



Structural Transformation & the Release of Labor from Agriculture

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Indonesia is undergoing structural transformation, with economy shifting from agriculture to non-agriculture

Structural Transformation in Indonesia (%)

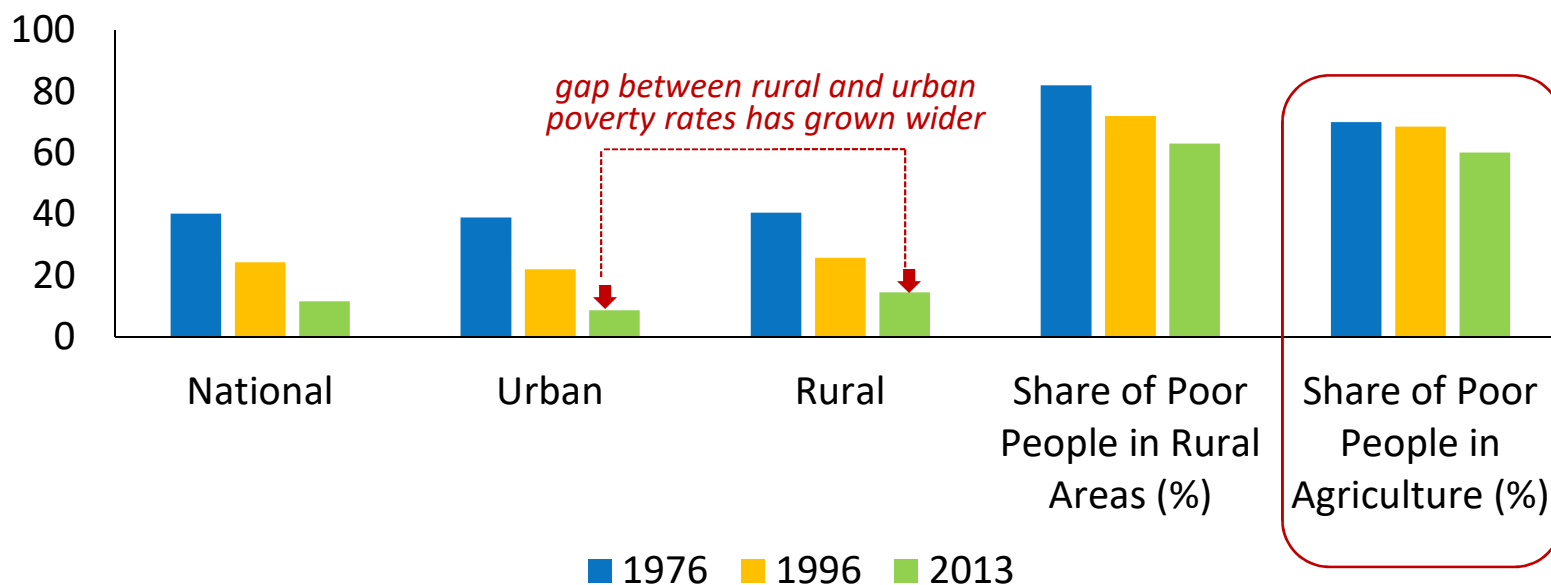
Sector	Indicator	1967	2014	Change	Change from the 1967 Level (%)
 Agriculture	Share of GDP	51.4	13.3	-38.1	-74
	Share of employment	69.0	34.3	-34.7	-50
	GDP/employment ratio	0.75	0.39	-0.36	-47
 Non-agriculture	Share of GDP	48.6	86.7	38.1	78
	Share of employment	31.0	65.7	34.7	119
	GDP/employment ratio	1.57	1.32	-0.25	-15.8

GDP = gross domestic product

Sources: For GDP data, World Bank Open Data, data.worldbank.org (accessed 26 June 2016); for employment data, Sandri et al. (2007) and BPS (various years) Statistical Yearbook of Indonesia

While there has been success in reducing overall poverty, agriculture remains poverty-ridden

Poverty Rate in Indonesia, 1976–2013 (%)



Sources: BPS. *Number of Poor People. Percentage of Poor People and the Poverty Line, 1970–2017* (accessed 26 June 2016); and Suryahadi et al. (2009).

