulas are non-GMO certified <b>Mead Johnson</b> (US): Enfamil formulas are non-GMO certified
100% lactose	<b>Danone</b> (Germany): Aptamil ProNutra 1 (0-6 months)
Palm-oil free	<b>Abbott</b> (UK): Similac first and follow-on formulas <b>Nestlé</b> (Spain): NAN Optipro Supreme range
Starch-free	<b>Nestlé</b> (Germany): BEBA OPTIPRO 2 ohne Stärke
Vanilla flavour	<b>Danone</b> (Germany): Milupa Milumil 2 (6-10 months); Vanille-Geschmack; Milumil 3 (10 months+)
Aluminium-free	<b>Danone</b> (France): Various products from Bledilait and Laboratoires Gallia ranges

(preference for lactose and glucose; avoiding sucrose and fructose, etc.) and additives that should be used. Manufacturers are making use of such flexibility to develop a number of products. What are the main categories found on the market, and is there a scientific rationale for such differentiation?

Our product review has identified a number of products aimed at parents interested in ingredients perceived to be more natural and healthier, which are sold at a premium price. These include products associated with good production sources, such as organic milk, and other organically sourced ingredients that claim to be GMO-free. Moreover, certain product variations seem to fall into broader preferences, including a range of health, environmental and other consumer concerns - palm-oil free; lactose-only; starch-free; aluminium-free; etc.

Again, the analysis suggests that variations are driven by market characteristics specific to the countries in which products are placed, rather than scientific evidence.

Organic formula products - the most important products in this category - still account for a small share of total sales, but they are experiencing very strong growth, particularly in countries such as China. A recent survey by Mintel revealed that 75% of Chinese mums interviewed bought organic formula products, 49% of whom bought them 'because they were willing to pay more for their babies' food'.<sup>219</sup>

Beyond China, the bulk of organic and GMO-free products from the four largest manufacturers seem to be found in the US. Interestingly, organic certification and non-GMO claims have been the most controversial in the US, because the milk from GMO-free formula is likely to come from animals that have been fed GMO crops.<sup>220</sup> Some companies' organic claims have also been challenged as they do not prevent the presence of non-organic, non-agricultural materials, such as synthetic additives.<sup>221</sup>

One product we reviewed that made a large number of such claims was Similac's Pure Bliss.<sup>222</sup> This Irish-made product, which is only present in the US market, includes many claims regarding its natural milk production (grass-fed cows; no artificial growth hormones; no antibiotics; GMO-free; etc.) as its key marketing feature.

A possible explanation for the lack of organic products by the four biggest BMS manufacturers in Europe could be the strong presence of other brands, such as HIPP.<sup>223</sup> In any case, there is strong evidence that these decisions are driven by company's own market research rather than health or scientific considerations; companies such as Mead Johnson have defended their decision not to roll out non-GMO certification to all their products, saying 'not all parents are interested in them'.<sup>224</sup>

### 5.3.2.3. 'Premium' products: Additional nutrients

It is generally agreed that breastfeeding - or, more precisely, optimum breastfeeding - is the gold standard for infant feeding. From a purely nutritional perspective, as stated earlier in this report, breastmilk's composition has major benefits.<sup>225</sup> Although production of an identical product to breastmilk is not possible, formula manufacturers invest large amounts of money attempting to mimic the nutritional profile of human breastmilk,<sup>226</sup> including developing many products with additional substances beyond those required by law.

Our product review aimed to explore whether additions of specific nutrients are consistent across different markets and different manufacturers. The table below looks at the three groups of substances most commonly added to formula, beyond compositional requirements, in Nestlé NAN: a product found in all the countries reviewed.

As can be seen in the table, there are many variations in the composition of standard NAN formula products across different countries. While fortification of formula with probiotics seems common across the NAN product range, the addition of DHA and prebiotics seems to underpin the development of



**Table 5: Additional nutrients in Nestlé NAN products**

Product name	Country	DHA	Prebiotics	Probiotics
Nestlé NAN Optipro 1	Spain	✓	✗	<i>Lactobacillus reuteri</i>
Nestlé NAN Optipro Supreme 1	Spain	✓	2'-O-fucosyllactose & lacto-N-neotetraose	<i>Lactobacillus reuteri</i>
Nestlé NAN Optipro 1	The Netherlands	✓	✗	<i>Bifidus culture</i>
Nestlé NAN Optipro 1	Poland	✓	✗	<i>Bifidobacterium lactis</i>
Nestlé NAN Optipro 1 Plus	Poland	✓	FOS/GOS	<i>Lactobacillus reuteri</i>
Nestlé NAN 1	Bulgaria	✓	✗	<i>Bifidus culture</i>
Nestlé NAN Comfort 1	Australia	✗	✗	<i>Lactobacillus reuteri</i>
Nestlé NAN Optipro Gold 1	Australia	✓	✗	<i>Bifidus culture</i>
Nestlé NAN Gold	China (mainland)	✓	✗	<i>Bifidobacterium animalis</i>
Nestlé NAN pro	China (Hong Kong)	✓	✗	✗
Nestlé NAN Optipro 1	South Africa	✓	✗	<i>Bifidobacterium lactis</i>
Nestlé NAN Lactogen 1	South Africa	✗	✗	<i>Lactobacillus reuteri</i>

premium products in Spain, Poland, Australia and South Africa, where two varieties of NAN products exist. Although the table focuses on the Nestlé NAN range, significant variations in infant formula composition exist within and across all other manufacturers reviewed.

Variations in the nutrients added to products raise significant questions about the scientific rationale behind these additions. In the words of the UK Scientific Advisory Committee on Nutrition (SACN) in 2007, 'it would be unethical to withhold any ingredient unequivocally beneficial for commercial reasons'. The Committee argued that, if such health claims associated with certain substances were proven, the fortification of products 'should be made a requirement to reduce existing risks associated with [the lower nutritional profile of] artificial feeding'.

#### 5.3.2.4. 'Premium' products: Increasing the medicalisation of infant milks

A further trend driving the broad range of products on the market is associated with an increasing number of specialised formulas, which claim to help alleviate a number of common issues, such as constipation and indigestion, reduce crying and hunger, lower the risk of developing allergies, etc.<sup>227</sup>

All four companies in our study produce a wide variety of specialised formula products. It has not been possible to categorise such products into more concrete groups for this report, because there are many types of over-the-counter and prescription-only products with a very similar appearance; as such, technical medical knowledge is required to accurately differentiate. Indeed, expert organisations such as the First Steps Nutrition Trust have raised concerns that the potential confusion resulting from similar appearances, among both health professionals and users, could lead to infants being given specialised formula unsuitable to their needs.<sup>228</sup>

