Implications of Food Market Transformation for Smallholders: Insight from Indonesia

Presented by Nicholas Minot

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Acknowledgements

- Presentation is largely based on the article:
  - Minot, N., R. Stringer, W. Umberger, and Wahida. 2015. “Urban shopping patterns in Indonesia and their implications for small farmers.” Bulletin of Indonesian Economic Studies. 51 (30): 375-388.
- Research based on the ACIAR-funded project:
  - “Transformation of markets for high-value agricultural commodities in Indonesia: Promoting competitiveness and inclusions” implemented by IFPRI, the University of Adelaide, the Indonesian Centre for Agricultural, Socio-economic, and Policy Studies, and the Center for Agrifood Policy and Agribusiness Studies at Padjadjaran University

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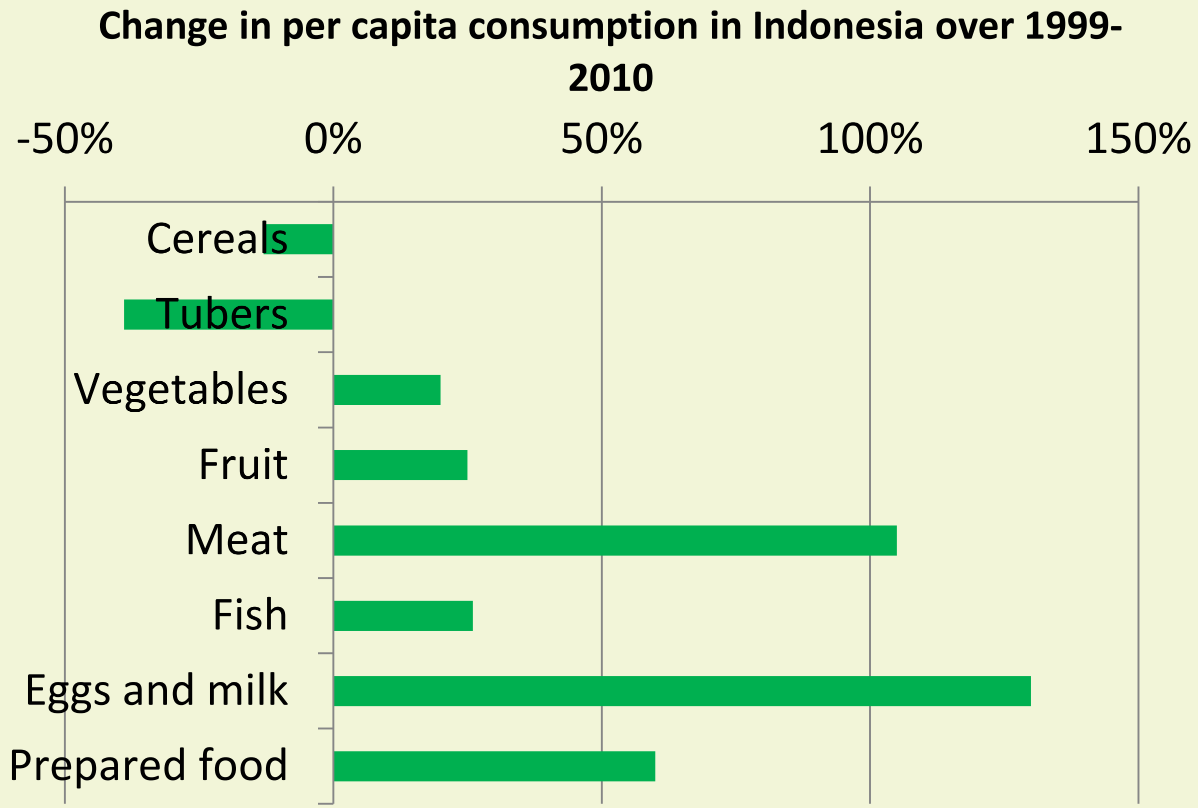
Objectives

- What we know about supermarket revolution in Indonesia:
  - Indonesian per capita income is growing rapidly (4.5% p.a. over 10 years)
  - Urbanization is continuing (30% in 1990 → 50% in 2012)
  - Diets are changing from staples to more animal products, fruit & vegetables & processed foods
  - Number of supermarkets sales are growing very rapidly (25% p.a. over 10 years)
  - Supermarkets have high quality standards that small farmers have difficulty meeting
- What we don’t know:
  - What is share of urban food purchased at supermarkets?
    - (estimates range from 11% to 30%)
  - How quickly is supermarket share likely to increase over time?
  - Is supermarket growth squeezing out traditional retailers?
  - Is supermarket growth hurting small farmers, because they are unable to meet quality standards and minimum quantities? Or is it giving them new opportunities to earn higher incomes?

Evidence of transformation

- Dietary change in Indonesia
  - Shift from staples to animal products, fruits, vegetables, and prepared food



Source: Dyck et al (2012) based on data from Badan Pusat Statistik.

Evidence of transformation

- Growth in modern food retail sector in Indonesia
  - 12% annual growth in number of supermarkets & hypermarkets
  - Much faster growth among minimarts
  - Overall number of modern food outlets increased 10x
  - Modern outlets grew at 25% per year over 10 years

Food category	Number of outlets in Indonesia			Annual growth
	1999	2004	2009	1999-2009
Hypermarkets	18	34	141	23%
Supermarkets	636	695	1,162	6%
Minimarts	533	1,435	10,039	34%
Modern total	1,176	2,163	11,342	25%

Source: Dyck et al (2012) based on data from Euromonitor.

Design of urban consumer survey

- Sample
  - 1180 urban households in three cities
  - Stratified three-stage random sample
  - Over-sampling of higher-income households
  - Over-sampling of neighborhoods near supermarkets
- Questionnaire
  - 16 pages: characteristics, consumption, where bought, beliefs,

Types of food outlets

Type	Definition
Hypermarket	Very large, modern stores with 10 or more cash registers. Examples: Carrefour, Giant, Macro, and Hypermart.
Supermarket	Medium or large modern stores with 3-9 cash registers. Examples: Hero, Matahari, Asia, and Yogya.
Minimarket	Small, modern stores with 1-2 cash registers. Examples: Alfa and Indomaret.

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Types of food outlets

Type	Definition	
Semi-permanent stand	Vendor who sells from a table, stand, cart, or stall that can be moved, but generally stays in one place during the day. Does not include vendors in a wet market .	
Small shop (warung)	Small store selling food products in a building or part of a house, often located in a residential area.	

Types of food outlets

Type	Definition	
Traditional (wet) market	Collection of numerous food vendors under one roof or in one location, usually renting space in the building	
Peddler	Small-scale vendors operating on foot, on bicycle, with a cart, or from a car/truck, who moving around during the day.	





Food shopping patterns

Frequency of using each type of food outlet

(percent of urban households)

	Hyper-market	Super-market	Mini-market	Semi-perm. stand	Small shop (warung)	Trad-itional market	Peddler	Total
Every day	0	0	2	8	41	35	26	16
2-6 times/week	1	2	11	15	32	18	30	15
Once a week	4	5	14	16	11	14	13	11
2-3 times/month	8	8	17	15	10	8	10	11
Once a month	20	21	18	13	3	10	5	13
Few times/year	19	18	12	13	1	13	4	12
Never	47	46	27	20	2	3	13	23
Total	100	100	100	100	100	100	100	100

Food shopping patterns

Main mode of transport to each type of food outlet
(percent of urban households that use this type)

	Hyper-market	Super-market	Mini-market	Semi-perm. stand	Small shop (warung)	Trad-itional market	Peddler	Total
On foot	5	7	32	49	92	39	99	52
Bicycle	1	2	6	4	3	7	0	3
Motorcycle	60	57	54	37	3	36	1	31
Car	16	13	4	4	1	4	0	5
Public transport	15	19	2	5	0	14	0	7
Taxi or ojek	1	0	1	1	0	0	0	0
Other	3	2	0	1	0	1	0	1
Total	100	100	100	100	100	100	100	100

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Food shopping patterns

Main reason for using this type of food outlet
(percent of urban households that use this type)

	Hyper-market	Super-market	Mini-market	Semi-perm. stand	Small shop	Tradi-tional market	Peddler	Total
Low price / value	19	29	21	26	11	45	10	23
Variety of foods	29	23	12	10	1	22	2	13
Easy to get to	11	16	47	49	77	19	70	45
Other	41	33	19	16	10	14	18	0
Total	100	100	100	100	100	100	100	100

"Other" reasons for going to hypermarket or supermarket include close to entertainment, provides discounts, high quality food, and cleanliness

