



How to Tackle the “Hog Price Cycle”

- A Practical Guide to Hedge Market
Risks for China Agribusiness

Jim W. Huang, CFA
China-America Commodities Data Analytics, Inc.

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IFAMA Miami

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What's the Big Deal about Hog and Layer Chicken?

China	Population	1.3 billion	accounting for	about 1/6 of the world's
Hog Industry	Farmers/Ranchers	50 million	people	
	Hog Output	670 million	heads	about 50%
	Wholesale Value (hog)	RMB 1.2 trillion	US\$ 175 billion	
	Retail Value (meat)	RMB 2.1 trillion	US\$ 300 billion	
Layer Chicken	Farmers/Ranchers	10 million	people	
	Egg Output	25 million	tones	about 40%
	Annual Wholesale Value	RMB 150 billion	US\$ 25 billion	
	Annual Retail Value	RMB 200 billion	US\$ 30 billion	





A. The infamous “Hog Price Cycle” in China

The price of hog follows a 3-5 year cycle of “Boom and Bust”, causing great pain to farmers, ranchers, feed processors and pork merchants in China



Similarly, the price of egg follows a 2-3 year pattern of roller coaster up and down, causing severe problem to egg farmers, feed processors and egg merchants

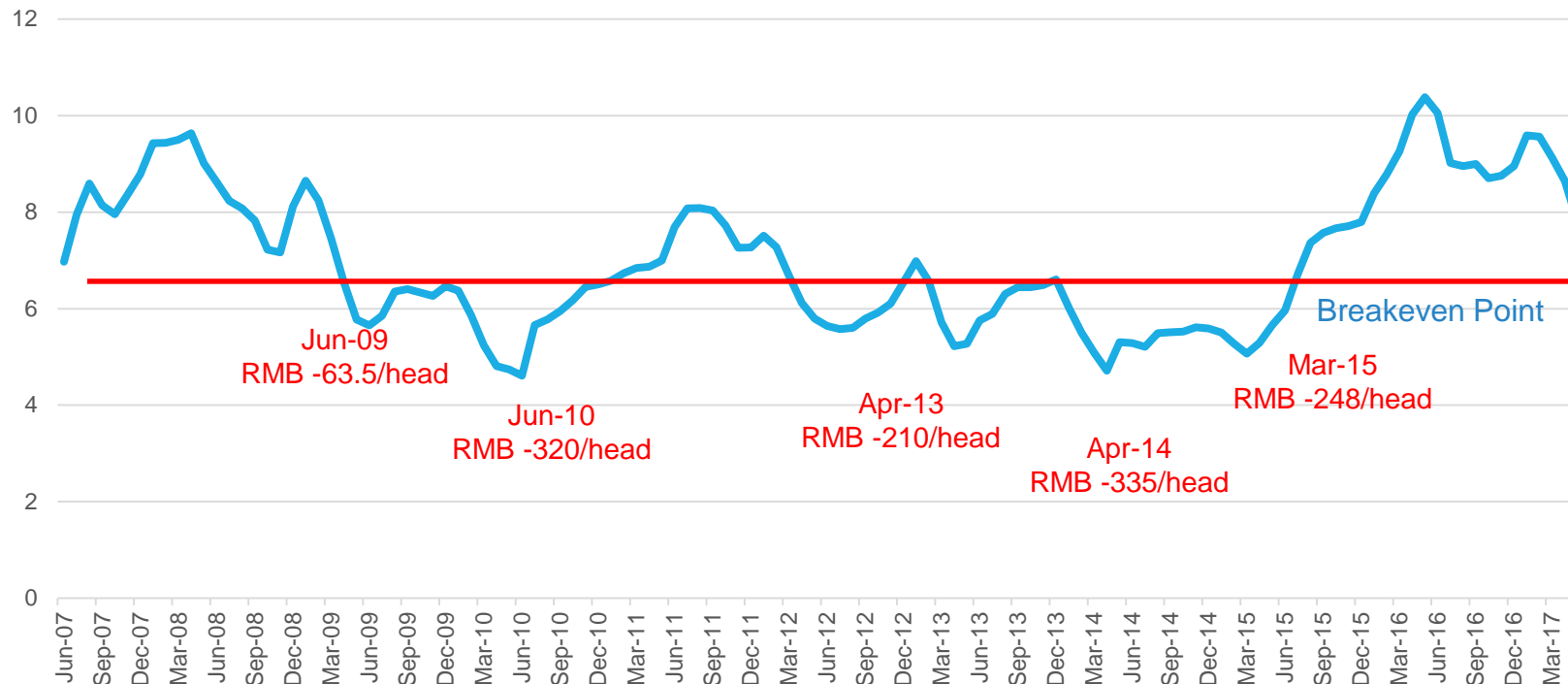




B. Market Risks - from Agribusiness Point of View

Investing in a new hog farm requires major capital, and its payback depends on the business profits in the next ten years, driven largely by the uncertain hog price