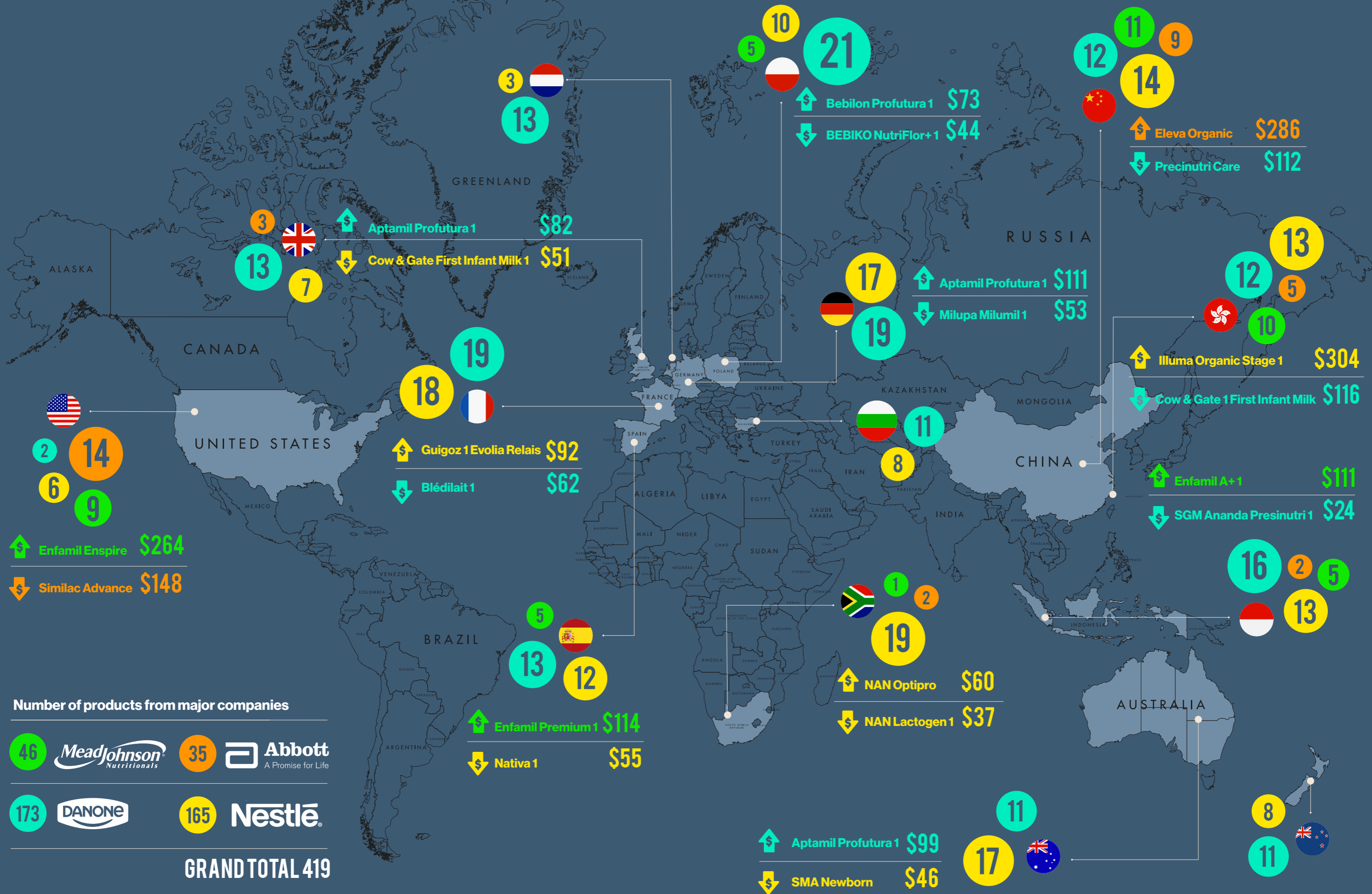
Although the US remains the largest global market for specialised formula products, China has been reported to be driving total growth globally.<sup>229</sup> Globally, the most common types of specialised formula found were those containing partially hydrolysed proteins, followed by low-lactose/lactose-free and anti-reflux products. Soy-based formulas and those for preterm infants were also popular, but outside of the remit of this report.

Indeed, there seems to be a huge variety of products containing partially hydrolysed proteins, including products labelled 'H.A', 'Comfort', 'Soothe', 'Gentle', 'Sensitive', etc. These are often marketed to infants 'with a family history of allergies';<sup>230</sup> they claim to be 'easier to digest'<sup>231</sup> and to help with 'digestive problems like colic and constipation'.<sup>232</sup> Despite the large number of such products on the market, they remain controversial, as proof of their effectiveness is limited.<sup>233</sup> In 2021, the European Commission intends to prohibit the use of such claims, unless manufacturers prove the efficacy of each product in reducing the risk of developing allergy to milk proteins.<sup>234</sup>

The placing of certain types of specialised formulas also seems to be limited to specific markets, suggesting that such decisions are strongly influenced by market-specific considerations. For example, Nestlé's (SMA) and Danone's (Aptamil and Cow & Gate) milks for 'hungrier babies' seem to be limited to the UK. Danone's (Nutrilon) 'Good Night' milk, a formula fed before bedtime to which cereal is added, was only found in the Netherlands. The UK's NHS advises 'that there is no evidence that such formulas are needed and/or that babies settle better or sleep longer after having them'.<sup>235</sup>

# SUMMARY OF PRODUCTS AND PRICES FOUND IN DIFFERENT MARKETS

Monthly cost of feeding an infant (USD) with the cheapest and most expensive formula found on the market



## Number of products from major companies



GRAND TOTAL 419

Chapter 6:

The wild, wild west of pricing



6.1. Product differentiation as a key driver to increase profit

Our research also looked at the prices of infant formulas available in different markets, based on the methodology presented in the previous chapter. Prices were taken from mainstream supermarkets or well-known nationwide shops, or from the online shops of supermarkets and well-known online retailers. In some countries, such as the US and China, the price of a product varied between retailers. In these cases, we took the price most frequently repeated (the mode); where this was not possible, we took the middle value (the median). Product prices can fluctuate over time; these changes may result in variation in the most and least expensive products, but generally do not affect overall pricing trends. To compare the price of products across markets we converted prices to USD using market exchange rates from 29 September 2017. Fluctuations in exchange rates may have occurred since the research was carried out. Our analysis represents a snapshot of typical prices at the time of our research: April-September 2017.

The calculations were based on 100ml of powdered product, made up according to the manufacturer's instructions on the label. We used scoop weights based on manufacturers' information; where this information was not available, we took the scoop weight and instructions from the nearest equivalent product. For the majority of products, the amount of powder in 100ml of made-up milk was calculated using a standard ratio of 1 scoop:30ml water. For Abbott Similac products across all markets, as well as Nestlé and Mead Johnson products in the US, the ratio was 1 scoop:60ml water.<sup>236</sup>

The cost per day was calculated based on the average intake of 920ml/day for a 2-3-month-old baby,<sup>237</sup> and this was used to work out the approximate cost per month. To compare the monthly cost of formula against wages, we used data on average monthly wages from the OECD for 2016 and from the ILO *Global Wage Report* for 2016/17, based on national government data.<sup>238 239</sup> In this instance, to compare between countries we converted the monthly costs into USD using purchasing power parity (PPP) exchange rates.<sup>240</sup> Using purchase power parity (PPP) exchange rates is an alternative to using market exchange rates. PPP exchange rates are relatively stable over time and equalise the purchasing power of two currencies by taking into account cost of living differences.<sup>241</sup>

Our study gives an approximation of the amount that a family with one 2-3-month-old infant would spend on formula feeding. Several additional variables could impact on the total amount a family might spend on infant formula each month, such as remaining salary after tax, the number of adults bringing income into a family and the total number of children a family may be feeding with formula. Additional costs of formula feeding to factor into the overall costs include bottles, sterilisation equipment and potentially (in areas with poor sanitation) acquiring a safe and clean water source.

Our findings show the four major BMS companies are charging higher prices for their so-called 'premium' products - especially in the growing Asian markets, where there is fierce competition for profits. This can be shown in three different ways: first, by looking at the price range within countries; second, by comparing the price of similar products within a brand across different countries; and third, by comparing the cost of feeding a 2-3-month-old baby against average salaries. The large price differences indicate that companies are not led by science and what is best for babies, but by competition for market share and profits.