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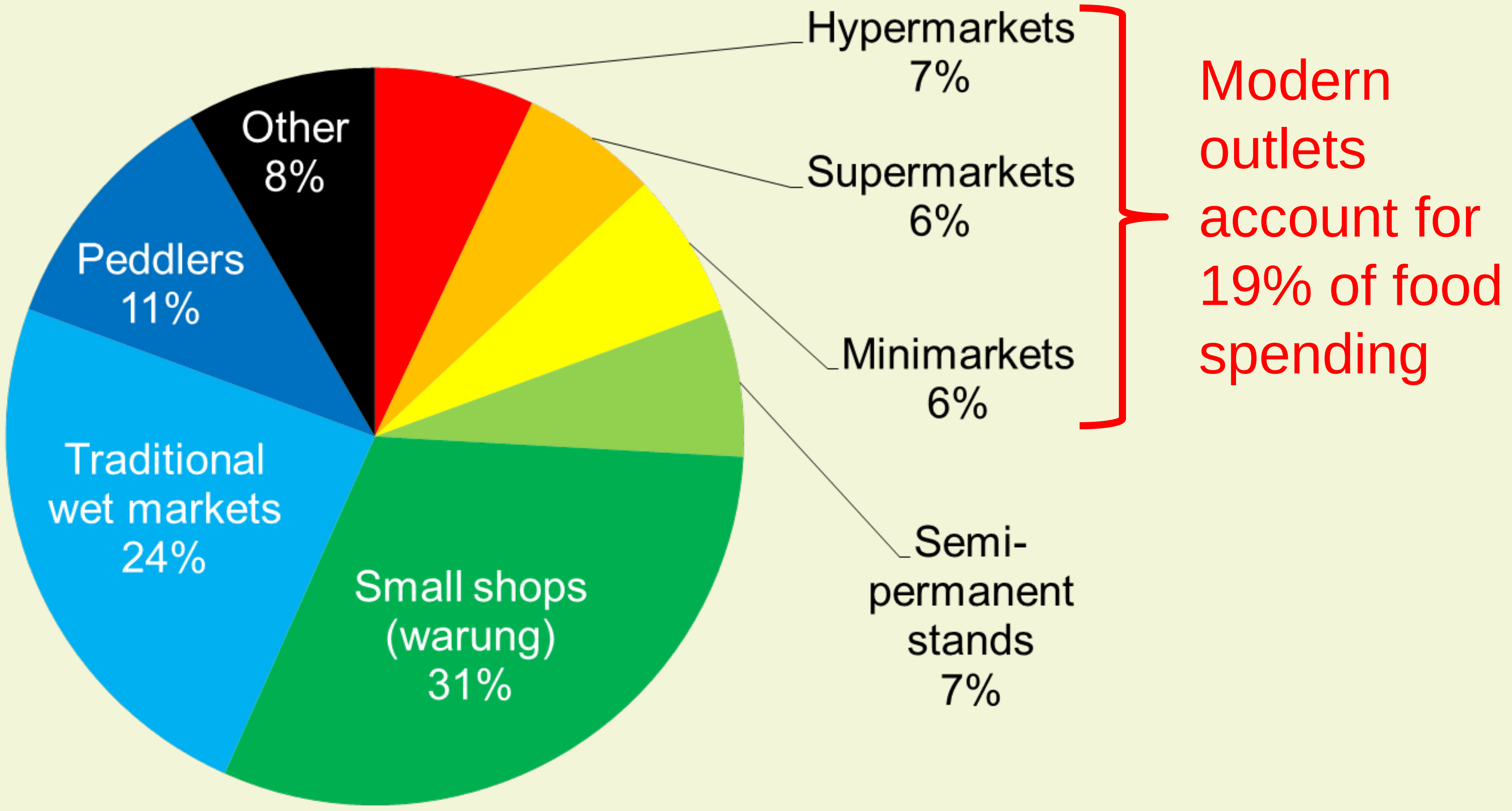
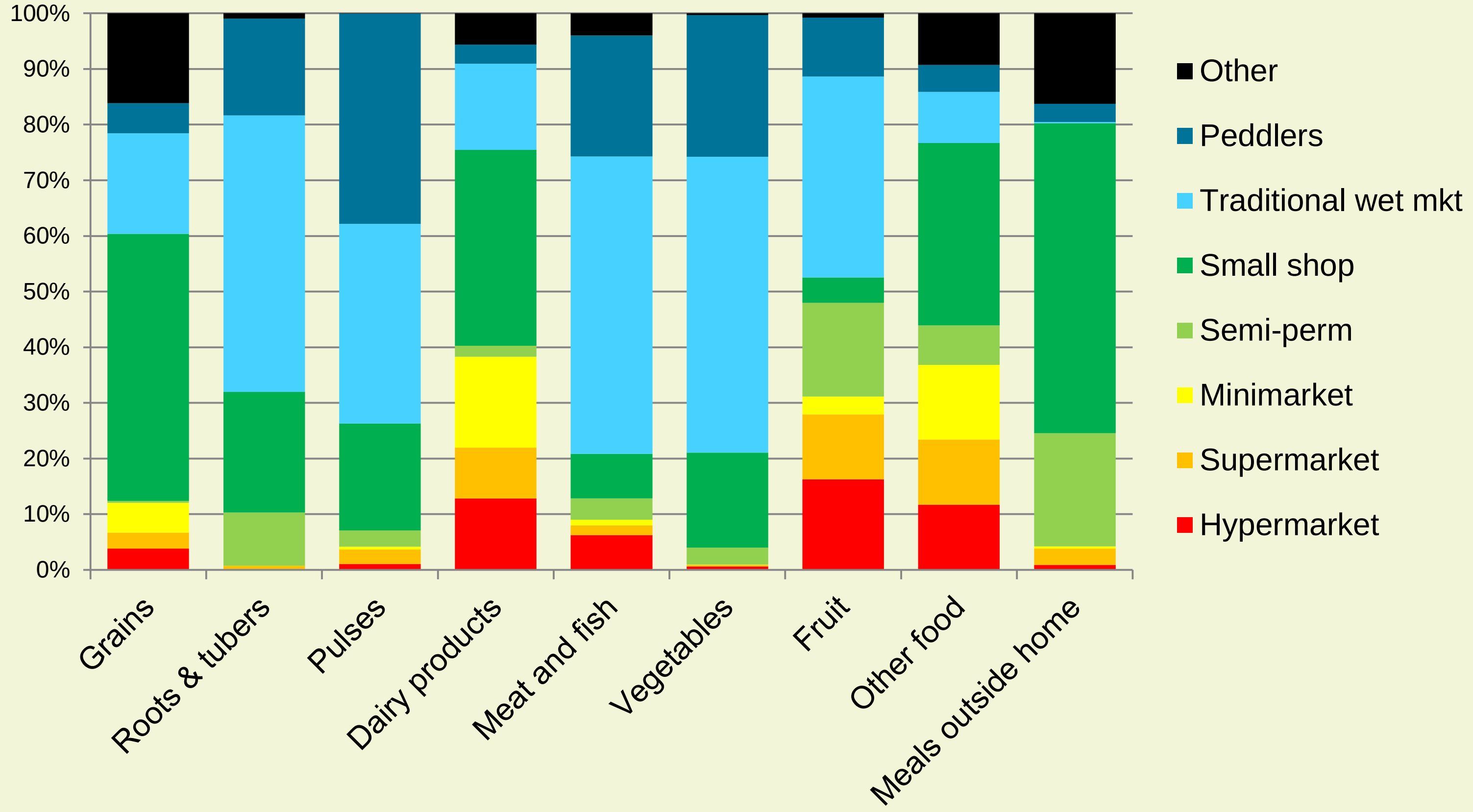
Food shopping patterns

Share of food spending by type of food outlet
(percent of urban food expenditure)



