Effects of Non-tariff Measures Reversal on Food on Poverty, Inequality, and Consumption

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Outline

1. Background: Poverty, Consumption, Food Security
2. Non-tariff measures
3. Literature review
4. Methodology
5. Findings:
   a. Poverty
   b. Inequality
   c. Consumption

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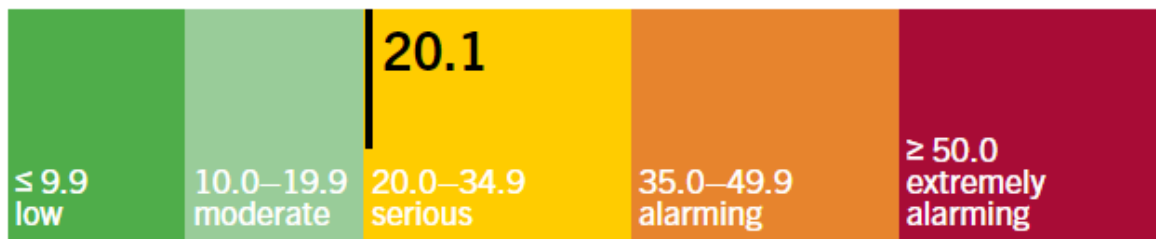Policy Studies

Background: Poverty

Poverty Rate, 1998-2019

24.7 million
In poverty

Estimated
9.7% - 17.9% poverty
rate due to Covid-19
(1.3 - 23.4 million
more people)

Source: Statistics Indonesia; SMERU (2020)

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Background: Consumption

Indonesia

In the 2019 Global Hunger Index, Indonesia ranks **70th** out of 117 qualifying countries. With a score of **20.1**, Indonesia suffers from a level of hunger that is **serious** [See overview of GHI calculation].

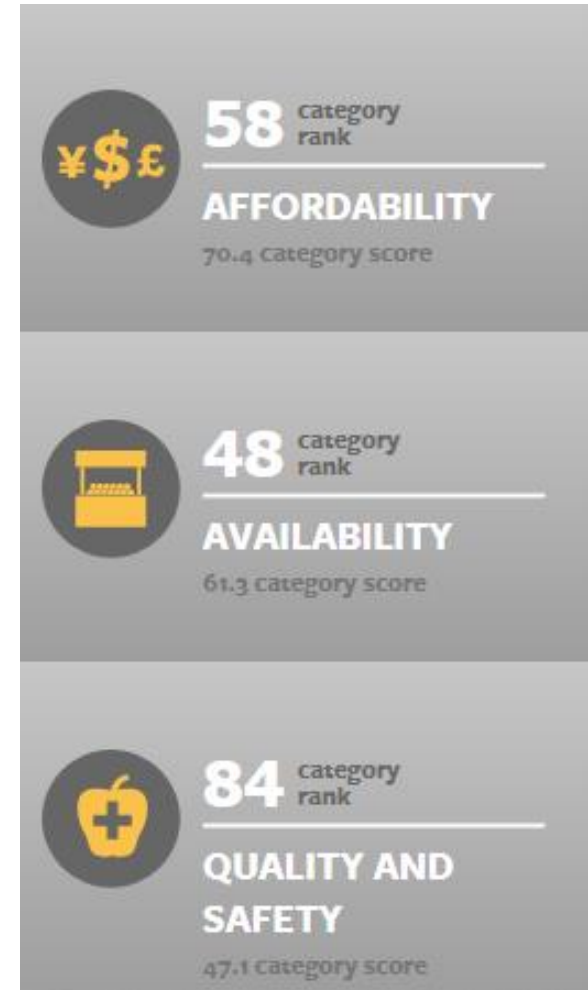| ≤ 9.9 low	10.0–19.9 moderate	20.0–34.9 serious	35.0–49.9 alarming	≥ 50.0 extremely alarming

20.1

22 million still endure hunger

27.67% children under 5 is stunted

Source: Global Hunger Index; Asian Development Bank (2019)

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Background: Food Security in 2019

![Global Food Security Index]

Rank	Country
1	Singapore
28	Malaysia
52	Thailand
54	Vietnam
62	Indonesia

Source: The Economist Intelligence Unit (2020)

58 category rank
AFFORDABILITY
70.4 category score

48 category rank
AVAILABILITY
61.3 category score

84 category rank
QUALITY AND SAFETY
47.1 category score

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Annual Meat Consumption, Kilogram/Capita