Hog-grain price ratio

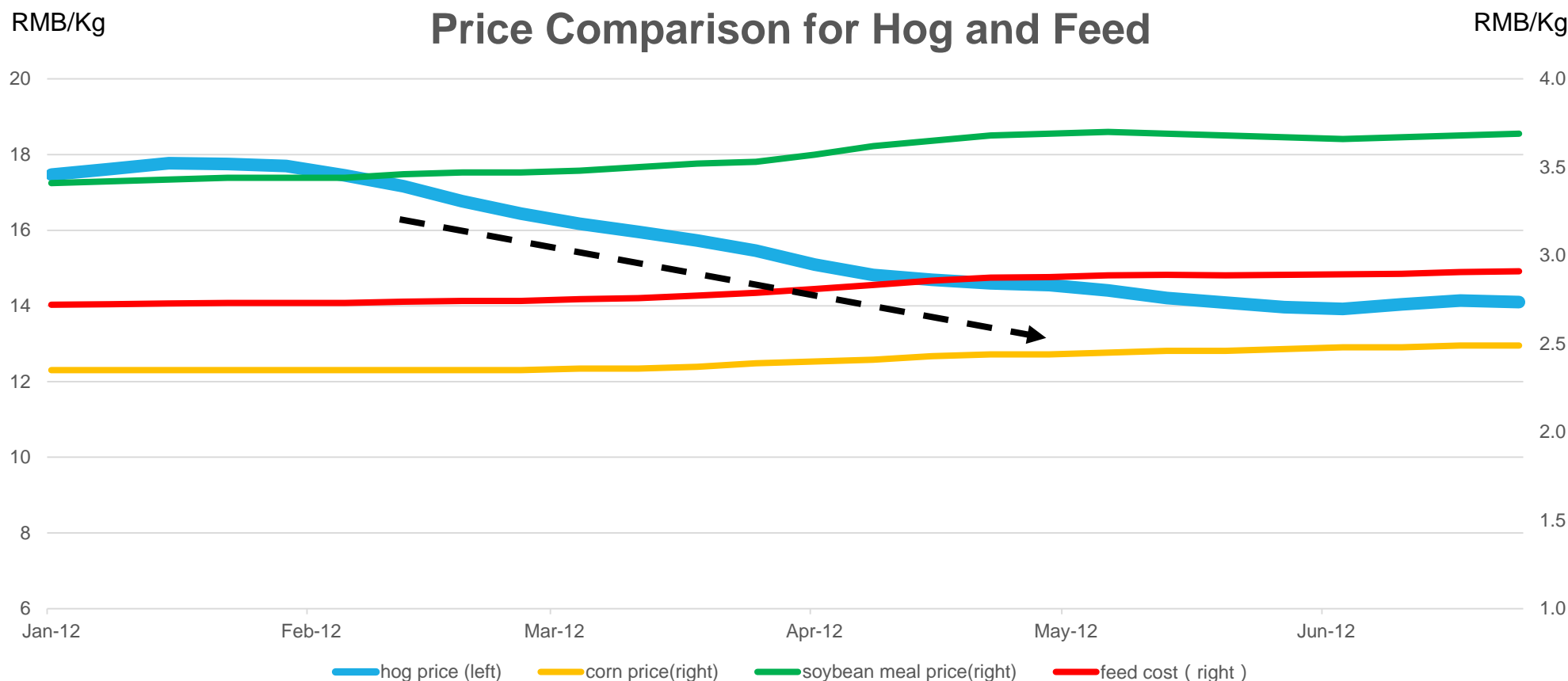


A 10,000-head Hog Farm, 2014 Profit/Loss

Annual Output	10,000 heads
Monthly Output	833 heads
Hog-grain Ratio	5.4
P/L per head	RMB -164.34
Depreciation	RMB 1 million
Annual P/L	RMB -2.64 million

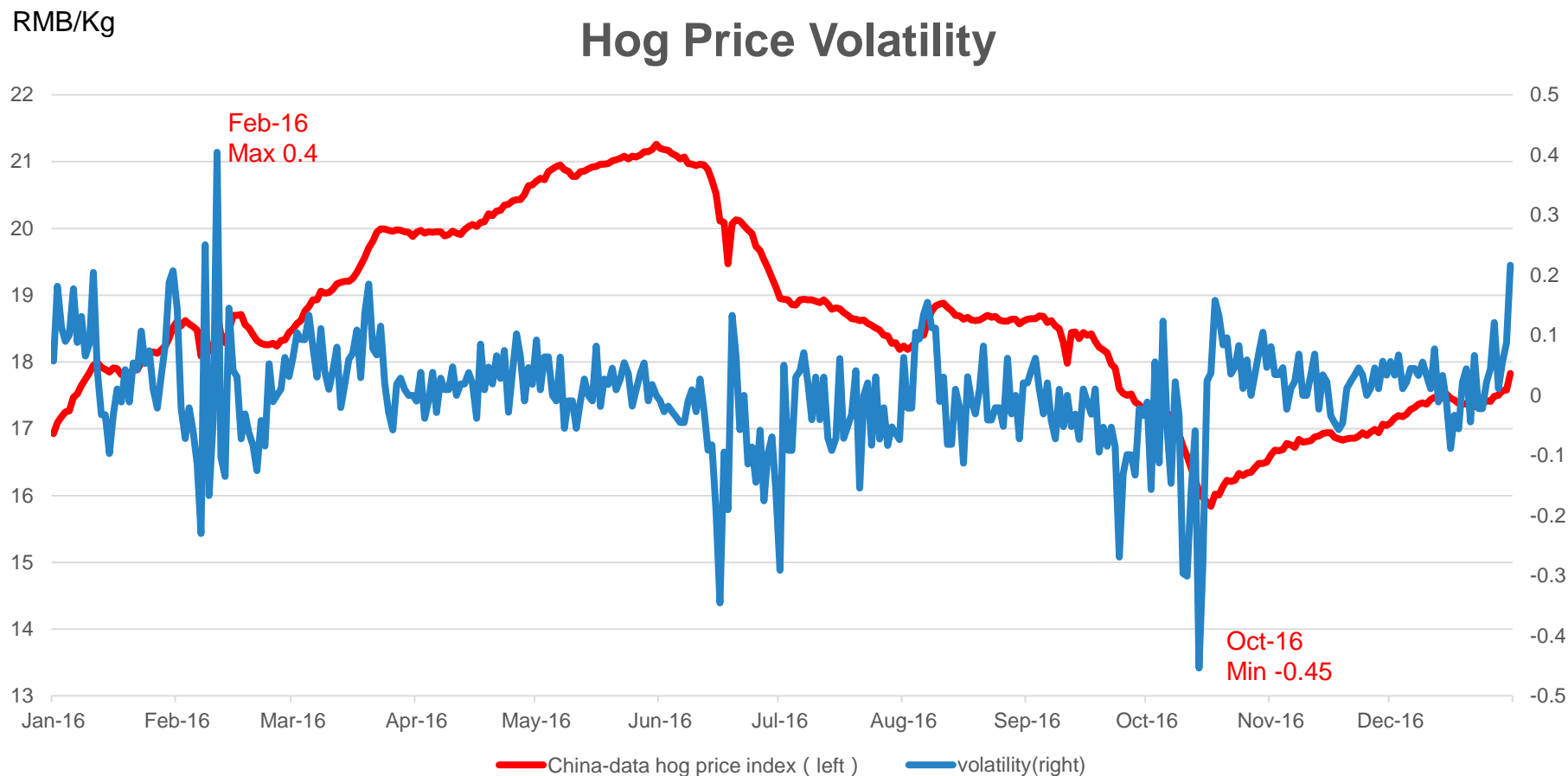
Note: ①. The breakeven point of hog feed ratio is measured by china-data
②. The price ratio is given out by the hog price that divided by the grain price

It takes five months to ready a hog to market. Future hog price is the key profit driver after deduction of upfront payment for piglets and the ongoing feed cost



The down trend of hog price, coupled with the steady rise of feed cost, turned hog farmers into deep losses in 2012

Meat processor, who pays cash now for hogs and sell meat products to supermarket several days later, will suffer losses if hog price goes down during this period