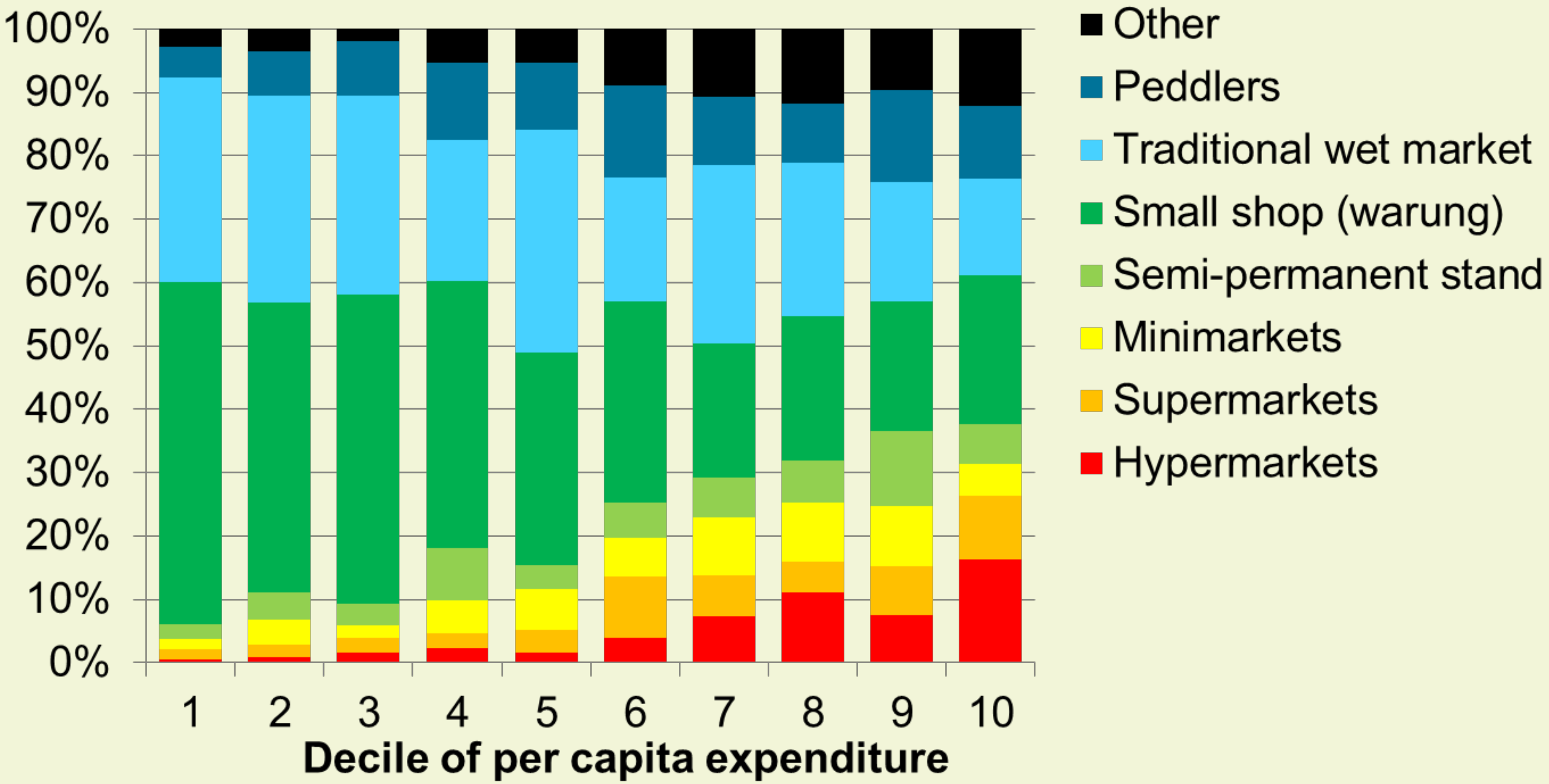
Food shopping patterns

Share of food spending by type of food outlet and food group
(percent of urban food expenditure)



Food shopping patterns

Share of food spending by type of food outlet and income
(percent of urban food expenditure)



Determinants of share of food spending at modern retail outlets

- **What factors influence**
  1. **Rising share of households using modern food outlets**
  2. **Rising share of spending at modern outlet by customers**

Determinant	Effect on use of modern outlet	Effect on spending at modern outlet
Per capita expenditure (log)	++	+++
Per capita expenditure (log squared)	- -	- - -
Household size	+++	+++
Female-headed household	0	0
Education of head of household	+++	+++
Working wife	0	0
Own refrigerator	+++	+++
Own motorbike, car, or truck	+++	0
Time to get to nearest modern retailer (min)	0	0
Surabaya	0	++
Bogor	0	++

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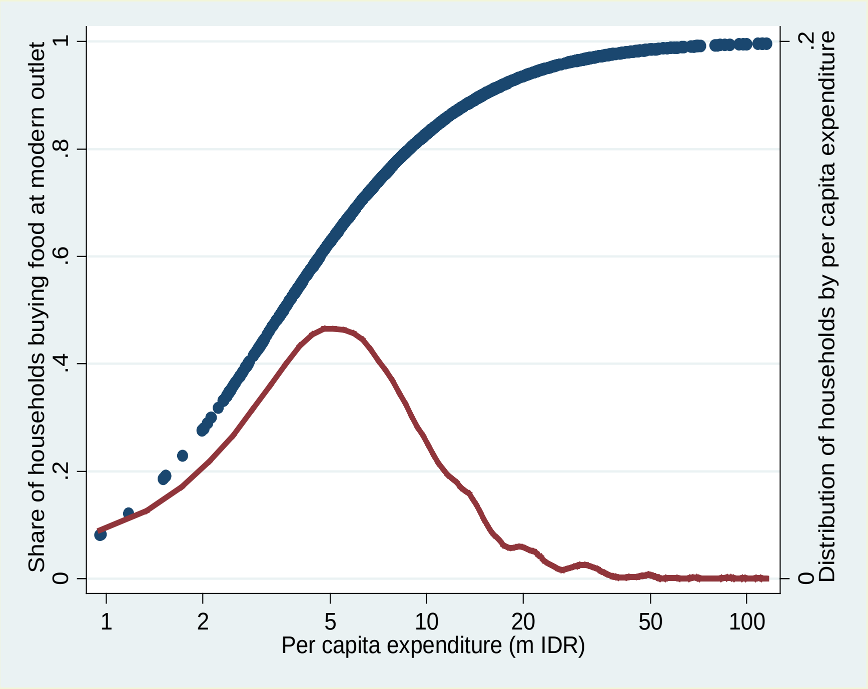
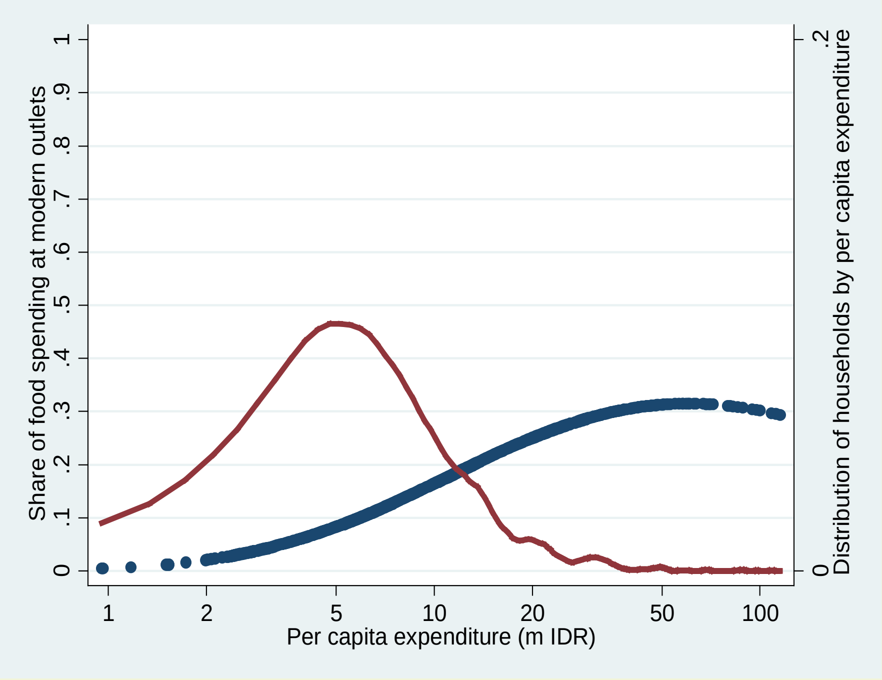
Effect of income on..

…share of households shopping at modern retailers?



…share of food budget spent at modern retailers?



