

**DISCOUNTED CASH FLOW VALUATION OF  
CHAROEN POKPHAND FOODS PUBLIC COMPANY LIMITED**



**A THEMATIC PAPER SUBMITTED IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR  
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2020**

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entitled  
**DISCOUNTED CASH FLOW VALUATION OF  
CHAROEN POKPHAND FOODS PUBLIC COMPANY LIMITED**

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August 30, 2020



*Paritchaya*

Ms. Paritchaya Thongwat  
Candidate

*Simon Zaby*  
Simon Zaby,  
Ph.D.  
Advisor

*Prof. Roy Kouwenberg*  
Prof. Roy Kouwenberg,  
Ph.D.  
Chairperson

*Vichita Ractham*  
Assoc. Prof. Vichita Ractham,  
Ph.D.  
Dean  
College of Management  
Mahidol University

*Worapong Janyangyuen*  
Worapong Janyangyuen,  
DBA  
Committee member

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Lastly, I wish that this thematic paper, Discount Cash Flow of Charoen Pokphand Food Public Company Limited, would provide some learnings for who are interested in this paper whether more or less

Paritchaya Thongwat

**DISCOUNTED CASH FLOW OF CHAROEN POKPHAND FOODS PUBLIC COMPANY LIMITED**

PARITCHAYA THONGWAT 6149172

M.M. (FINANCIAL MANAGEMENT)

THEMATIC PAPER ADVISORY: SIMON ZABY, Ph.D.

**ABSTRACT**

This thematic paper aims to study the present value of Charoen Pokphand Public Company Limited which estimates based on the fundamental performance of the company by using the discounted cash flow model.

The discounted cash flow concerns about the nature of the company operation such as source of sales revenue, economic impact, and funding & financing. For the instinct value of CPF, the target price is compared to the market price as of 28 February 2020.

Considering by the nature of CPF, a 18.43 Baht per share is the target price which is lower than the marked market price. There recommend taking the sell position for this stock because of undervalued.

**KEY WORDS:** FREE CASH FLOW / DISCOUNT RATE / TARGET PRICE /

75 pages

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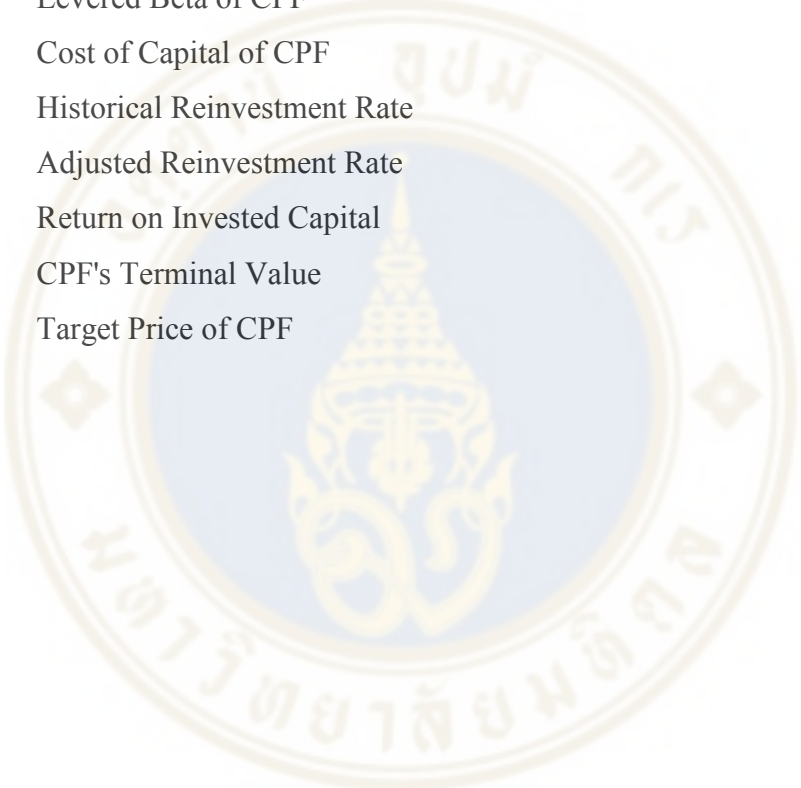
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# **CHAPTER I**

## **BUSINESS DESCRIPTION**

### **1.1 Introduction**

As if talking about the various ingredients which is capable to plant for supplying food and beverage industry, the advantages of the geography are one of an important aspect for doing agriculture activities. For example, the suitable areas for planting and/or farming where have properly an essential nutrition, a favorable weather, and so on. Mostly this area locates in equatorial region like Southeast Asia – Myanmar, Laos, Philippines, Indonesia, Thailand, Malaysia and so on – one of these countries is Thailand where has the advantages about the agricultural resources. In addition, there has an advantage in the aspect of distribution that deliver through to land and sea.

### **1.2 Business overview**

Charoen Pokphand Foods Public Company Limited (or CPF), which operates the business integrated food producing through the food processing, estimated on January 17, 1978. First, the operation of CPF has started from the animal feeding and farming included the live animals through the fresh meat product as well as has continuously expanded its business line in the food processing. CPF has become a public company limited since 1994 registered in the food and beverage sector in the agricultural industry in the Stock Exchange of Thailand (SET).

## 1.2.1 Vision, mission, and strategy

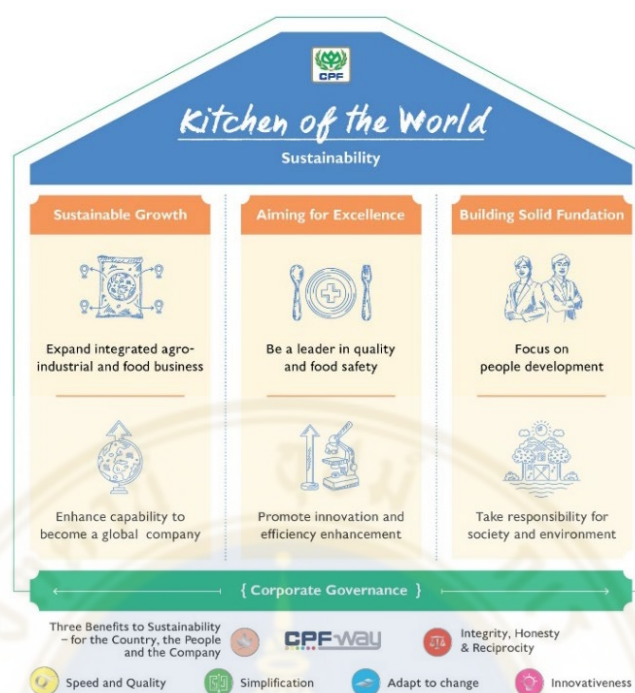


Figure 1.1 CPF's Corporate Strategy Direction

Source: (Charoen Pokphand Foods PCL, 2020)

“Kitchen of the World” is the vision that the company is standing for its company value, it also links to the mission of the company that desires to provide the products with the nourishment and appetizing taste. The production process of CPF desires to correspond to the international food safety standards, and desires to manage the usage of the natural resources efficiently and effectively, in order to confront any challenge in the food industry, Furthermore, CPF desires to be the sustainable growth while accomplishing the appropriated shareholders’ wealth. (Charoen Pokphand Foods PCL, 2020)

In order to fulfill its vision and mission, the strategy of CPF is derived into three strategies by expanding business line segment horizontally and vertically in the agricultural and food industry which aim

- 1) To sustain its growth with the capable enhancement
- 2) To be an excellence in the food quality and safety by encouraging the innovation to improve the efficiency.
- 3) To build the solid foundation of corporate by focusing on the employee development.

## 1.2.2 Business operation structure

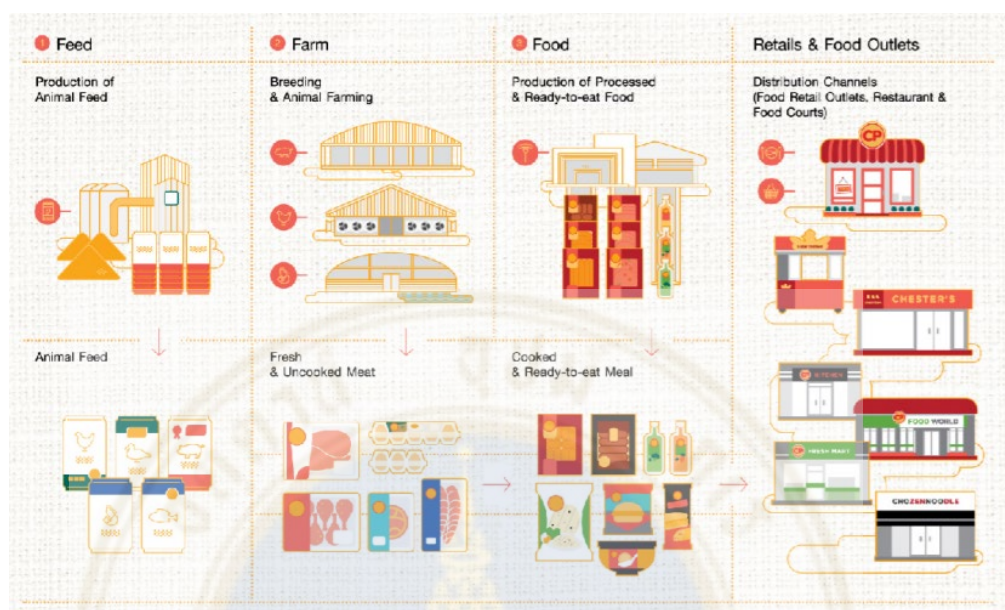


Figure 1.2 CPF's Business Types

Source: (Charoen Pokphand Foods PCL, 2018)

CPF's operation structure is classified into three types of the business such as the feeding business, farming business, and food business. First, the feeding business does produce and distribute the animal feeds. Second, the farming business includes the animal breeding distribution, the farming, through the fresh meat product sales. Third, the food business has extended business section to be added the value on the fresh meat turning it into the cooked products through the ready to eat products. According to three business sections vertically expanded, CPF widens also horizontally the business into two clusters such as the aqua livestock and the livestock included the swine, poultry, and others. However, in order to distribute the products, CPF distributes its products under the named brand "CP", and other company's brands and customer's brand as well.

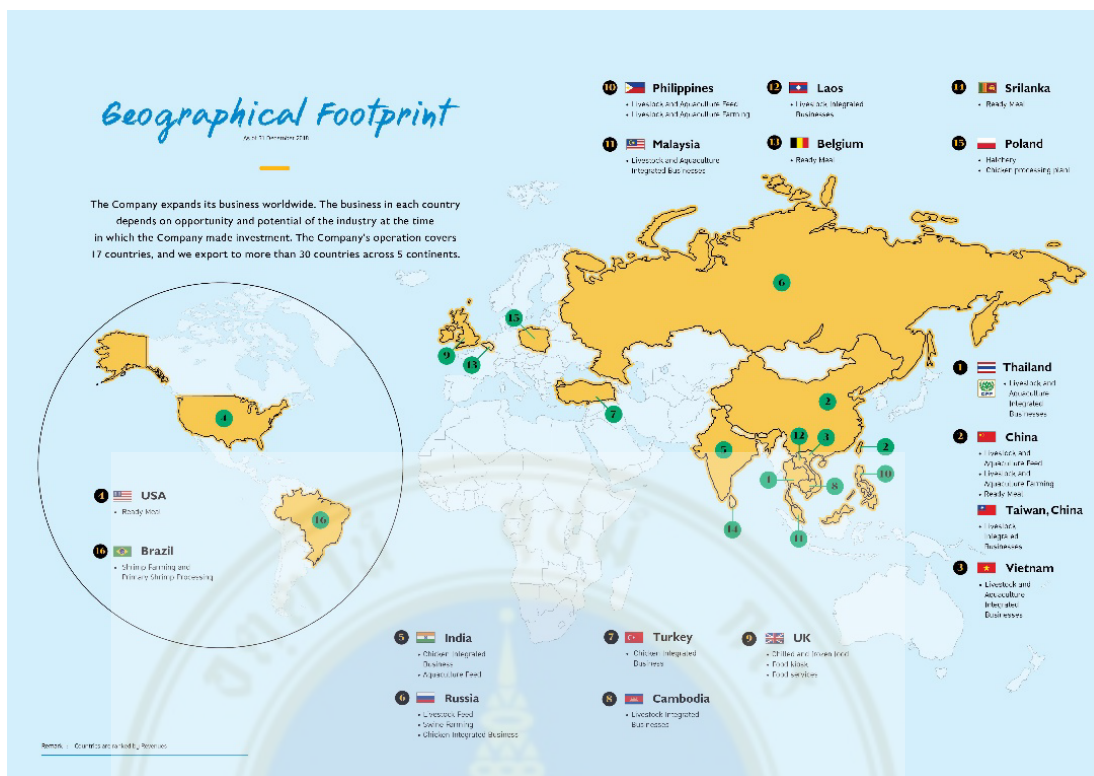


Figure 1.3 CPF's Investment Footprint  
Source: (Charoen Pokphand Foods PCL)

Moreover, CPF has associated and joint ventures with 30 companies both of domestic and international through the subsidiaries. According to its strategy on sustainable growth, CPF has the ambitious expansion further in the international expansion where its operation locates in 17 countries and exports its products more than 30 countries, for example, China, Vietnam, Malaysia, India, Sri Lanka, United Kingdom, Belgium, United States, Brazil, so on.