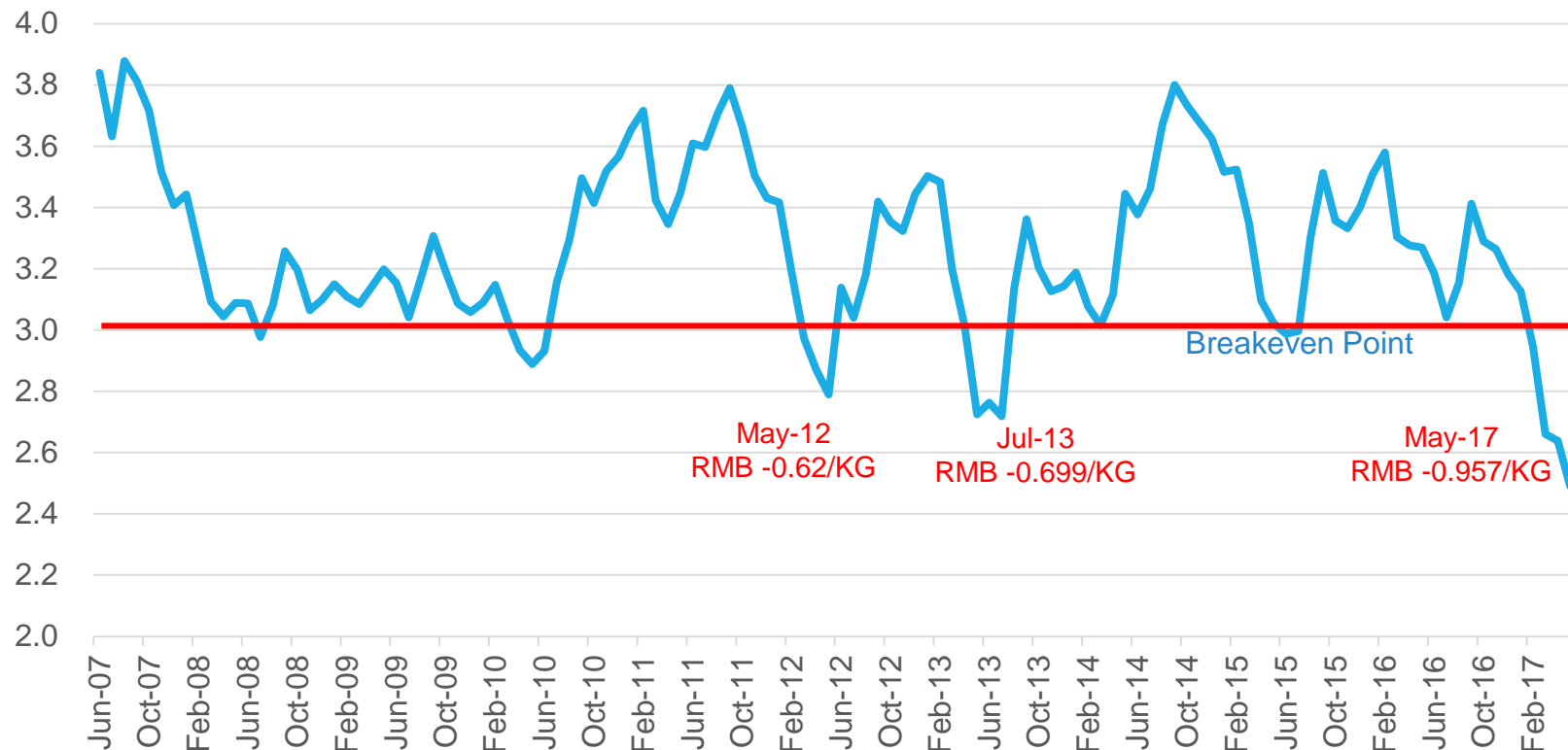


Opinion:

- The price fluctuates frequently
- Sometimes there will be violent fluctuations
- Because of short-term price fluctuations , the timing of selling the hogs should be carefully chosen

Investing in a new chicken farm requires major capital, and its payback depends on the business profits in the next ten years, driven largely by the uncertain egg price

Egg grain price ratio



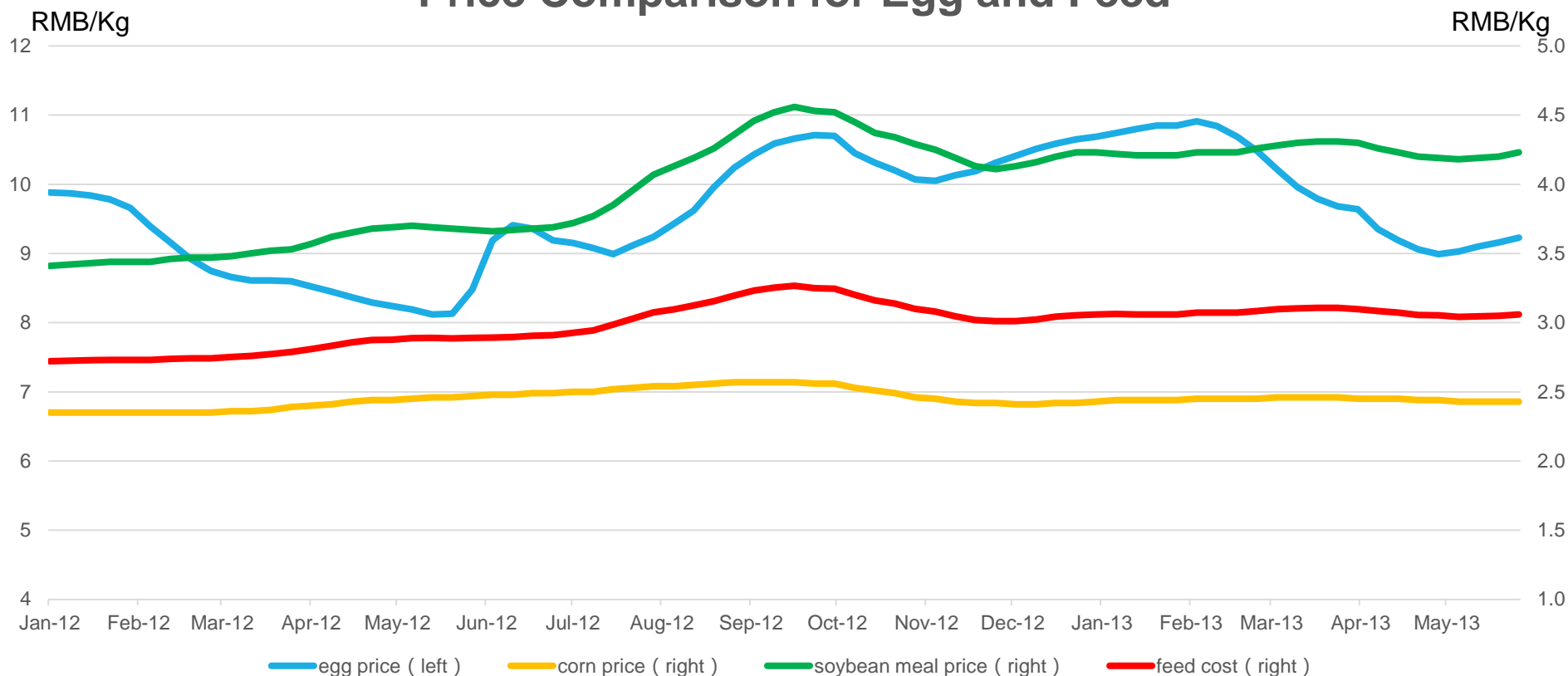
A 10,000-bird Layer Chicken Farm, 2017 P/L