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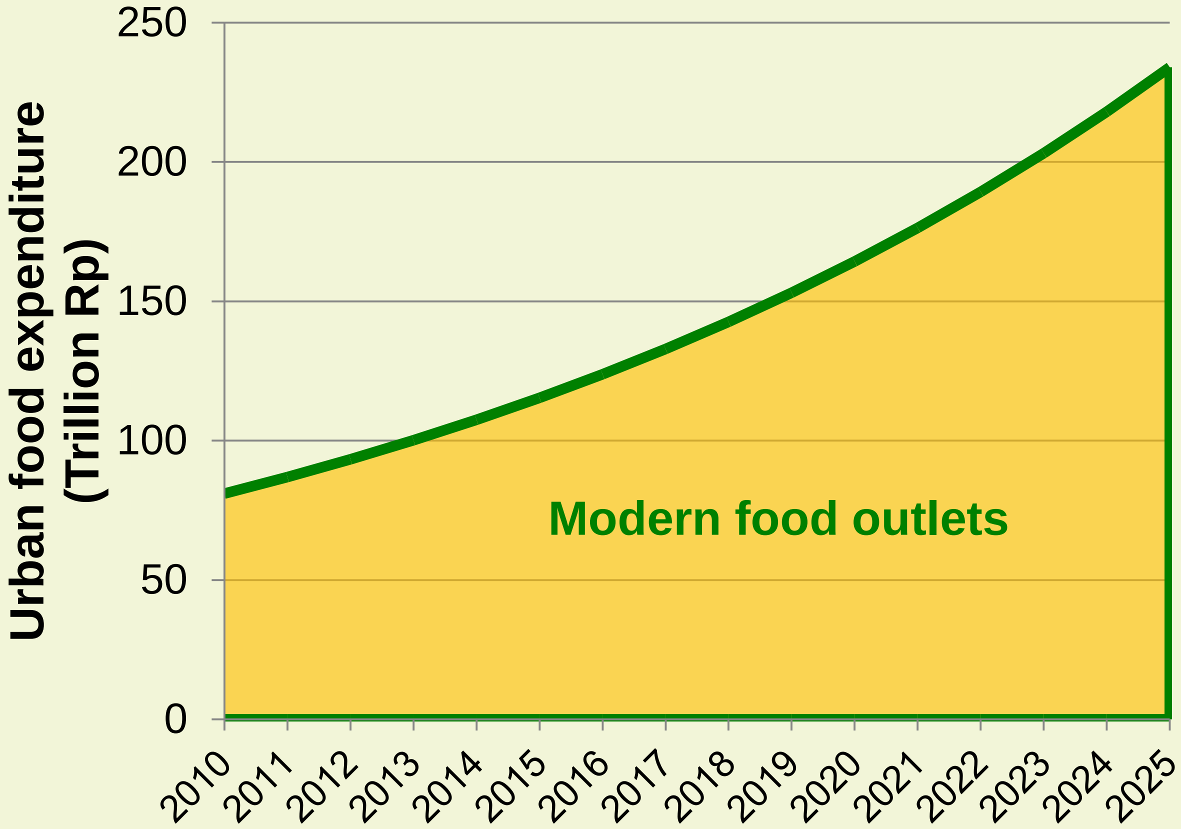
Projecting evolution of food retail sector

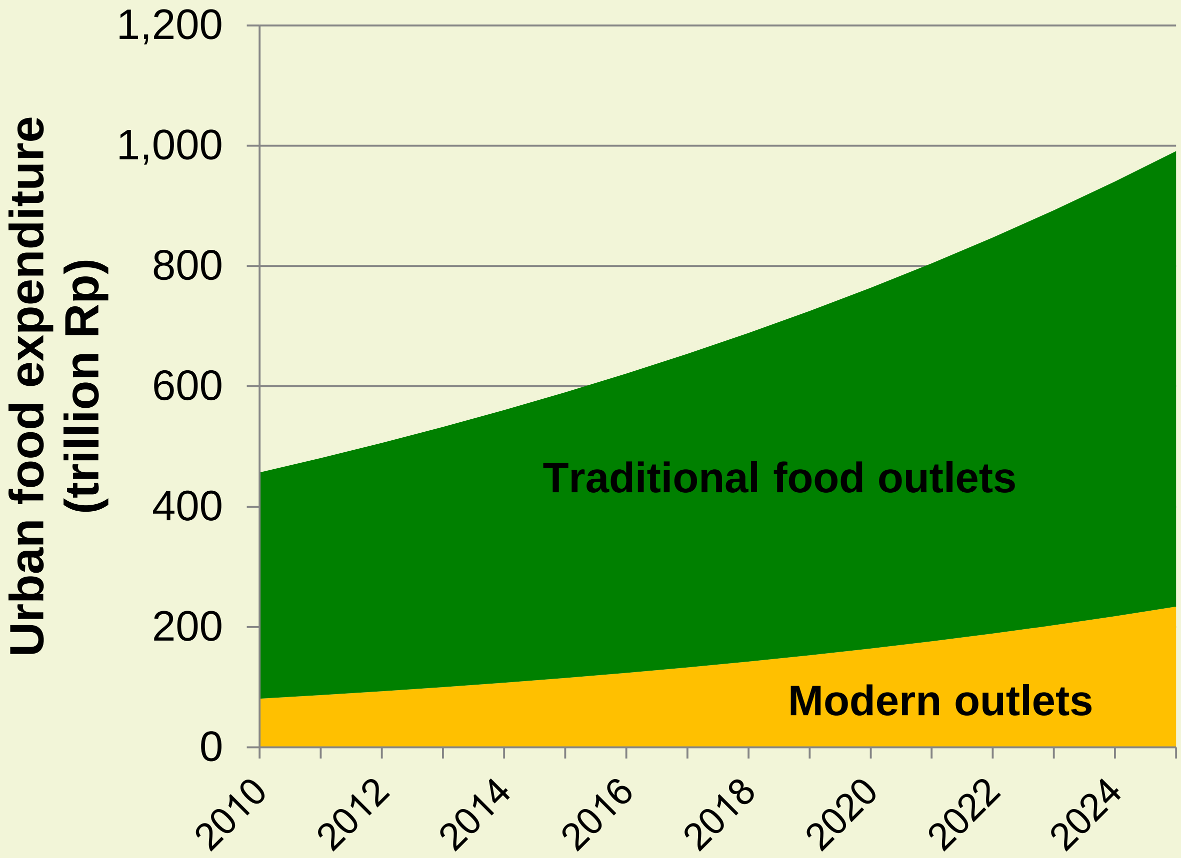
- What is the projected total urban expenditure at modern food outlets?
  - Taking into account income growth (4.5%), urban population growth (2.5%), and declining share of food in total expenditure



Total food expenditure at modern outlets grows from 81 to 234 trillion Rp per year, about 7.3% per year

Projecting evolution of food retail sector

- **What is the projected total urban expenditure on food (modern and traditional)?**



…but food expenditure at traditional outlets will remain three-quarters of total food expenditure over 15 years.

Conclusions & implications for small farmers

- What is share of urban food purchased at supermarkets?
  - (estimates range from 11% to 30%)

  We estimate 19% of urban food from all modern retail outlets
- How quickly is supermarket share likely to increase over time?

  Not quickly. May only reach 24% in 2025
- Is supermarket growth squeezing out traditional retailers?

  No. Traditional food retailers continue to grow but at slower rate (4.8%)
- Is supermarket growth hurting small farmers, who are unable to meet quality standards and minimum quantities? Or given them new opportunities to earn higher incomes?

  For vegetables, neither. Negligible share of vegetables sold through modern channels.

  For fruit, maybe. About 32% of fruit sold through modern channels, but mostly imported fruit like apples and oranges.

