

# THE ANALYSIS OF SUPPLY RESPONSE OF RICE INDONESIAN CONTEXT (JAMBI PROVINCE)



**By:**

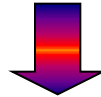
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# I. INTRODUCTION

## Background

### Rice Farms in Jambi

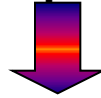
**Production and investment decisions were made under price and production uncertainty and government policy**



**Area and Farm production varies each year**



**Rice production response varies *each year***



**Solution using rice supply response under risk**

# Kondisi Wilayah Provinsi Jambi

Secara geografis :

antara  $0^{\circ} 45'$  Lintang Utara –  $2^{\circ} 45'$  Lintang Selatan  
antara  $101^{\circ} 10'$  Bujur Timur –  $104^{\circ} 44'$  Bujur Timur.

Luas wilayah : 53.435,72 Km<sup>2</sup>

Luas daratan : 51.000,00 Km<sup>2</sup>

Luas lautan : 2.435,75 Km<sup>2</sup>

Laut Cina Selatan

Riau

Sumatera Barat

Jambi

Bengkulu

Sumatera Selatan

Provinsi Jambi terletak pada Pantai Timur Pulau Sumatera berhadapan dengan laut Cina Selatan dan Lautan Pasific, pada alur lalu lintas Internasional dan Regional.

ORIENTASI WILAYAH



SEKALA 1:3.000.000  
0 50 100 200  
Kilometers

LEGENDA

- Kota
- BATAS
  - Batas Provinsi
  - Batas Kabupaten
  - Jalan
  - Perairan Laut



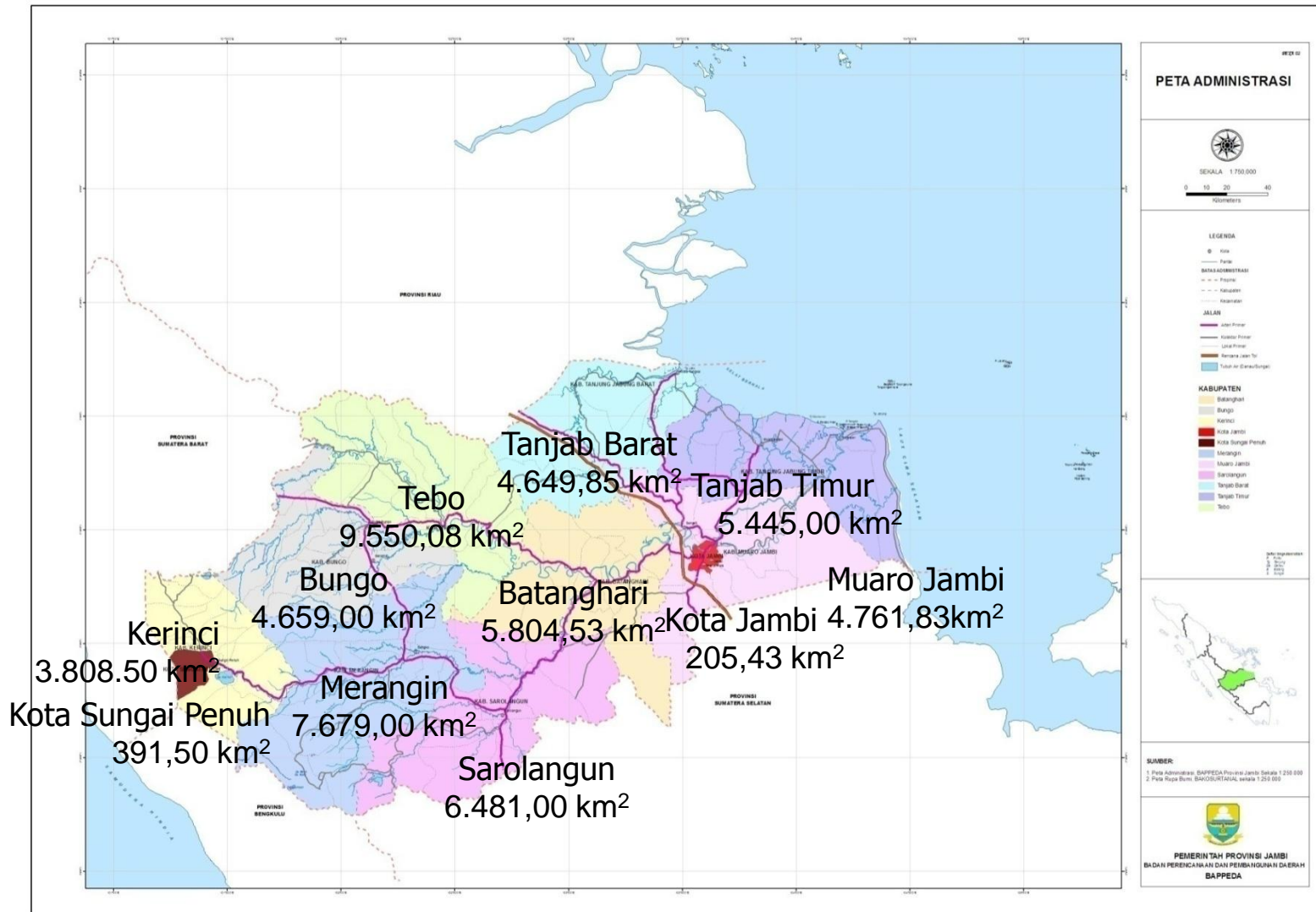
SUMBER:

1. Peta Administrasi EAP/PEDA Provinsi Jambi Skala 1:250.000
2. Peta Rupa Bumi BAKOSURTIAL skala 1:250.000



PEMERINTAH PROVINSI JAMBI  
BADAN PERENCANAAN DAN PEMBANGUNAN DAERAH  
BAPPEDA

# Wilayah Administrasi Provinsi Jambi



# INTRODUCTION

## Problem Formulation

Background	
Rice Farming in Jambi	Agricultural Policy
➤ Productivity & rice production lower than national average	➤ Farmers unable to influence support programs and uninformed about program
➤ Uncertainty in production and price	➤ Farmers face many constraints in obtaining new technology and guidance
➤ Low government support for rice farming	➤ Poor articulation of policy to the farmers, despite a desire by government to maintain self sufficiency

### PROBLEMS

➤ Can supply response to input price, output price, government policy, and other exogenous variables be explained?



### PROBLEMS SOLVING

Need to analysis supply response of rice in Jambi Province



### GOALS

How to maintain rice output in Jambi

# INTRODUCTION

## Research Objective

1. To evaluate rice supply response to input price, output price, government support program, fertilizer price, pesticide price, and other exogenous variables

# II. LITERATURE REVIEW

## A. Theoretical review of Meta-Profit Functions

The MPA function assumes that a farmer's utility depends upon maximizing an expected profit function subject to output price, input prices, and a set of variable inputs. Thus the function is defined as follows :

$$\text{Max } E[U(\pi)] = E[U\{p, f(x, T, \varepsilon) - cx\}] \quad (1)$$

where :

$\pi$  = profits

$p$  = output price

$x$  = a set of variable inputs

$T$  = technology used in production

$\varepsilon$  = production uncertainty

$c$  = a set of variable input prices

## B. Operational version of Meta-Profit Function Models

Empirical model of the profit function can be written as follows:

$$\begin{aligned} \text{LOG} (\pi_t) = & \beta_0 + \beta_1 \text{LOG} (P_t) + \beta_2 \text{LOG} (L_t) + \beta_3 \text{LOG} (X_t) + \beta_4 \text{LOG} (F_t) \\ & + \beta_5 \text{LOG} (A_t) + \beta_6 \text{LOG} (II_t) + \beta_7 \text{LOG} (PS_t) + \beta_8 \text{LOG} (IS_t) \\ & + \beta_9 D(SN_t) + \varepsilon_t \dots\dots\dots (21) \end{aligned}$$

where:

LOG ( $\pi_t$ ) = log profit (Rp) in year-t

LOG ( $P_t$ ) = log output price (Rp / kg) in the year-t

LOG ( $L_t$ ) = log wage (Rp / ha) in the year-t

LOG ( $X_t$ ) = log pesticide price (Rp / ha) in the year-t

LOG ( $F_t$ ) = log of fertilizer prices (Rp / ha) in the year-t

LOG ( $A_t$ ) = log harvested area (ha) in the year-t

LOG (IIT) = log index of irrigation in the year-t

LOG (PST) = log support price (Rp / kg) in the year-t

LOG (IST) = log inputs at subsidized prices (Rp / ha) in the year-t

D (SNt) = dummy influence of season, a value of 1 if it rains, and 0 if not

$\beta_0$  = intercept

$\beta_1 - \beta_9$  = parameter

$\varepsilon_t$  = error term

# III. RESEARCH METHODS

A. Research Background

B. Research Methods

C. Data Analysis Methods

Empirical Model of Meta-Profit Functions

# IV. FINDINGS AND DISCUSSIONS

## 4.1. Meta-Profit Function

Table 1 Parameter estimates

Variable	Parameter	Std. Error
Intercept	19,3374	27,6547
Log Output Price	0,6771***	0,0612
Log Wage	-0,2026**	0,0316
Log Pesticide Price	-0,6678	0,5951
Log Fertilizer Price	-0,4402	0,5291
Log Harvest Area	0,4039**	0,1844
Log Irrigation Index	0,1048***	0,0379
Log Support Price	0,7362	0,6305
Log Input Subsidy	0,1517	0,2533
Seasonal Effect	0,7769**	0,2348
R-Squared	0,8717	

Note : \*\*\* = significance level at  $\alpha$  0.01

\*\* = significance level at  $\alpha$  0.05

## 4.2. Elasticities

Table 3. Rice Production Function Elasticity

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Variable	Elasticity
Output Price	0,6771 ***
Wage	-0,2026 **
Fertilizer Price	-0,4402
Irrigation Index	0,1048 ***

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Note: \*\*\* = significance level at  $\alpha$  0.01