Source: OECD Data
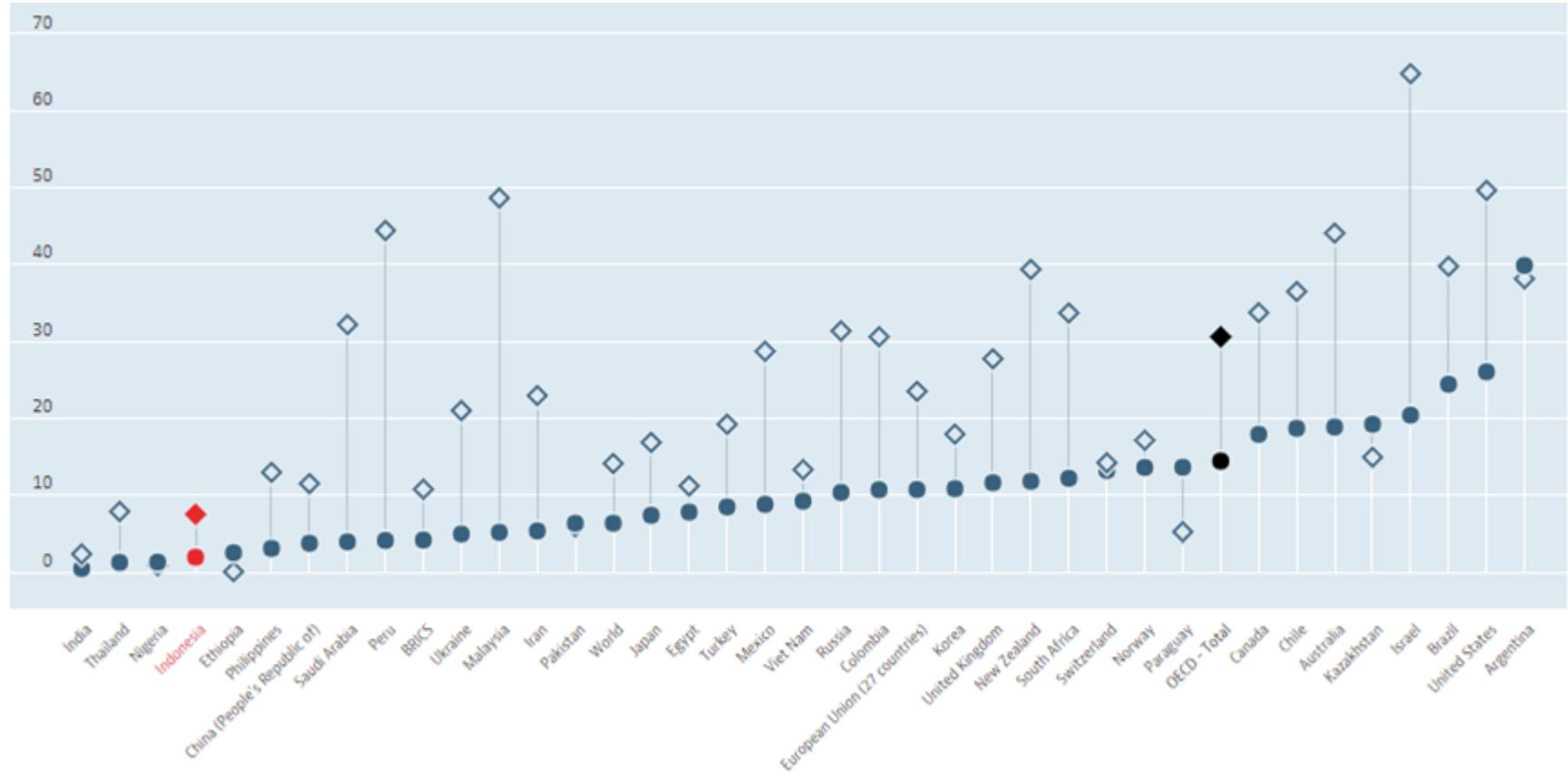
Percentage of Indonesian households that CAN and CANNOT afford a nutritious diet in selected provinces**