Daily Egg Output	500 KG
Monthly Egg Output	15,000 KG
Egg-grain ratio	2.77
P/L per KG	RMB -0.648
Depreciation	RMB 7,000 per month
Annual P/L	RMB -208.8K

Note : ①.The breakeven point of egg feed ratio is measured by china-data
②.The price ratio is given out by the egg price that divided by the grain price

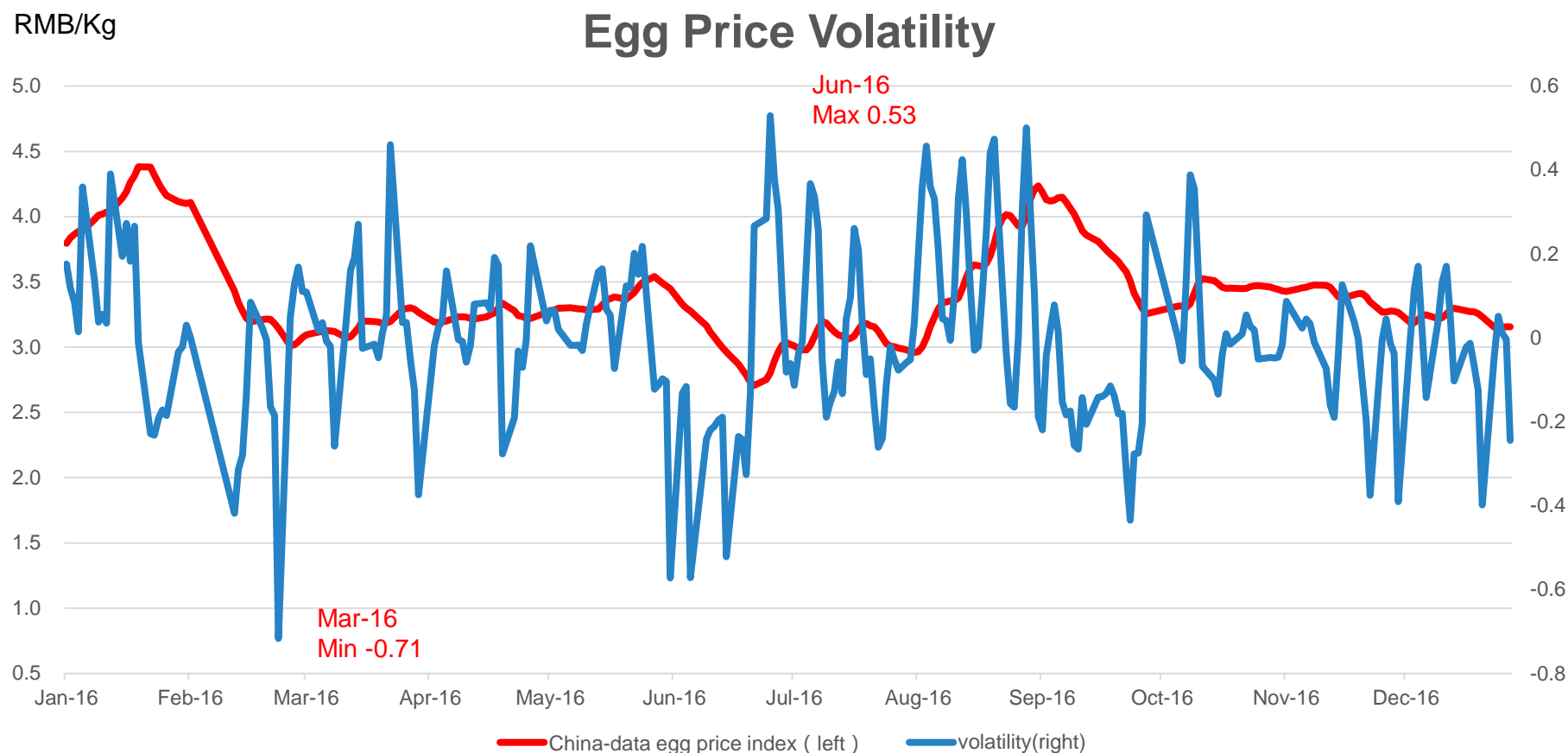
The average life span of layer chicken is 500 days. Future egg price is the key profit driver after deduction of upfront payment for chicks and the ongoing feed cost

Price Comparison for Egg and Feed



The down trend of egg price, coupled with the up trend of feed cost, turned egg farmers into deep losses in 2012

Egg merchant, who pays cash now for eggs and sell to supermarket several days later, will suffer losses if egg price goes down during this period



Opinion:

- Short-term prices are prone to violent fluctuations, making the normal profit of the farm can not be guaranteed
- Farm stock management and short-term risk hedging can ease the farm's profit fluctuations

How Are Market Risk Impacting on China Agribusiness?