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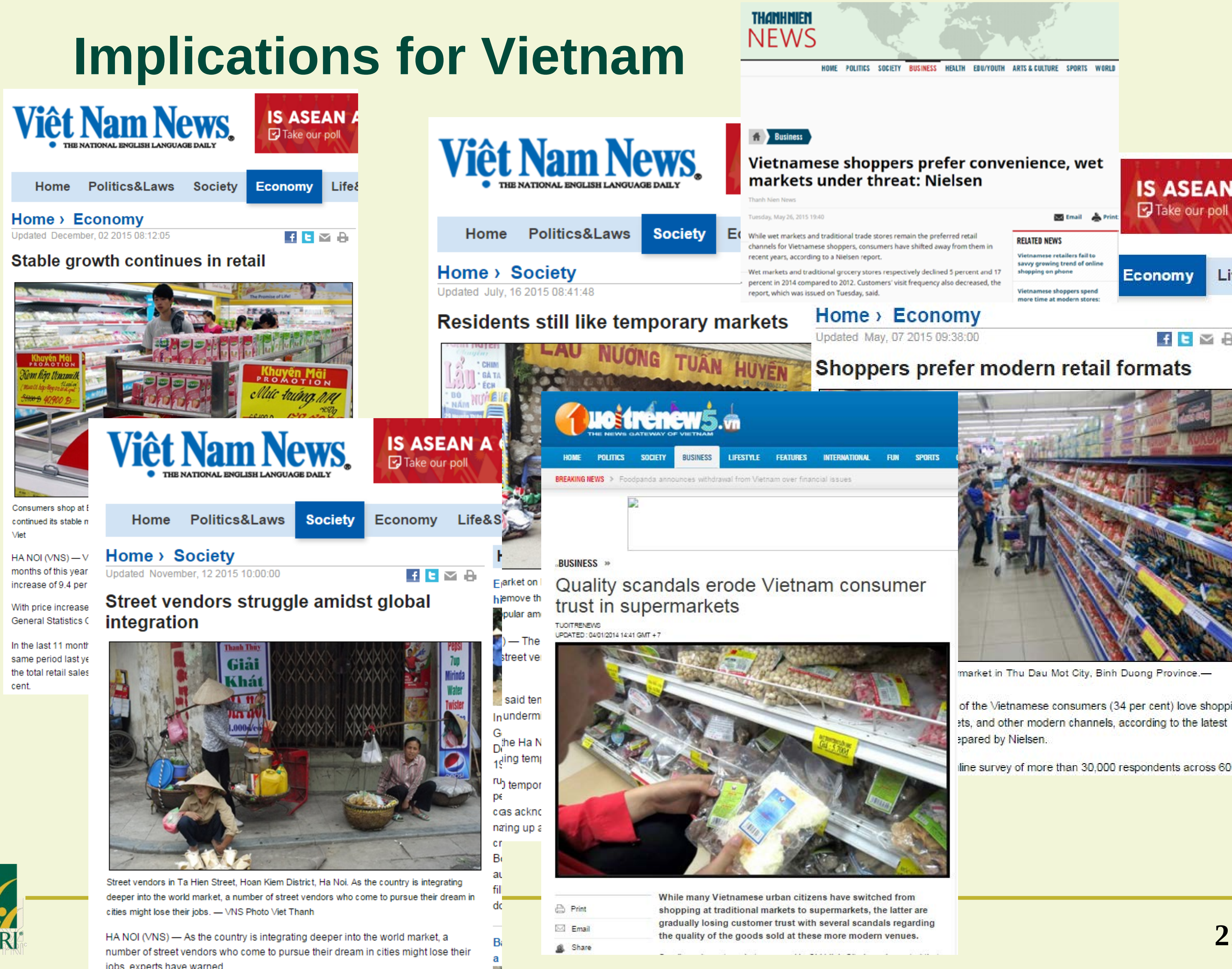
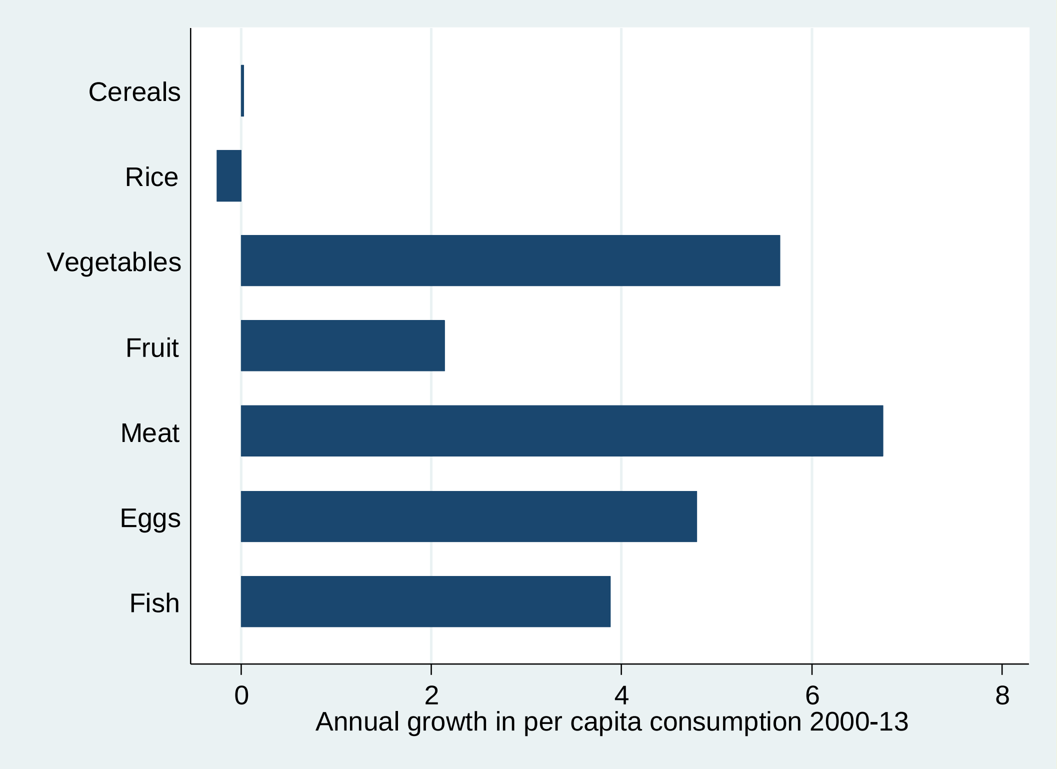
Implications for Vietnam



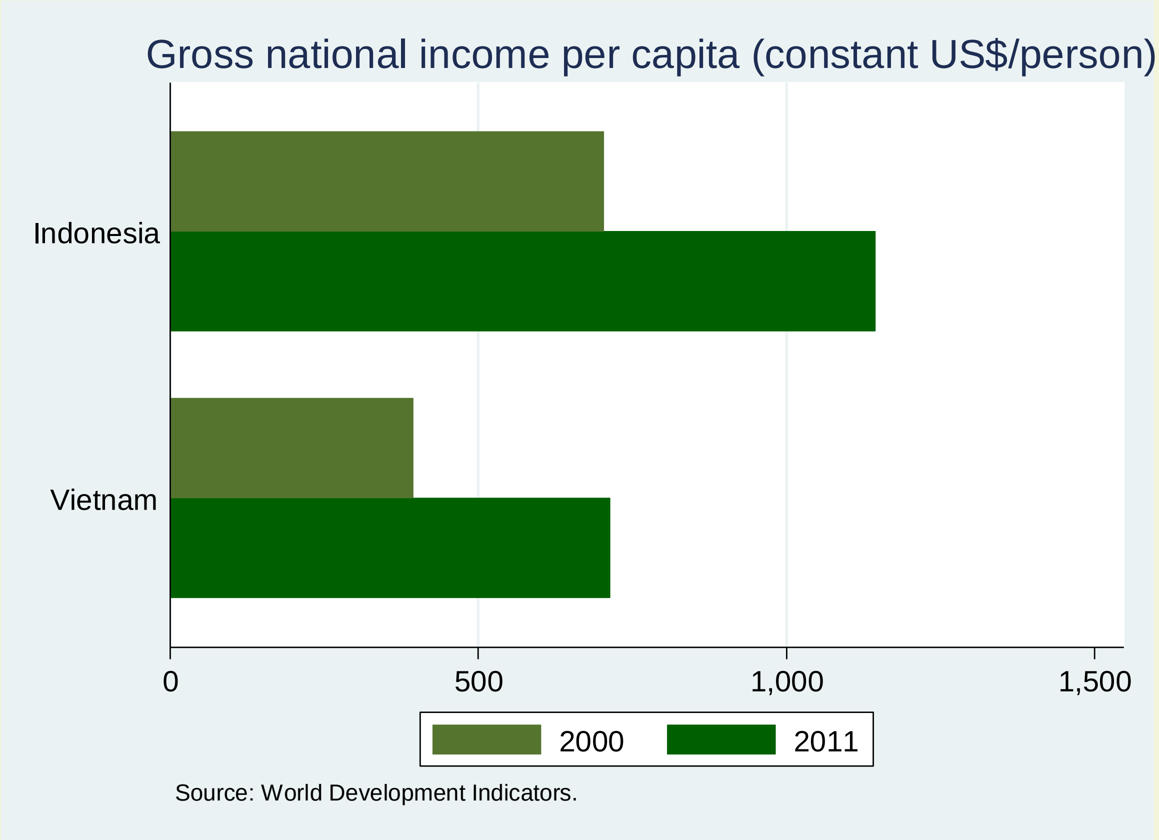
Implications for Vietnam

- Diet transition in Vietnam over 2000-13
  - No growth for cereals, negative growth for rice
  - Rapid growth for meat, vegetables, eggs, and fish