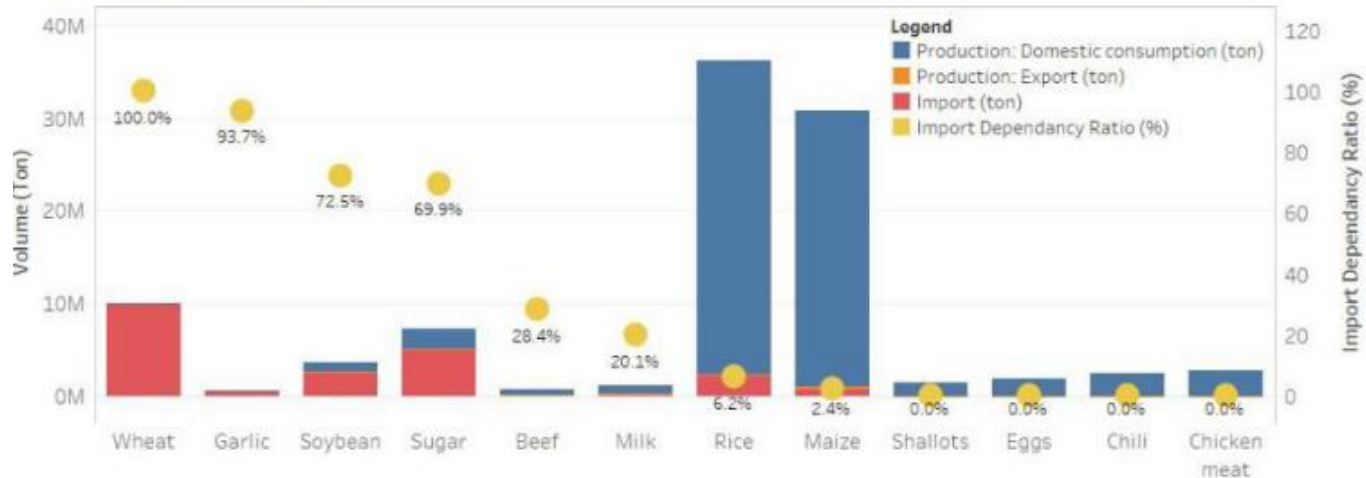|	National	Jawa Barat	Jawa Timur	Kalimantan Selatan	Lampung	Maluku	NTT	Papua	Sulawesi Selatan
CANNOT	38	38	42	24	44	56	68	48	40
CAN	62	62	58	76	56	44	32	52	60
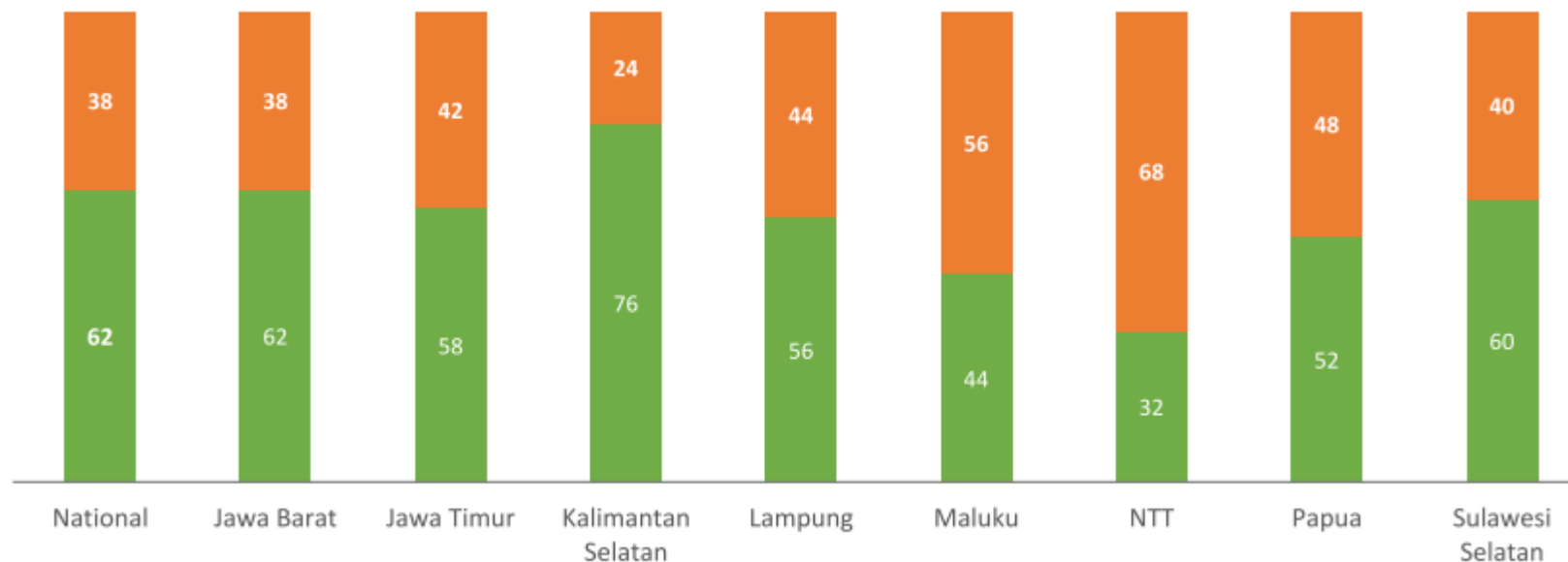
*This diet is defined as the least expensive diet consisting of locally available foods, includes the preferred staple food in Indonesia (rice), and meets the recommended intakes of nutrients.
**The provinces were selected for the joint BAPPENAS-WFP Cost of the Diet Study. Details of the study are presented in the Methodology section.