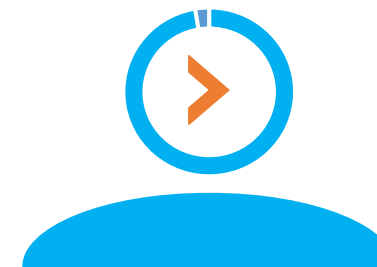
With Revenue and Profit greatly affected by uncertain future price, China's banking system and capital market largely stay away from Agriculture



It is difficult to obtain long-term capital investment for building new farms



Working capital to finance new crops can be costly

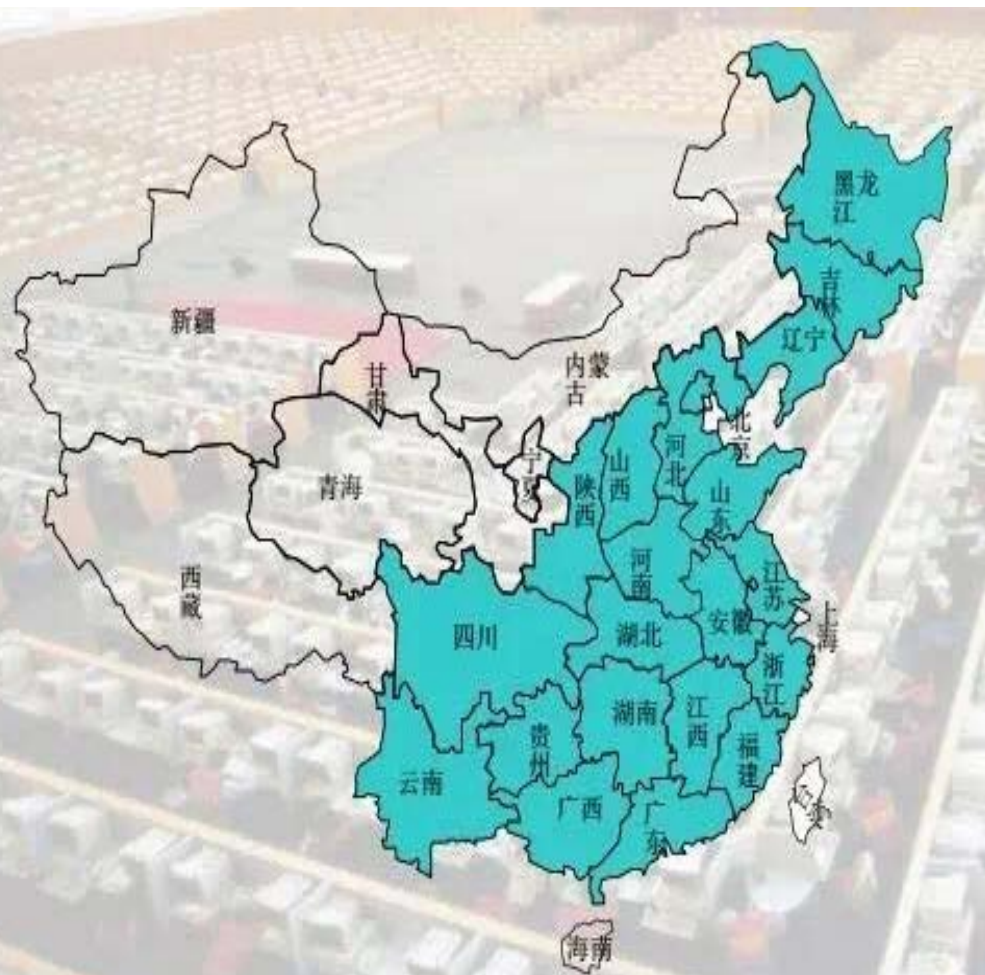


Short-term loan for purchasing may not be extended if price is trending down



C. Big Data Solutions and Price Forecasts

Measure Supply and Demand accurately, the first step in tackling the “Hog Price Cycle”



- Proprietary data sources from 24 provinces cover more than 30% of China's hog and egg trades;
- Scientific sampling represents the current state of hog and egg production, trade and consumption;
- Using a combination of data collection techniques, from on-site inspection, video monitoring, telephone interview, online data mining, to point-of-sales data from our partners and customers;
- Screening, correcting and removing outliers to ensure the accuracy of our data;
- Our industry trade data is constantly being cross-examined using price data, government agency data, third-party data and commodities trading data

Upstream

8,000+ Hog and Egg Farms in 24 Provinces



Midstream

500 Merchants and slaughterhouses in 30+ cities

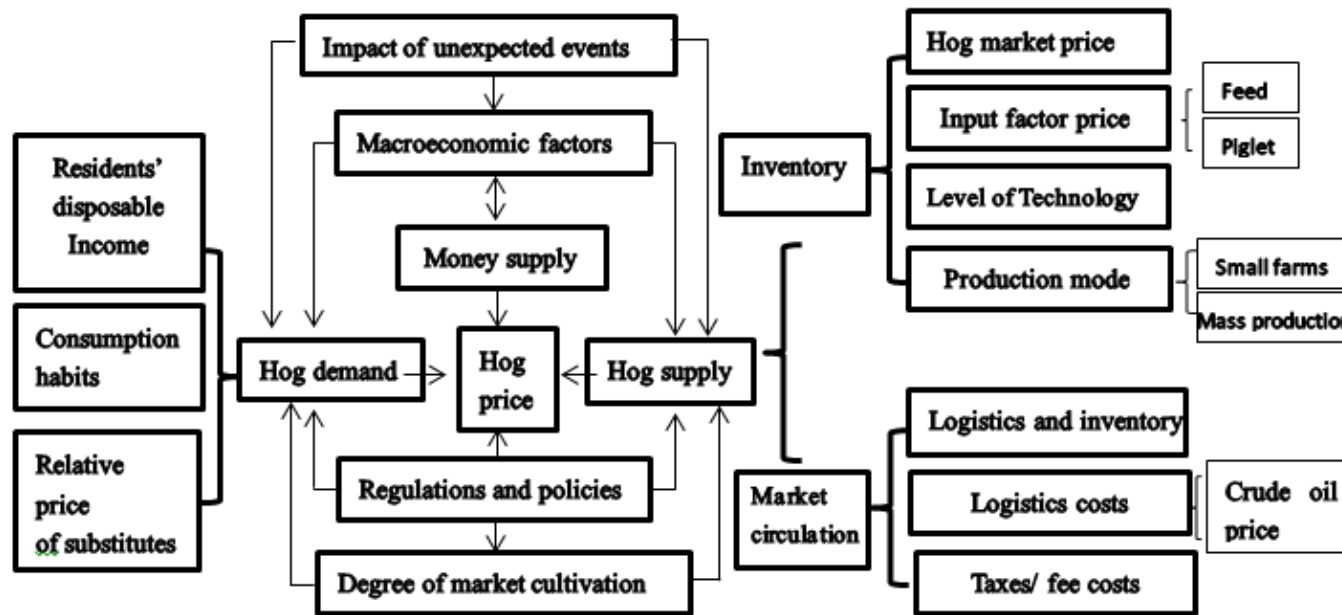


Downstream

10,000+ Restaurants, Supermarkets and Convenience Stores

Construct Supply and Demand Balance Sheet, our second step in understanding current market conditions and directions