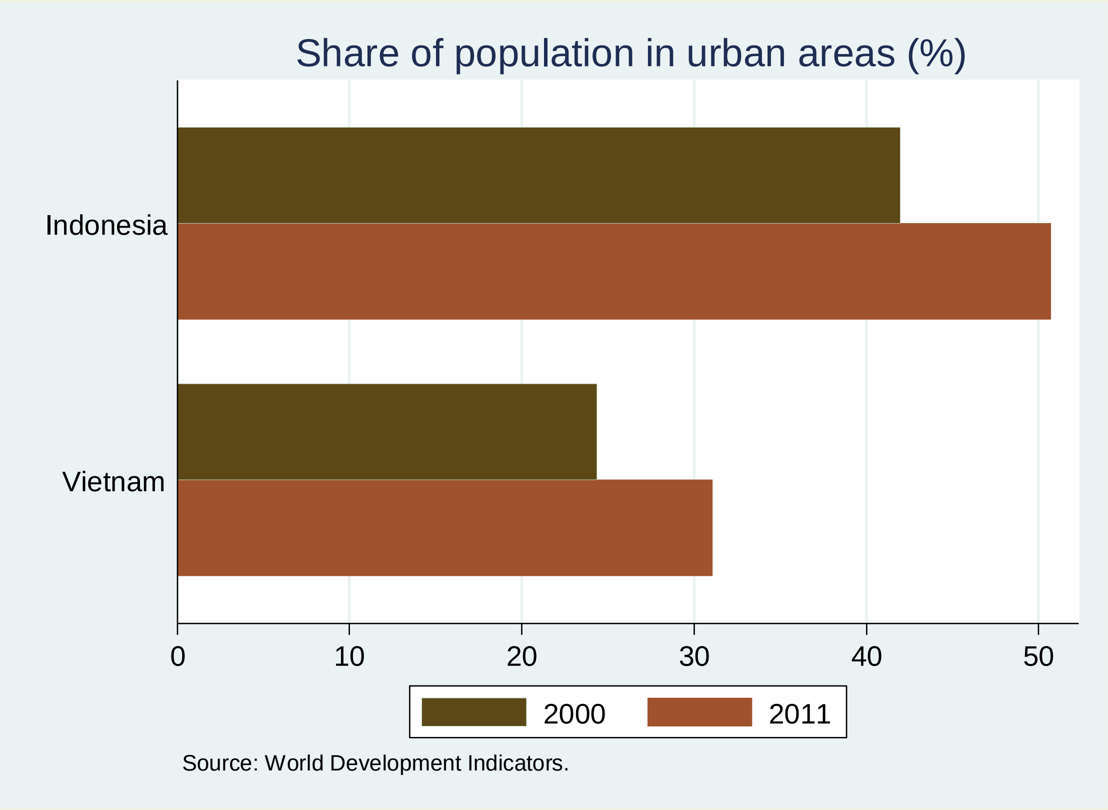
Implications for Vietnam

- Per capita income
  - Per capita income in Vietnam is about 40% lower than in Indonesia
  - But Vietnam is growing more quickly



Implications for Vietnam

- Urbanization
  - Vietnam is less urbanized (31%) than Indonesia (51%)
  - But urban population is growing more quickly



Implications for Vietnam

- Rapid growth in income in Vietnam is driving diet transition
- Rice consumption is declining, demand for animal products rising quickly
- But level of income in Vietnam is 40% lower than in Indonesia so supermarket penetration *in urban areas* is probably lower
- Urbanization in Vietnam is lower than in Indonesia so supermarket penetration *at national level* probably substantially lower

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Thank you!

Comments and suggestions welcome:
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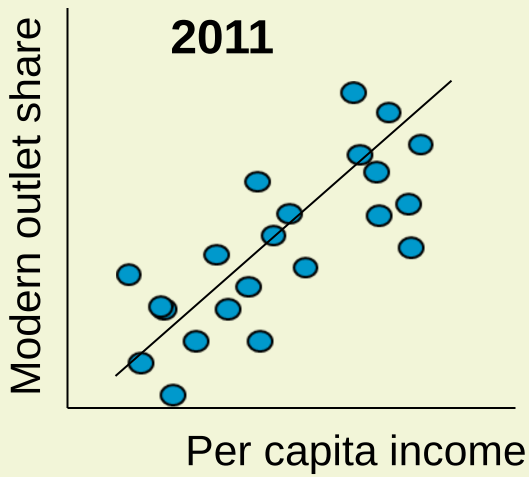
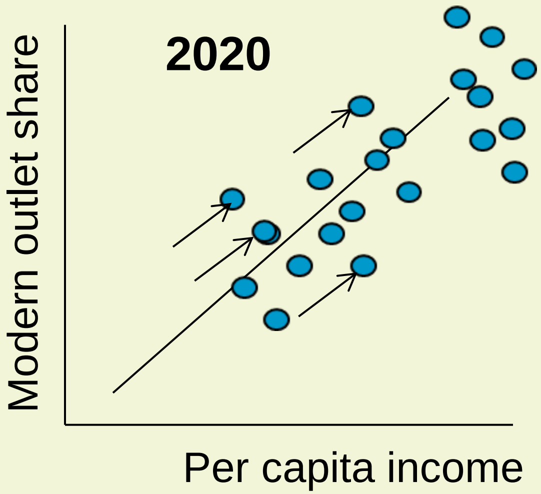
Projecting evolution of food retail sector

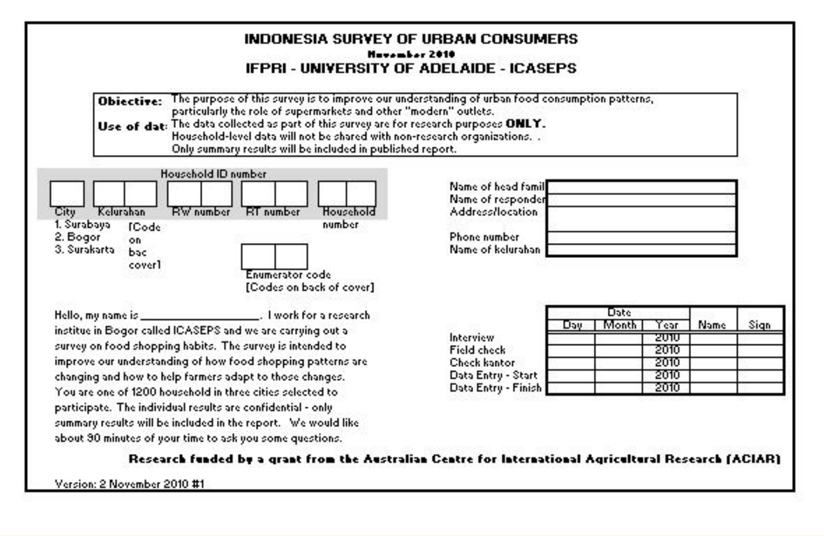
- **Key assumptions in making projections**
  - **Urban population growth: 2.5%**
    - **World Bank & UN, http://data.worldbank.org/indicator/SP.URB.GROW**
  - **Per capita income growth: 5.5%**
    - **Projection 2010-14, http://devdata.worldbank.org/AAG/idn_aag.pdf**
  - **As incomes rise, households will follow patterns of higher income households today**





Design of urban consumer survey

- Questionnaire
  - 16-page questionnaire
    - Household member characteristics
    - Assets and housing
    - Shopping attitudes and behavior
    - Food & non-food expenditure
    - Perceptions
    - Attitude toward certification
    - Nutrition status
- Data collection
  - 33 enumerators in three teams
  - Nov 2010 to Feb 2011


INDONESIA SURVEY OF URBAN CONSUMERS

November 2010

IFPRI - UNIVERSITY OF ADELAIDE - ICASEPS

Objective: The purpose of this survey is to improve our understanding of urban food consumption patterns, particularly the role of supermarkets and other "modern" outlets.

Use of dat: The data collected as part of this survey are for research purposes **ONLY.** Household-level data will not be shared with non-research organizations. . Only summary results will be included in published report.

Household ID number

City | Kelurahan | RW number | RT number | Household number

City: 1. Surabaya 2. Bogor 3. Surakarta

Kelurahan: [Code on bac cover]

Enumerator code [Codes on back of cover]

Name of head famil
Name of responder
Address/location
Phone number
Name of kelurahan

Hello, my name is ____________________. I work for a research institue in Bogor called ICASEPS and we are carrying out a survey on food shopping habits. The survey is intended to improve our understanding of how food shopping patterns are changing and how to help farmers adapt to those changes. You are one of 1200 household in three cities selected to participate. The individual results are confidential - only summary results will be included in the report. We would like about 90 minutes of your time to ask you some questions.