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Source: World Food Programme (2017)

Importance of Food Import

Import Dependency Ratio (IDR) of Various Commodities, 2018

Legend
- Production: Domestic consumption (ton)
- Production: Export (ton)
- Import (ton)
- Import Dependancy Ratio (%)

Wheat 100.0%, Garlic 93.7%, Soybean 72.5%, Sugar 69.9%, Beef 28.4%, Milk 20.1%, Rice 6.2%, Maize 2.4%, Shallots 0.0%, Eggs 0.0%, Chili 0.0%, Chicken meat 0.0%

Source: WFP calculation based on BPS and MoA data

Note: Beef refers to both meat from cattle and buffalo. The figures for beef and chicken meat exclude live animals and processed products. The figures for wheat exclude other meslins and wheat flour. The figures for chili only includes fresh chili. The import dependency ratio is calculated by the following formula: Import/(Production + Import - Exports) * 100. 2018 figures are used as it represents the most recent production data for most commodities. The IDR for rice in 2019 is lower at 1.4%.

Source: World Food Programme (2020)

Non-Tariff Measures (NTM)

"Policy measures — other than ordinary customs tariffs — that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both." (UNCTAD)

Examples of NTM on import

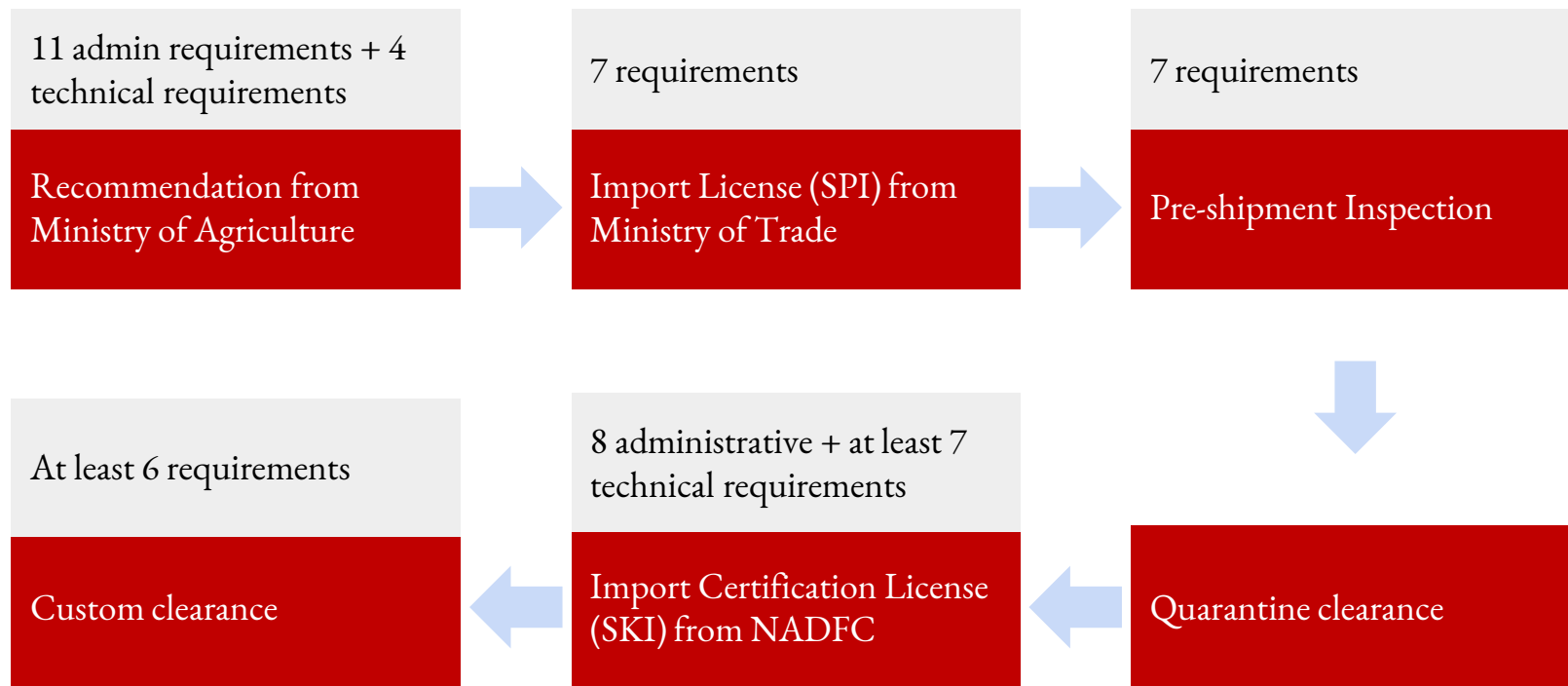| Category	Chapter	Examples
Technical Measures	Sanitary and Phyto-Sanitary Measures (SPS)	Labelling requirements related to food safety, hygienic requirements and quarantine requirements
	Technical Barriers to Trade (TBT)	Testing or certification procedure
	Pre-shipment inspection and other formalities (INSP)	Inspection in exporting country prior to shipment
Non-Technical Measures	Price control measures (PC)	Seasonal duties, minimum import price
	Licenses, quota, prohibitions, and other quantity control measures (QC)	Quota
	Charges, taxes, and other para-tariff measures	Service charge (PNBP)