### 6.1.1. Difference in price of infant formula within a country

Our findings show a disparity in the costs of different brands of standard infant formula within countries. In older and more established markets (like the UK, EU and US), consumers are arguably more price savvy, and over the last two decades questions about the cost of formula have largely been asked and answered. If we look at these markets, the cost of the most expensive standard infant formula tends to be around double the price of the least expensive formula found in our study.

In the UK, the cost of the cheapest brand of formula in our study was Cow & Gate First Infant Milk (Danone), at 0.14 pence per 100ml of made-up milk or nearly 38 GBP per month to feed a 2-3-month-old infant. In comparison, Aptamil Profutura 1 (Danone), at 0.22 pence per 100ml or just over 61 GBP per month, was almost double the price for essentially the same product. The trend is very similar in France and Germany.

In Spain, the cheapest formula in our study was Nativa 1 (Nestlé) at 0.17 eurocents per 100ml or around 47 EUR per month. The most expensive was Enfamil Premium 1 (Mead Johnson), which at 0.34 eurocents or nearly 97 EUR per month was just over double the price.

Similarly, in the US the most expensive formula was Enfamil Enspire (Mead Johnson), costing 0.94 cents for 100ml. Per month, Enspire costs around 264 USD to feed a 2-3-month-old child. This is nearly double the price of Similac Advance (Abbot), at 0.53 cents for 100ml made-up milk, or 148 USD per month to feed a 2-3-month-old child.

Comparatively, the gap in price between the most and least expensive formulas in China, Hong Kong and Indonesia is much higher. In emerging and growth markets, where there is high demand and fierce competition for profits, companies are charging large amounts for their supposed 'premium' products.

In China and Hong Kong, there is nearly a threefold price difference between the most and least expensive formulas manufactured by the four biggest global companies. In Indonesia, the most expensive first infant formula we found on the market - Enfamil A+ (Mead Johnson) - is four and a half times the price of economy brand formula SGM Ananda Presinutri 1 (Danone).

As mentioned previously, China, Hong Kong, Indonesia and Vietnam are the leading markets for BMS in terms of total sales (65% or 30 billion USD), and account for almost all the projected growth (54%) to 2020. China is not only the largest market for infant formula but also the fastest growing. Sales in China alone (20 billion USD) are worth more than double those in the US (5 billion USD) and Western Europe (3 billion USD) put together.<sup>242</sup>

Chinese mistrust in the safety of domestically produced infant formula (due to the aforementioned 2008 melamine scandal) has led to high demand for foreign infant formula, and large international companies use this to their advantage. Active promotion in China through advertising and free sampling has resulted in many parents perceiving infant formula as a healthier substitute for breastmilk. Due to the size and growth of the lucrative Chinese market, and intense competition between the four largest global infant formula manufacturers to gain a share of it, companies seek a competitive advantage through product differentiation.

According to a 2014 investors relations document by Mead Johnson Nutrition, growth in the infant milks industry is partly driven by 'increasing spend on premium nutrition'.<sup>243</sup> Figure 1, taken from Nestlé's strategy, shows how the *premiumisation* of products is seen as an important growth driver for the company.<sup>244</sup>

**Table 6: Comparison of cheapest and most expensive infant formula from the four largest companies in 11 markets**

Country	Cost per month per infant (USD)			Cheapest product		Most expensive product	
	Lowest	Highest	Difference (Lowest- Highest)	Manufacturer	Name	Manufacturer	Name
Indonesia	24	111	x 4.5	Danone	SGM Ananda Presinutri 1	Mead Johnson	Enfamil A+1
China (Hong Kong)	116	304	x 2.6	Danone	Cow and Gate 1 First Infant Milk	Nestlé	Illuma Organic Stage 1
China (mainland)	112	286	x 2.5	Danone	Precinutri Care	Abbott	Eleva Organic
Australia	46	99	x 2.1	Nestlé	SMA Newborn	Danone	Aptamil Profutura 1
Germany	53	111	x 2.1	Danone	Milupa Milumil 1	Danone	Aptamil Profutura 1
Spain	55	114	x 2.1	Nestlé	Nativa 1	Mead johnson	Enfamil Premium 1
US	148	264	x 1.8	Abbott	Similac Advance	Mead johnson	Enfamil Enspire
Poland	44	73	x 1.6	Danone	BEBIKO Nutriflor +1	Danone	Bebilon Profutura 1
UK	51	82	x 1.6	Danone	Cow and Gate 1 First Infant Milk	Danone	Aptamil Profutura 1
South Africa	37	60	x 1.6	Nestlé	NAN LActogen 1	Nestlé	NAN Optipro 1
France	62	92	x 1.5	Danone	Bledilat 1	Nestlé	Guigoz Evolia Relais

Take, as an example, the two super-premium and most expensive non-organic products on the market in China: Nestlé / Wyeth ILLUMA Stage 1, and Mead Johnson Enfinitas Stage 1.

The ILLUMA website states: '*ILLUMA has integrated the remarkable mystery of nature to enhance the "Human Affinity Formula". Following a baby's natural nutritional needs more closely, to support their absorption of key nutrients. Help unleash their natural defence and illuminate their endless shining potential.*'<sup>245</sup> ILLUMA Stage 1 costs the equivalent of 62 USD per 900g tin (6.12 RMB / 0.91 USD per 100ml made-up milk).

Enfamil Enfinitas is specifically customised for the Chinese market and is the sister product of Enspire, sold in the US. Enfinitas Stage 1 costs nearly 30 USD for a 400g tin (6.72 RMB / 1.00 USD per 100ml made-up milk). In October 2016, Mead Johnson reported to its investors that Chinese parents should be willing to pay for Enfinitas after domestic quality scares and baby formula recalls.<sup>246</sup>

Figure 1: Nestlé strategic roadmap



Figure 2: ILLUMA Stage 1 (Wyeth/Nestlé) and Enfinitas Stage 1 (Mead Johnson), the two super-premium and most expensive non-organic products in China and Hong Kong



A Danish asset-management company wrote the following about Mead Johnson: 'Since the company launched its super-premium product on the Chinese market in the spring of 2016, it has experienced great success - and significantly increased sales through the fastest growing sales channels. Super-premium products carry higher margins... which are almost twice the regular products.'<sup>247</sup>

The primary method for formula manufacturers to differentiate and justify the price of their premium products is claiming they are based on the latest scientific advances. Given that both ILLUMA and Enfinitas products comply with the Codex standards, they appear to be differentiated solely on the basis of additional nutrients. The types of additional nutrients added to premium formulas to justify their higher price include the fatty acid sn-2 palmitate, prebiotics, probiotics and oligosaccharides. The EFSA has concluded that all these nutrients are unnecessary and that the evidence to support the benefits to infants is limited at best.<sup>248</sup>

BMS companies make many claims about their

*First Steps Nutrition notes that 'many of the more expensive brands make health claims, but can only do so for those ingredients that are not needed, and these unnecessary ingredients may in fact be a burden on a young child's metabolism'.<sup>249</sup>*

'premium' infant formula being led by science. However, the large price ranges within markets call this claim into question.

### 6.1.2. Difference in price of formula between countries

Manufacturers also charge very different prices in different countries for infant formula of the same brand.

We looked at Nestlé S-26 products, which are available in several countries: South Africa, Australia, China, Hong Kong and Indonesia. Table 7 shows the various S-26 products available in different countries at their different prices.

