ANALYSIS OF THE INFLUENCE OF THE INCOMES VARIABLES OF A GRAIN STORAGE ON THE FINANCIAL VIABILITY OF THE INVESTMENT IN MATO GROSSO, BRAZIL

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June/2014

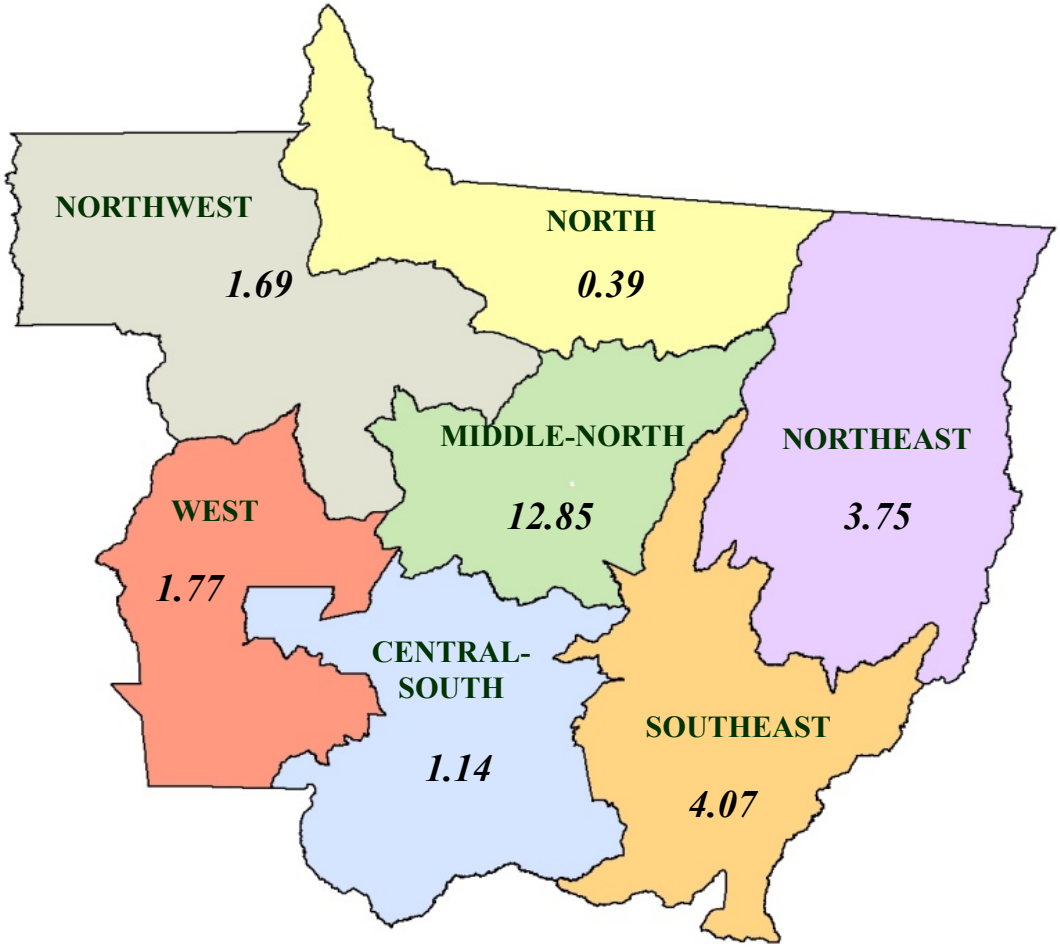
Introduction

- In 2001, Mato Grosso State produced 10.5 million tons of soybeans and corn.
- In 2012/13 these two cultures produced 43 million tons, increase of 318%, putting the state first in the production of soybeans and corn 2nd crop in the country.
- Nowadays, Mato Grosso has storage capacity of 28.2 million tons, but this is not evenly distributed.
- The current deficit storage capacity of Mato Grosso is 25.65 million tons.
- If nothing is done, in 10 years the deficit could reach more than 50 million tons, considering the potential for production of soybeans and corn increase in the coming years.