## CHAPTER II

### MACROECONOMIC ANALYSIS

#### 2.1 Important factor in 2019

##### African swine fever outbreak

In 2019, the scourge of African swine fever (ASF) in south-east Asia killed a lot of swine. Swine farms in many countries around Thailand, for example Myanmar, Laos, Vietnam, Philippine, and Cambodia had to eliminate their livestock. Thai local farmers were panic and rushed to sell livestock to avoid being infected. But for big farms that have better system to protect their livestock, it became an opportunity to increase their sale since small farms in Thailand and in neighbor countries cannot export. However, the ministry of agriculture and cooperatives had established a task force to deal with this situation and Thailand had successfully prevented swine farming industry from ASF. (Prachachat, 2019, December 29)

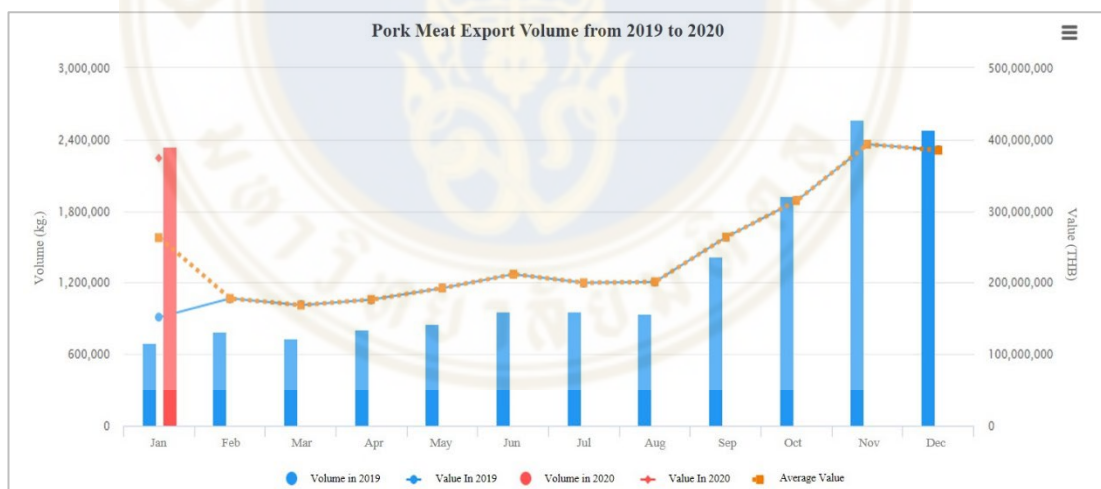


Figure 2.1 Pork Meat Export Volume during 2019 - 2020

Source : (Office of Agricultural Economics)

In early 2020, the pork meat price becomes dramatically an increase because of the effect of ASF, especially in China and Vietnam. It is the result of shortage of pork supply in South-East Asia. Pork's export price to China is double higher the domestic price. (Bangkokbiz, 2020, January 10) On the other hand, the effect of ASF made demand

in broiler increase as consumer wants chicken instead of pork. Since chicken still has lower price than pork, it leads to increasing in broiler price. (Prachachat, 2019, December 29)

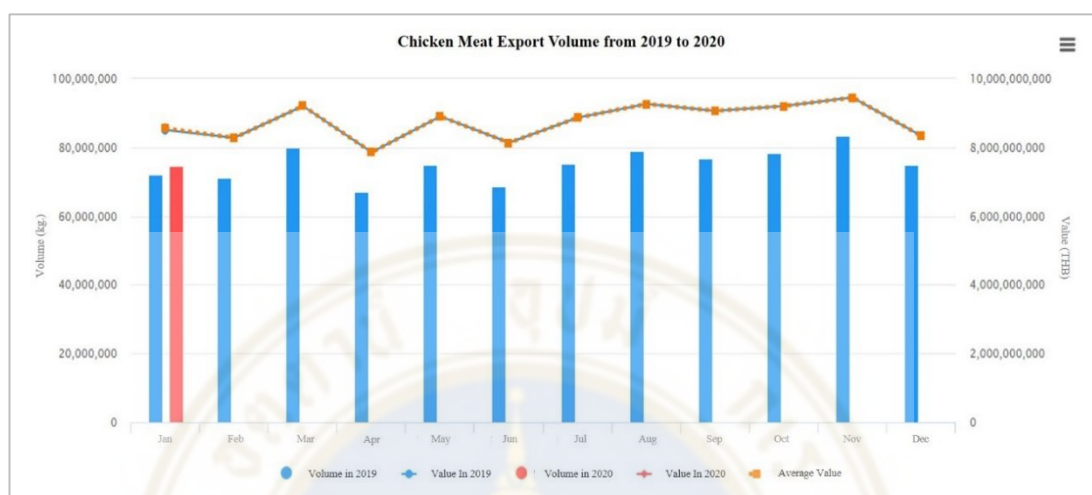


Figure 2.2 Chicken Meat Export Volume during 2019 - 2020

Source: (Office of Agricultural Economics)

Another factor that affects chicken meat price is China's policy. China is the third largest export market for chicken meat from Thailand after Europe and Japan. In 2019, there are seven chicken factories in Thailand certified by the General Administration of Customs of People's Republic of China (GACC) and can export chicken meat products to the country. As a result, chicken export value in first tenth months of 2019 is 4,040 million Baht, increase from 2018 which is 1,769 million Baht. There is expectation that more nine factories will be certified in 2020. (Naewna, 2019, November 1) So the export volume to China should be more increase in the future.

In conclusion, CPF swine and broilers are not the effect from the African-swine fever because CPF has better closed farming system. We can say that the high agriculture technology is one of the strengths of the company, so the situation turned out to be an opportunity for CPF to gain more profit from the international market.

## 2.2 Important factor in 2020

### 1) Coronavirus pandemic

At the beginning year of 2020, Coronavirus spreads in China is significantly evidence that is panic the whole worldwide market because it is the new contagious disease that the number of patients of this are increasing rapidly in the mainland of China. Furthermore, the other countries also encounter the climbing number of these patients up. As what this evidence happens, each government does the action in the different strategy to limit the number of patients. Especially, the government action of Thailand informs the guideline of health prevention to avoid the physical contact as well as inform the basic symptoms of this disease.

While skyrocketing the global number of this sickness, the World Health Organization, called WHO, declares the suggested policy and procedure of health manner that generally enact to restrain the extremely raising infection. The physical interaction is seriously as more as difficultly for keeping contact or communicate between people to others.

Because of the Coronavirus spreads and later called Covid-19 pandemic, the globe economic situation would be driven slowly down. According to the pandemic, there would be the effect into 4 issues such as the supply chain and logistics problem, the declining export of the agricultural and food products, the tourism slide shutdown, and the slowdown of domestic economy, which would be leading the slowdown of global economy. (Bangkokbiz, 2020, February 23).

As if the government policy and procedure have an impact on the world economic situation, especially in Thailand, there predicts the business workflow would be struggling and there would be slow down at last. According to the policy rate of Thailand, by the Bank of Thailand, has announced to drop the policy rate twice time during the first quarter of 2020. On 5 February 2020, the Thailand policy rate has been announced down to a 1.00 percent to encourage consumption and investment. While Coronavirus is becoming more critical than expectation, the policy rate is announced again on 23 February 2020 dropping from 1.00 percent down to 0.75 percent which this rate is the lowest in the past decades in the history of Thailand. (Bank of Thailand, 2020, March 20)



Cause of the relation between the inflation rate and interest rate moving along together, the inflation rate tends to increase lesser than the target inflation (1 – 3 percent down from 2.5 percent  $\pm$  1.5) due to low domestic demand.

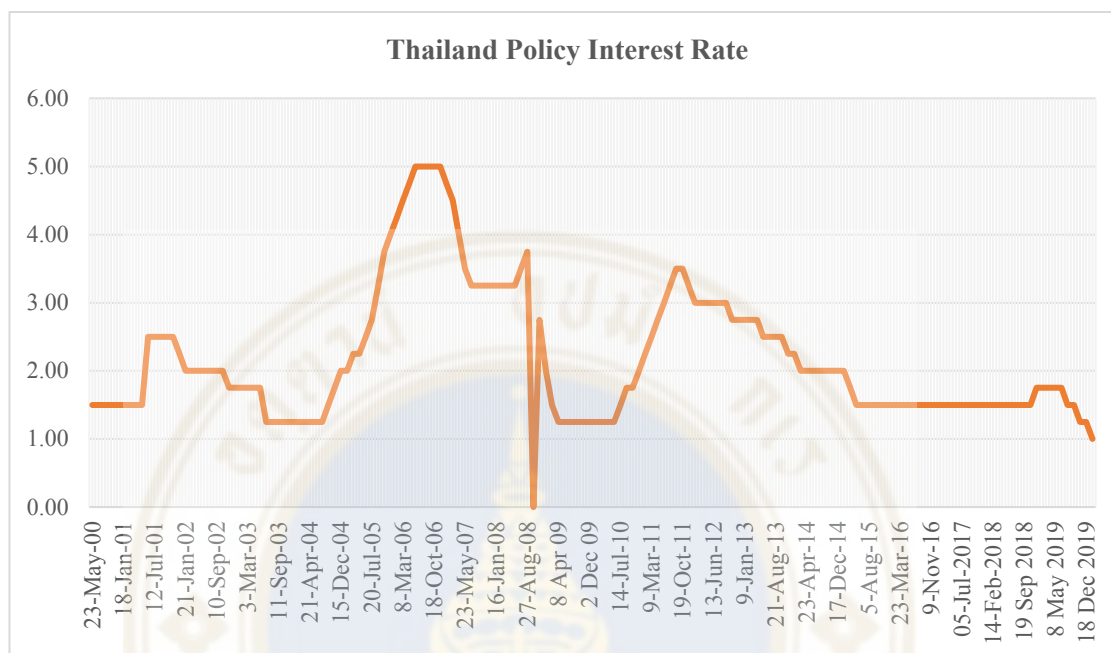


Figure 2.3 Thailand Policy Interest Rate

Source: Bank of Thailand

## 2) Drought situation

Year 2020, the drought is forecasted to be stronger and lasting longer than year before which happened earlier than the prediction. According to the average water level of dams in Thailand locating each region decrease 33.1 (YoY). It would reduce the agricultural products and revenue of related sectors. There impacts to the animal feeds as rice, cassava and cane, the farming producers might plan to reserve water more to feed animals and to support the processing production. In addition, the laid off employees from saving company cost in the private sector would make the result of the least purchasing power as well. (Kasikorn Research Center, 2020, January 17)

Furthermore, the potential and large international market like China market might be disrupted in a short term that causes from the strict lockdown policy, which would be an impact on the supply chain and logistics system both side of export

and import as well. But looking for a long term, the expert from Ministry of Commerce gave an opinion that there will be opportunity of highly increasing demand from China. (Bangkokbiz, 2020, February 23)

Besides of those factors, the international market that has potential opportunity. China is one of countries that is interested in the eyesight of the investors and the businesses in term of one of rapid economic growth in the past decades. Although Chinese market has gone up well, but all investment of sectors for example the industrial production, the retail sales, comparing the first two months in 2019, drop for two digits in the same period in 2020. It might mean the deduction of Chinese purchasing power. (Bradsher, 2020, March 16)

Claiming by CPF, the company is able to manage and deal with the effect itself both opportunities and threats. However, in the consumer 's view might likely not to be same as a company's view, because this effect could be an impact on the household agricultural activity and could people make a lower income. That would cause the households spend lesser than before.

By the way, dealing with those significant factors that influence the whole business area, CPF has managed their risks such as the system of wastewater treatment that the company's plan expects the reduction of water usage around 25 percent from outsources. CPF claims that the company has developed shrimp farming technology which improves water usage efficiently by cutting around 70 percent of outsourcing water usage. (Bangkokbiz, 2020, January 28)

## **2.3 Industry analysis**

### **Bargaining power of suppliers**

In agriculture and food business, there is low bargaining power of suppliers because most of big companies in this industry are almost monopoly. Moreover, CPF has the fully vertical integrated from upstream to downstream. Suppliers have to buy material from CPF and sell products back to them. So, it is difficult for suppliers to bargain with the company.

### **Threat from new entrant**

There is low threat from new entrant because the agriculture and food business have high cost of entry. New entrant has to invest in the farming system, the factory and the distribution channel. Most players in the industry have their own shop to distribute products so it would be difficult for new entry to build the market share.

### **Bargaining power of customers**

Customers have medium bargaining power as commodity goods have many players in the market and commodity goods are sensitive to price changing. So, if the price changes, people can switch to others brand easily. However, CPF has horizontally integrated most products in same level. Therefore, people might switch from CPF brand to CPF's subsidiary brand instead.

### **Threat from substitute product**

There is low substitute product for this industry because food is basic needs for human and agriculture is upstream for food production. So, it difficult to find other substitutes products.

For competition in same industry, it depends on the location of doing business. In Thailand, there are low competitors because there are very few competitors that can compete with CPF. However, if we consider international market, for example China, U.S.A., Brazil, or India, CPF would face strong competitors both internationally and locally. Brazil and U.S.A are expected to export pork meat at 20% and 11% consecutively more than last year. (Charoen Pokphand Foods PCL, 2020) So, the competition would be more intense.

## 2.4 Competitive analysis

### 2.4.1 Sales revenue

With the growth strategy, the company has done a lot of overseas merger and acquisition for years. The pros of this strategy are avoiding non-tariff export barriers and gaining more local customer base since they are already familiar with local brands. Moreover, CPF gain both know-how and asset from subsidiaries. From CPF president and chief executive officer, the goal of M&A is to fulfill the supply chain of value-added products include make more geographical business expansion. CPF president also add that they focus on producing domestically and selling domestically. (Toomgum & Debo, 2015, November 22) CPF has huge amount of capital for investment, so they can use this strategy to make the company grow faster.

In 2019, CPF had acquired 8 new direct and indirect subsidiaries. For example, a subsidiary of CPF named CPF Canada Holdings Corp. had merged with HyLife Investments Ltd. to integrated pig business in Canada. CPF also buy new issued of total capital stock of Dak Galbi, a famous Korea restaurant in Thailand. As a result, CPF's shares of Dak Galbi increase to 60% of total capital stock. (Charoen Pokphand Foods PCL, 2020)

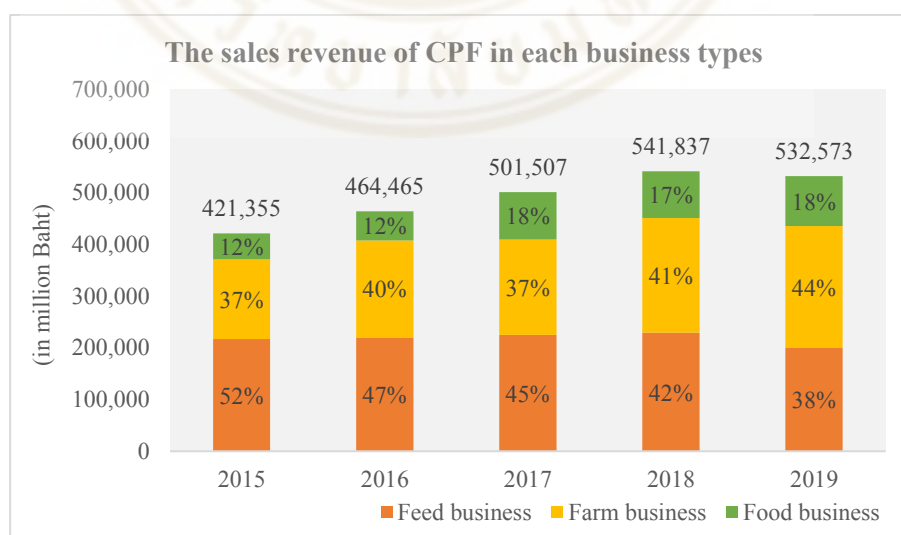


Figure 2.4 Sales Revenue of CPF in Each Business Types

Source: (Charoen Pokphand Foods PCL)

Figure 2.4, the big portion of the sales revenue of CPF is the feed and farm businesses which contribute accumulated over 80 percent, and the food business contributes about 18 percent on the total sales revenue. According to the operation business type of CPF, the farming business has the 44 percent as the biggest portion in the total sales revenue in 2019, and it is followed by the feeding business and food business at 38 percent and 18 percent consecutively.