S-26 products are most expensive in China and Hong Kong, where our analysis suggests parents may be spending almost five times more than parents feeding their children on S-26 products in other parts of the world. The S-26 'Gold'-labelled products are three times more expensive in China and Hong Kong than South Africa, and over double the price of the same products in Australia. This makes a significant difference to the monthly cost of feeding a baby.

As discussed in the previous chapter, there may be slight differences in the composition of these products

Table 7: Comparison of prices of Nestlé S-26 first infant formulas between countries

	Cost						Product name
	Per can (local currency)	Per can (USD)	Monthly (local currency)	Monthly (USD)	Difference against feeding infants with cheapest product	Monthly (most to least expensive)	
China (mainland)	122	18	1,152	173	x 3.8	3rd	S-26 SMA GOLD
	308	46	1,454	218	x 4.8	1st	S-26 SMA Ultima 1
China (Hong Kong)	345	45	1,629	212	x 4.7	2nd	S-26 SMA ULTIMA 1
	298	39	1,250	163	x 3.6	4th	S-26 SMA Gold 1
Indonesia	119,130	8	1,125,108	79	x 1.7	6th	S-26 SMA Promil Nutries-entials
	317,750	22	1,333,756	93	x 2	5th	S-26 SMA Gold 1
Australia	15	12	59	45	x1	11th	SMA Newborn
	20	15	79	61	x 1.3	8th	S - 26 Original Newborn
	25	19	100	77	x 1.7	7th	S - 26 GOLD Newborn
South Africa	179	13	693	49	x 1.1	10th	S - 26 Gold Biofactor System 1
	148	10	644	45	x1	12 th	S-26 1
	183	13	768	54	x1.2	9th	S-26 Gold 1

- but we question whether these differences can account for, or justify, such large price disparities across countries.

The price differences in different markets also apply to Danone infant formula; for example, Aptamil Profutura 1 on sale in the UK, Germany and China. This product is easy to compare across different markets, as the same name and similar packaging is used. However, similar to Nestlé's NAN this product also has slight variations in composition across different markets. In the UK, it costs 13 GBP per 800g (around 17 USD). In Germany, the price is higher at nearly 20 EUR for an 800g tin (around 24 USD), whereas in China it costs 365 RMB per 900g (around 55 USD per tin). Aptamil Profutura 1 is one of the most expensive powdered cows' milk-based infant formulas available in the UK, at 0.22 GBP (0.29 USD) per 100ml of made-up milk, yet the same product costs nearly three times the price (0.82 USD) in China.

Furthermore, in a review of infant milks in the UK, First Steps Nutrition Trust conclude that Aptamil

**Table 8: Comparison of the price of Aptamil Profutura 1 (Danone) in 5 markets**

	Cost						Product name
	Per can (local currency)	Per can (USD)	Monthly (local currency)	Monthly (USD)	Difference against feeding infants with cheapest product	Monthly (most to least expensive)	
<b>China (Mainland)</b>	365	55	1,532	230	x 2.8	1st	Aptamil Profutura 1
<b>China (HK)</b>	348	45	1,461	190	x 2.3	2nd	Aptamil Profutura 1
<b>Germany</b>	20	24	94	11	x 1.4	3rd	Aptamil Profutura 1
<b>Australia</b>	30	23	126	97	x 1.2	4th	Aptamil Profutura 1
<b>UK</b>	13	17	61	81	x 1	5th	Aptamil Profutura 1

Profutura 1 'offers no advantage over any other first infant milk. The very high cost of this milk, the increased range of potential allergens included, and the high number of unnecessary ingredients could be seen as making this a less good choice'.<sup>250</sup>

Questions remain as to why manufacturers are charging very different prices for very similar products. If the products differ based on additional nutrients, this leads us to ask whether any of these additional nutrients can justify such high costs in some countries. From our study, this price difference between markets appears to be further evidence highlighting that BMS companies are not science-led.

Organic infant formulas are another method of product differentiation and are also sold at a higher price than their non-organic equivalents. In the US, Similac Organic (Abbott) costs around 0.63 USD per 100ml made-up milk or 177 USD each month to feed a 2-3 month-old infant. While Similac Advance



Figure 3: Aptamil Profutura Stage 1 and 2 (Danone) on the supermarket shelves in Beijing, China where it costs nearly three times more than in the UK.



Copyright: Benedict Wermter

### Box 10: Case study from Vietnam: 'Aptamil is the BMW of formula'

When Viet Hong Ngo went back to work after six months of exclusive breastfeeding, she was confident she could keep giving her daughter breastmilk for a bit longer, which she wanted to do.

In Vietnam, new mothers returning to work are given an additional one-hour break per day to breastfeed. Mothers can decide for themselves whether to work one hour less and feed, or take time to use a breast pump, or even go home in between shifts to feed and pump.

Every day, 29-year-old Viet got on her scooter and hurried home to breastfeed. 'I very often got stuck in the traffic and I was so stressed that I could not really enjoy breastfeeding my daughter anymore. My milk got less and less and after three months trying to make this schedule work, I gave up.'

But her struggle to provide the best nutrition for her daughter Khan Chi - nicknamed Pikachu, after the Pokémon character - didn't begin, or even end, there.

Viet gave birth in a public hospital in central Hanoi. 'There were people from milk companies there who asked for our names and contact details. They said they would have a gift for me, and so we signed up.'

Weeks later, Viet received a call from Nestlé asking how her child was developing and if she felt she had enough milk. The Nestlé representative also asked if she had chosen an infant formula yet, and encouraged her to attend a conference where she would get more free samples.

Wanting to give her baby the best nutrition, Viet began sifting through articles and websites to help her make what she hoped would be the best choice for her Pikachu.

'Most people here look for the weight and the height,' she confides. 'We always see chubby children on formula packages and on TV. We all want that.'

After trying various brands, which her daughter either rejected or did not produce the promised height and weight benefits, she was frustrated: 'What should I use for my child to make sure her health is safe and weight is good?'

She was driven by this question, she says, and eventually became convinced that Aptamil, a Danone brand from Germany, was the answer.

'Aptamil from Germany contains Vitamin B3 - for the height,' she says. But the only Aptamil she can get in Vietnam comes from Latvia, and she thinks that 'it doesn't contain vitamin B3'.

Viet has friends in Germany, so she asks them to buy Aptamil there and send it to her. Sometimes they send it over with other friends who are visiting Vietnam. 'We have to give a little money to those visitors, and they bring it to us.'

All this effort has been stressful - and very expensive. Viet earns 4 million Dong (around 160 USD) in her part-time job as an accountant. Her husband works full time. For one can, they have to pay up to 800,000 Dong (35 USD), and they need four cans per month - 140 USD. 'That is nearly my whole income.'

Besides the formula, they have to pay their rent, gas and electricity bills (among others). In total, Viet says, they are spending half of their income on meeting their daughter's needs, including diapers or toys. But, she says, it's worth it, because 'Aptamil is the BMW of formula'.

Even so, Viet admits that after a year on Aptamil her daughter hasn't gained much in the way of height. But compared to other children, she thinks her daughter's health may be better; 'she is less sick', she says.

For that reason, she will continue to give her daughter Aptamil three times a day until she is two.

'Only two months left!' she says. After that, there will be a little extra money again, and they can finally plan to have another baby.

Author: Benedict Wermter

costs 0.53 USD per 100ml or around 148 USD per month This is a large difference when considering the monthly costs.

