Value Distribution

in the Cocoa Supply Chain

Introduction

The global chocolate industry has a global turnover of approximately €100 billion per year. Up till now no comprehensive overview has been presented about the value distribution in this chain: who is earning what at which stage. The intention of this paper is to start the debate on this value distribution.

Farming: from soil to bean

The first stage in the cocoa value chain is the cocoa farm. Cocoa pods are harvested during two harvest seasons. Subsequently the pods are opened, and the beans are separated from the shell and mulch. The beans are then fermented on location for a few days, after which they are dried at farm or village level. Market information suggests that in Côte d'Ivôire the drying sometimes happens further upstream.

Table 1: From soil to bean
Farmer revenue & share of FOB per tonne

	FOB %	Revenue	Input costs	Income
Côte d'Ivôire	65%	€ 1.328	€ 660	€ 668
Ghana	72%	€ 1.474	€ 237	€ 1.237
Nigeria	90%	€ 1.839	€ 825	€ 1.014
Indonesia	70%	€ 1.430	€ 375	€ 1.055
Equador	90%	€ 1.839	€ 667	€ 1.172

FOB Price

The Free on Board price, or FOB, is the price of a tonne of cocoa once it is loaded on a ship in the producing nation's port. FOB is volatile on a daily basis, and tends to be lower during the harvest season. The percentage of the FOB price that a farmer receives varies per nation.[1] Historically, Ghana - the world's second largest producer of cocoa - has set a fixed price for farmers. In the last few years, Côte d'Ivôire - the world's largest cocoa producing nation - has similarly started setting a fixed minimum price. Other nations have no such fixed price settings.

Inaccurate weights and quality controls

An often underreported issue is that weights are structurally manipulated at point of sale. Due to insufficient oversight, fraudulent quality control checks often also reduce the price for the farmers cocoa. Though this is not unique to cocoa, it is a reality many cocoa farmer must deal with, and which costs them between 5% - 10% revenue (which could be as much as € 170 annually in West Africa), while their costs stay the same.

Transport: from farm to factory

From the farm village, cocoa is transported to local collection points and cooperatives. Here it is purchased by local traders or licensed buying companies, who transport the cocoa in larger quantities to ports, where the cocoa is stored until shipping to the major processing ports, where the cocoa is often cleaned, and then warehoused.

Inland transport

The Ghanaian and Ivorian marketing boards have stipulated a fixed amount of the FOB to be allocated for transport costs from farm to port. In other countries, such a fixed amount is not present. Additionally, there are costs for storage and handling at producing ports. In general, half the inland transportation costs go to local transport from the farm to the collection centre.

Table 2: From farm to factory
Taxes, transportation and handling per tonne

	Inland Transport	Taxes, other inland	Int'l Transprt	THC	Total
Côte d'Ivôire	€ 95	€ 620	€ 24	€160	€804
Ghana	€ 102	€ 467	€ 41	€160	€668
Nigeria	€ 95	€ 109	€ 24	€160	€294
Indonesia	€ 95	€ 518	€ 24	€230	€772
Equador	€ 95	€ 109	€ 50	€200	€359

Taxes and Marketing Boards

There are major differences in taxation on cocoa per country, as well as strong variance on the role - if any - of national cocoa marketing boards. In Nigeria there are virtually no taxes; as a result the FOB percentage received by the farmers is relatively high, while in Ghana and Côte d'Ivôire approximately 25% - 30% goes to taxes and marketing boards. None of the cocoa producing nations, however, are transparent on how income from taxes on cocoa are re-invested into local infrastructural development.

International Transport

In order to compensate for the relatively low international transportation costs, shippers use relatively high Terminal Handling Costs (THC's) at consuming nations ports. Interestingly, Ghana charges more for the shipping of its cocoa than other West African countries. As such, they receive approximately €27 more per shipped ton than it's neighbouring countries. This is almost € 28 million extra income per year for the Cocobod.

Commodity markets

The major cocoa trading companies do not just buy and sell the physical cocoa. Much of their business is conducted through commodity exchange markets. Traders can protect themselves against market fluctuations, or even benefit from these fluctuations, through hedging, futures, and other market mechanisms.

Table 3: Volume, margin & profit of major cocoa traders			
	Tonnage	**Gross Margin** (in thousands)	**Net profit** (in thousands)
Olam	450.000	€ 15.177	€ 5.135
Ecom/Armajaro	400.000	€ 13.491	€ 4.564
Touton	200.000	€ 6.745	€ 2.282
Noble	150.000	€ 5.059	€ 1.712
Continaf	120.000	€ 4.047	€ 1.369

As the major companies do not publish the profits made specifically on cocoa, margin and profit calculations for traders, processors and manufacturers in this paper are extrapolations. These are based on average margins and volumes that resulted from interviews and research conducted for this paper. The authors welcome any companies wishing to provide more accurate figures for the upcoming Cocoa Barometer.