	Date			Name	Sign
	Day	Month	Year		
Interview			2010		
Field check			2010		
Check kantor			2010		
Data Entry - Start			2010		
Data Entry - Finish			2010		

Research funded by a grant from the Australian Centre for International Agricultural Research (ACIAR)

Version: 2 November 2010 #1

Food shopping patterns

Food products for which **more than 50%** of spending at modern retail outlets

Food product	% from modern outlets
Infant formula & nutr	92
Spreads	91
Other dairy products	84
Other cooking oils	68
Other fresh and froze	68
Apple	67
Other milk	67
Fats, butter, and mar	65
Chocolate, meisus, an	63
Alcoholic beverages	59
Chili sauce and other	57
Breakfast cereals	57
Processed meat	51
Other processed food	51

Other food products of interest

Food product	% from modern outlets
Mango	7
Mangosteen	10
Shrimp	11

Food products for which **less than 4%** of spending at modern retail outlets

Food product	% from modern outlets
Other seafood	5
Onion	5
Meals eaten outside home	4
Poultry	4
Maize products	4
Other meats	4
Fish	4
Pineapple	4
Rice	3
Potato	3
Other spices and seas	3
Processed fish & seaf	2
Ready-to-eat meals	2
Tofu and tempe	2
Green bean (buncis)	1
Tomato	1
Carrots	1
Garlic	1
Tubers	1
Chilies	1
Leafy green vegetable	1
Long bean	0
Shallots	0
Cucumber	0

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Effect of transformation on food security

- Effect on farmers
  - Supermarket chains establish structured supply chains
  - Regular suppliers, sometimes with contracts
  - Private quality and food safety standards
  - Preference for larger suppliers that can supply throughout year

  - Opportunities for small farmers
    - Technical assistance to improve yield and quality
    - Higher prices
    - High-value crops provide better return on small plots

  - Challenges for small farmers
    - Need to meet higher quality standards
    - Need to achieve minimum quantities
    - Risk of being excluded from growing lucrative markets

Outline

- Background on transformation of diet & agriculture
- Objectives & design of urban consumer survey
- Patterns of urban shopping behavior
- Model of purchases from modern food outlets
- Projections of role of modern food outlets
- Implications for high-value agriculture
- Conclusions

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Overview of project

- Project title: Markets for high-value commodities in Indonesia: Promoting competitiveness and inclusiveness
- Funding: ACIAR
- Implementation: IFPRI, University of Adelaide, ICASEPS, CAPAS, Michigan State University
- Objectives:
  - Study determinants and outcomes of participation of farmers in modern market channels
  - Explore patterns of urban consumer demand
  - Identify policies to promote the competitiveness and inclusiveness
  - Build research capacity
- Activities
  - Surveys of farmers of chilies, shallots, mangoes, mangosteen, & shrimp
  - Survey of urban consumers in three cities
  - Value chain studies
  - Training and capacity building

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Effect of transformation on food security

Potential effects on three groups: consumers, competitors, and farmers

- **Effect on urban consumers**
  - Greater access to processed food with higher levels of sugar, salt, and fat
  - Possible effect on diet and obesity
  - Some evidence of this (study of supermarkets in Honduras)

- **Effect on competitors**
  - Growth of supermarkets will displace traditional shops
  - Possible effect on employment, income, & nutrition of families of shop owners and employees

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Food expenditure data

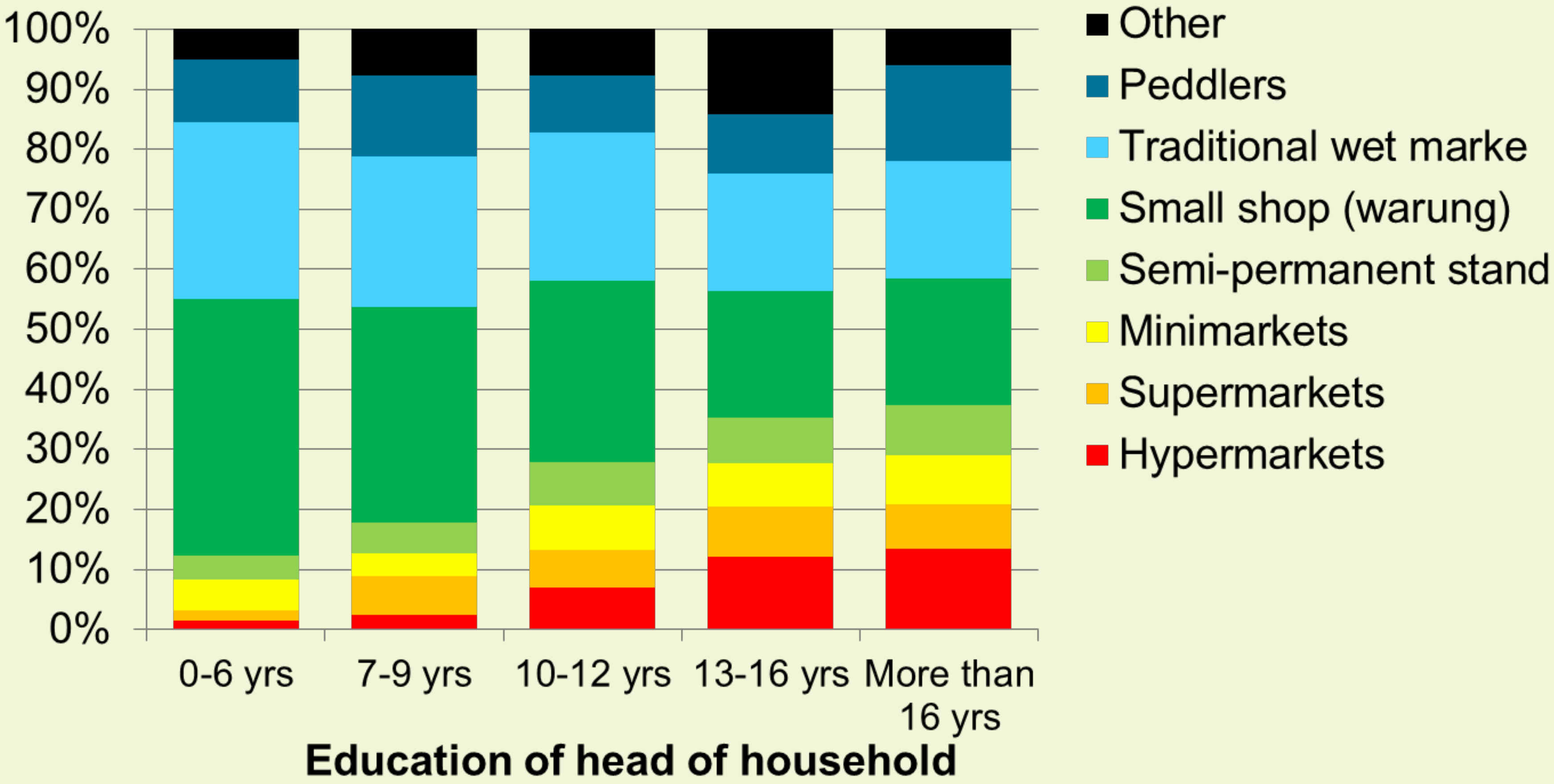
- **Food expenditure module**
  - **67 food categories**
    - **7 rice and other grain products**
    - **3 beans, soy, and tofu**
    - **12 animal products**
    - **23 fruits and vegetables**
    - **22 other (spices, beverages, etc)**
- **Questions on**
  - **Change in consumption over past five years**
  - **Frequency of purchase**
  - **Normal amount of purchase**
  - **Main type of store where bought**

E2. FOOD CONSUMPTION (fruits and vegetables)

			ASK ONLY IF E2 = 1			
		Food Consumption	**Change in Consumption**	**Purchased food**		
		During the past 12 months, has your household consumed any [...]? 1. Yes 2. No	Are members of your household consuming smaller or larger quantities of [...] on a per person basis than 5 years ago? 1. Smaller quantities 2. About the same 3. Larger quantities 4. Never consumed	During the past month, how many times did your household purchase [...]? Number of times	For each purchase, what is the normal value of [...] bought for household consumption? Value in Rupiah	Where do you buy most of the [...]? 1. Hypermarkets 2. Supermarkets 3. Minimarkets 4. Semi-perm. stand 5. Smallshop (warung) 6. Traditional wet 7. Peddlers 8. Other (e.g. Chemist)
E1	**Food Product**	E2	E3	E4	E5	E6
611	Chilies					
612	Shallots					
613	Onion					
614	Garlic					
615	Cucumber					
616	Leafy green vegetables e.g Spinach, Water Spinach, Bok					
617	Long bean					
618	Green bean (buncis)					
619	Tomato					
620	Potato					
621	Carrots					
622	Other fresh and frozen vegetables					
623	Canned or dried vegetables (NOT fried or crisps)					
711	Banana					
712	Mango					
713	Papaya					
714	Mangosteen					
715	Apple					
716	Melon					
717	Pineapple					
718	Orange /mandarins and other citrus					
719	Other fresh fruit					
720	Other fruit (canned, dried, processed, frozen,					

Food shopping patterns

Share of food spending by type of food outlet and education
(percent of urban food expenditure)