Our analysis also shows that organic infant formulas in China and Hong Kong are significantly more expensive than in the US and carry a higher premium. For example, in Hong Kong, ILLUMA Stage 1 Organic (Nestlé/Wyeth) costs 579 HKD for a 900g tin, the equivalent of 1.09 USD per 100ml made-up milk. It is also more expensive than its non-organic equivalent, ILLUMA Stage 1, which costs 529 HKD per

### Box 11: China acts to regulate infant milks

On 6 June 2016, the China Food and Drug Administration (CFDA) published the final rule of Administrative Measures for Registration of Recipes for Formula Powder Product for Infants and Young Children ('Infant Formula Measures'). The regulations apply to both domestic and international brands of infant milks on the market in China.

Manufacturers must already comply with China's national standards, which set out requirements for macro and micronutrients, specific contaminants, sensory issues and specific labels, in addition to the national standard for labelling prepackaged foods for special dietary uses.<sup>251</sup>

The new measures mean manufacturers that intend to sell their infant milks on the Chinese market – including those who were previously allowed to sell products in the country – are required to submit a report to CFDA. This report must describe the research and development (R&D) of the product and the manufacturing process, and must contain a product-testing report, documentation to demonstrate its capacities in R&D, details of production, testing and other materials that support the science and safety of the formula.<sup>252</sup>

In addition, the maximum number of infant formula brands a company can market within each age series in China will be limited to three: nine formulas for each manufacturer. A series includes infant formula (0–6 months, stage 1), older infant formula (6–12 months, stage 2) and young children formula (12–36 months, stage 3).

The Registration Measures also provide detailed provisions to tackle misleading and false advertising on infant milks, including prohibiting ambiguous terms (such as 'imported milk source', 'ecologic pasture' and 'imported raw materials') and prohibiting explicit or implicit health and function claims (such as stating that the products may increase intelligence, build up resistance, increase immunity or protect the intestines).

There is also a requirement for all producers to sell nationwide. This is likely to hit China's smaller regional brands while favouring larger multinational brands.

The new regulations were due to come into force on 1 October 2016. However, due to the size of the Chinese market and the relative complexity of the registration process, CFDA granted 15 months for the infant formula manufacturer to adapt the transition. The final compliance date is 1 January 2018.<sup>253</sup>

A report by Rabobank, a financial services provider for the global food and agribusiness sector, suggests that manufacturers may produce more 'Stage 4' children's milk formula (for children over three years old) to circumnavigate the new regulations, which allow up to three registered products for specific age ranges.<sup>254</sup>

tin or 0.99 USD per 100ml.

In China, the price difference between Abbott Eleve 1 (155 tRMB for 400g) and Eleve Organic 1 (218 RMB for 400g) is also noticeable. For comparison in USD Eleve Organic 1 is around 1.02 USD per 100ml while Eleve 1 is approximately 0.73 USD per 100ml. The price gap between organic and non-organic infant formulas appears to be wider within China than elsewhere, suggesting that companies are making the most out of Chinese parents' safety concerns and a preference for more natural products.

### 6.1.3. Specialised infant formulas

We also compared prices of specialised infant formula across different markets. Since specialised formulas can be more expensive, we compared these separately from the pricing of standard infant formulas. Specialised infant milks cover a wide range of over-the-counter and prescription-only products, and availability of and access to these formulas differs across countries. According to 2007 market research by the European Commission: *'Within IFFO [infant formula and follow-on] milks, a further distinction can be made between standard and therapeutic milks: therapeutic milks are milks intended for babies with particular digestive or health problems (milks for premature babies, anti-regurgitation milks, and milks without lactose, anti-diarrheic milks, anti-regurgitation milks or allergy treatment milks). Therapeutic milks, which are only sold in the pharmacy channel, are on average 40–50% more expensive than standard IFFO milks.'*<sup>255</sup>

It is worth noting that many of these specialised formula products fall under different regulations from standard formulas, or are fully exempt from regulations. For example, in the EU, many of these products are classified as food for special medical purposes, which are regulated differently. As First Steps Nutrition notes, *'while infant formula have legislation regulating the labelling and marketing of products based on the WHO International Code of Marketing of Breast-milk Substitutes, specialised infant milks – which fall under the regulations for foods for special medical purposes – currently do not'*.<sup>256</sup>

While some specialised formulas are for infants with very precise metabolic disorders,<sup>257</sup> many specialised products have very similar brands and packaging to standard infant formula products and *'carry highly promotional, misleading and unsubstantiated claims and brand names, such as Staydown, Anti-Reflux, Comfort, Easy Digest, that medicalise common feeding occurrences'*.<sup>258</sup> This can cause confusion among both consumers and healthcare professionals, and increases the risk of infants being fed specialised formula that is not only expensive but also unsuitable, and could have a negative effect on their health.<sup>259</sup>

When looking at the price of these specialised formulas in different markets, our findings follow similar trends to the standard infant formulas, in that BMS manufacturers are charging vastly different prices for similar products. The table below looks at the cost of specialised infant formula containing partially hydrolysed proteins in eight different markets and compares the cheapest specialised product against the most expensive, both within each market and across different markets. As set out in section 5.3.2.4., these are the most common category of special formulas, and include products typically labelled as 'Comfort', 'H.A.', etc.

Such categories of products seem to be most expensive in China and the US, where parents using the most expensive products may be spending multiple times the amounts of parents feeding their children on such products in other parts of the world. For example, parents feeding their children on the most expensive partially hydrolysed formula product in China (NAN H.A.) are spending five and a half times more than those using the cheapest product in Indonesia (SGM PhPro), and four times more than those using the cheapest product in the UK (Cow & Gate Comfort). While there are other differences in formulation between such products, our analysis again questions whether such large price disparities across countries can be justified.

**Table 9: Comparison of the cost of specialised infant formula containing partially hydrolysed proteins in 8 markets**

Country	Cost per month in (USD)			Difference of feeding infant between most expensive and cheapest specialised infant formula (within same country)	Difference of feeding infant between most expensive specialised infant formula across countries
	Lowest	Highest	Average		
China (HK)	207	254	230	x 1.2	x 5.5
China (HK)	164	246	205	x 1.5	x 5.3
US	154	181	168	x 1.2	x 3.9
France	89	116	103	x 1.3	x 2.5
Australia	80	109	95	x 1.4	x 2.3
Poland	77	97	87	x 1.3	x 2.1
UK	64	73	68	x 1.2	x 1.6
Indonesia	46	122	84	x 2.6	x 2.5

Statements from BMS companies indicate that specialised infant milks are a profitable business. Mead Johnson, speaking to the US Securities and Exchange Commission, said: 'We design several solutions infant formulas to address common feeding tolerance problems in normal infants, including spitting-up, fussiness, gas and lactose intolerance. We market our solutions infant formulas for mild intolerance such as Gentlease ... under the Enfa family of brands name. Solutions infant formula products comprised 16%, 18%, and 19% of our infant formula net sales for the years ended 31 December, 2010, 2009 and 2008, respectively.'<sup>260</sup>

In addition to developing a range of 'premium' and 'super-premium' infant milks as a means of product differentiation to compete in different markets, companies have benefitted from parents' willingness to pay higher prices for products that make health claims for range of common infant conditions. Despite companies' declarations that they develop these specialised milks based on scientific understanding, our pricing study again shows they are driven by profit.