Fonte: Conab/Imea

Introduction

Figure 1: Storage deficit in Mato Grosso State (million tons).



Fonte: Imea

Storage Advantages

Cestari and Gottardo (2008) demonstrated the viability of building a warehouse of own grain.

- By having a storage facility, the producer added more value to your final product, generating extra price of R$ 38.3/ton when provided sale available.

- This producer have to pay less freight, adding R$ 5.0 per ton recipe. And generate revenues from the sale of waste to the feed industry, which represents 3% of total grain production, being sold at R$ 220 per ton.

- A warehouse in a unit of approximately 240 hectares, would have a payback of 5 years and 11 months, Net Present Value of US$ 20 thousands, and a rate of return on investment of 13% per year.

Methodology

Seven income components considered deterministic by Stakeholders that impact on the economic viability of the investment. The viability indicator used is the Net Present Value (NPV).

A. **Distance from the closest grain storage:** Closer the production area is from the storage unit, more freight savings the producer will have.

B. **Grain moisture:** The moisture that is usually discounted by commercial storage was recorded as a gain in revenue to the producer.

C. **Price of forward soybean:** It is the forward grain's value to be commercialized after it was delivered, processed and stored by a company in trade.

Methodology

D. **Differential forward and spot price:** The soybeans available is that which the producer has already processed or delivered within the established quality standards. The difference between spot and forward prices usually exceed the costs of processing and storage also reflecting determine the relationship of supply and demand of the period, as in the case of soy forward, the volume has already deposited is considered part of the market share by the trading company recipient.

E. **Seasonality of soybean:** A producer that has its own grain storage can sell soybeans in periods of high prices.

F. **Seasonality Corn:** As is the case of soybeans, corn can be sold in periods of high price because the producer has the option of storing the produce in the grain storage.

G. **Price of corn:** Corn is traded in dollars per bag and no deferral in the price received, as in the case of soybeans.

Methodology

In addition, there are a series of factors that may influence the viability of the investment. The design of experiment was designed in the form of Fractional Factorial 2 k-1, where k is the factor of the revenue number to be evaluated, ie k = Seven: A, B, C, D, E, F, G.

Factors	A	B	C	D	E	F	G
Units	km	%	R$/sc	R$/sc	R$/sc	R$/sc	R$/sc
Low Level	10	0%	35	0	1%	1%	10
High Level	100	100%	60	4	7%	15%	20
Average	55	50%	47,5	2	7%	14%	18,75
Standart Derivation	22,5	25%	11,69	1	16%	37%	5,06

Methodology

To find the specific values of the variables for each test performed within the experiment, an equation was made using a normal distribution with a standard deviation of one-twentieth of the amplitude value being found random around the limits, upper and lower, generated by the Microsoft Excel random algorithm. The formula below illustrates the operation.

$$x = F\uparrow -1\ p \pm Lim, A/20$$

Where:

X: Random Value Generated

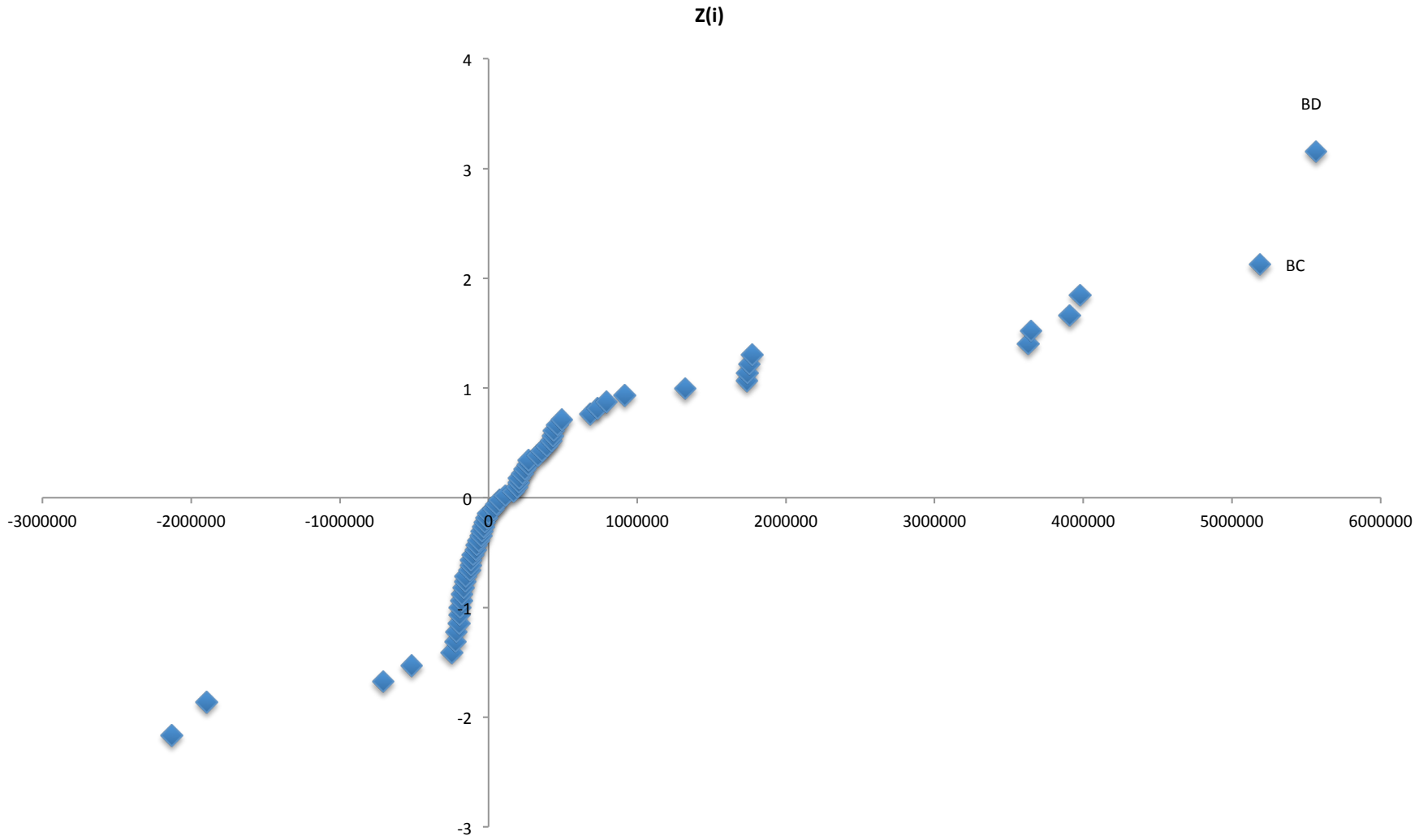
$F\uparrow -1$: *Inverse Function*

P: Probabilistic Variable

Lim: Variable Limit;

A: Amplitude of the variable;

Results


Z(i)
4
3
2
1
0
-1
-2
-3
-3000000
-2000000
-1000000
0
1000000
2000000
3000000
4000000
5000000
6000000
BD
BC

Results

AB: Combining the distance from the closest warehouse (A) and grain moisture (B) is a significant interaction for the cash flow.

AC: Shows that the greater the distance from the warehouse and the higher the value per bushel of soybeans, it becomes more feasible to build the warehouse.

BC: Interaction between grain moisture (B) and the price of forward soybean.

AD: The combination of the distance of the commercial warehouse (A) and the differential forward and spot price of soybean (D).

BD: Interaction between grain moisture (B) and the differential forward and spot price of soybean.

EG: Combining the gain with the seasonality of the price of soybeans (E) and the price of corn (G).

F: Gain with the seasonality of the price of corn alone impacts the viability of investment in storage.

Conclusions

- All observed generates important factors for decision making of producers results. Observing the influence of factors on the revenue from producer facilitate the decision to accept or reject it investment.

- The result showed that there is a rule to be followed in decision making, being prudent regional historical analysis of how the combined factors behave as the result.

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