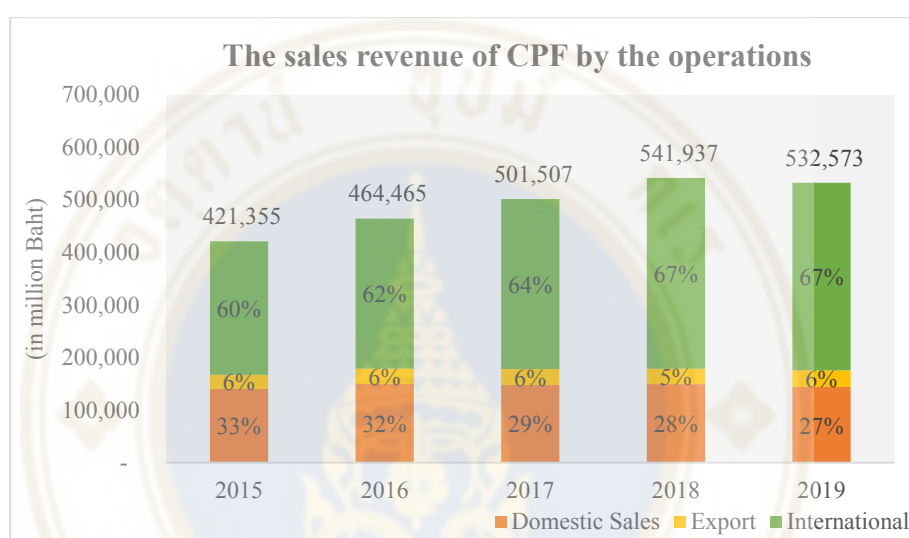


Figure 2.5 Sales Revenue of CPF by the Operations

Source: (Charoen Pokphand Foods PCL)

Due to the CPF worldwide expansion strategy, it separates the sales from the domestic, and the international. As figure 2.5, the domestic sales in Thailand are around 30 percent over the total sales revenue which seems on the stable level, as well as the product export is also around 5 percent out of the total.

Although the domestic sales and the exports seem constant earnings, but the happening sales in overseas is slightly growing higher since it has taken the biggest portion of the total of the sales revenue. Then, it is available to consider that CPF has desired to aim the sustainable growth of the company by widen the market internationally.

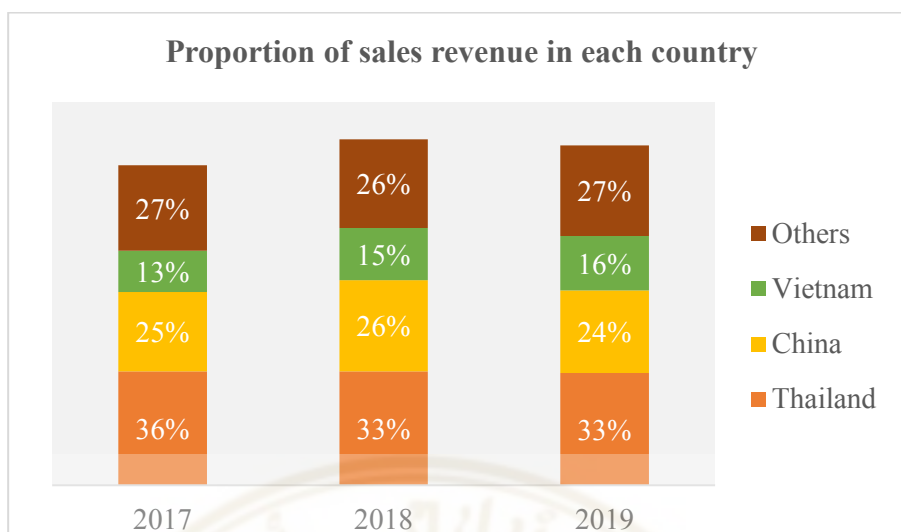


Figure 2.6 Sales Revenue of CPF in Each Country

Source: (Charoen Pokphand Foods PCL)

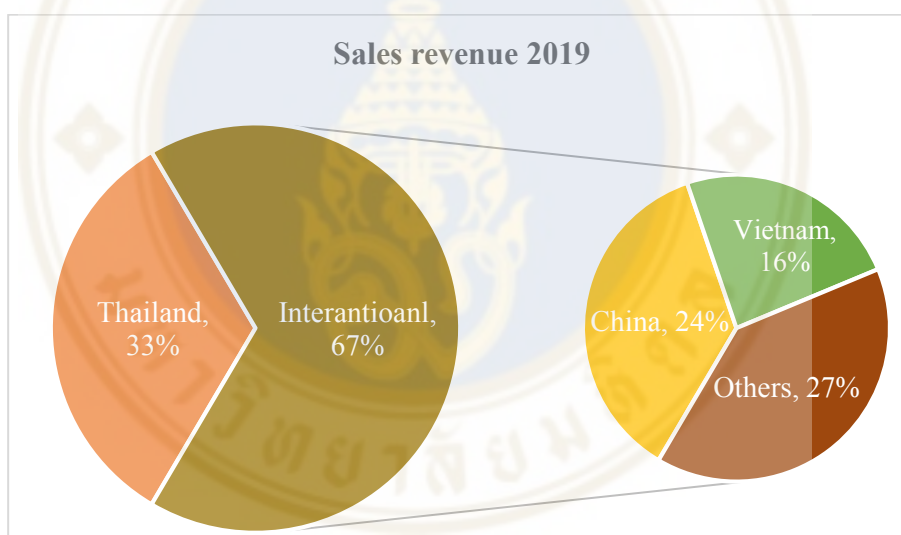


Figure 2.7 Sales Revenue of CPF in 2019

Source: (Charoen Pokphand Foods PCL)

In order to ensure that the international market growth of CPF, the international revenue is growing higher than the operation revenue on Thailand over 60 percent of the total of the sales revenue showing in figure 2.7. By the end of 2019, the most international sales revenue came from China at 24 percent, Vietnam at 16 percent on the second, and other countries at 27 percent in figure 2.7.

## 2.4.2 Financial analysis

Besides of the competitiveness of CPF in the sales revenue, the efficiency and effectiveness of financial management have an important factor that make a signal about the business health through the financial statements as showing below.

### 1) Balance sheet

<i>Balance Sheet</i>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
	<i>Thousand Baht</i>				
<i>Current Assets:</i>					
Cash & Cash Equivalents	44,233,718	40,856,964	26,838,110	33,033,527	33,496,112
Receivables	26,344,676	30,855,590	36,862,845	40,967,136	33,470,827
Inventories	79,869,147	84,168,842	85,090,897	94,309,393	98,090,760
Prepaid Expenses	3,774,547	5,567,965	8,767,736	10,276,113	7,838,615
Other Current Assets	5,771,292	4,919,508	6,887,516	6,956,585	5,749,741
<b>Total Current Assets</b>	<b>159,993,380</b>	<b>166,368,869</b>	<b>164,447,104</b>	<b>185,542,754</b>	<b>178,646,055</b>
<i>Non Current Assets:</i>					
Long-Term Investment	6,646,537	8,242,162	9,181,508	7,616,935	6,971,844
Investments in Associates, Joint Ventures and Unconsolidated Subsidiaries	70,035,605	80,787,871	91,209,273	105,754,352	125,328,577
Receivables & Loans			2,700	6,150	28,650
Property, Plant & Equipment	156,819,674	183,701,500	196,824,221	203,416,887	205,487,501
Intangible Assets	85,813,044	126,180,022	116,007,061	111,640,086	102,166,734
Other Non-Current Assets - Total	14,954,496	16,898,606	15,825,081	14,113,687	15,421,198
<b>Total Non Current Assets</b>	<b>334,269,356</b>	<b>415,810,161</b>	<b>429,049,844</b>	<b>442,548,097</b>	<b>455,404,504</b>
<b>Total Assets</b>	<b>494,262,736</b>	<b>582,179,030</b>	<b>593,496,948</b>	<b>628,090,851</b>	<b>634,050,559</b>
<i>Current Liabilities:</i>					
Accounts Payable & Accruals	36,362,266	42,145,149	45,834,194	47,013,855	45,185,597
Short-Term Debt & Notes Payable	107,128,127	112,242,281	104,440,399	94,216,817	94,679,828
Current Portion of Long-Term Debt	30,723,561	23,189,797	25,251,497	27,128,370	42,727,218
Payable Income Taxes	1,711,550	1,832,589	1,625,305	1,256,492	1,501,248
Other Current Liabilities	10,365,185	11,088,686	13,467,004	12,596,625	13,617,219
<b>Total Current Liabilities</b>	<b>186,290,689</b>	<b>190,498,502</b>	<b>190,618,399</b>	<b>182,212,159</b>	<b>197,711,110</b>
<i>Non Current Liabilities:</i>					
Long-Term Debt	120,299,374	177,295,450	159,018,495	208,948,336	196,494,651
Deferred Tax & Investment Tax Credits	5,531,193	13,680,506	9,985,310	9,087,554	7,881,843
Other Non Current Liabilities	8,416,530	6,998,162	7,232,888	9,184,548	13,090,561
<b>Total Non Current Liabilities</b>	<b>134,247,097</b>	<b>197,974,118</b>	<b>176,236,693</b>	<b>227,220,438</b>	<b>217,467,055</b>
<b>Total Liabilities</b>	<b>320,537,786</b>	<b>388,472,620</b>	<b>366,855,092</b>	<b>409,432,597</b>	<b>415,178,165</b>
<i>Shareholders' Equity:</i>					
Common Equity	<u>46,540,700</u>	<u>46,540,700</u>	<u>66,470,923</u>	<u>66,470,923</u>	<u>66,470,923</u>
Common Stock - Treasury/Repurchased	1,135,146	1,135,146	2,909,249	2,909,249	2,909,249
Common Stock - Issued & Paid	7,742,942	7,742,942	8,611,242	8,611,242	8,611,242
Common Stock - Additional Paid in Capital including Option Reserve	39,932,904	39,932,904	60,768,930	60,768,930	60,768,930
Reserves & Retained Earnings	69,823,975	87,156,983	86,544,275	84,062,232	86,804,341
Minority Interest - Equity	57,360,275	60,008,727	58,626,658	53,125,099	50,597,130
Hybrid Financial Instrument - Equity			15,000,000	15,000,000	15,000,000
<b>Total Shareholders' Equity</b>	<b>173,724,950</b>	<b>193,706,410</b>	<b>226,641,856</b>	<b>218,658,254</b>	<b>218,872,394</b>
<b>Total Liabilities &amp; Shareholders'</b>	<b>494,262,736</b>	<b>582,179,030</b>	<b>593,496,948</b>	<b>628,090,851</b>	<b>634,050,559</b>

Figure 2.8 Balance Sheet of CPF

## 2) Cash flow statement

<i>Cash Flow Statement</i>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
	<i>Thousand Baht</i>				
<i>Operating Cash Flow:</i>					
Net Income	16,374,143	20,685,784	17,898,306	21,424,679	24,097,876
Non Cash Items & Reconciliation Adjust	15,546,503	28,828,543	15,512,033	19,600,344	27,031,718
Income Taxes Paid/(Reimbursed)	4,638,396	6,573,759	4,837,852	5,666,524	4,897,236
Interest Paid	8,996,892	10,538,041	11,751,387	12,649,264	14,228,113
Interest & Dividends - Received	3,311,468	4,483,158	4,537,371	4,856,634	5,368,110
Working Capital - Increase/(Decrease)	(6,419,810)	(11,709,467)	(11,316,623)	(20,064,480)	(5,623,502)
Accounts Receivables -					
Decrease/(Increase)	(1,014,803)	(3,206,628)	(5,257,836)	(6,045,246)	3,160,305
Inventories - Decrease/(Increase)	625,398	(701,948)	(296,329)	(6,736,190)	(4,422,370)
Other Assets - Decrease/(Increase)	(9,215,798)	(9,832,246)	(12,526,387)	(11,384,152)	(8,074,282)
Accounts Payable -					
Increase/(Decrease)	799,747	2,089,229	5,701,018	2,532,085	(701,690)
Other Liabilities -					
Increase/(Decrease)	2,385,646	(57,874)	1,062,911	1,569,023	4,414,535
<b>Net Cash Flow from Operating Activities</b>	<b>15,177,016</b>	<b>25,176,218</b>	<b>10,041,848</b>	<b>7,501,389</b>	<b>31,748,853</b>
<i>Investing Cash Flow:</i>					
Capital Expenditures	25,572,506	22,375,976	30,607,784	28,250,345	25,672,631
Property, Plant & Equipment Sold	1,537,950	1,348,138	320,322	1,118,148	2,513,466
Intangible Assets Sold	0	0	82	2,803	900
Acquisition & Disposals of Business Sold/(Acquired)	(20,413,360)	(40,688,006)	(2,154,233)	(624,965)	(577,541)
Investments excluding Loans -					
Decrease/(Increase)	(10,733,877)	(5,359,506)	6,013,163	(4,894,154)	(7,791,712)
Other Investing Cash Flow -					
Decrease/(Increase)	1,853	(191,420)	(590,952)	(88,587)	(488,281)
<b>Net Cash Flow from Investing Activities</b>	<b>(55,179,940)</b>	<b>(67,266,770)</b>	<b>(27,019,402)</b>	<b>(32,737,100)</b>	<b>(32,015,799)</b>
<i>Financing Cash Flow:</i>					
Dividends Paid	5,534,504	7,018,475	7,411,616	4,910,810	4,911,458
Stock Issuance/(Retirement)	207,889	135,506	20,171,864	229,411	399,262
Minority Interests & Joint Ventures			(114,406)	(6,560,587)	(1,291,728)
Long-Term & Short-Term Debt Issuance/(Retirement)	49,105,035	51,283,365	(15,618,731)	48,841,445	10,882,076
Other Financing Cash Flow -					
Increase/(Decrease)	(4,026,519)	(4,243,858)	12,206,787	(2,920,716)	(2,884,576)
<b>Net Cash Flow from Financing Activities</b>	<b>39,751,901</b>	<b>40,156,538</b>	<b>9,233,898</b>	<b>34,678,743</b>	<b>2,193,576</b>
<i>Change in Cash:</i>					
<b>Beginning Cash Balance</b>	<b>31,923,565</b>	<b>32,387,481</b>	<b>30,973,674</b>	<b>21,922,487</b>	<b>30,043,466</b>
Net Change in Cash	(251,023)	(1,934,014)	(7,743,656)	9,443,032	1,926,630
Foreign Exchange Effects	714,939	520,207	(1,307,531)	(1,322,053)	(1,593,511)
<b>Ending Cash Balance</b>	<b>32,387,481</b>	<b>30,973,674</b>	<b>21,922,487</b>	<b>30,043,466</b>	<b>30,376,585</b>

Figure 2.9 Cash Flow Statement of CPF



## 3) Income statement

<i>Income Statement</i>	2015	2016	2017	2018	2019
			<i>Thousand Baht</i>		
Revenue from Goods & Services	421,354,833	464,464,888	501,507,496	541,937,396	532,573,465
Cost of Operating Revenue	363,287,019	391,822,154	441,421,552	476,228,200	456,269,311
Gross Profit	58,067,814	72,642,734	60,085,944	65,709,196	76,304,154
Selling, General & Administrative Expenses	46,889,243	45,472,860	51,788,082	52,048,733	54,819,121
Other Operating Expense/(Income)	(3,413,629 )	(2,327,344 )	(2,226,472 )	(3,130,765 )	(3,040,105 )
<b>Operating Profit</b>	<b>14,592,200</b>	<b>29,497,218</b>	<b>10,524,334</b>	<b>16,791,228</b>	<b>24,525,138</b>
<i>Non Operating Expenses:</i>					
Interest Expense	9,613,774	10,601,235	11,743,356	11,703,447	13,784,629
Interest Income	9,188,757	3,377,967	11,441,486	10,135,853	9,241,784
Equity Earnings/(Loss)	5,220,876	6,512,494	7,983,044	8,343,121	8,893,402
Non-Recurring Income/(Expense)	639,944	(888,852 )	(56,554 )	4,069,828	668,019
Earnings Before Taxes	20,028,003	27,897,592	18,148,954	27,636,583	29,543,714
Income Taxes	3,653,860	7,211,808	250,648	6,211,904	5,445,838
<b>Net Income</b>	<b>16,374,143</b>	<b>20,685,784</b>	<b>17,898,306</b>	<b>21,424,679</b>	<b>24,097,876</b>

Figure 2.10 Income Statement of CPF

By considering the financial health of CPF compared to the agriculture and food industry, the use and source of CPF's fund have the four kinds of the financial analysis whether between the industrial benchmark and CPF company have the efficiency and effectiveness of company's fund as figure 2.11.