Hog Prices Affecting Factor Analysis Framework



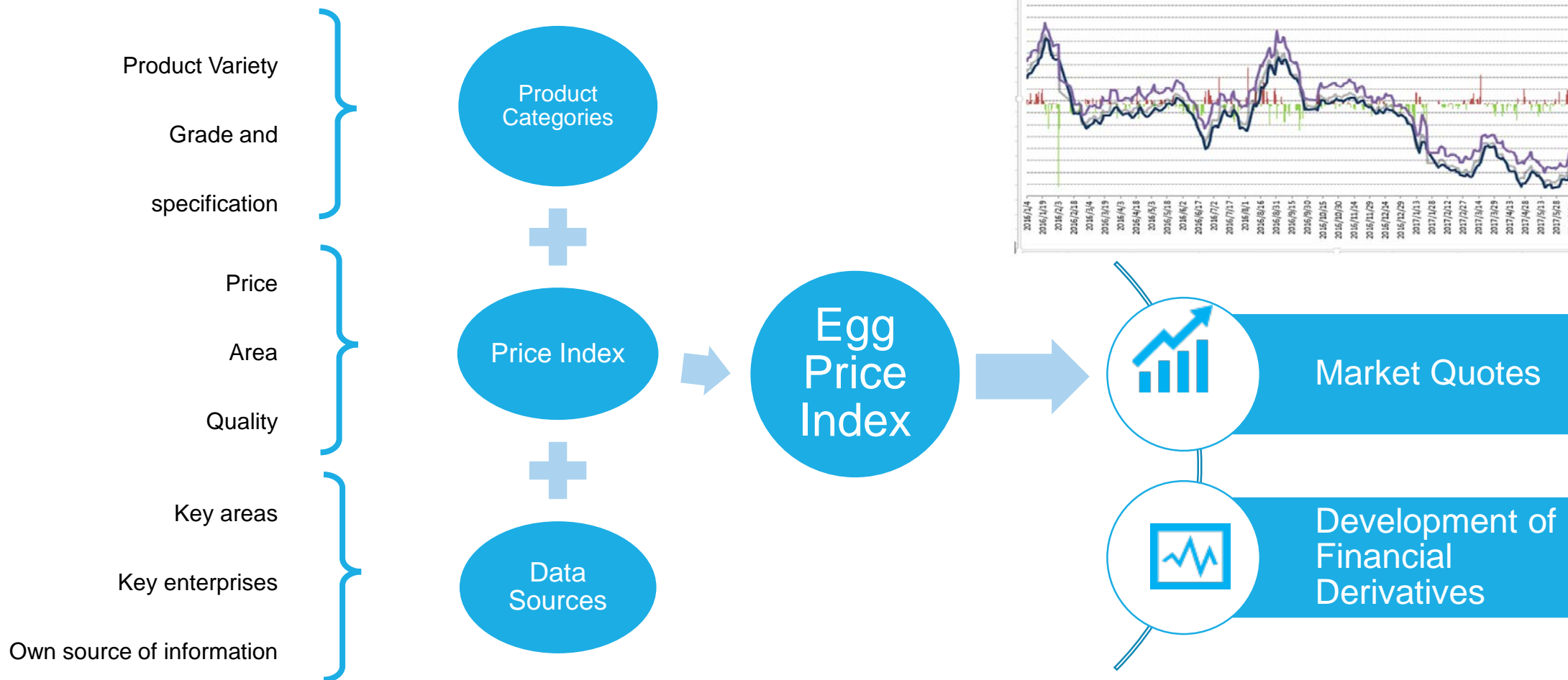
China Hog Supply-Demand Balance Sheet

(Million Head)	2012	2013	2014	2015
Beginning Stocks	473.34	463.41	466.67	430.18
Sow Beginning Stocks	49.28	50.68	49.38	41.9
Production	707	725	721	712
Imports	7	8	7	10
Total Supply	1188	1196	1195	1153
Total Slaughter	698	716	735	708
Loss	25	9	20	46
Sow Slaughter	-1	1	6.5	3.9
Exports	3	3	3	3
Ending Stocks	463	467	430.18	391.64
Total Distribution	1188	1196	1195	1153

Building our proprietary Price forecasting models, the Holy Grail in penetrating the myth of Hog Price Cycle

- In our second version of the forecast model, we simplify in order to consider only the main factors such as the piglets, the substitute chicken, pork prices, government policy and holiday demand. And policy and holiday demand are set as exogenous variables, with the others being endogenous variables to establish the error correction model:
- $$ECM_{1,t-1} = \eta_{10} + \kappa_1 PIG_{t-1} - \eta_{11} PORK_{t-1} - \eta_{12} CHICKEN_{t-1} + \pi_1 \quad (1)$$
- $$ECM_{2,t-1} = \eta_{20} + \kappa_2 PIG_{t-1} - \eta_{21} PORK_{t-1} - \eta_{22} CHICKEN_{t-1} + \pi_2 \quad (2)$$
- $$\Delta PIG_t = \lambda_{10} + \lambda_{11} ECM_{1,t-1} + \lambda_{12} ECM_{2,t-1} + \sum \alpha_{1i} \Delta PIG_{t-i} + \sum \beta_{1i} \Delta PORK_{t-i} + \sum \gamma_{1i} \Delta PIGLET_{t-i} + \sum \delta_{1i} \Delta CHICKEN_{t-i} + \theta_1 PL_{t-4} + \xi_1 FD_t + \mu_{1t} \quad (3)$$
- $$\Delta PORK_t = \lambda_{20} + \lambda_{21} ECM_{1,t-1} + \lambda_{22} ECM_{2,t-1} + \sum \alpha_{2i} \Delta PIG_{t-i} + \sum \beta_{2i} \Delta PORK_{t-i} + \sum \gamma_{2i} \Delta PIGLET_{t-i} + \sum \delta_{2i} \Delta CHICKEN_{t-i} + \theta_2 PL_{t-4} + \xi_2 FD_t + \mu_{2t} \quad (4)$$
- $$\Delta PIGLET_t = \lambda_{30} + \lambda_{31} ECM_{t-1} + \sum \alpha_{3i} \Delta PIG_{t-i} + \sum \beta_{3i} \Delta PORK_{t-i} + \sum \gamma_{3i} \Delta PIGLET_{t-i} + \sum \delta_{3i} \Delta CHICKEN_{t-i} + \theta_3 PL_{t-4} + \xi_3 FD_t + \mu_{3t} \quad (5)$$
- $$\Delta CHICKEN_t = \lambda_{40} + \lambda_{41} ECM_{t-1} + \sum \alpha_{4i} \Delta PIG_{t-i} + \sum \beta_{4i} \Delta PORK_{t-i} + \sum \gamma_{4i} \Delta PIGLET_{t-i} + \sum \delta_{4i} \Delta CHICKEN_{t-i} + \theta_4 PL_{t-4} + \xi_4 FD_t + \mu_{4t} \quad (6)$$