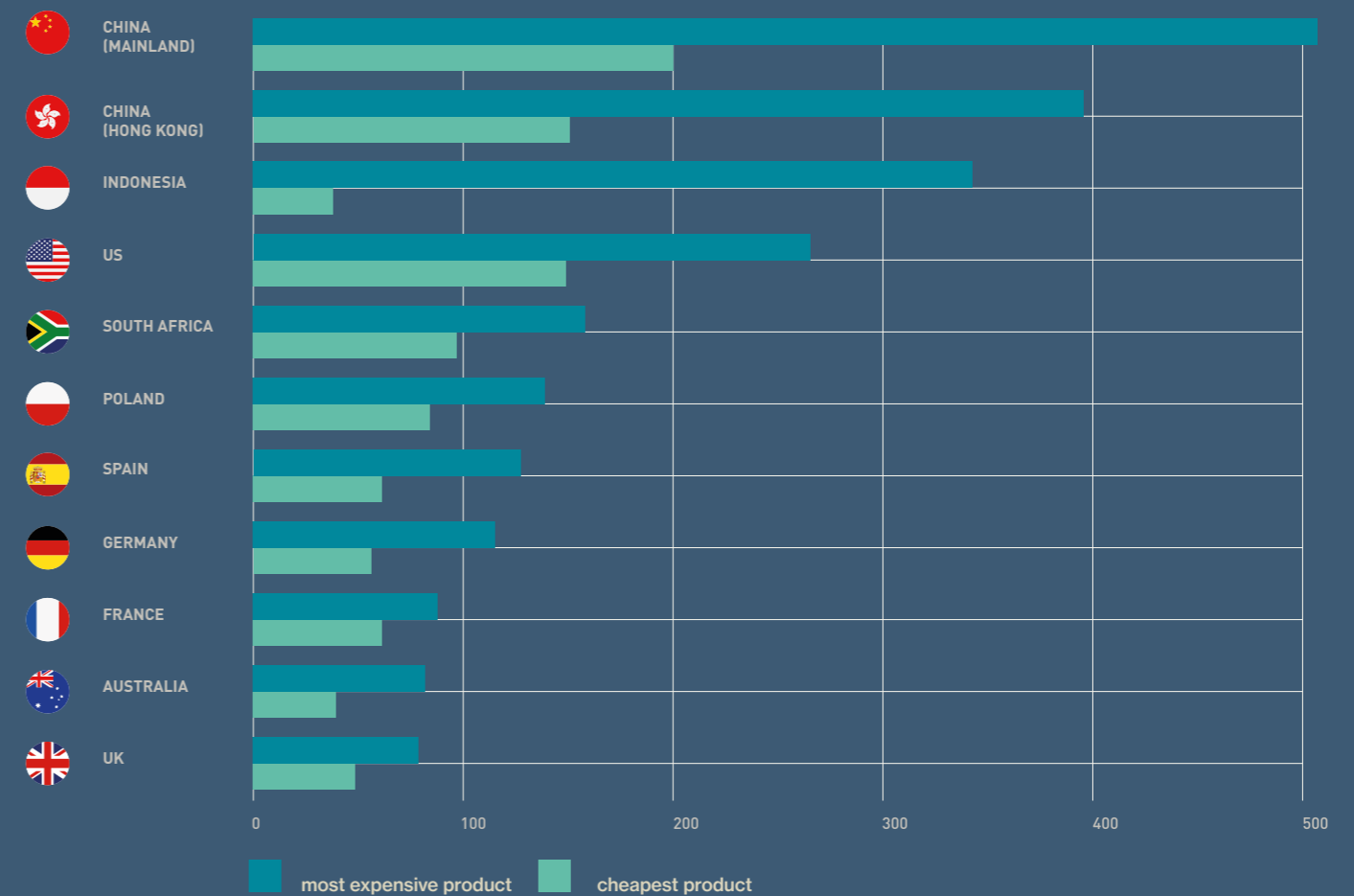
#### 6.1.4. Family spending on standard infant formula

It is clear from our research into formula pricing that families can spend a lot of money on infant formula, and that the cost of feeding a 2-3-month-old baby can be vastly different depending on both the country and the chosen product. The infographic shows a comparison of the prices of the most and least expensive products by country. Chinese families are paying the most and UK families the least for similar products. In the UK, monthly costs can range from 38-61 GBP; in the US, 148-263 USD; and in China, 747-1,899 RMB. Comparing across countries highlights the stark contrast in the amounts families are paying to formula-feed their children.<sup>261</sup>

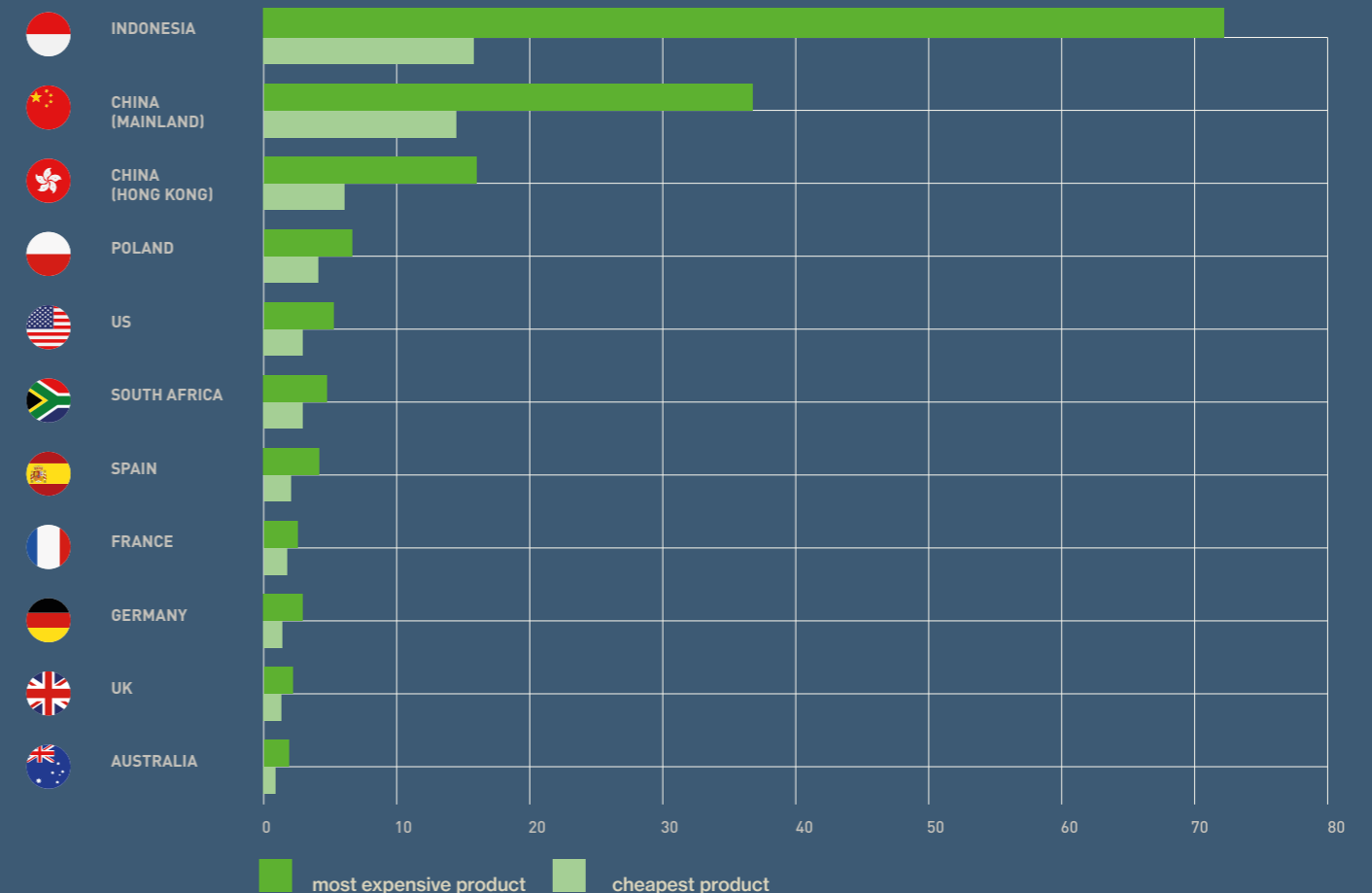
Moreover, parents are choosing to spend exorbitant amounts for so-called 'premium' products, which manufacturers lead them to believe bring additional health and development benefits for their babies. But the prohibitive cost of infant formula can have significant negative consequences for families.