According to CPF's financial statements between year 2015 to 2019, there have five kinds of financial management to analyze how well the company does in the operation in 2019.

1) Profitability – how well the business is capable to generate the income.

1.1) Gross margin – looking for the net revenues after cost of operating revenue – CPF generates a 14.33 percent which is better than year 2018 and an average of its company own.

1.2) EBITDA margin – looking for the earnings after the cost of administration – CPF still does well as an 8.93 percent comparing to the previous year.

1.3) Operating margin – looking for the earnings after the other incomes and expenses relating to the operation – CPF is at a 4.61 percent comparing to the previous year and an average which is better.

1.4) Net profit margin – looking for the net income after all of cost and expenses of business – CPF is at a 4.52 percent which is better than the previous year.

Comparing to the industry in 2019 in case of the operation cost control, CPF generates better than the other companies in the same industry, but the accounting and financial cost assumed a lot of expenses is higher than the others. As the result that the operating margin and the net profit margin are below far away from the benchmark.

Financial Ratio	2015	2016	2017	2018	2019	Average of CPF	Industry (Y 2019)
<b>Profitability</b>							
Gross Margin (%)	13.78	15.64	11.98	12.12	14.33	13.57	2.84
EBITDA Margin (%)	7.22	10.32	6.33	7.22	8.93	8.01	1.37
Operating Margin (%)	3.46	6.35	2.10	3.10	4.61	3.92	9.3
Net Profit Margin (%)	3.89	4.45	3.57	3.95	4.52	4.08	6.9
<b>Liquidity</b>							
Current Ratio (times)	0.86	0.87	0.86	1.02	0.90	0.90	1.34
Times Interest Earned (times)	1.5	2.8	0.9	1.4	1.8	1.68	8.7
Cash Cycle (days)	65.6	62.5	58.5	63.0	64.4	62.8	47.8
<b>Leverage</b>							
Debt/Equity (times)	1.85	2.01	1.62	1.87	1.90	1.8	0.22
<b>Asset Management</b>							
Average Account Receivable Days	22.5	23.9	26.5	27.2	22.6	24.5	27.8
Average Inventory Days	79.1	77.3	69.4	71.3	77.4	74.9	61.3
Average Account Payable Days	36.0	38.7	37.4	35.5	35.7	36.7	46.7
Fixed Asset Turnover (times)	0.79	0.90	0.86	0.82	0.86	0.8	3.23

Figure 2.11 Financial Analysis of CPF

2) Liquidity – how well the business does the fund flow management.

2.1) Current ratio – looking for the business ability to pay in one-year due term – is at 0.9 times of CPF in 2019 is not quite good in term of the balance between paying ability and needed paid comparing to the previous year.

2.2) Times interest earned – looking for the ability of the business can cover the interest payable – is at 1.8 times of CPF can cover its payable which is better previously.

2.3) Cash cycle – looking for the working capital management of business in the period of days – CPF needs around 60s days in the fund flow cycle.

Comparing to the industry, CPF is far away from the benchmark in the liquidity management.

3) Leverage – refers to the source of funds of business.

3.1) Debt/Equity – looking for the portion of liabilities and owner in business – CPF has 1.9 times which means it holds the liabilities portion more than the owner portion, and an average the company has held around 1.8 times for 5 years. Whenever comparing to

the industry at rate of 0.22 times, CPF is extremely higher than others. There would be causing from CPF's financing procedure and policy for held the debentures and loan.

4) Asset management – how business assets are capable to operate for generating the earnings.

4.1) Average account receivable days – looking for how long business expects to get the realized earnings – CPF gets around early 20s days until mid-20s days, while the industry gets around lately 20s days or almost a month for earnings.

4.2) Average inventory days – looking for how long product will return becoming income – CPF spends around 70s days or around more than twice months for earnings from processing until finished product, while the industry can get their earnings from sales of inventories in two months.

4.3) Average account payable days – looking for how long business needs to pay creditors back – CPF holds payable around a month, while the industry can hold around one month and a half month.

4.4) Fixed asset turnover – looking for how well business can manage its asset for getting the sales – CPF has done around 0.8 times that its assets is able to generate its sales, while the industry has the capability at 3.23 times over their assets.

## **CHAPTER III**

### **DISCOUNTED CASH FLOW MODEL**

Based on the fundamental performance of Charoen Pokphand Foods Public Company Limited (or CPF), Discount Cash Flow model (or DCF) is a model which is brought to estimate the value of this company. DCF model requires three major components for the calculating equation as following.

- 1) Discounted rate
- 2) Expected growth rate
- 3) Free Cash Flow

Basically, Discounted Cash Flow model looks for the operating ability of the company generates, which have the set of cash flows showing in the company financial statements. Consistently, the generating cash flow of the company have two sets such as 1) Free cash flow to Firm (or FCFF) and 2) Free cash flow to Equity (or FCFE).

For this CPF's valuation on DCF model, the free cash flow to firm (or FCFF) is the selection instead of using the free cash flow to equity (FCFE), because this company has generated the cash flow consistently. Additionally, there has not scheduled debt payment and debt received.

Note that being consistently an estimation, this discounted cash flow estimation is denominated currency in Thai Baht through the way of calculation, for the reason that CPF has listed in the Stock Exchange of Thailand (SET) and the company's financial statement has reported in Thai Baht.

#### **3.1 Discounted rate estimation**

To figure the discounted rate of CPF, the weighted average cost of capital (or WACC) is the return that is used as the denominator variable for the DCF model. The cost of capital is the required rate of return of the company that represents the financial cost

which currently holds. It is the benchmark cost compared with the return of any investment projects of the company's expansion.

Since CPF has the liabilities and equity as its existing funded source, the cost of capital of CPF is allocated which is belonging to the proportion of sourcing capital. So, the weighted average cost of capital is more appropriated to apply for the cost of capital estimation of CPF as shown in equation 3.1 below.

#### Equation 3.1 Weighted Average Cost of Capital (WACC)

$$\text{WACC} = [W_d \times R_d(1 - T)] + (W_s \times R_s)$$

Where,      $W_d$ : Weighted debt  
                $W_s$ : Weighted equity  
                $R_d$ : Cost of debt  
                $T$ : Marginal tax rate  
                $R_s$ : Cost of equity

Note that the marginal tax rate is applied as a component in CPF's cost of capital and other part of the estimation instead of using the effective tax rate because of the effect of its rate fluctuation year by year. So, the marginal tax rate is used for CPF's cost of capital is 20 percent, which refers to the corporate income tax rate of Thailand as listed in the Stock Exchange of Thailand (SET) from the Revenue Department of Thailand.

#### 3.1.1 Cost of equity ( $R_s$ )

There have a few models to find out the cost of equity such as

First, the dividend discounted model is available for the company that usually pays the dividends. Although CPF pays the dividends as usual, but the discounted dividend model concerns only the performance of the company operation, as well as is not considering the market overall.

Second, the capital asset pricing model (or CAPM) is selected to estimate the cost of equity of CPF. Since, the capital asset pricing model is including the base return rate that the overall market would be providing, or in the other hand, the base rate called the risk-free rate is the minimum risk that would be affected the overall market unavoidably. CAPM model also includes the premium rate which is on top of the risk-free rate to get

the market return, the premium rate represents the availability of gain or loss that could be avoidable. Then, as represented the expected overall market return, the relationship between the company and the market is the measurement to see whether how the company moves through the market.

Thus, the capital asset pricing model is the model to determine the cost of equity of CPF which includes the risk-free rate, add up the relative risk of company to market times with the equity risk premium which is the premium of the market over the risk free, as shown in equation 3.2 below.

Equation 3.2 Capital Asset Pricing Model (CAPM)

$$\text{CAPM} = R_f + (\beta \times \text{ERP})$$

Where:  $R_f$ : Risk free rate  
 $\beta$ : Relative risk of company to market  
 ERP: Equity risk premium

### 1) Risk free rate ( $R_f$ )

The risk-free rate is the return that is expected to get back in the future as the opportunity cost of the investment, so in the theoretical definition the risk-free rate has no default risk and no reinvestment risk uncertainty to be anxiety. Due to the return usually uses the treasury bill or treasury bond from the government issued since it seems to guarantee that the government will not be going to be bankrupt. As the economic uncertainty, using 1-year yield of Thailand government bond which is the shortest yield to maturity to avoid the default risk, but the reinvestment risk is still questioning because after one month what the rate is going to be. Even the coupon rate of 10-year Thailand government bond yield is also getting the reflection on the interest rate changes over the time (Damodaran, 2006).

However, the company's lifetime is unlimited, the income is going to be generated so long as the company's lifetime is existing as well. By considering the lifetime, it is more accurately taken Thailand government bond yield at 10-year yield-to-maturity to be the risk-free rate that is applied in the cost of equity and cost of debt.

Due to a decrease on the policy rate of Thailand (Bank of Thailand, 2020, February 5) and the COVID-19 pandemic consideration to avoid the effect of lower risk-free rate

during this period, the risk-free rate as input in the capital asset pricing model (CAPM) is 3 percent annually by taken an average on 10-year Thailand government yield for 10 years.

## **2) Equity risk premium (ERP)**

The equity risk premium is the gap between the market return and risk-free rate as the base required rate of return. For the reason, Charoen Pokphand Foods PCL., is listed in the Stock Exchange of Thailand, the average return of total return index of Stock Exchange of Thailand (SETTRI) is used as the market return for determining the equity- risk premium.

### **2.1) Equity risk premium**

The historical data is the simplest way to look for the market return. The average return of SETTRI for 10 years is 13.82 percent annually. The gap which differs from the risk-free rate of an average on Thailand government 10-year bond yield is 10.82 percent on premium as calculated in equation 3.3 below.

Equation 3.3 Equity Risk Premium (ERP)

$$\begin{aligned} \text{Equity risk premium (ERP)} &= \text{Market return} - \text{Risk free rate} \\ \text{ERP} &= 13.82\% - 3.0\% = 10.82\% \end{aligned}$$

### **2.2) Implied equity risk premium (Implied ERP)**

For the implied equity risk premium, the market return is estimated from the discounted rate on the expected cash flow on the stock exchange index, and the cash flow that would happen on the stock market is the dividends from the listed companies. There assume that this approach is applicable from its advantage which it does not require the historical data (Damodaran, 2006).

According to CPF listed in Stock Exchange of Thailand index, or SET index is referring as the indication of the dividend's estimation. The SET index as of February 28, 2020 was 1,340.52, the expected dividend yield on the index is 3.30 percent, the expected growth rate on the dividends is approximately 3.80 percent for five years (Fenebris, 2020, February 28), and an average on 10-Year Thailand government bond yield is 3 percent.

### Equation 3.4 Future Value of Cash Flow

$$\text{Cash flow for year 1} = \text{SET index} \times \text{Dividend yield} \times (1 + \text{Dividend growth})$$

With the expected dividend yield and the growth rate on the dividends, it gets the expected cash flow on the SET index by applying equation 3.4 above to calculate the expected cash flow as shown in figure 3.1 below.

<i>Estimating Implied ERP by Goal Seek</i>	2019	2020	2021	2022	2023	2024
Expected Earnings	44.24	45.92	47.66	49.47	51.35	53.31
Expected Terminal Value						1,557.87
Sum of Earnings		45.92	47.66	49.47	51.35	1,611.18

Figure 3.1 Expected Cash Flow on SET index

To estimate the implied equity risk premium with an average on risk-free rate at 3 percent constraint, the expected market return required to calculate as the cost of capital of the cash flow on equation 3.5 below.

### Equation 3.5 EPR Estimation by Goal Seek

$$\begin{aligned} \text{SET index} &= 1,340.52 \\ &= \frac{45.92}{(1 + 3\% + \text{ERP})} + \frac{47.66}{(1 + 3\% + \text{ERP})^2} + \frac{49.47}{(1 + 3\% + \text{ERP})^3} + \frac{51.35}{(1 + 3\% + \text{ERP})^4} \\ &\quad + \frac{53.31}{(1 + 3\% + \text{ERP})^5} + \frac{53.31 \times (1 + 3\%)}{(3\% + \text{ERP} - 3\%) \times (1 + 3\% + \text{ERP})^5} \end{aligned}$$

In order to compute the return rate estimation, the implied equity risk premium comes from the reflecting rate on the expected cash flow, or the expected dividends in the calculation, which constrain the risk-free rate, and which is expected to get the value as same as the SET index at the present by using the goal seek to forecast the cash flow back to the present value that is equal to the SET index. Then, it gets the implied equity risk premium at 3.52 percent.

Due to the economic uncertainty assumption mentioned earlier, the implied-equity risk premium is more appropriated to be an input in the cost of capital of CPF estimation, in the point that there is no guarantee that the forward market return would get as same rate as the historical market return provided previously.



### 3) Beta (b)

#### 3.1) Historical market betas

This measurement is using the regression analysis to find out the coefficient relationship of the total return index of CPF company in the exchange market corresponds to the total return index of Stock Exchange of Thailand (SET TRI) for 10 years. It shows that the CPF's return moves along the overall market at 1.02 as the beta of CPF. If the market return changes by 1, then the CPF return will change by 1.02 in the positive direction as same as the market movement.

#### 3.2) Fundamental betas

There is another way to estimate company's beta, the fundamental beta is the second way to find out the CPF's beta by concerning about the company's operation. This beta is looking for the business risk and the risk on the capital structure as the following formula. The bottom-up beta method is applied by using the total return index of each company stock since the dividend paid is concerned in this return (Damodaran, 2006).

CPF company has three business classifications: 1) the feeding business and 2) the farming business, and 3) the food processing business. Although CPF has categorized the business section into 3 types, but it is difficult to find other agricultural companies that has revenue structure as similar as CPF has. So, the feeding and farming business are involved as the agriculture business sector in the market, and the food business is categorized as the food and beverage business.

Equation 3.6 Levered Beta

$$\beta_L = \beta_\mu \left[ 1 + (1 - T) \times \left( \frac{\text{Debt}}{\text{Equity}} \right) \right]$$

Where:  $\beta_L$ : Levered beta  
 $\beta_\mu$ : Unlevered beta  
 T: Marginal tax rate

To estimate the unlevered beta (or  $\beta_U$ ) of the business sector, the average beta, and the average of debt-to-equity ratio in each industry that are compared to represent the beta of that industry. Since the agriculture business and food and beverage business represent the CPF's comparable business as the unlevered beta, it will get each of unlevered beta of the agricultural business and food and beverage business at 0.40 and 0.48 consecutively as shown in table 3.1 below.

Table 3.1 Unlevered Beta

Business	Feed & Farm	Food
Comparable business sector	Agriculture	Food & beverage
Number of companies	11	39
Average of beta	0.73	0.71
Average D/E ratio (times)	1.02	0.62
Unlevered beta	0.40	0.48

From the table 3.2, estimating the unlevered beta that applies for CPF by allocating with the percentage of the value of the company. Thus, it gets the CPF's unlevered beta at 0.42 as table 3.2 below.