开盘前三日各区现货成交均价表																
日期	铜	铝	镍	锡	锌	铁	锰	镍	锡	铜	铝	镍	锡	锌	铁	锰
2017/05/03	2,31	2,36	2,88	2,1	2,24	2,16	2,1	2,25	2,1	2,25	2,1	2,16	2,44	2,51	2,08	2,08
2017/05/04	2,4	2,72	2,62	2,37	2,38	2,38	2,25	2,2	2,4	2,35	2,27	2,44	2,51	2,73	2,08	2,08
2017/05/05	2,49	2,85	2,8	2,45	2,51	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/06	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/07	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/08	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/09	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/10	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/11	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/12	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/13	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/14	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/15	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/16	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/17	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/18	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/19	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/20	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/21	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/22	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/23	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/24	2,5	2,9	2,85	2,5	2,55	2,35	2,4	2,3	2,2	2,5	2,38	2,46	2,51	2,19	2,55	2,18
2017/05/25	2,5	2,9	2,85													

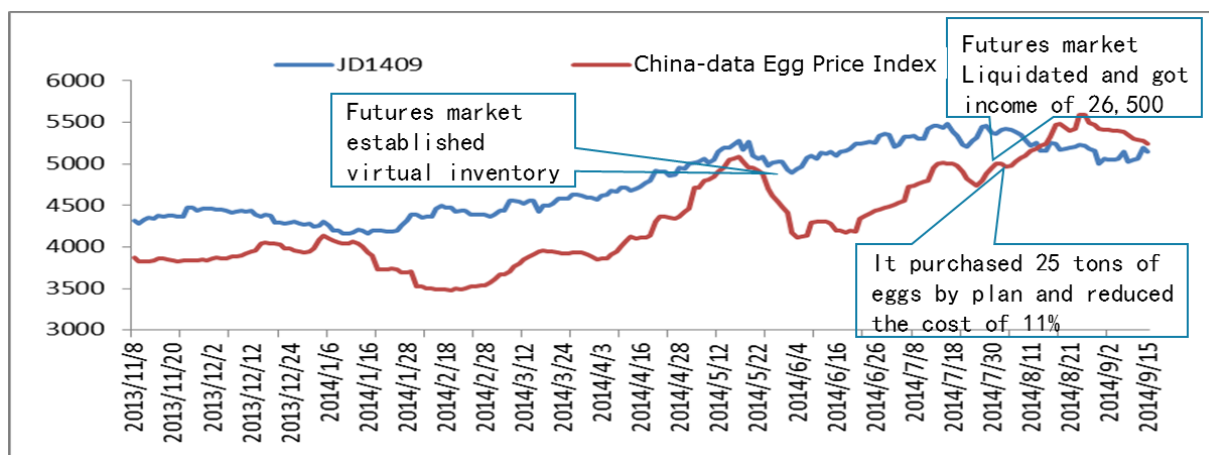




D. Our Risk Management Solutions

Exchange-traded Derivatives credited to us: DCE Egg Futures, Tianfu Egg Forward Contract, DCE Soybean Meal Options, and DCE Hog Futures (to be launched in 2017)

DCE listed egg futures in 2013



DCE will list hog futures around the end of this year



DCE listed Soybean Meal Options in 2017

卖价	买价	成交量	涨跌	最新	看涨	行权价	看跌	最新	涨跌	成交量
314.0	308.0	616	27.0	310.0	C	2400	P	3.0	-0.5	98
266.0	258.0	512	25.5	262.5	C	2450	P	4.5	-3.0	328
219.5	213.0	462	22.5	216.0	C	2500	P	8.0	-6.0	810
175.5	170.0	604	19.5	173.0	C	2550	P	14.5	-9.5	1184
137.0	133.0	1542	15.0	133.0	C	2600	P	24.5	-14.0	3112
102.0	100.5	1140	11.0	99.0	C	2650	P	41.0	-17.0	2964
75.0	73.5	2502	11.5	74.5	C	2700	P	63.5	-19.5	1244
53.5	53.0	1910	9.5	53.0	C	2750	P	95.0	-18.5	762
40.0	38.5	1398	10.0	39.0	C	2800	P	130.5	-18.0	364
28.5	28.0	2524	9.5	28.0	C	2850	P	170.0	-18.0	530
21.0	20.5	1696	10.0	21.0	C	2900	P	212.5	-18.5	510
16.0	14.0	970	9.0	15.5	C	2950	P	256.5	-20.0	388
11.5	10.5	550	8.0	11.5	C	3000	P	303.5	-20.0	434
8.5	7.5	78	6.0	8.0	C	3050	P	349.5	-22.0	456
6.0	5.5	430	5.0	6.0	C	3100	P	397.0	-24.0	442

China-data and Tianfu Mercantile Exchange developed egg forward in 2015

序↓	代码	名称	最新	幅度%	现手	涨跌	买价	卖价	成交量
1	JDGZHQ	鸡蛋广东广州行情	42.50	0.62	1339998	0.26	42.39	42.55	10713110
2	JDGZ1511	鸡蛋广东广州1511	44.95	-5.01	33200	-2.37	44.95	47.20	1436400
3	JDGZ1512	鸡蛋广东广州1512	41.00	-1.63	568	-0.68	40.95	41.10	360746
4	JDGZ1601	鸡蛋广东广州1601	42.50	0.62	1339998	0.26	42.39	42.55	10713110
5	JDXSHQ	鸡蛋湖北浠水行情	42.05	-0.64	1200	-0.27	42.00	42.40	389194
6	JDXS1511	鸡蛋湖北浠水1511	39.60	1.10	6000	0.43	39.50	40.25	729746
7	JDXS1512	鸡蛋湖北浠水1512	40.80	-0.54	400	-0.22	40.80	40.90	140016
8	JDXS1601	鸡蛋湖北浠水1601	42.05	-0.64	1200	-0.27	42.00	42.40	389194