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NTM on Agro-Food Products in Indonesia

(as of 1 July 2020)

	SPS	TBT	INSP	QC	PC	Other	Export	Total
All partners	209	71	22	30	8	7	70	417
Bilateral	10	2	1	1	-	-	2	16
TOTAL	210	73	23	31	8	7	72	433

● Between 2015-2018, the Ministry of Agriculture introduced 47% more NTMs

Source: UNCTAD-Trainsdata for HS 01-22

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Case Study: Beef Import Process

11 admin requirements + 4 technical requirements
Recommendation from Ministry of Agriculture

→

7 requirements
Import License (SPI) from Ministry of Trade

→

7 requirements
Pre-shipment Inspection

↓

At least 6 requirements
Custom clearance

←

8 administrative + at least 7 technical requirements
Import Certification License (SKI) from NADFC

←

Quarantine clearance

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Food Price

Beef Price in Indonesia and in International Market, 2011-2019

Source: Statistics Indonesia and World Bank Pink Sheet
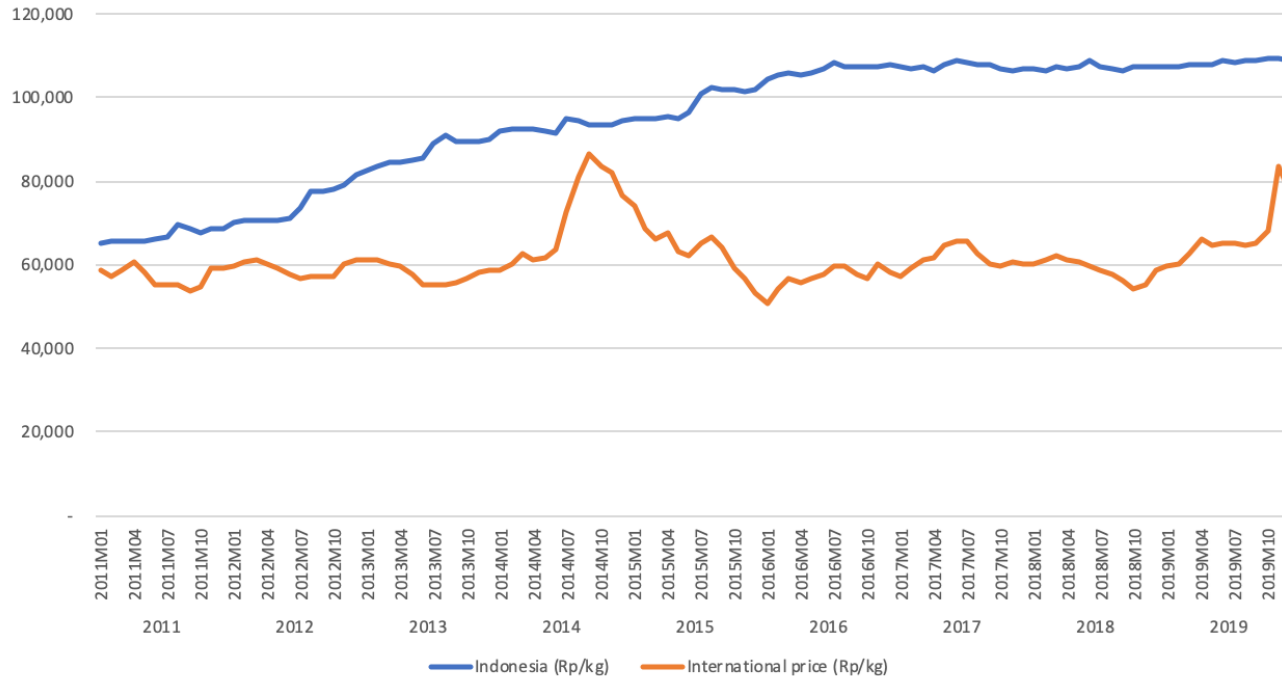
Literature Review

- NTM creates artificial scarcity, leading to increased food price (McCulloch, 2008; Suryahadi & Al Izzati, 2018; Warr, 2011, p. 62)

- The non-automatic import licensing system have also regularly caused delays in issuing the import license, which leads to supply shortages and skyrocketing prices (KPPU, 2020a; KPPU, 2020b)

- NTM carry compliance costs

  - SPS requirements on food and agriculture is equivalent (AVE) to 7.6% tariff; 16.1% for animal products (Ing & Cadot, 2017)

  - Food and agriculture importers reported 96% of NTMs are associated with delays, arbitrary behaviour by officials, unusually high fees or charges, and numerous administrative windows and organizations involved (International Trade Centre, 2016)

  - NTM on food import have imposed an effective rate of protection between 33% to 41% for agriculture products (Marks, 2017)

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Research Questions

1. What is the effect of removing NTM on rice and meat on poverty?
2. What is the effect of removing NTM on rice and meat on inequality?
3. What is the effect of removing NTM on rice and meat on consumption?