In the UK, France and Germany, the cost of feeding a 2-3-month-old baby is 1-3% of the average monthly salary, whereas in Poland it is 4-7% and higher in absolute terms. This is despite EU regulations, which set out standard requirements for the composition of infant milks on sale across Europe.

**Figure 4: Estimated monthly formula expenditure by country (USD PPP)**



**Figure 5: Percentage of average monthly salary spent on infant formula by country**





## Box 12: Case study from Indonesia: 'Your baby stays strong'

Umi comes from a poor neighbourhood in North Jakarta.

When her daughter was only a few months old, her husband left to visit his village in Central Java and never returned.

To support herself, her two children and her young nephew, 35-year-old Umi works as a *'washing and ironing lady'*, servicing up to seven customers a day. Sometimes she goes to their houses to wash and iron. But usually, she collects laundry and washes it on a walkway in the neighbourhood in a plastic tub, next to which runs a trickle of dark effluent heading to Jakarta's coast.

In her room, a mattress leans against the wall on which Umi, her daughter (aged 19 months), her son (aged 9) and her nephew (aged 15) all sleep. She invites guests to sit on the bare ground as she talks about her struggle to feed her youngest child.

After she gave birth, she exclusively breastfed for a time – not because she necessarily wanted to, but because she didn't have the money to buy formula. After three months – and with three children to support – she went back to work, coming home in between jobs to breastfeed and pray, if there was sufficient time for both. Now, when she is out, her nephew (who has left school to help with the baby) knows to give the baby a bottle whenever she cries.

Umi, like all mothers, wants to give her baby the best. For her, this initially meant Lactogen – a premium product made by Nestlé, which she believes is enriched with vitamins that other products don't have. It keeps a baby healthy, even if a mother works all day, she says; with Lactogen, *'your baby stays strong'*.

But the Lactogen quickly became too expensive, so Umi switched to an Indonesian brand: Sari Husada's SGM, a subsidiary of Danone. Many mothers in the neighbourhood give this brand their children – at least, the ones who can afford to. For some, feeding watered down condensed milk to their babies is the only option.

Umi calculates that almost 10% of her income of a little over 2 million rupiah (around 160 USD) is spent on SGM. The smallest-sized box at the local minimarket costs 23,000 rupiah (\$1.80 USD). This box lasts three to four days, and she needs ten per month – sometimes more. Lactogen, she says, costs around 10,000 rupiah more per box, and *'we don't have enough money for that'*.

But with the cheaper brand, Umi constantly worries about nutrition. When her daughter was six months old, Umi began trying to spoon-feed her, but she rejected most of the solid food and ate only once a day. For a time, Umi worried her daughter was becoming too weak. She continues to offer her rice, vegetables and (when they can afford it) fish and chicken alongside the formula, and her daughter is eating more now.

However, Umi's greatest wish is still being able to afford Lactogen. She worries that buying a cheaper formula is somehow letting her child down: *'I still believe Lactogen is better. If I could buy Lactogen, she would eat more.'*

With the money she manages to save from buying SMG, she hopes to eventually buy a small fridge to store fresh food for the children.

Umi stares at the ground and starts to cry. *'I just want to save more money for my kids, for a better life'*.

Author: Benedict Wermter



However, the financial impact of buying formula shoots up even further in the growth markets of China, Hong Kong and Indonesia. In China, buying premium infant formula to feed a 2–3-month-old baby can cost up to nearly 40% of a parent's monthly salary. Even the lowest-priced foreign formula available in China costs around 15% of an average monthly salary.

In Indonesia, a parent on an average salary with a 2–3-month-old baby could spend up to nearly three-quarters of their monthly income, should they choose to buy Mead Johnson's Enfamil A+ first infant formula, which was the most expensive product found through our research. Even the costs of purchasing an economy brand of first infant formula can be significant; for example, SGM Ananda Presinutri 1 (Danone) would still carve out 15% of a working parent's average monthly salary. Many families earning far below an average salary buy the SGM formula because it is cheap; for these families, it costs a more significant proportion of their earnings, especially when factoring in the necessary bottles and sterilisation equipment needed to use the formula safely.

Beyond the immediate and obvious financial burden, buying infant formula has broader impacts on families with limited resources. A UNICEF report in 2012 highlighted higher instances of pneumonia and diarrhoea among children living in poverty. There are complex reasons for this, but nutrition and infant feeding is one factor: *'Infants who are exclusively breastfed for the first six months of life and who receive continued breastfeeding through age 2 and older develop fewer infections and suffer less severe illness than those not breastfed. This is particularly true for pneumonia and diarrhoea.'*<sup>262</sup>

Families like Umi's, already stretched due to the high costs of formula, have far fewer financial and time resources at their disposal to deal with such health issues. Again, families and infants around the world are paying the ultimate negative financial, health and economic costs to boost the profits of multinational BMS manufacturers.

### 6.1.5 How do companies set their prices?

Our investigation has uncovered that besides social listening (see box 6), BMS companies also work with a variety of market research organisations to conduct interviews, focus groups and carry out in-depth consumer analysis. For example, Daxue Consulting, a Chinese consulting firm prides itself on its website to have conducted market research for 'one of the major players in European baby food market', which included pilot studies on *'mothers' perceptions of the current and prospective baby food products'*.<sup>263</sup> Companies perform such market research on both emerging and developed markets.<sup>264</sup> This enables them to develop products in line with the market demand and based on very good knowledge of consumer preferences in different countries.

Our investigation also came across a report of a person who worked in Nestlé Bangladesh, which provides an interesting insight into Nestlé's pricing strategies. According to the report, *'Nestlé sets infant product prices in comparison to competitors like Biomil and Prima' and sets prices of its 'infant products slightly higher than the competitors, in order to maintain a perception of superior quality'*.<sup>265</sup> In addition, Nestlé also takes its own product range into account when setting prices, and sets different prices for products within the same range. *'This type of pricing strategy aims to maximize the sales of different products and the price of one product impacts the price of another'*.<sup>266</sup> However, as *'Nestlé is perceived to have good brand value'*, they price similar products higher than their competitors *'to create a perception of superior quality'*.<sup>267</sup>

While these findings are probably just the tip of the iceberg, they reveal strategies on product and pricing ranges and put the industry statements that their products are science-based under question. This has already attracted the attention of some regulators, as explained in Box 13.

### Box 13:

#### 2017 Singapore Competition Commission market inquiry into infant milk supply

On 10 May 2017, the Competition Commission of Singapore (CCS) published a long-awaited market inquiry into the supply of infant formula in the country.<sup>268</sup> This was initiated because Singapore has some of the highest retail prices for infant milks in the world. In 2017, the average price of a 900g tin was 56 Singapore dollars (SGD) – equivalent to 41 USD.<sup>269</sup>

The cost of living is high in Singapore. However, infant milk prices have more than doubled since 2008, exceeding increases for other staples.<sup>270</sup> With infants consuming up to four tins per month, the monthly infant feeding bill can be 175 SGD or more, adding an extra 50–60% to monthly food budgets (2012 figures).<sup>271</sup> These are the prices of premium and speciality milks, reflecting the overwhelming preference for these milks in Singapore; in 2015, they accounted for 95% of all infant milk sales, while 'standard' accounted for only 5%.<sup>272</sup>

The inquiry revealed that the high prices were due not to high ingredient and manufacturing costs or price-fixing but to high marketing and R&D costs, which were being passed back to the consumer. Despite rising breastfeeding rates and a low birth rate, Singapore is a profitable market, because parents will pay high prices for milks containing 'premium ingredients' that claim to make babies healthier or smarter.