Table 3.2 Unlevered Beta of CPF

Business	Feed & Farm	Food	Total
Sales revenue in 2019 (million Baht)	435,808	96,765	532,573
EV/Sales	0.91	1.61	
Estimated value (million Baht)	395,582	156,197	551,779
Proportion of company value (%)	72%	28%	100%
Unlevered beta of CPF	0.29	0.13	0.42

From table 3.2, it is computed CPF's beta with the debt-to-equity ratio and the marginal tax rate, and it gets the beta for CPF at 1.09 as table 3.3 below.

Table 3.3 Levered Beta of CPF

Unlevered beta	D/E ratio of CPF (times)	Marginal tax rate	Levered beta
0.42	1.98	20%	1.09

By considering both of beta estimations, the beta from the historical data is selected as an input on the cost of equity of CPF because the beta from the historical data is more relevant than the fundamental beta. Because the data that is brought to calculate the industry beta is not slightly appropriated by comparable company selection in kind of the similarity of the revenue structure, and size of market sales. So, it will not be relevant to use the fundamental beta to see whether the reflection of CPF through the market. Due to the relevant data issue and the lifetime of existed company in the market, the beta from the historical data is applied as the CPF's beta instead of the fundamental beta.

Then, according to equation 3.2 in this chapter earlier, CPF's cost of equity is 6.59 percent from a 3 percent of risk-free rate, 1.02 of CPF's beta, and a 3.52 percent of the implied equity risk premium as following the calculation below.

$$\text{Cost of equity} = 3\% + (1.02 \times 3.52\%) = 6.59\%$$

### 3.1.2 Cost of debt (Rd)

To estimate the cost of debt of CPF by avoiding the complicated and the miscalculated cost estimation, because the company has both the long-term borrowings and a lot of the outstanding bonds. So, the way to estimate the cost of debt by adjusted the risk-free rate with the default spread of the rating of the corporate bond, it is more appropriated and reasonable because the rating that given by the rating agency is based on the financial ratios of the company itself (Damodaran, 2006).

#### Equation 3.7 Cost of Debt Estimation

$$\begin{aligned} \text{Cost of debt} &= \text{Risk free rate} + \text{Default spread} \\ &= 3\% + 1.37\% = 4.37\% \end{aligned}$$

CPF gets the rating on its corporate bond as the negative A and it changes to positive A on March 2020 (Tris Rating Co., 2020, March 31). There does not have any significant on the default spread from the sign changes because the rating is grouped that including all signs in each group, the default spread of CPF is 1.37 percent of over five years bond as of February 28, 2020 (Thai Bond Association).

With a 3 percent of an average on risk-free rate from the 10-Year Thailand government bond yield and a 1.37 percent of default spread, CPF's cost of debt is 4.37 percent as equation 3.7.

### 3.1.3 Capital structure

The capital structure shows the proportion of the source of the capital that is provided for the company usage. It has two sources such as borrowing side (or liabilities) and owner side (or equity).

Equation 3.8 Debt-to-Equity Ratio (D/E ratio)

$$\text{Debt – to – capital(\%)} = \frac{\text{Total debt}}{\text{Total capital}} = \frac{333,902 \text{ million Baht}}{502,177 \text{ million Baht}} = 66\%$$

The capital structure of CPF as the latest reported, total debt is 333,902 million Baht and equity is 168,275 million Baht. So, the capital including debt and equity is 502,177 million Baht in the total. Then, the capital structure of CPF is a 66 percent of debt and a 34 percent of equity.

According to debt-to-capital ratio, it presents the actual capital structure from the book value of CPF's financial that would not ensure this structure would preserve over the time. However, the targeting capital structure is the better way to predict the portion of the long-term debt and equity can be in the future, CPF seems to issue the new debentures which value approximately 30 to 40 billion Baht in 2020 to replace the outstanding debentures for the reason of cutting down the financial cost of the company. Because of the replacing debt purpose, it assumes that the targeting capital structure would not change much more than the actual capital structure exists.

### 3.1.4 Weighted average cost of capital (WACC)

Since the CPF has source of funds from both of liabilities and equities, and as notice that the weighted cost of capital is more appropriated to apply for the cost of capital estimation of CPF. The cost of capital of CPF is allocated which is belonging to the proportion of sourcing capital.

Table 3.4 Cost of Capital of CPF

Cost of equity	6.59%
Cost of debt after-tax	$4.37\% \times (1 - 20\%) = 3.49\%$
Weighted debt	66%
Weighted equity	34%
WACC	4.53%

With a 66 percent of the debt-to-capital ratio of CPF, and 6.59 percent of the cost of equity, and 4.39 percent the cost of debt, the cost of capital of CPF is 4.53 percent as table 3.5 above.

## 3.2 Free cash flow to firm (FCFF) estimation

As earlier mentioned of this chapter, the free cash flow to firm (or FCFF) is the set of cash flows that is chosen to estimate the value of the operating assets of Charoen Pokphand Foods PCL., it used the operating income after-tax and subtract the net capital expenditure and the net changes in working capital in the latest year (For this valuation, the financial statement data used at the end of 2019 as the recent year).

### 3.2.1 Operating income after-tax (or EBIT(1-T))

The operating income of CPF relates to the business operating activity and excludes the non-curing income and expenses for the reason that some earnings and expenses would create the misunderstanding on the operating income and would mislead for the whole free cash flow estimation. At the end of 2019, the operating income of CPF is 24,525 million Baht.

$$\begin{aligned}
 \text{Operating income after – tax} &= \text{EBIT} \times (1 - T) \\
 &= 24,525 \text{ million Baht} \times (1 - 20\%) \\
 &= 19,620 \text{ million Baht}
 \end{aligned}$$

### 3.2.2 Net capital expenditure (or Net CAPEX)

Instead of taking the cash flow from the investing activity in cash flow statement to less out from the operating income, there could not use it all since CPF has invested in the securities that are not relating to business operation. The capital expenditure which is the spending on the operating activity of business and the acquisition of business that notices in the company strategy. Both of spending are used in, however, the investment seemed to vary in the latest five years from the acquisition. In order to avoid the mistake from the lump sum investment, the capital expenditure is normalized as a percentage of the operating income after-tax to average the spending during 2015 to 2019 that reflect the rising operating income over the period (Damodaran, 2006).

<i>Normalized Capital Expenditure</i>	2015	2016	2017	2018	2019	Total
Operating Income	14,592,200	29,497,218	10,524,334	16,791,228	24,525,138	95,930,118
Less: Tax Expense	2,918,440	5,899,444	2,104,867	3,358,246	4,905,028	19,186,024
Operating Income after-tax	11,673,760	23,597,774	8,419,467	13,432,982	19,620,110	76,744,094
Capital Expenditures	25,572,506	22,375,976	30,607,784	28,250,345	25,672,631	132,479,242
Depreciation & Amortization	15,845,799	18,438,000	21,200,000	22,352,000	23,050,549	100,886,348
Acquisition & Disposals of Business Acquired/(Sold)	20,413,360	40,688,006	2,154,233	624,965	577,541	64,458,105
Net Capital Expenditures	30,140,067	44,625,982	11,562,017	6,523,310	3,199,623	96,050,999
% Net CAPEXas of Operating Income after-tax	258.19%	189.11%	137.32%	48.56%	16.31%	125.16%

Figure 3.2 Normalized Capital Expenditure of CPF

From figure 3.2 of the normalized capital expenditure of CPF above, the net capital expenditure is over the operating income after-tax 125.16 percent. This over capital expenditure might mean the company needs to look for the capital for the investment. That has an impact on the cost of capital of CPF company in both of capital structure changes and cost of debt or cost of equity changes as well.

To see how much the net capital expenditure (Net CAPEX) of CPF is going to be, there is estimated from using the percentage of net capital expenditure to the operating income after-tax times the current operating income after-tax.

$$\text{Net CAPEX as percent of EBIT (1-T): 2015 to 2019} = 125.16\%$$

EBIT (1-T) in 2019: 19,620 million Baht

$$\begin{aligned}\text{Net CAPEX} &= \% \text{ Net CAPEX of EBIT}(1 - T) \times \text{the current EBIT}(1 - T) \\ &= 125.16\% \times 19,620 \text{ million Baht}\end{aligned}$$

Normalized net CAPEX in 2019 = 24,556 million Baht

### 3.2.3 Net change in working capital (or Net change in WC)

Working capital describes the difference between the company's current assets and current liabilities, it is used for measuring the liquidity of the company in the short term. For the valuation purpose, the working capital is determined to be the wasting assets, it is counted as the reinvest capital since it consume cash holdings which is affect the company running out of cash whenever the working capital is going higher (Damodaran).

According to the cash consumption from the working capital, the change in working capital, which comes from removed cash and equivalents, is the input number for the free cash flow to firm of CPF. During 2015 to 2019, the change in working capital of CPF show the negative changes slightly vary, so seeing whether the effort of change in working capital as the percentage of the revenue in each year.

<i>Normalized Net Change in Working Capital</i>	2015	2016	2017	2018	2019	Total
Revenue	421,354,833	464,464,888	501,507,496	541,937,396	532,573,465	2,461,838,078
Change in Non Cash Working Capital	(6,419,810)	(11,709,467)	(11,316,623)	(20,064,480)	(5,623,502)	(55,133,882)
% Net Change in Working Capital as of Revenue	-1.52%	-2.52%	-2.26%	-3.70%	-1.06%	-2.24%

Figure 3.3 Normalized Net Changes in Working Capital of CPF

By looking at the net change in working capital as a percentage of revenue on figure 3.3 above, the percentage of net change seems slightly volatile in the past. It is possible that the net change in working capital will fluctuate over the revenue in the future.

Normally, the company could not also get the negative net change in working capital for long term, a negative 1.06 percent of net change in working capital in 2019 might be a selection from the assuming the CPF's net change in working capital being zero or nearly zero as much as possible. Although the net changes in working capital of year 2019 seems to be likely appropriate, but CPF have had its own financing policy to keep its net changes in working capital in the negative. Then, the average net change in working capital over the revenue is more appropriate than using one of

the percentage year selections, the normalized net changes in working capital (or an average of this changes) is used for these changes in year 2019 should be.

Then, the net change in working capital in 2019 is showing below.

$$\begin{aligned}\text{Net change in WC} &= \% \text{ Net change in WC} \times \text{Revenue} \\ &= -2.24\% \times 532,573 \text{ million Baht} \\ \text{Net change in WC in 2019} &= -11,927 \text{ million Baht}\end{aligned}$$

### 3.3 Expected growth rate estimation

#### 3.3.1 Expected growth rate on the revenue growth

The expected growth of CPF from the historical growth on the revenue, looking at the average growth rate for 5 years latest during 2015 to 2019 by considering the time value of money changes over time-period.

As equation 3.9 below, it gets CPF's growth rate from compounded average growth rate (CAGR) at 4.80 percent per annum.

Equation 3.9 The Average of the Growth Rate on Revenue

$$\text{CAGR} = \left( \frac{532,573 \text{ million}}{421,355 \text{ million}} \right)^{(1/5)} - 1 = 0.0478 \text{ or } 4.80\%$$

#### 3.3.2 Fundamental growth

Fundamental growth of CPF that is based on the company expansion investment by looking at the reflection of the investment which company will be getting in the operating income, it is considering the relationship between total reinvestment and the invested capital earnings.

Equation 3.10 Fundamental Expected Growth Rate

$$\text{Expected growth rate} = \text{Reinvestment rate} \times \text{ROIC}$$



### Reinvestment rate

Equation 3.11 Reinvestment Rate

$$\text{Reinvestment rate of CPF} = \frac{\text{Net CAPEX} + \text{Net change in WC}}{\text{EBIT}(1 - T)}$$

#### 1) Historical reinvestment rate

Table 3.5 Historical Reinvestment Rate

Historical Reinvestment Rate	2015	2016	2017	2018	2019	Total
Operating Income after-tax	11,674	23,598	8,419	13,433	19,620	76,744
Net Capital Expenditures	30,140	44,626	11,562	6,523	3,200	96,051
Net Change in Working Capital	(6,420)	(11,709)	(11,317)	(20,064)	(5,624)	(55,134)
Reinvestment	23,720	32,917	245	(13,541)	(2,424)	40,917
Reinvestment Rate	49%	139%	3%	-101%	-12%	53%

In table 3.5 above, CPF's reinvestment for five years past extremely fluctuated over the operating income after-tax since its reinvestment rate went in a range from positive 100 percent down to negative 100 percent. Being consistently due to volatile rate year by year, an average of CPF's reinvestment rate over five years is 53 percent.

#### 2) Adjusted reinvestment rate

According to the normalized capital expenditure, and the adjusted net change in working capital as a percentage in 2019 for CPF's stable cash flow forecast, the reinvestment of CPF applies the percentage of net capital expenditure and net changes in working capital as its normalized and adjusted.

Table 3.6 Adjusted Reinvestment Rate

Operating Income after-tax	19,620
Net Capital Expenditures	125% × 19,620 = 24,556
Net Change in Working Capital	-2.24% × 532,573 = -11,927
Reinvestment	12,629
Reinvestment Rate	64%

Then, the adjusted reinvestment of CPF is 12,629 million Baht, and the reinvestment rate over the operating income after-tax is 96 percent as showing table 3.6 above.

### Return on invested capital (ROIC)

Equation 3.12 Return on Invested Capital (ROIC)

$$\text{Return on invested capital (ROIC)} = \frac{\text{EBIT}(1 - T)}{\text{Book value of debt and equity} - \text{Cash}}$$

The return on invested capital (or ROIC) is using the book value of debt and equity instead of its market value to see whether the reflection of the earnings from all business project investment on the company's financial position.

Table 3.7 Return on Invested Capital

Historical Return on Invested Capital	2015	2016	2017	2018	2019	Average
Operating Income after-tax	11,674	23,598	8,419	13,433	19,620	76,744
Book Value of Debt	151,023	200,485	184,270	236,077	239,222	1,011,077
Book Value of Equity	173,725	193,706	226,642	218,658	218,872	1,031,604
Cash	44,234	40,857	26,838	33,034	33,496	178,458
Book Value of Invested Capital	280,514	353,335	384,074	421,701	424,598	1,864,222
Return on Invested Capital	4.16%	7.45%	2.28%	3.33%	4.64%	4.12%

In table 3.7 above, it shows the return on invested capital during 2015 to 2019. It is slightly unstable on CPF's ROIC over five years. Then, its return on invested capital is more appropriated to make an average, and it gets 4.12 percent.

The expected growth rate of CPF will be calculated by multiplying the adjusted reinvestment rate because of cash flow forecast consistency, with the return on invested capital.

$$= 64\% \times 4.12\% = 2.65\%$$

Then, the growth rate for five years projection on the cash flow in this valuation is using a 2.65 percent a year.

### 3.4 Value of equity

#### 3.4.1 Cash flow projection

Free cash flow to firm gets from the operating income after-tax, and subtracts by the reinvestment, including net capital expenditure and net changes in working capital which each of them keeps the percentage of the operating income after-tax.