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Data & Methodology

To measure the welfare impact of NTM reversal scenario on poverty and inequality , we used the National Socio-economic Survey (SUSENAS) 2015 data set.

We use quadratic almost ideal demand system (AIDS) to estimate household's own price elasticity and cross-price elasticity.

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Methodology

Based on Banks, Blundell, and Lewbell (1997), the quadratic AIDS model is derived from indirect utility function

$$lnV(p,m) = \left[\left\{ \frac{\ln m - \ln a(p)}{b(p)} \right\}^{-1} + \lambda(p) \right]^{-1}$$

where p is a vector of prices and m is total expenditure. $\ln a(p)$ is the transcendental logarithmic function

$$\ln a(p) = \alpha_0 + \sum_{i=1}^{k} \alpha_i lnp_i + \frac{1}{2} \sum_{i=1}^{k} \sum_{j=1}^{k} \gamma_{ij} \, lnp_i \, lnp_n$$

where $i = , \ldots, n$ described commodities and $b(p)$ is the Cobb-Douglas price aggregator.

$$b(p) = \prod_{i=1}^{k} p_i^{\beta_i} \qquad \lambda(p) = \sum_{i=1}^{k} \lambda_i \, lnp_i|$$

Uncompensated price elasticity of good i with respect to changes in the price of good j is

$$w_i = \alpha_i + \Sigma_{j=1}^{n} \gamma_{ij} ln \, p_j + \beta_i \ln \left\{ m/a(p) \right\} + \gamma_i / b(p) \left[\ln \left\{ m/a(p) \right\} \right]^2, \quad i = 1, \ldots, n$$

$$\mu_i = -\delta_{ij} + 1/w_i \left(\frac{\gamma_{ij} - \left[\beta_i + \eta'_i z + \frac{2\lambda_i}{b(p)c(p,z)} \ln \left\{ \frac{m}{\overline{m}_0(z)a(p)} \right\} \right]}{\left(a_j + \sum_l \gamma jl \, lnp_l \right) - \frac{(\beta_j + \eta'_i z)\lambda_i}{b(p)c(p,z)} \left[\ln \left\{ \frac{m}{\overline{m}_0(z)a(p)} \right\} \right]^2} \right)$$

Scenarios

Effective rate of protection	
Field rice	67.2
Meat & Viscera	37.4

Marks (2017)

A. Initial Condition

B. Rice NTM reversal

C. Meat NTM reversal

E. Rice QR reversal

F. Meat QR reversal

D. Rice and meat NTM reversal

G. Rice and meat QR reversal

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Results

This is preliminary results, please do not cite.

Effect on Poverty and Inequality

POVERTY	Initial Condition	Rice NTM reversal	Meat NTM reversal	Rice and meat NTM reversal	Rice QR reversal	Meat QR reversal	Rice and meat QR reversal
Poverty Rate	10.54	8.01	10.33	7.71	8.22	10.35	7.93
Change		-2.52	-0.21	-2.83	-2.31	-0.19	-2.60

GINI	Initial Condition	Rice NTM reversal	Meat NTM reversal	Rice and meat NTM reversal	Rice QR reversal	Meat QR reversal	Rice and meat QR reversal
Gini Coefficient	0.4148	0.4075	0.4147	0.4075	0.4079	0.4147	0.4079
Change (%)		-1.77	-0.03	-1.76	-1.66	-0.03	-1.65

Preliminary findings, please do not cite

Poverty in Urban and Rural

POVERTY	Initial Condition	Rice NTM reversal	Meat NTM reversal	Rice and meat NTM reversal	Rice QR reversal	Meat QR reversal	Rice and meat QR reversal
URBAN	7.94	6.30	7.82	6.04	6.45	7.83	6.21
Change		-1.64	-0.12	-1.90	-1.50	-0.11	-1.73
RURAL	13.17	9.76	12.88	9.41	10.03	12.91	9.69
Change		-3.41	-0.29	-3.77	-3.15	-0.27	-3.49

GINI	Initial Condition	Rice NTM reversal	Meat NTM reversal	Rice and meat NTM reversal	Rice QR reversal	Meat QR reversal	Rice and meat QR reversal
URBAN	0.4342	0.4299	0.4340	0.4299	0.4301	0.4340	0.4301
Change (%)		-0.98	-0.04	-0.98	-0.93	-0.04	-0.94
RURAL	0.3388	0.3301	0.3389	0.3303	0.3307	0.3389	0.3309
Change (%)		-2.57	0.03	-2.50	-2.39	0.03	-2.33