\*\* = significance level at  $\alpha$  0.05

# V. CONCLUSIONS AND RECOMMENDATIONS

## 5.1. CONCLUSIONS

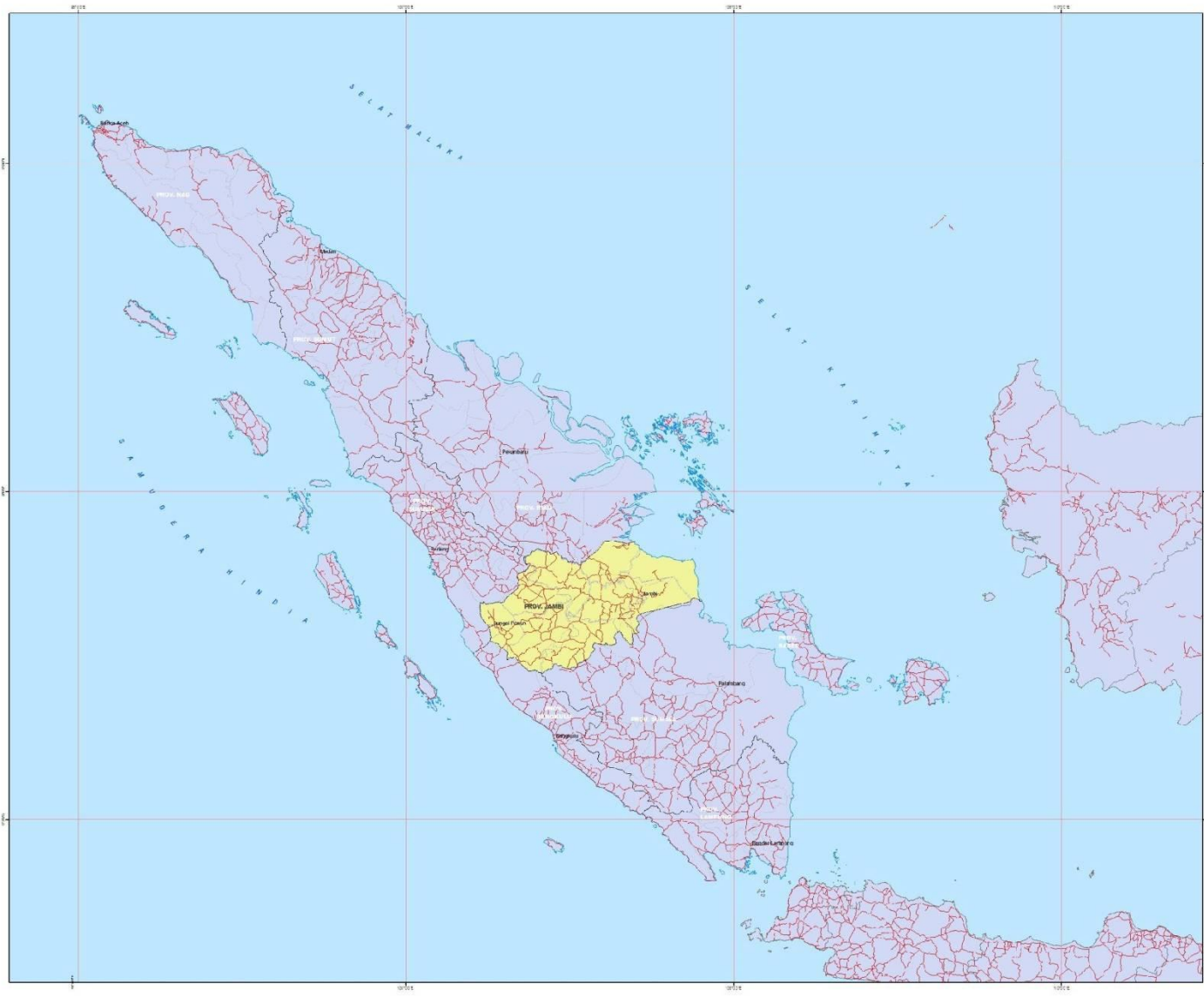
- Farmers have chosen to plant rice because rice is relatively more profitable than other crops
- Rice market price is significant
- Fertilizer price is insignificant
- Rice support price is insignificant
- Fertilizer subsidy is insignificant
- Irrigation index is insignificant

# V. CONCLUSIONS AND RECOMMENDATIONS

## 5.2. RECOMMENDATIONS

- Continue government expenditure to maintain the irrigation system
- Further research necessary

**Thank you**



WJZD 01

**ORIENTASI WILAYAH**



SKALA 1:3.000.000  
 0 50 100 200  
 Kilometers

**LEGENDA**

- Kota
- BATAS**
- Batas Provinsi
- Batas Kabupaten
- Desa
- Provinsi Jambi

Proyeksi: UTM  
 Datum: WGS 84  
 Unit: Meter



**SUMBER:**  
 1. Peta Administrasi BAKOSURTIAL Provinsi Jambi Skala 1:250.000  
 2. Peta Rupa Bumi BAKOSURTIAL, skala 1:250.000



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