Processing: from bean to butter

Once arrived in processing facilities, beans are converted to cocoa mass through grinding and roasting. Subsequently, the mass is pressed, resulting in cocoa butter and cocoa powder. Profits for processors are achieved through traditional margins. However, the larger processing companies realise additional profit by buying cocoa mass, cocoa butter and cocoa powder (cake) on the international market (mostly produced by third world countries). These are then refined, mixed with other volumes (dilution) and then sold as first quality ingredients.

Table 4: Value added at processing		
Purchase	€ 2.282	74%
Weight loss	€ 205	7%
Processing Costs	€ 474	15%
Marketing Costs	€ 39	1%
Profit	€ 104	3,4%
Sells	€ 3.104	100%

Weight and moisture loss

Throughout the process of transporting cocoa beans, the weight of a ton of cocoa deteriorates due to moisture loss. Moisture content at farm gate is presumed to be around 9,5%. By the time cocoa reaches the port of arrival, this has dropped to 6,5%. Grinding and roasting further reduces moisture levels to around 1,5%. Additionally, processors calculate a loss on beans through bad quality, waste in the cocoa, etc.

Combined cocoa ratio

As the price of cocoa beans is a major element in the end price of the processed products (cocoa mass, cocoa butter, cocoa powder), these products are sold in a price system linked to the price of cocoa beans; cocoa butter ratio, cocoa powder ratio and the combined cocoa ratio. The higher the combined ratio is, the more profitable for industry. The fluctuations of the different ratios can be relatively high. Processing companies can decide to stock butter and/or powder as to take advantage of differences in market prices of these products.

Table 5: Volume, margin & profit of major processors			
	Tonnage	**Sales** (in millions)	**Net profit** (in millions)
Barry Callebaut	950.000	€ 2.949	€ 99
Cargill Cocoa	630.000	€ 1.956	€ 65
ADM Cocoa	580.000	€ 1.801	€ 60
Blommer	200.000	€ 621	€ 21
Ecom	160.000	€ 497	€ 17

Manufacturing: from cocoa to chocolate

Cocoa mass is the main ingredient for chocolate, it is then combined with cocoa butter and powder, sugar, and milk powder (for milk chocolate) to make couverture. Later ingredients such as nuts and other ingredients are added. It is then poured into the moulds that shape the product into the bar we would recognise as chocolate. The product is then packaged, and made ready for shipment to retail.

Table 6: Value added at manufacturing Per tonne of chocolate (not cocoa)		
	Per tonne	**In %**
Cocoa ingredients	€ 1.061	13%
Other ingredients	€ 1.599	20%
Couverture production	€ 1.273	16%
Chocolate production	€ 1.203	15%
Packaging	€ 1.203	15%
Marketing	€ 1.132	14%
Profits	€ 651	8%
Sales exit manufacturer	€ 8.122	100%

Market concentration

Both at processing and at manufacturing level there is a process of increasing market concentration. The sale of Armajaro's cocoa division to Ecom, the proposed but now cancelled merger of ADM and Cargill, Cadbury's acquisition by Kraft; these all reflect the increasing size of companies in the cocoa chain. There is an increasing vertical integration in the supply chain, with manufacturers taking over processing, futures and trading. One of the main reasons for this is the scale that is needed to properly make a business profit. Smaller chocolate makers have been struggling for a while now, more and more seeking to differentiate themselves on quality, sustainability, branding or niche markets.

Table 7: Volume, sales & profit of major manufacturers
Tonnage in cocoa, sales & profits in cocoa derived products

	Tonnage	Sales (in millions)	Profit (in millions)
Mondelez	450.000	€ 11.411	€ 915
Nestlé	400.000	€ 10.143	€ 814
Mars	390.000	€ 9.890	€ 793
Hershey	200.000	€ 5.072	€ 407
Ferrero	120.000	€ 3.043	€ 244

Retail: from chocolate to consumer

From the factories, the chocolate is transported in bulk to wholesalers, where it is distributed to retailers. Margins and profits for retailers are under pressure due to various reasons, such as price wars and the economic recession of the last years, resulting in an increasing market concentration in retailers.

Table 8: Value added at wholesale and retail
Per tonne of chocolate (not cocoa)

	Per tonne	In %
Purchase of chocolate	€ 8.122	57,0%
Wholesale costs	€ 863	6,0%
Wholesale profits	€ 141	1,0%
Retail costs	€ 3.750	27,0%
Retail profits	€ 354	3,0%
VAT	€ 920	7,0%
Retail price	€ 14.149	100%

General conclusions

None of the relative margins in the supply chain are exorbitant, but absolute profits can be significant for companies operating at scale. Inversely it can be said that the smaller the scale, the harder it is to make a living. Many of the smaller actors in the supply chain are either struggling with bankruptcy or are prey to acquisitions and mergers.