Year	Actual			Projected		
	2019	2020	2021	2022	2023	2024
Operating income	24,525,138	25,174,999	25,842,081	26,526,838	27,229,740	27,951,267
Less: Tax expenses	4,905,028	5,035,000	5,168,416	5,305,368	5,445,948	5,590,253
Operating income after-tax	19,620,110	20,140,000	20,673,665	21,221,470	21,783,792	22,361,014
Less: Net Capital Expenditure	24,556,042	25,206,722	25,874,644	26,560,264	27,264,052	27,986,489
Less: Net Change in Working Capital	(11,927,203 )	(12,243,247 )	(12,567,666 )	(12,900,681 )	(13,242,520 )	(13,593,418 )
Reinvestment	12,628,839	12,963,475	13,306,978	13,659,583	14,021,532	14,393,071
Free Cash Flow to Firm	6,991,271	7,176,525	7,366,686	7,561,887	7,762,260	7,967,943

Figure 3.3 Free Cash Flow Projection

According to a 2.65 percent of CPF's expected growth rate, CPF's free cash flow to firm will increase in range of 700 million Baht that is forecasted by its expected growth rate every year during 2020 to 2024.

#### 3.4.2 Terminal value estimation

For the terminal value, it would not be appropriated to use the expected growth rate as same as the rate used for five-year projection. Since nothing is certainty, the company would get the impact from the economic fluctuation over the time, and it would not clearly predict that the company growth rate could generate constantly as same growth rate as the first-five-year free cash flow projection.

To be more accurate in the terminal value estimation, the change in the expected growth rate of terminal value is assumed the capability of company could generate cash inflow as same as at least the minimum rate of return that the overall market would provide (Damodaran, 2006).

According to CPF has expected to invest for its expansion for 5 years during 2020 to 2024 as its spending over a 100 percent of its income in the capital expenditure.

There assumes that the company will decrease the investment spending, because the company could not consistently spend money heavily for long time as well as the negative net change in working capital will be expected to negative lesser because of the declining capital expenditure in the long-term.

As mentioned above, CPF will be calculated by using the equation as showing in equation 3.13 below. The terminal value model of CPF determines its return on invested capital equal to the CPF's weighted average cost of capital as 4.53 percent.

Equation 3.13 Terminal Value Model

$$\text{Terminal value} = \frac{\text{EBIT}(1 - T)_5 \times (1 + \text{constant growth rate}) \times (1 - \text{Reinvestment rate})}{\text{WACC} - g}$$

The reinvestment rate of CPF is estimated from applied by the fundamental expected growth rate equation on the reinvestment rate of this terminal value model.

A 3 percent of constant growth rate divide by a 4.53 percent of return on invested capital. It gets 66 percent representing the reinvestment rate of CPF for terminal stage.

With 66 percent on the constant reinvestment rate, the terminal value of CPF will get 554,931 million Baht for terminal value as in table 3.8 below.

Table 3.8 CPF's Terminal Value

Operating profit after-tax for terminal value (Million Baht)	24,420
Constant growth rate	3%
CPF's cost of capital	4.53%
Reinvestment rate (Terminal)	3%/4.53% = 66%
Terminal value (Million Baht)	554,931

### 3.4.3 The value of operating assets

After the cost of capital and the free cash flow to firm of CPF forecast already, to calculate CPF's value of operating assets, those expected free cash flow to firm including projected cash flow and terminal value are discounted to estimate the operating assets of CPF as equation 3.14 below.

## Equation 3.14 Discount Cash Flow Model on FCFE

$$\text{CPF's value} = \frac{\text{FCFF}_1}{(1 + \text{WACC})^1} + \frac{\text{FCFF}_2}{(1 + \text{WACC})^2} + \frac{\text{FCFF}_3}{(1 + \text{WACC})^3} + \frac{\text{FCFF}_4}{(1 + \text{WACC})^4} + \frac{\text{FCFF}_5}{(1 + \text{WACC})^5}$$

In figure 3.5 below, free cash flow of CPF is discounted by its WACC at 4.53 percent, and it gets the value of operating assets of CPF at 440,236 million Baht.

Year	Actual	Projected				
	2019	2020	2021	2022	2023	2024
Free Cash Flow to Firm	6,991,271	7,176,525	7,366,686	7,561,887	7,762,260	7,967,943
Terminal Value						508,141,012
Sum of Cash Flow		7,176,525	7,366,686	7,561,887	7,762,260	516,108,954
Present Value of Cash Flow		6,865,348	6,741,692	6,620,264	6,501,023	413,507,358
<b>Value of Operating Assets</b>	<b>440,235,685</b>	<b>440,235,685</b>				

Figure 3.5 Value of Operating Assets of CPF

The value of equity estimation is focusing on the value part of shareholder of the company, to get the value of equity, the value of debt is taken it out of the value of firm of CPF since the liabilities is the reimbursement obligation from the company borrowing that promise to repayment as the priority of creditors.

The value of operating assets needs to add cash & equivalent back since cash & equivalent is taken out of CPF's estimation of the value of operating assets in earlier. For the reason of avoid the misleading and misunderstanding during and after this estimation from the interest income in the cash flows. It will get the value of firm at 440,236 million baht.

Table 3.9 Target Price of CPF

Operating assets value (in million Baht)	440,236
Add: Cash & equivalent	33,496
Value of firm	473,732
Less: Value of debt	314,988
Value of equity	158,744
Number of share outstanding (in million shares)	8,611
Target price (Baht/Share)	18.43

Then, it gets the equity value of CPF at 158,744 million Baht, and with 8,611 million shares of the number of share outstanding, there will get the target price at 18.43 Baht per share.

The market price of CPF as of 28 February 2020, is 26.75 Baht per share which compares to the target price at 18.43 Baht per share, the market price of CPF is overvalued. There would like to recommend taking the sell position of CPF since the market price is still to be higher than the price that would get from the target value of CPF should be.



## CHAPTER IV

### SENTIVITY ANALYSIS AND SCENARIO ANALYSIS

#### 4.1 Sensitivity analysis

As the result in the chapter three by using the discounted cash flow model (DCF), CPF's target price is 18.43 Baht per share with a 4.53 percent of the cost of capital (or WACC), and 2.65 percent of the expected growth rate.

To look whether the changes on CPF's stock price varies from the effect of a single factor changing on its cost of capital (or WACC).

At 4.53 percent of CPF's cost of capital, its lowest WACC would decrease as same as the average risk-free rate of 3 percent becoming the lower boundary of the cost of capital of CPF, and the highest WACC of CPF would be maximized at 10 percent becoming the higher boundary, to make a change in the boundary equally. the company's cost of capital will be determined to change 50 basis points decreasingly and increasingly from its WACC.

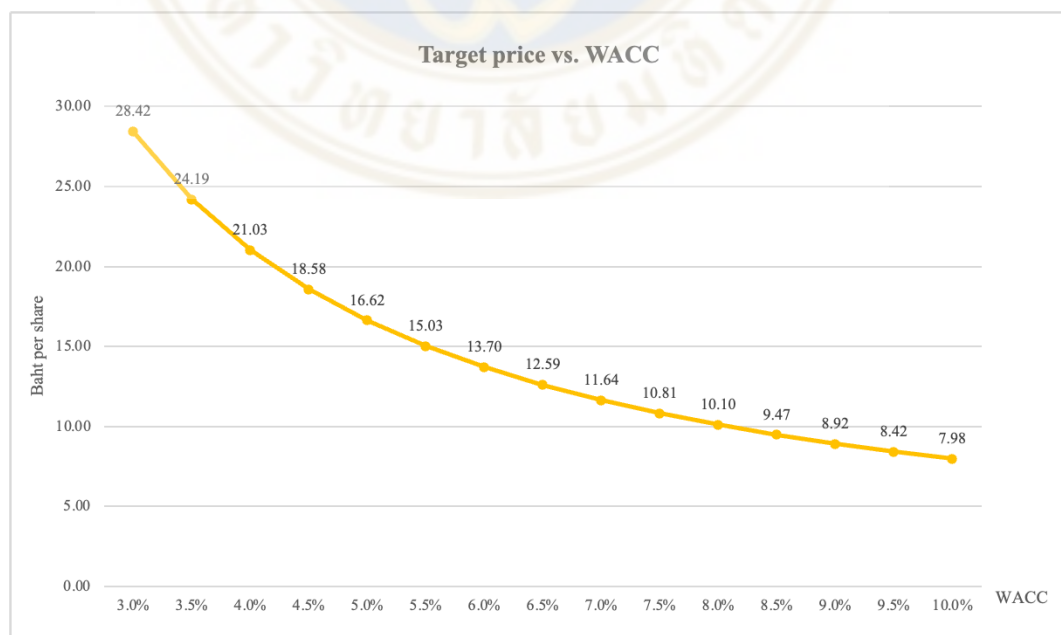


Figure 4.1 Changes on Target Price by Changing WACC of CPF

In figure 4.1, showing the higher WACC the lower price, the impact of WACC changes of CPF would make the target price moving reverse direction to the WACC rate. Whenever the cost rate at a 3 percent at the minimum boundary, the price would be moving up to a 28.42 Baht per share which is not much higher than the market price at 26.75 Baht per share as of 28 February 2020. In the other way, the maximum boundary at a 10 percent, in the graph above, the price moves down to a 7.98 Baht per share which make its price move too far away from the market price.



Figure 4.2 Changes on Target Price by Changing Growth Rate of CPF

In figure 4.2, showing the higher growth rate the higher price, the relation between the growth rate and the target price moves along together in the same direction. As an assumption, the growth rate is minimum at a 1 percent, the price would be a 17.14 Baht per share. In the other way, at a 15 percent maximum, the price would be a 31.09 Baht per share. Whenever, comparing to the market price at a 26.75 Baht per share, CPF company would be climb its growth rate around 11 to 12 percent to reach its company price look like the market price.



## 4.2 Scenario analysis

According to the economic outlook mentioned in the chapter two, there are the evidence that would have the impact on the CPF’s operation either positive side or negative side. Especially, the catastrophic impact of the COVID-19 pandemic in 2020 in the beginning year would be disturb the whole supply chain of the business both Thailand and Global.

As figure 4.3 below, the Euromonitor forecast the world GDP in year 2020 for the best scenario at a negative 0.76 percent (Baseline) and at a negative 7.31 percent in the worst scenario (C19 Pessimistic3).

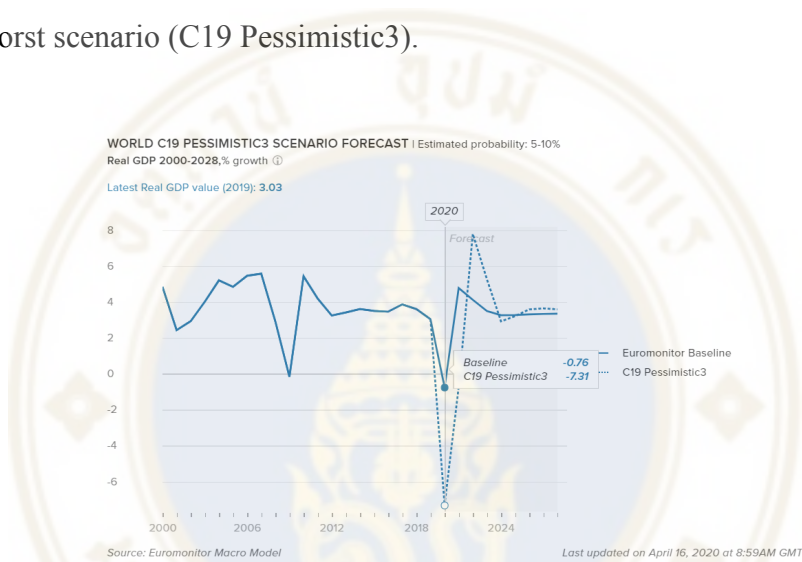


Figure 4.3 World GDP scenario forecast on the impact of Coronavirus  
 Source: (Euromonitor, 2020, April 14)

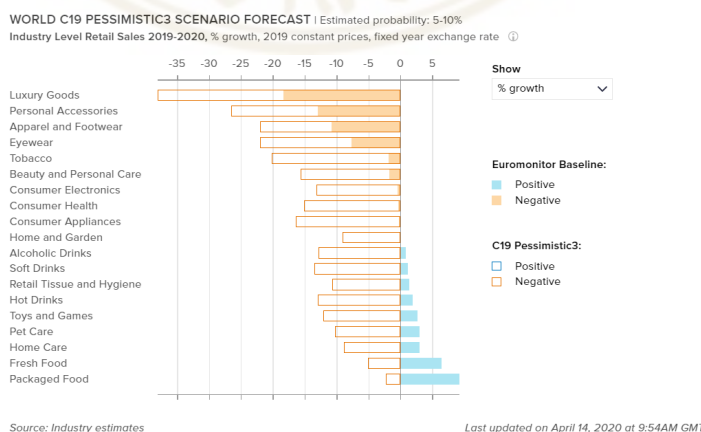


Figure 4.4 Industry sales scenario forecast on the impact of Coronavirus  
 Source: (Euromonitor, 2020, April 14)

As figure 4.4, the fresh food industry, which has defined to fresh uncooked and unprocessed foods (packaged and unpackage), forecasts around a positive 7 percent at the best case (baseline) and a negative 5 percent at the worst case (C19 Pessimistic3).

The forecasted growth of fresh food industry for the case scenario, assume that the sales revenue growth rate of CPF in 2020 would get as same as the industry could provide. However, in order to be appropriated to look forward on the average of CPF's growth rate for the next five years, thus, the expected growth rate of CPF for best-case scenario and worst-case scenario is expected to vary from the percentage of 3.52 to 1.12 as figure 4.5 below.

Revenue growth (% Change)	2020	2021	2022	2023	2024	Average
<b>Neutral case assumption</b>	2.65%	2.65%	2.65%	2.65%	2.65%	<b>2.65%</b>
<b>Best case assumption</b>	7.00%	2.65%	2.65%	2.65%	2.65%	<b>3.52%</b>
<b>Worst case assumption</b>	-5.00%	2.65%	2.65%	2.65%	2.65%	<b>1.12%</b>

Figure 4.5 The average percentage changes of revenue growth

By the way, in the same year 2020, CPF has approved to repurchase the company shares for 400 million shares at 1.00 Baht per share, which is 4.65 percent of the number of share outstanding of the company with the budget plan of 10,000 million Baht. As assumption of the share repurchasing plan, CPF would have the available cash for its budget that would be affected on its capital structure by changing from the actual debt-to-capital ratio at a 66 percent to a 68 percent of the targeted ratio.

Debt-to-Equity changes to 2.13 times accordingly the CPF' capital structure plan, so the weighted debt will be 68 percent and weighted equity will be 32 percent. As the result that the cost of capital (WACC) of CPF will change from 4.53 percent to the newly rate of 4.49 percent.

By considering the effect of pandemic and the company plan, the value of CPF will split the scenario into the three cases as the neutral case, the best case and the worst case from the effect of pandemic in view of economic and the effect of the change of the company capital structure and the number of shares outstanding.

#### **4.1.1 Neutral case scenario**

From mentioned situation scenario on above, the cost of capital of CPF would get the effect from the adjusted growth and the modified cost of capital of CPF, the value of operating asset would be 445,450 million Baht. The target price would be 18.67 Baht per share as figure 4.7.

#### **4.1.2 Best case scenario**

Suppose optimistically with the controllable epidemic, as the consequence the new infected number would be the positive signal as its downturn, the restrictions would be loosened, and the private sector could be able to start running the business nearly in the normal situation.