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Change in Poverty by Region

POVERTY	Initial Condition	Rice NTM removal	Meat NTM removal	Rice and meat NTM removal	Rice QR removal	Meat QR removal	Rice and meat QR removal
Sumatera	10.78	8.03	10.56	7.72	8.25	10.57	7.95
Java & Bali	10.11	7.74	9.96	7.46	7.95	9.98	7.67
Kalimantan	5.85	4.31	5.57	4.10	4.39	5.59	4.27
Sulawesi	9.94	7.56	9.62	7.16	7.69	9.65	7.43
Papua & Nusa Tenggara	18.45	14.31	17.99	13.83	14.60	18.02	14.18

POVERTY	Rice NTM removal	Meat NTM removal	Rice and meat NTM removal	Rice QR removal	Meat QR removal	Rice and meat QR removal
Sumatera	-2.75	-0.22	-3.06	-2.53	-0.21	-2.83
Java & Bali	-2.37	-0.15	-2.65	-2.16	-0.13	-2.45
Kalimantan	-1.54	-0.28	-1.75	-1.46	-0.26	-1.58
Sulawesi	-2.38	-0.32	-2.79	-2.25	-0.29	-2.51
Papua & Nusa Tenggara	-4.15	-0.47	-4.62	-3.85	-0.44	-4.27

Poverty in the Poorest Provinces

POVERTY	Initial Condition	Rice NTM reversal	Meat NTM reversal	Rice and meat NTM reversal	Rice QR reversal	Meat QR reversal	Rice and meat QR reversal
PAPUA	23.23	22.03	22.85	21.36	22.14	22.88	21.55
PAPUA BARAT	23.41	19.04	22.81	18.54	19.29	22.88	18.88
NUSA TENGGARA TIMUR	20.34	13.68	19.49	13.06	14.16	19.55	13.61
MALUKU	17.35	13.71	16.98	13.18	14.04	16.98	13.60
GORONTALO	16.94	14.11	16.52	13.75	14.19	16.52	13.98

POVERTY	Rice NTM reversal	Meat NTM reversal	Rice and meat NTM reversal	Rice QR reversal	Meat QR reversal	Rice and meat QR reversal
PAPUA	-1.20	-0.38	-1.87	-1.09	-0.35	-1.69
PAPUA BARAT	-4.37	-0.60	-4.87	-4.12	-0.54	-4.53
NUSA TENGGARA TIMUR	-6.66	-0.85	-7.28	-6.18	-0.79	-6.73
MALUKU	-3.64	-0.37	-4.17	-3.30	-0.36	-3.75
GORONTALO	-2.83	-0.42	-3.20	-2.76	-0.42	-2.97

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Effect on Inequality by Region

POVERTY	Initial Condition	Rice NTM removal	Meat NTM removal	Rice and meat NTM removal	Rice QR removal	Meat QR removal	Rice and meat QR removal
Sumatera	0.37	0.36	0.37	0.36	0.36	0.37	0.36
Java & Bali	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Kalimantan	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Sulawesi	0.41	0.40	0.41	0.40	0.40	0.41	0.40
Papua & Nusa Tenggara	0.39	0.38	0.39	0.38	0.38	0.39	0.38

| POVERTY	Rice NTM removal	Meat NTM removal	Rice and meat NTM removal	Rice QR removal	Meat QR removal	Rice and meat QR removal
Sumatera	-2.21	-0.02	-2.19	-2.07	-0.02	-2.06
Java & Bali	-1.54	-0.01	-1.51	-1.44	-0.01	-1.42
Kalimantan	-1.90	-0.06	-1.93	-1.78	-0.06	-1.82
Sulawesi	-1.91	-0.15	-2.02	-1.78	-0.14	-1.88
Papua & Nusa Tenggara	-2.70	-0.06	-2.63	-2.52	-0.05	-2.46

Inequality in the Poorest Provinces

GINI	Initial Condition	Rice NTM reversal	Meat NTM reversal	Rice and meat NTM reversal	Rice QR reversal	Meat QR reversal	Rice and meat QR reversal
PAPUA	0.4091	0.4073	0.4086	0.4066	0.4074	0.4087	0.4068
PAPUA BARAT	0.4347	0.4300	0.4337	0.4360	0.4303	0.4338	0.4352
NUSA TENGGARA TIMUR	0.3578	0.3426	0.3574	0.3424	0.3437	0.3574	0.3435
MALUKU	0.3566	0.3498	0.3563	0.3495	0.3503	0.3564	0.3500
GORONTALO	0.4201	0.4121	0.4197	0.4118	0.4126	0.4197	0.4123