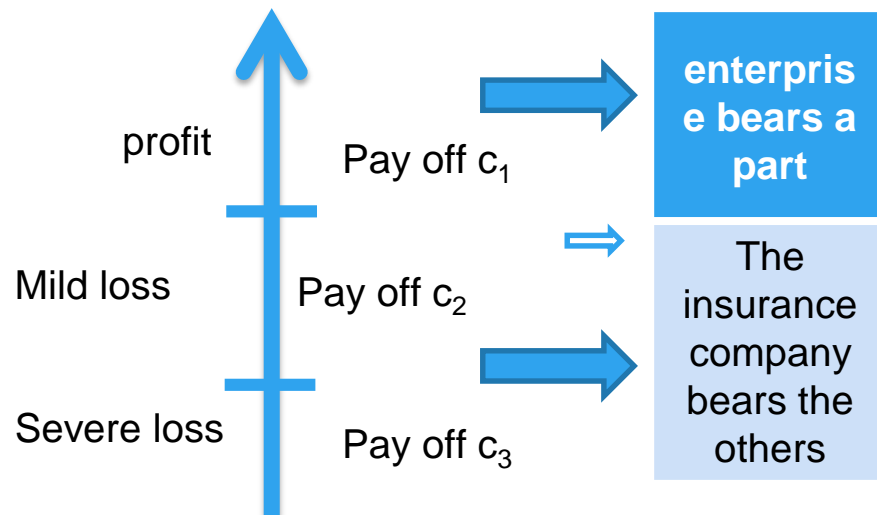
Insurance, OTC Options and Structured Finance products credited to us: Hog Price Insurance ,and Huatai Egg Options (Calls and Puts)

Two basic principles for Agribusiness to choose risk hedging tools :

- combine the actual situation of the industry and the enterprises when choose financial tools
- Make sure that the risk is basically covered and the market capacity is sufficient to meet the needs of enterprises

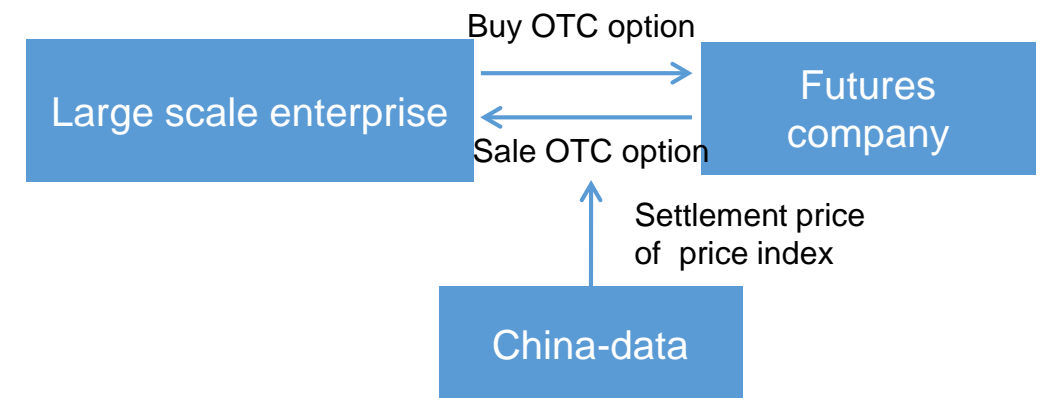
Structured Insurance

- Make risk matches income through using the form of classification to share the risks

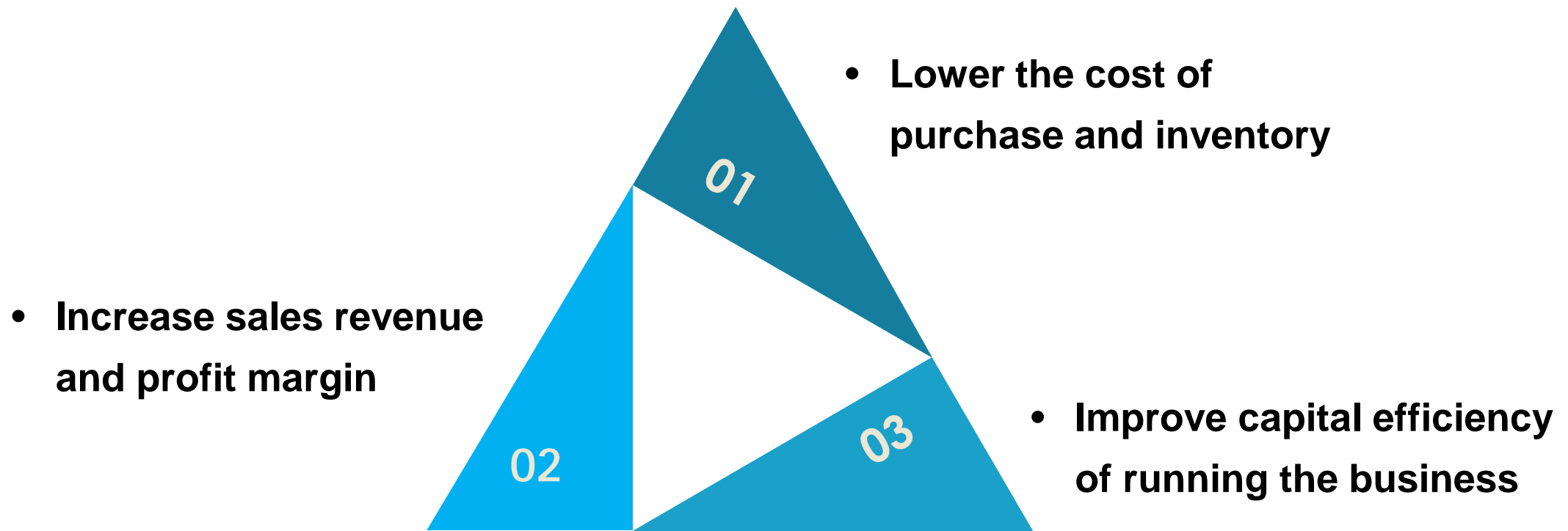


Egg options

- Using the spot price as a basis for settlement, and meeting the needs of enterprises through financial innovation



Backed by accurate forecast of Price Trends, We combine Exchange-traded Futures and Options contracts, OTC Derivatives, Insurance contracts and Structured Finance products, for the purpose of helping our clients --



We look for long-term partnership with domestic And international companies, to build win-win business cooperation



Our Partners



财运亨通



|芝|华|让|生|活|变|得|更|美|好|

Thank You!

Jim W. Huang, CFA, MBA
CEO, China-America Data Analytics, Inc.

Mobile: US- 1-630-698-1290; China- 86-139-7146-8983

Email: ceo@china-data.com.cn

www.china-data.com.cn

Headquartered in Wuhan, with subsidiaries in
Guangzhou and Shanghai, PR China