Although the impact from the COVID-19 epidemic is the barrier of lots of business operations, but the CPF is still doing well against this epidemic since food is the fundamental needs for daily living. Due to be food producer company, CPF could survive among the business run pausing even it probably loses some demand of sales revenue from its distribution channels such as restaurant because a decrease on the number of customers causing from unavailable sitting in the restaurant and some customers isolate themselves in the residential. Despite lose in demand, but it could assume that the sales revenue growth of CPF would get the advantage from the stockpiling purchase of household.

The growth on sales revenue of CPF could assume to be change over the growth on the neutral case by accumulating a positive 7 percent approximated from the forecast growth on fresh food industry from the baseline scenario on Euromonitor. However, the forecast growth is used for 2020 since the assumption of the epidemic would be ended in a year.

#### **4.1.3 Worst case scenario**

In the counterpart, due to continually increase new infected since the confirmed infected cases is over 850,000 globally in the first quarter of 2020, and it is keeping higher in the second quarter.

Suppose pessimistically with the uncontrollable epidemic, it would take longer to be controllable the new infected cases for over a year. The restrictions behaved

on the social distancing would be longer in order to reduce the overload in the healthcare system. Since the labor, as one of the resources in the economic activities, is the significant factor that would have affected by this emerging disease, that would lead the unemployment rate raising extremely high from the extended time on the business disruption. Thus, the economic situation would be deeply damaged from a decrease on the consumption rate and the purchasing power.

According to the purchasing power declines, CPF would be facing with the affordable behavior on consuming slowdown, people would be tied to spend money even spending on the food. From the worst-case scenario on Euromonitor, the forecast growth on the fresh food industry is estimated approximately at a 5 percent on the negative.

Case Assumption	Neutral	Best	Worst
Expected Growth Rate	2.65%	3.52%	1.12%
<b>Value of Operating Assets</b>	<b>445,450,263</b>	<b>464,064,195</b>	<b>414,190,666</b>
Add: Cash	33,496,112	33,496,112	33,496,112
Value of Firm	478,946,375	497,560,307	447,686,778
Less: Value of Debt	325,683,535	338,341,009	304,427,009
Value of Equity	153,262,840	159,219,298	143,259,769
No. of Share Outstanding	8,211,242	8,211,242	8,211,242
<b>Target Price (Baht per share)</b>	<b>18.67</b>	<b>19.39</b>	<b>17.45</b>

Figure 4.6 Case scenario assumption

As figure 4.6, the target price of the neutral case is 18.67 Baht per share compares to the target price of CPF at 18.43 Baht per share in the chapter three. The price on neutral case scenario is not significantly an impact on the target price even the changes on CPF's capital structure and the number of shares outstanding that would be expected to change at the end of 2020.

However, the best-case scenario and worst-case scenario, the effect of COVID-19 would impact the target price by the changes on the expected growth rate of CPF, which it would give a 19.39 Baht per share at the best case that would impact in short term and a 17.45 Baht per share at the worst case that would impact the company in longer time.

## **CHAPTER V**

### **INVESTMENT SUMMARY**

Charoen Pokphand Foods Public Company Limited, called CPF, operates with its company direction “Kitchen of the World” in an agro-industry which comprises of the animal feeding, farming, and food processing. The distribution channels of CPF are across around the world which is more than 30 countries to reach more consumers like B2B and B2C. Moreover, its greenfield locates in 17 countries which have fully assembly line or partial one. In 2019, CPF acquires 8 new direct and indirect subsidiaries in Thailand, United States, Vietnam and Sri Lanka. It focuses on merger and acquisition to fulfill its company value chain, extended the market internationally and make more growth.

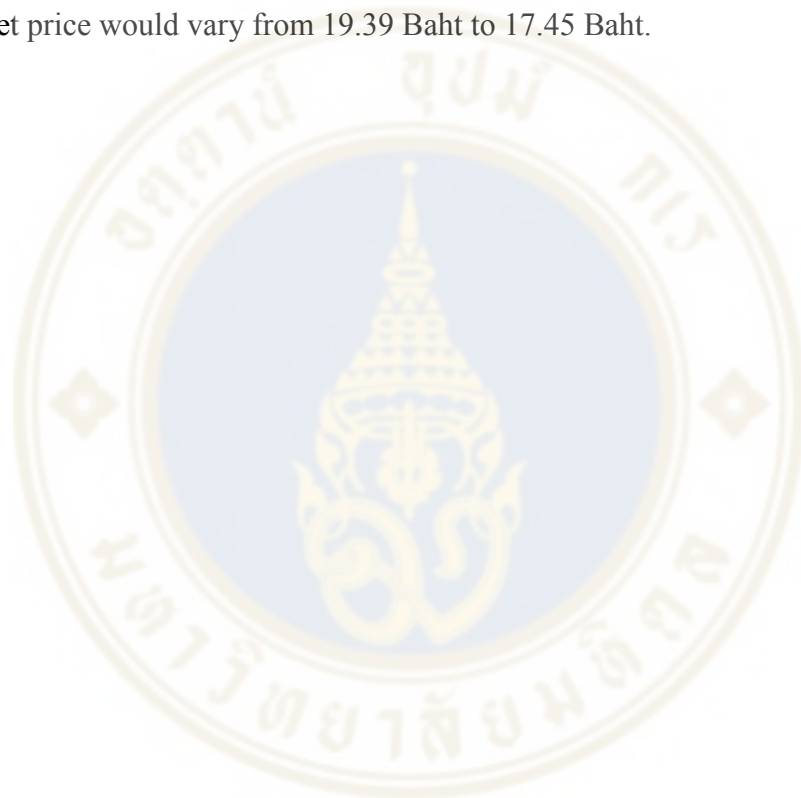
Whenever, zooming out of this company to widen into the economic situation, the significant factors influence the input and output of the agricultural business such as an impact on farming from the drought and the animal fever which challenges the company operation every year. In the beginning of 2020, a new challenge is coming from the unpredictable situation. The pandemic of Corona-virus, later called Covid-19, leads to be trouble the whole value chain in each inch of business area by considering the policy interest rate is adjusted lower twice times in the first quarter of 2020.

According to CPF’s distribution channels around the world, the most of its sales revenue gets from the international market more than domestic. Although its revenue decreases from 541.94 million Baht in 2018 down to 532.57 million Baht in 2019, but CPF has still managed to make a net profit from 21.42 million Baht in 2018 up to 24.10 million baht in 2019. In the financial management, CPF has its own policy and procedure which is riskier than others in the industry and seems to be going on this management.

In this paper, with the discounted cash flow valuation method by estimating from the free cash flow to firm, it gives the target price of CPF at 18.43 Baht per share with a 4.53 percent the cost of capital of the company and a 2.65 percent of the expected growth rate. As the result, the target price of CPF is lower than the market price

at 26.75 Baht per share as of February 28, 2020. Then, there would like to recommend taking the selling position because of the overvalued price.

Furthermore, the target price of CPF would be change by the movement on the cost of capital of CPF and the growth rate changes. The higher cost of capital the lesser the target price, in the opposite of the more growth rate the higher target price. In case of the pandemic, the target price is affected by the changes on the growth rate from a 3.52 percent of the best scenario shortly impact in short-term going down a 1.12 percent of the worst scenario shortly impact in longer term. There influences the target price would vary from 19.39 Baht to 17.45 Baht.



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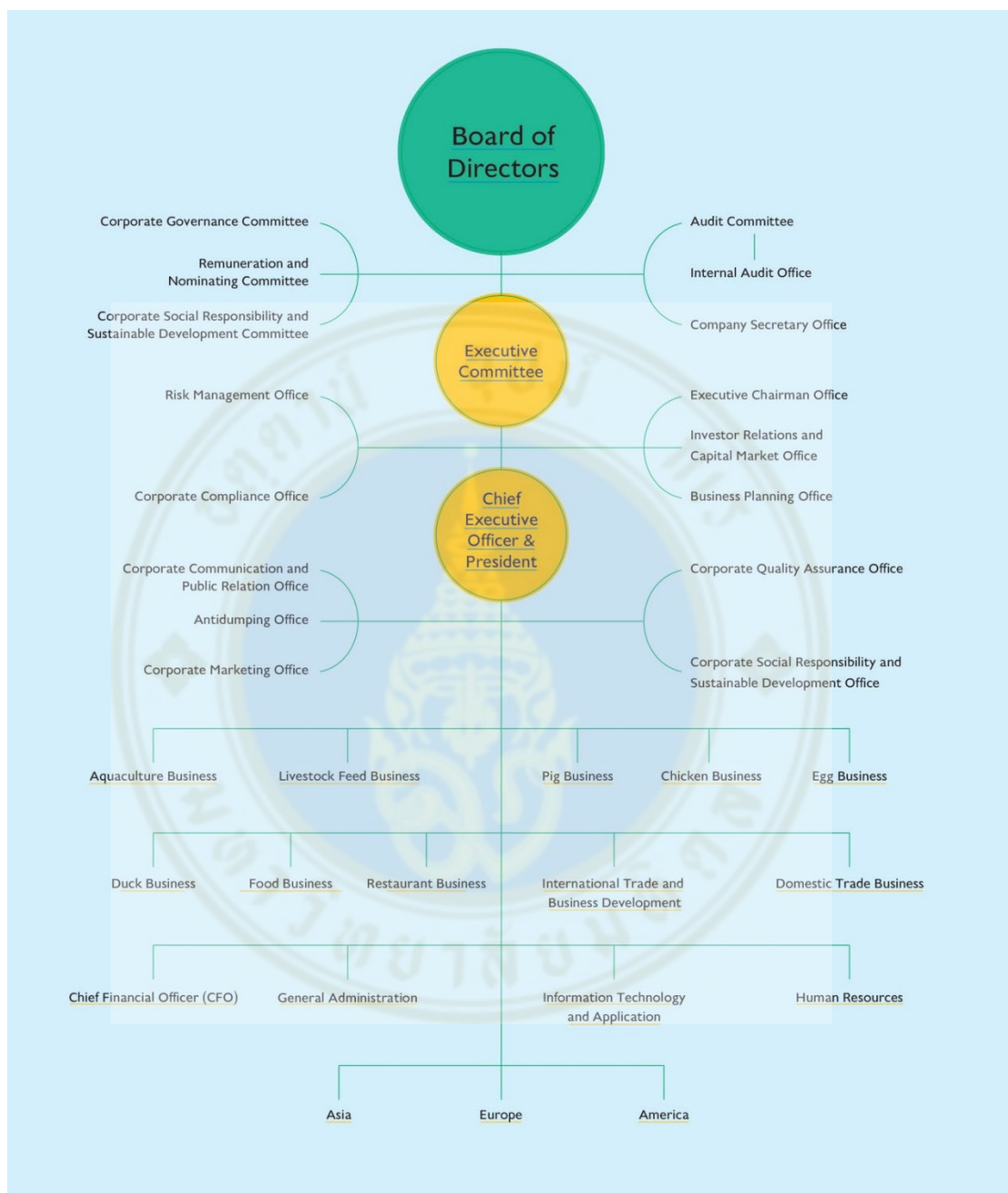
**APPENDICES**

## Appendix A – Organization shares holding chart of Charoen Pokphand Food Public Company Limited



Source: (Charoen Pokphand Foods PCL, 2020)

## Appendix B – Management structure as of February 18, 2019



Source: (Charoen Pokphand Foods PCL)

## Appendix C – List of Agro & Foods industry in Stock Exchange of Thailand

### 1) Foods and beverage sector

<b>Ticker</b>	<b>Name</b>
APURE	Agripure Holdings Public Company Limited
ASIAN	Asian Sea Corporation Public Company Limited
BR	Bangkok Ranch Public Company Limited
BRR	Buriram Sugar Public Company Limited
CBG	Carabao Group Public Company Limited
CFRESH	Seafresh Industry Public Company Limited
CM	Chiangmai Frozen Foods Public Company Limited
CPF	Charoen Pokphand Foods Public Company Limited
CPI	Chumporn Palm Oil Industry Public Company Limited
F&D	Food and Drinks Public Company Limited
HTC	Haad Thip Public Company Limited
ICHI	Ichitan Group Public Company Limited
KBS	Khonburi Sugar Public Company Limited
KSL	Khon Kaen Sugar Industry Public Company Limited
KTIS	Kaset Thai International Sugar Corporation Public Company Limited
LST	Lam Soon (Thailand) Public Company Limited
M	MK Restaurant Group Public Company Limited
MALEE	Malee Group Public Company Limited
MINT	Minor International Public Company Limited
OISHI	Oishi Group Public Company Limited
OSP	Osotspa Public Company Limited
PB	President Bakery Public Company Limited
PM	Premier Marketing Public Company Limited
PRG	Patum Rice Mill and Granary Public Company Limited
RBF	R&B Food Supply Public Company Limited
SAPPE	Sappe Public Company Limited
SAUCE	Thaitheparos Public Company Limited

## Foods and beverage sector (cont.)

<b>Ticker</b>	<b>Name</b>
SFP	Siam Food Products Public Company Limited
SNP	S & P Syndicate Public Company Limited
SORKON	S. Khonkaen Foods Public Company Limited
SSC	Sermsuk Public Company Limited
SSF	Surapon Foods Public Company Limited
SST	Sub Sri Thai Public Company Limited
TC	Tropical Canning (Thailand) Public Company Limited
TFG	Thaifoods Public Company Limited
TFMAMA	Thai President Foods Public Company Limited
TIPCO	Tipco Foods Public Company Limited
TKN	Taokaenoi Food & Marketing Public Company Limited
TU	Thai Union Public Company Limited
TVO	Thai Vegetable Oil Industry Public Company Limited
ZEN	Zen Corporation Group Public Company Limited

## 2) Agricultural sector

<b>Ticker</b>	<b>Name</b>
CHOTI	Kiang Huat Sea Gull Trading Frozen Food Public Company Limited
EE	Eternal Energy Public Company Limited
GFPT	GFPT Public Company Limited
LEE	Lee Feed Mill Public Company Limited
NER	North East Rubber Public Company Limited
PPPM	PP Prime Public Company Limited
STA	Sri Trang Agro-Industry Public Company Limited
TRUBB	Thai Rubber Latex Group Public Company Limited
TWPC	Thai Wah Public Company Limited
UPOIC	United Palm Oil Industry Public Company Limited
UVAN	Univanich Palm Oil Public Company Limited
VPO	Vichitbhan Palm Oil Public Company Limited



## Appendix D – Regression of CPF's beta

### SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.506901741
R Square	0.256949375
Adjusted R Square	0.256665009
Standard Error	0.016203199
Observations	2615

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	0.237230261	0.237230261	903.5840841	9.4074E-171
Residual	2613	0.686026549	0.000262544		
Total	2614	0.92325681			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	4.16013E-05	0.000316986	0.131240309	0.895595313	-0.000579967	0.00066317	-0.000579967	0.00066317
<b>CPF</b>	<b>1.02487897</b>	<b>0.034094812</b>	<b>30.05967538</b>	<b>9.4074E-171</b>	<b>0.9580234</b>	<b>1.091734541</b>	<b>0.9580234</b>	<b>1.091734541</b>