GINI (% change)	Rice NTM reversal	Meat NTM reversal	Rice and meat NTM reversal	Rice QR reversal	Meat QR reversal	Rice and meat QR reversal
PAPUA	-0.44	-0.12	-0.62	-0.42	-0.11	-0.58
PAPUA BARAT	-1.08	-0.22	0.29	-1.01	-0.20	0.11
NUSA TENGGARA TIMUR	-4.23	-0.11	-4.28	-3.93	-0.10	-3.99
MALUKU	-1.92	-0.08	-2.01	-1.79	-0.08	-1.87
GORONTALO	-1.92	-0.10	-1.99	-1.79	-0.10	-1.86

Preliminary findings, please do not cite

Effect on Rice & Meat Consumption Share
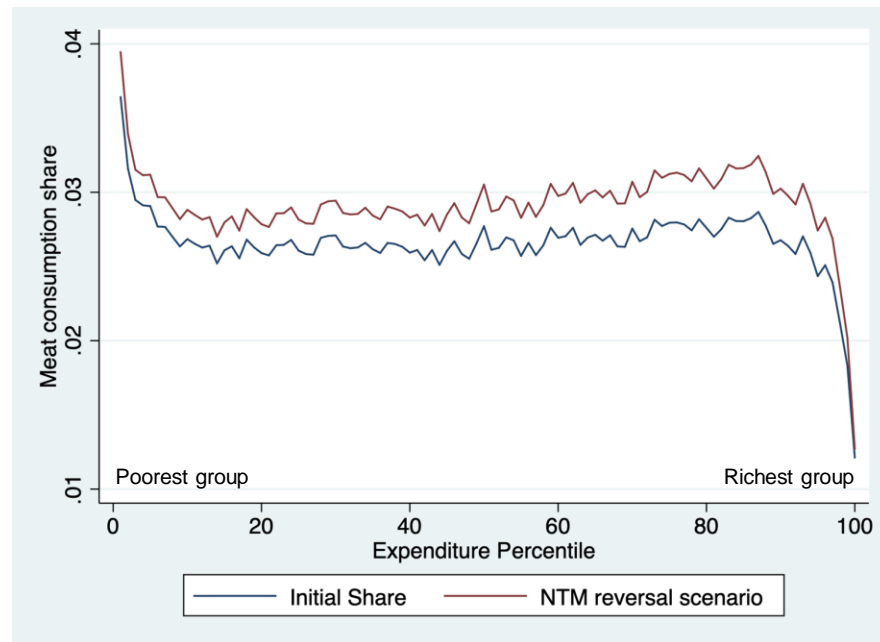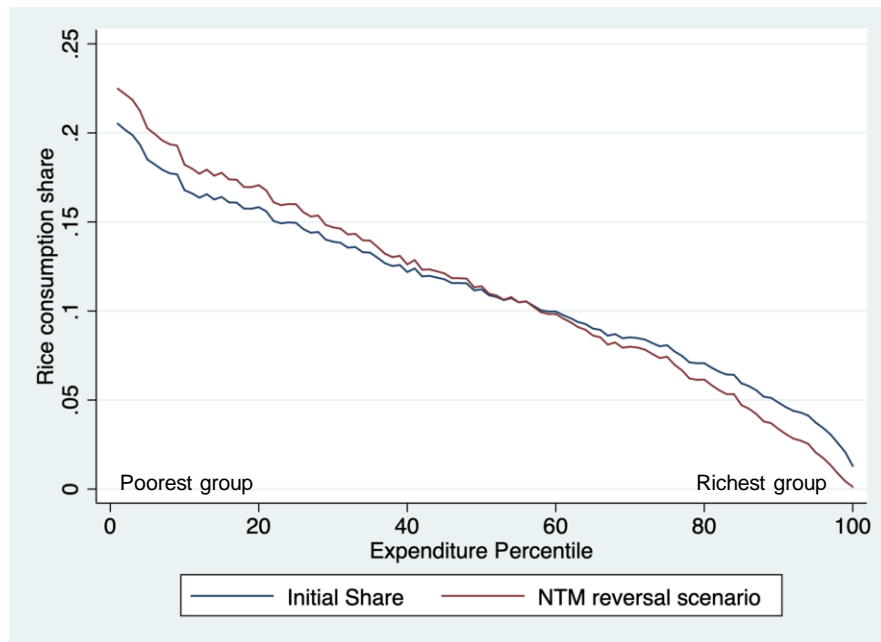
Conclusions

The NTM reversal scenarios on rice and meat reduce poverty significantly but the effect on inequality are somewhat varied. In terms of effect, the rice NTM reversal reduce inequality and poverty significantly. Meanwhile, meat NTM reversal scenario's effects are very small. NTM reversal scenarios on rice and meat change the consumption pattern, but the effect are different in each expenditure group. In addition, the QR contributes to most of the effect, both in poverty and inequality.

Policy Recommendations

- Streamline Non-Tariff Measures on food and agriculture, eliminate unncessary ones
- Introduce automatic import licensing system to replace current non-automatic system

Thank You

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