Singapore thus has a competitive infant milk market – but rather than competing on price, manufacturers *'compete mainly on building a premium brand image through aggressive marketing activities and reinforcing this image by engaging in research & development to develop and introduce new ingredients contributing to attributes desired by parents'*.<sup>273</sup> The CCS found that all infant milk manufacturers in Singapore invest heavily in R&D, and their total marketing expenditure increased by 42% between 2010 and 2014.

The CCS notes that high prices also have a marketing value; parents *'may rely on pricing as a signal for the quality of a brand'*, since they may struggle to understand nutritional labelling or the significance of premium ingredients. *'Anecdotal feedback suggests that some parents perceive more expensive brands as having better quality. This could be in part due to the aggressive marketing and advertising efforts by formula milk manufacturers. This could also be due to the inability of parents to accurately assess the price versus quality trade-off in the formula milk market'*.<sup>274</sup>

The Singapore government responded by appointing a taskforce to tighten up marketing regulations, including banning some nutrition and health claims and committing to public education. Speaking in July 2017, the head of the taskforce argued: *'if parents keep on buying the most expensive brands, milk companies will keep on raising prices because they have a stranglehold on you.'* He reminded parents that while manufacturers advertise the DHA content of their milks, *'One-and-a-half tablespoons of salmon can provide as much DHA ... as 30 bottles of milk'*, and can be given on weaning.<sup>275</sup>

Industry lobbyists the Asia Pacific Infant and Young Child Nutrition Association (APIYCNA) challenged the inquiry findings, stating that price fluctuations were unavoidable given R&D costs, the quality of ingredients, cost inflation and varying operating and overhead costs between countries. APIYCNA argued that regulating labels *'may deprive parents and caregivers of the necessary information to make appropriate nutrition decisions for their young children'*.<sup>276</sup>

From another perspective, an infant milk ingredient manufacturer argued that high prices in Singapore and China had the positive benefit of driving unprecedented innovation, leading to higher quality formula. Without these markets, she argued, there would be no serious advances in research.<sup>277</sup>

Author: Lucy Michaels

## Conclusions and recommendations

This report has exposed the lack of scientific underpinning behind the products BMS manufacturers put on different markets. Manufacturers are constantly placing new formula products on the market under a range of different claims. Some are presented to be '*tailored to meet nutritional needs*' of infants of specific age groups. Others claim to be '*nutritionally complete and closest ever to breastmilk*', or able to help with general conditions such as '*fussiness, gas and crying*'. Such improvements in formulation are presented as the result of '*years of research*' and solely informed by the '*latest developments in nutritional science*'. However, the wide variety of products available within and between countries, and companies' efforts to push expensive premium products - especially to high-growth Asian markets - calls such claims into question.

Our review of the existing product range from the four major manufacturers has shown that manufacturers are behaving very differently in different markets, and that often their products are closer to those of their direct competitors within the same market than their own products elsewhere. There is evidence that such decisions are primarily informed by market research instead of scientific or health considerations. We have identified companies' very sophisticated use of market research and social media to study consumer preferences. Such research seems to primarily focus on consumer affordability and willingness to pay, as there is no clear scientific justification for the very large price differences observed within brands on each market and within brands across different countries. Although not specifically included in this study, anecdotal evidence suggests similar issues in the actions of smaller manufacturers.

Governments in China and Singapore have recently made efforts to curb the proliferation of infant milks available on the market or address the very large price differences, although the impact of these measures remains to be seen. In the US, some academics have called for a voluntary moratorium on releasing more infant formula products onto the market until the scientific evidence base for the different components and any subsequent claims can be investigated and/or expanded.<sup>278</sup> It is clear that national governments should adopt a cautionary approach to approving new compositions of infant milks and demand robust evidence of positive effect - not just absence of negative effects - before allowing new milks onto the market.

There is a clear need to strengthen the regulatory framework that governs the marketing of formula products to cover the latest market developments and close existing legislative loopholes. Thirty-six years after the adoption of the WHO Code, BMS manufacturers continue to market their products irresponsibly. The Code and subsequent WHA resolutions are vital tools to regulate and reduce inappropriate marketing, but many countries have not fully incorporated them into national legislation; where the Code *has* been partially or fully incorporated nationally, there are often insufficient formal mechanisms for systematic monitoring and enforcement. A 2016 report on the status of the Code notes that countries like South Africa have adopted comprehensive legislation, which prohibits a wide range of promotional activities, and measures for effective enforcement are being put in place.<sup>279</sup> Our research revealed that packaging on products in South Africa is plainer on some products and includes more visible warnings than products in other countries. Nevertheless, there remained a large number of products on the market in South Africa, including 'premium' products, which leads us to conclude that measures are needed to limit the price range and number of products available.

This report shows that most formulas on the market today broadly align with the global Codex and existing legislation guided by it. However, the legislation continues to give companies too much flexibility to decide on the composition of their products, based on commercial or other market-driven considerations. When a specific formulation or ingredient is not scientifically proven to be beneficial, its addition should not be allowed due to a mere absence of negative impacts. Equally, when the benefits of a new nutrient have been proven, it should be required for all products.

*The classification of the labelling of BMS products with health or nutrition claims is 'entirely unsupportable, as it would be unethical to withhold any ingredient unequivocally beneficial for commercial reasons'. Instead, if such claims were proven, the fortification of products 'should be made a requirement to reduce existing risks associated with [the lower nutritional profile of] artificial feeding'.*

*UK Scientific Advisory Committee on Nutrition, 2007*

Lastly, there is a need to establish clear rules on the product health claims that manufacturers can make. One major trend is the increasing *medicalisation* of formula products, with manufacturers making claims about the potential of products to help with general conditions such as constipation, indigestion, etc. It is important to address regulatory loopholes on the composition and marketing of such products, including restricting their over-the-counter sale.

## **BOX 14: Recommendations for formula manufacturers and policymakers**

### **Formula manufacturers must:**

- Ensure that all infant milk products placed on the market are safe, as compositionally complete as possible and solely guided by the best available science.
- Limit the number of products on the market to those based only on unequivocal, robust scientific evidence and highest-quality ingredients.
- Eliminate any health claims that are not 100% proven.
- Fully respect the WHO Code and subsequent WHA resolutions across all countries, and relevant national legislation where this is in place.
- Ensure that products are fairly priced across global markets.

### **Policy - makers must:**

- Strengthen global marketing and compositional standards to ensure clear rules on the marketing and composition of infant milks adequately cover the current product range, including special medical products.
- Adopt a conservative approach to the approval of new compositions of infant milks.
- Regulate the use of health claims, and allow only those claims that have been clearly verified with independent evidence.
- Implement and strengthen marketing and compositional standards into national legislation, and ensure proper and regular enforcement.
- Introduce restrictions on over-the-counter sales of formulas for special medical purposes.
- Step up efforts regarding the monitoring and enforcement of rules on the marketing and composition of formula products.

## Executive Summary endnotes

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