## Appendix E – Data for fundamental beta calculation

### 1) Foods and beverage sector

Stock Symbol	Beta	Debt	Equity	D/E ratio	Revenue	EV	EV/Sales
	(1)	(THB Million) (2)	(THB Million) (3)	(times) (2) / (3)	(THB Million) (4)	(THB Million) (5)	(times) (5) / (4)
APURE	0.82	1.26	1,658.42	0.00	1,701,408	402,315	0.24
ASIAN	0.61	2,195.87	2,810.27	0.78	8,194,029	4,405,012	0.54
BR*	1.15	5,695.40	4,177.75	1.36	n.a.	n.a.	n.a.
BRR	0.76	6,647.84	1,861.61	3.57	4,985,158	9,808,222	1.97
CBG	1.23	4,128.63	8,565.81	0.48	14,933,012	87,319,231	5.85
CFRESH	0.51	2,385.37	1,609.83	1.48	5,503,180	3,218,131	0.58
CM	0.36	-	1,409.87	-	1,163,257	676,303	0.58
CPF	1.02	333,901.70	168,275.26	1.98	532,573,465	590,227,515	1.11
CPI	0.40	1,834.32	1,853.92	0.99	3,313,349	2,788,216	0.84
F&D	0.25	177.18	1,052.92	0.17	754,723	492,116	0.65
HTC	0.76	631.16	2,914.70	0.22	6,775,501	5,052,647	0.75
ICHI	1.14	800.66	6,220.36	0.13	5,334,214	7,267,971	1.36
KBS	0.75	4,634.23	3,536.24	1.31	6,595,738	6,719,307	1.02
KSL	0.77	22,122.74	18,834.68	1.17	17,811,307	31,096,024	1.75
KTIS	0.41	6,817.24	7,662.09	0.89	16,312,765	22,590,824	1.38
LST	0.57	486.60	3,883.46	0.13	6,397,739	4,367,411	0.68
M	0.64	12,849.66	14,306.48	0.90	17,408,960	57,260,292	3.29
MALEE	0.73	2,204.90	885.00	2.49	4,921,000	3,979,608	0.81
MINT	1.16	112,373.35	75,461.25	1.49	119,022,654	284,508,282	2.39
OISHI	0.46	-	6,993.18	-	13,625,869	21,418,621	1.57
OSP	1.15	502.20	17,871.31	0.03	25,610,467	118,187,068	4.61
PB	0.27	-	8,369.37	-	7,743,973	29,551,059	3.82
PM	0.65	106.95	1,653.28	0.06	4,086,309	4,401,131	1.08
PRG	0.14	1,374.91	9,010.70	0.15	1,973,202	8,161,487	4.14
RBF	1.55	139.24	3,870.27	0.04	2,864,654	7,698,347	2.69
SAPPE	0.94	30.06	2,647.19	0.01	3,299,478	4,869,930	1.48
SAUCE	0.18	-	2,492.38	-	2,896,713	7,859,930	2.71
SFP	0.38	-	1,617.60	-	1,795,077	3,281,982	1.83
SNP	0.28	158.78	2,489.84	0.06	7,312,369	6,905,405	0.94
SORKON	0.33	1,024.91	1,083.98	0.95	2,845,633	2,507,406	0.88
SSC	0.34	-	8,810.23	-	11,768,463	7,768,560	0.66
SSF	0.33	1,192.76	1,615.95	0.74	5,866,932	3,011,461	0.51
SST	0.77	1,403.68	2,283.81	0.61	3,312,260	3,939,079	1.19
TC	0.36	33.19	1,815.63	0.02	4,898,670	960,966	0.20
TFG	1.28	9,867.53	9,885.80	1.00	28,919,187	33,022,384	1.14
TFMAMA*	0.24	90.10	23,391.96	0.00	n.a.	n.a.	n.a.
TIPCO	1.14	0.79	3,906.80	0.00	3,561,064	5,607,572	1.57
TKN	1.80	878.73	2,140.92	0.41	5,266,779	15,199,098	2.89
TU	0.66	59,904.76	48,423.20	1.24	126,275,247	127,006,000	1.01
TVO	0.66	-	8,664.65	-	23,587,407	21,867,045	0.93
ZEN	1.21	883.37	1,434.08	0.62	3,026,641	4,017,573	1.33

\*The stocks are not counted as the number of firms in the unlevered beta of each sectors from its unavialable data.

## 2) Agricultural sector

Stock Symbol	Beta	Debt	Equity	D/E ratio	Revenue	EV	EV/Sales
	(1)	(THB Million) (2)	(THB Million) (3)	(times) (2) / (3)	(THB Million) (4)	(THB Million) (5)	(times) (5) / (4)
CHOTI	0.29	347.33	955.41	0.36	2,506,828	937,038	0.37
EE*	1.00	-	1,509.54	-	3,364	1,386,149	412.05
GFPT	0.71	3,424.40	13,484.92	0.25	16,863,739	17,889,269	1.06
LEE	0.44	-	2,627.86	-	2,625,181	1,092,698	0.42
NER	1.38	4,587.51	3,011.14	1.52	13,005,501	8,735,219	0.67
PPPM	0.75	1,437.81	379.12	3.79	2,119,416	1,700,552	0.80
STA	1.24	28,936.65	24,119.03	1.20	60,286,372	42,759,265	0.71
TRUBB	0.86	4,936.79	1,889.63	2.61	6,827,452	5,371,159	0.79
TWPC	0.64	1,454.95	5,020.83	0.29	7,323,005	4,165,470	0.57
UPOIC	0.45	275.00	1,019.57	0.27	545,848	1,388,174	2.54
UVAN	0.37	86.14	3,150.67	0.03	4,505,613	4,681,102	1.04
VPO	0.89	510.23	569.26	0.90	1,078,699	1,092,639	1.01

\*The stocks are not counted as the number of firms in the unlevered beta of each sectors from its unavialable data.

## Appendix F – Fundamental beta of Charoen Pokphand Food Public Company Limited

Sector	Agro	Food&beverage	Total
Number of Firms	11	39	
Average Bata	0.73	0.71	
Average D/E Ratio	1.02	0.62	
Unlevered Beta	0.40	0.48	
CPF's Revenue	435,808	96,765	532,573
EV/Sales	0.91	1.61	
Estimated Value	395,582	156,197	551,779
Percentage of Estimated '	72%	28%	100%
CPF's Unlevered Bata	0.29	0.13	<b>0.42</b>
CPF's D/E Ratio			1.98
CPF's Levered Beta			<b>1.09</b>

## Appendix I – Implied equity premium estimation

<i>Estimating Implied ERP by Gaol Seek</i>		2019	2020	2021	2022	2023	2024
Expected Earnings		44.24	45.92	47.66	49.47	51.35	53.31
Expected Terminal Value			45.92	47.66	49.47	51.35	1,557.87
Sum of Earnings			43.11	42.00	40.93	39.88	1,611.18
Present Value							1,174.60
Intrinsic Value of SET Index		1,340.52					
<b>Implied Equity Risk Premium</b>							
SET Index		1,340.52					
Expected Dividend Yield		3.30%					
Expected Growth on Dividend		3.80%					
Risk-Free Rate		3.00%					
<b>Implied ERP</b>		<b>3.52%</b>					
Expected Market Return		6.52%					

## Appendix J – Discounted cash flow model of Charoen Pokphand Food Public Company Limited

### 1) Variable inputs in model

Debt-to-Equity (times)	1.98
Weighted Debt	0.66
Weighted Equity	0.34
Risk Free Rate	3.00%
Corporate Credit Spread	1.37%
Cost of Debt	4.37%
Marginal Tax Rate	20%
<b>Cost of Debt after-tax</b>	<b>3.49%</b>
CPF's Beta	1.02
Equity Risk Premium	3.52%
<b>Cost of Equity</b>	<b>6.59%</b>
<b>WACC</b>	<b>4.53%</b>
Net Capital Expenditures	125%
Net Change in Working Capital	-1.06%
Reinvestment Rate	96%
Return on Capital	4.64%
<b>Expected Growth Rate</b>	<b>4.47%</b>
<i>Stable Stage:</i>	
Return on Capital	4.53%
Stable Growth Rate	3.00%

### 2) Discounted cash flow model

Year	2019	2020	2021	2022	2023	2024
Operating income	24,525,138	25,622,440	26,768,838	27,966,527	29,217,804	30,525,065
Less: Tax expenses	4,905,028	5,124,488	5,353,768	5,593,305	5,843,561	6,105,013
Operating income after-tax	19,620,110	20,497,952	21,415,070	22,373,222	23,374,243	24,420,052
Less: Net Capital Expenditure	24,556,042	25,654,727	26,802,569	28,001,768	29,254,621	30,563,529
Less: Net Change in Working Capital	(5,623,502)	(5,875,108)	(6,137,972)	(6,412,597)	(6,699,509)	(6,999,258)
Reinvestment	18,932,540	19,779,618	20,664,597	21,589,171	22,555,112	23,564,271
Free Cash Flow to Firm	687,570	718,334	750,473	784,051	819,131	855,780
Terminal Value						554,931,448
Sum of Cash Flow		718,334	750,473	784,051	819,131	555,787,229
Present Value of Cash Flow		687,186	686,803	686,419	686,036	445,297,658

### 3) The value of CPF and the target price

<b>Value of Operating Assets</b>	<b>448,044,102</b>
Add: Cash	33,496,112
Value of Firm	481,540,214
Less: Value of Debt	333,901,697
<b>Value of Equity</b>	<b>147,638,517</b>
No. of Share Outstanding	8,611,242
<b>Target Price (Baht per share)</b>	<b>17.14</b>

## Appendix K – Sensitivity analysis between WACC and Growth rate of Charoen Pokphand Food Public Company Limited

WACC	Growth										
	1.0%	2.0%	2.65%	3.0%	4.00%	5.0%	6.0%	7.0%	8.0%	9.0%	10.0%
3.00%	26.35	27.59	28.42	28.88	30.21	31.60	33.05	34.54	36.10	37.71	39.38
3.50%	22.45	23.49	24.19	24.57	25.70	26.87	28.08	29.34	30.65	32.00	33.41
4.00%	19.53	20.43	21.03	21.36	22.32	23.33	24.37	25.45	26.57	27.74	28.94
4.53%	17.14	17.92	18.43	18.72	19.56	20.42	21.32	22.26	23.23	24.24	25.28
5.00%	15.47	16.16	16.62	16.87	17.62	18.39	19.19	20.03	20.89	21.79	22.72
5.50%	14.00	14.61	15.03	15.25	15.92	16.61	17.32	18.07	18.84	19.64	20.47
6.00%	12.78	13.33	13.70	13.91	14.50	15.13	15.77	16.44	17.13	17.85	18.60
6.50%	11.75	12.25	12.59	12.77	13.31	13.88	14.46	15.07	15.70	16.35	17.03
7.00%	10.87	11.33	11.64	11.80	12.30	12.81	13.34	13.90	14.47	15.07	15.68
7.50%	10.11	10.53	10.81	10.97	11.42	11.89	12.38	12.89	13.41	13.96	14.52
8.00%	9.45	9.84	10.10	10.24	10.66	11.09	11.54	12.01	12.49	13.00	13.52
8.50%	8.87	9.23	9.47	9.60	9.99	10.39	10.81	11.24	11.69	12.15	12.63
9.00%	8.36	8.69	8.92	9.04	9.40	9.77	10.16	10.56	10.97	11.40	11.85
9.50%	7.90	8.21	8.42	8.54	8.87	9.22	9.58	9.95	10.33	10.74	11.15
10.00%	7.50	7.79	7.98	8.09	8.40	8.72	9.06	9.40	9.77	10.14	10.53

## Appendix L – Scenario case of discounted cash flow model of Charoen Pokphand Food Public Company Limited

### 1) Scenario case variable inputs

<b>Scenario Case</b>	
Debt-to-Equity (times)	2.13
Weighted Debt	<b>0.68</b>
Weighted Equity	<b>0.32</b>
Risk Free Rate	3.00%
Corporate Credit Spread	1.37%
Cost of Debt	4.37%
Marginal Tax Rate	20%
<b>Cost of Debt after-tax</b>	<b>3.49%</b>
CPF's Beta	1.02
Equity Risk Premium	3.52%
<b>Cost of Equity</b>	<b>6.59%</b>
<b>WACC</b>	<b>4.49%</b>
<i>Stable Stage:</i>	
Return on Capital	4.49%
Stable Growth Rate	3.00%

### 2) Neutral scenario case

<b>Neutral case assumption</b>						
Year	2019	2020	2021	2022	2023	2024
Operating income	24,525,138	25,622,440	26,768,838	27,966,527	29,217,804	30,525,065
Less: Tax expenses	4,905,028	5,124,488	5,353,768	5,593,305	5,843,561	6,105,013
Operating income after-tax	19,620,110	20,497,952	21,415,070	22,373,222	23,374,243	24,420,052
Less: Net Capital Expenditure	24,556,042	25,654,727	26,802,569	28,001,768	29,254,621	30,563,529
Less: Net Change in Working Capital	(5,623,502)	(5,875,108)	(6,137,972)	(6,412,597)	(6,699,509)	(6,999,258)
Reinvestment	18,932,540	19,779,618	20,664,597	21,589,171	22,555,112	23,564,271
Free Cash Flow to Firm		718,334	750,473	784,051	819,131	855,780
Terminal Value						560,722,126
Sum of Cash Flow		718,334	750,473	784,051	819,131	561,577,906
Present Value of Cash Flow		687,494	687,418	687,342	687,266	450,945,900

### 3) Best scenario case

<b>Best case assumption</b>						
Year	2019	2020	2021	2022	2023	2024
Operating income	24,525,138	25,574,656	26,669,086	27,810,351	29,000,454	30,241,487
Less: Tax expenses	4,905,028	5,114,931	5,333,817	5,562,070	5,800,091	6,048,297
Operating income after-tax	19,620,110	20,459,725	21,335,269	22,248,281	23,200,363	24,193,189
Less: Net Capital Expenditure	24,556,042	25,606,882	26,702,691	27,845,394	29,036,998	30,279,594
Less: Net Change in Working Capital	(5,623,502)	(5,864,152)	(6,115,099)	(6,376,786)	(6,649,672)	(6,934,235)
Reinvestment	18,932,540	19,742,731	20,587,592	21,468,608	22,387,326	23,345,359
Free Cash Flow to Firm		716,994	747,677	779,672	813,037	847,830
Terminal Value						555,513,010
Sum of Cash Flow		716,994	747,677	779,672	813,037	556,360,841
Present Value of Cash Flow		686,212	684,857	683,504	682,153	446,756,608



## 4) Worst scenario case

<i>Worst case assumption</i>						
Year	2019	2020	2021	2022	2023	2024
Operating income	24,525,138	24,912,477	25,305,933	25,705,604	26,111,586	26,523,981
Less: Tax expenses	4,905,028	4,982,495	5,061,187	5,141,121	5,222,317	5,304,796
Operating income after-tax	19,620,110	19,929,982	20,244,747	20,564,483	20,889,269	21,219,185
Less: Net Capital Expenditure	24,556,042	24,943,869	25,337,821	25,737,995	26,144,489	26,557,404
Less: Net Change in Working Capital	(5,623,502 )	(5,712,317)	(5,802,535)	(5,894,177)	(5,987,267)	(6,081,828)
Reinvestment	18,932,540	19,231,552	19,535,286	19,843,818	20,157,222	20,475,576
Free Cash Flow to Firm		698,430	709,460	720,665	732,047	743,609
Terminal Value						487,225,273
Sum of Cash Flow		698,430	709,460	720,665	732,047	487,968,882
Present Value of Cash Flow		668,445	649,851	631,775	614,201	391,838,006