Clearly, there seems to be too little in the cocoa value chain to go around. In this, the cocoa value chain is exemplary of the trend in the previous decades to squeeze a supply chain until there is little room left for squeezing.

Though farmers have the largest relative income (an Ivorian cocoa farmer would earn a 'profit' of almost 60% on the selling price), the small scale of their farms and relatively low yields mean that their total annual income remains very low. As they are self employed, this income cannot be seen as 'net profit', but has to be counted as income for labour. Even if the farmer would be able to double his yield and receive a premium for producing certified cocoa, his net income wouldn't be able to go near the extreme poverty line.

Market power plays an important role in influencing value distribution. And though the entire value chain stands or falls with the cocoa farmer, they have the weakest market power.

Redistribution

If one were to distribute half of the chocolate profits of the major manufacturers and processors among the ca. 5,5 million smallholder cocoa farmers in the world, it would raise their annual income by € 325. This is an increase of cocoa income by 31%. A significant increase, but it would still leave the farmer below the extreme poverty line, and at just 40% of the poverty line of $2 per day.

Internalised costs

These calculations deal with current needs and poverty. However, they do not take into account other hidden costs that are not covered by the value chain, the so-called 'hidden' social, environmental and economic costs. A lack of access to healthcare, education, and clean drinking water, environmental degradation, stunted growth due to malnutrition, corruption as a result of poverty; many of these issues are a result of an insufficient price received by farmers. In economic terms, these are 'externalised costs'. If the cocoa chain is to become truly sustainable and attractive to future generations, these costs or going to have to be internalised.[2]

Recommendations

The term 'shared responsibility' is being used more and more in the sustainability discussion in the cocoa sector. And it should be. It is unrealistic to expect any single actor to solve the problems of value distribution in the cocoa supply chain. Every major actor should be taking their share of the burden. We propose the following recommendations to ensure a more equitable distribution within the cocoa value chain.

- A broad pre-competitive discussion should be started by all the actors in the cocoa supply chain to create a risk-assessment and action plan, specifically aimed at value distribution in the supply chain, including strongly improved sharing of information.
- Producing nations should invest incomes from cocoa taxes to build local infrastructure and access to basic social service such as healthcare and education, particularly in remote cocoa growing areas, to improve market access and reduce costs for cocoa farmers.
- This requires transparency in received tax income. This needs to be coupled with transparency on taxes paid by companies, as well as active reduction of tax avoidance schemes.
- The creation and strengthening of farmer groups such as coops should be stimulated, to ensure market power for farmers increases.
- Regulatory measures should be put in place to ensure prices are internalised, in both consuming and producing nations, creating a level playing field.
- The formulation of true price calculations for the supply chain would be a useful first step, leading to a rise in the price of chocolate at consumer level.
- Hedging and futures should be reduced to a pragmatic system of protection against market fluctuations, not as a means of earning 'unearned' profit through speculation. A commodity transaction tax, or a sustainability levy directly inputting into a Global Cocoa Development Fund could be useful disincentives, ensuring that prices truly reflect supply and demand. This fund can then be used to support producers.

These steps will require a re-evaluation of the mechanism that sets the price for the product; of the level of transparency of profits earned; and a more equitable distribution of value added throughout the supply chain. All actors are going to have be willing to share a little bit more of the profit with the rest of the chain, especially with farmers. And it will also mean that the sector is going to have to charge more for chocolate. Currently, consumers are not paying the price it costs to actually make the product. That price is being transferred in time and place. Later generations will be paying the price of cheap chocolate, much as current generations of cocoa farmers already are doing.

Colofon

The data in this paper is based on a variety of sources, ranging from publicly available research papers, interviews with experts in the supply chain, where necessary supplemented by informed extrapolation. As this is a first attempt at creating an overview, there will be gaps and faults in the data. As such, the authors welcome any and all contributions to improve the facts and figures presented. Comments can be submitted to antonie@voicenetwork.eu until 31-08-2014. This document should be seen as a draft document, and is not to be cited as a source for information.

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Sources: a bibliography as well as an extensive dataset for the calculations used for this paper can be found at www.cocoabarometer.org

[1] A more in-depth exploration of farmer income and value added at farm level can be found in our 'Decent Living' Think Piece, published simultaneously with this paper.

[2] Further suggestions on increasing livelihood for cocoa farmers can be found in our 'Decent Living' Think Piece.