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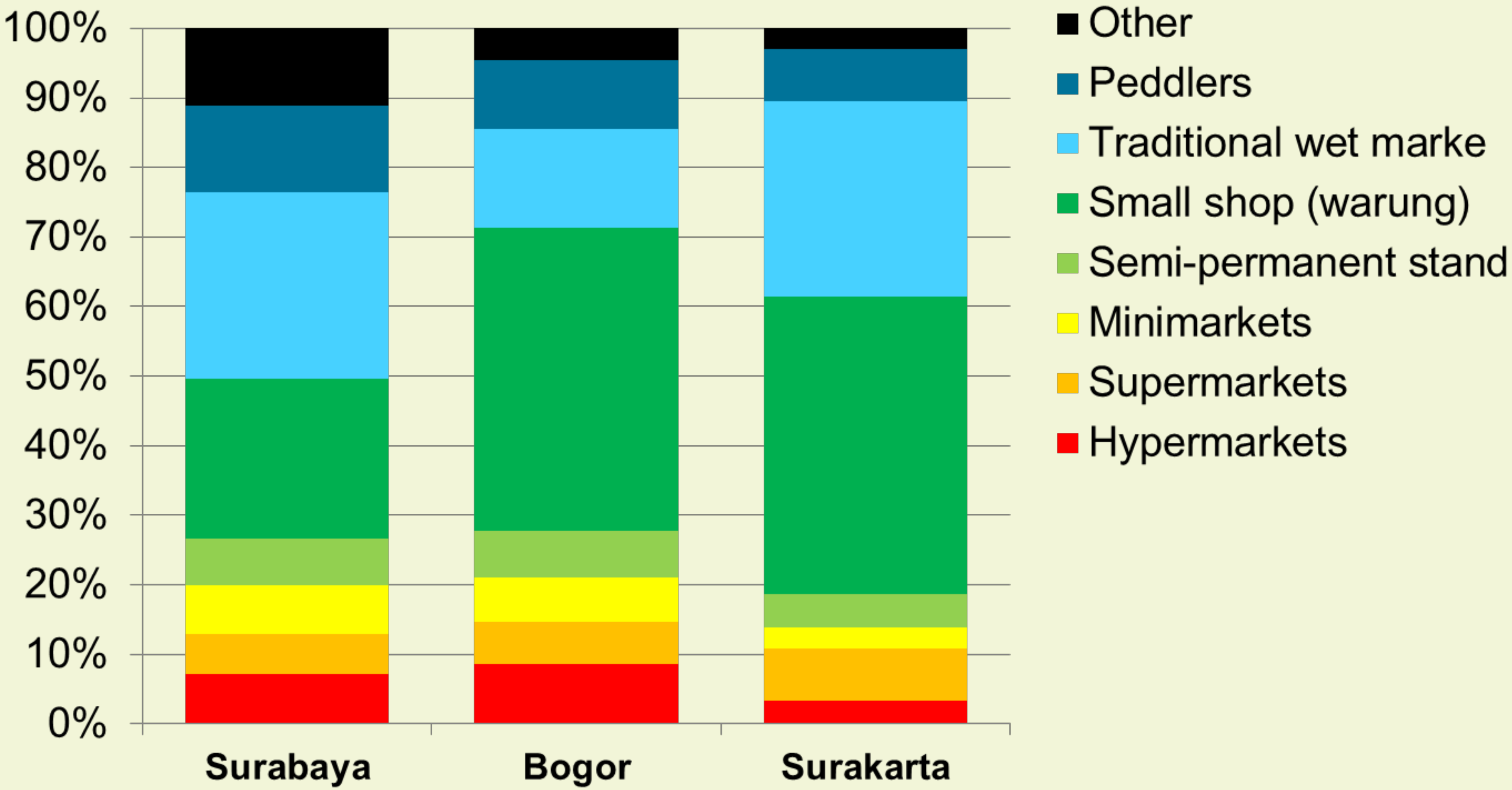
Food shopping patterns

Share of food spending by type of food outlet and city
(percent of urban food expenditure)



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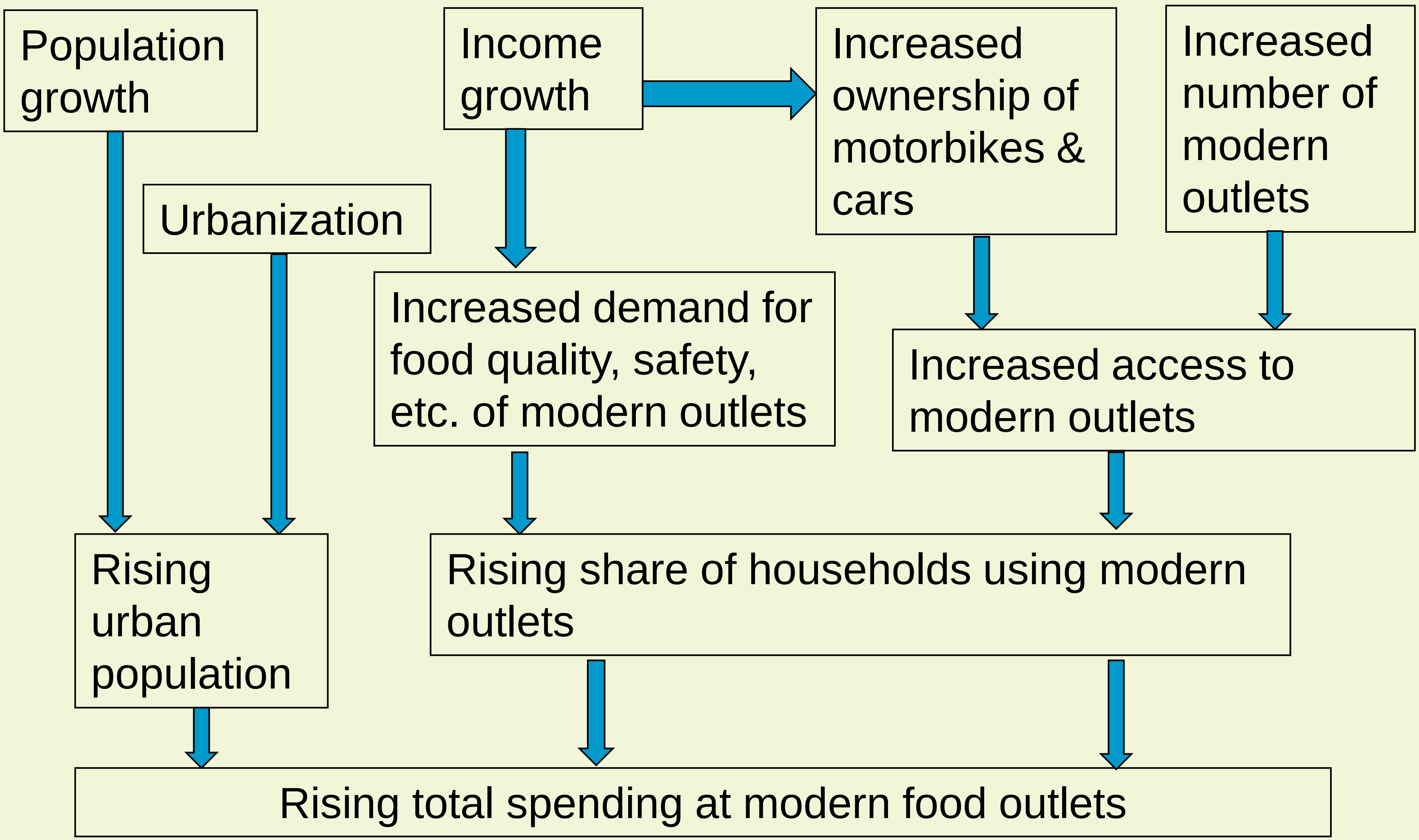
Transformation of diet and shopping patterns



Other results

Chili channel choice (Sahara et al)

- Survey of 600 chili farmers in the highlands of central Java
- Participation in the modern channel (supermarkets) is linked to proximity to road, more education, and younger farmers
- Participation is *not* related to farm size, irrigated area, or ownership of assets (other than storage facility).
- Farmers who participate in the modern channel have 75% higher incomes, even after controlling for education, assets, and farm size.
- However, participation in the modern channel is still quite rare: just 3% of the random sample of chili farmers sell to supermarkets.

Shallot farmer survey

- Survey of 600 shallot farmers on north coast of Java (Brebes & Tegal)
- More than two-thirds of the sales involve selling shallots in the ground (trader hires labor and takes responsibility for harvesting)
- Main quality criterion is size – larger shallots get a better price
- Just 2% of farmers report that shallots are sold to supermarket