What we need to know

- **Individual choice of sectoral employment** during their lifetime. In this case we need a longitudinal data to observe workers behavior
- **Individual and household attributes** that affect such behaviors
- **External incentives or disincentives** that are impactful enough to influence people to decide to move out of rural agriculture

Data: Indonesia Family Life Survey (IFLS) is a uniquely designed household survey that makes it possible to investigate our questions because...

- It is a longitudinal dataset that represents 83% of population in Indonesia
- It has been conducted in 5 rounds for over 21 years from 1993 up to 2014
- It collects both detailed individual and household information as well as community-level information.
- It has relatively good consistency with other labor market data such as SAKERNAS by the BPS

Our study confirms most people who started working in rural agriculture stay in the sector, or move to housekeeping and out of the labor market

Matrix of Employment Transformation, 1997–2014

Main Job in 1997	Main Job in 2014 (%)								
	Rural			Urban			Unemployed	Housekeeping	Out of Labor
	Agri	Ind	Serv	Agri	Ind	Serv			
Rural									
Agri	35.06	16.09	13.86	6.27	2.91	4.71	0.04	9.50	11.49
Ind	15.23	17.38	17.97	6.84	10.35	17.97	0.59	8.20	5.47
Serv	17.41	10.95	26.12	5.78	5.60	17.07	0.17	8.45	8.45
Urban									
Agri	3.33	2.00	2.50	24.13	11.65	30.45	0.17	11.48	14.31
Ind	0.68	1.23	1.77	6.96	25.10	43.79	0.27	13.23	6.96
Serv	0.78	0.54	2.05	8.43	16.02	45.84	0.18	13.67	12.47
Unemployed	8.19	7.60	8.77	9.94	15.79	33.33	1.17	12.28	2.92
Housekeeping	6.06	7.32	10.61	4.29	10.86	21.46	0.00	34.60	4.80
Out of Labor	6.19	4.76	10.48	8.57	15.71	33.81	0.48	15.95	4.05

Agri = agriculture, ind = industry, serv = services

Source: Authors' calculations based on data from Rand Corporation (various years), Indonesia Family Life Survey

Both female and male have similar tendency to stay at rural agriculture. However, significant number of female opt out labor market as they switch to housekeeping activities.

Main Job in 1997 and Gender	Main Job In 2014										Total	Number
	Rural Agriculture	Rural Industry	Rural Services	Urban Agriculture	Urban Industry	Urban Services	Unemployed	Housekeeping	Out of Labor Market			
Rural Agriculture												
Male	39.62	17.87	13.37	7.25	3.80	5.14	0.07	0.91	11.82	100	1,419	
Female	30.43	14.29	14.36	5.29	2.00	4.29	0.00	18.21	11.14	100	1,400	
Rural Industry												
Male	17.69	16.67	18.03	8.84	12.24	19.05	1.02	1.36	5.10	100	294	
Female	11.93	18.35	17.89	4.13	7.80	16.51	0.00	17.43	5.96	100	218	
Rural Services												
Male	20.45	11.54	22.73	6.47	7.69	19.06	0.35	1.40	10.31	100	572	
Female	14.46	10.37	29.42	5.10	3.57	15.14	0.00	15.31	6.63	100	588	

Source: Authors' calculations using data from Rand Corporation (various years), Indonesia Family Life Survey.

More educated workers are more likely to move out of rural agriculture, suggesting bigger role of education to improve social mobility.

Main Job In 2014											
Main Job in 1997 and Completed Education	Rural Agriculture	Rural Industry	Rural Services	Urban Agriculture	Urban Industry	Urban Services	Unemployed	Housekeeping	Out of Labor Market	Total	Number
Rural Agriculture											
Not completed primary schooling	34.30	10.98	11.43	4.27	1.37	3.51	0.00	12.04	22.10	100	656
Primary	36.57	17.26	13.81	6.44	2.98	4.27	0.06	9.19	9.30	100	1,707
Lower secondary	33.97	22.90	15.65	4.58	3.82	6.49	0.00	8.02	4.58	100	262
Higher secondary	25.70	15.08	17.32	15.08	6.70	11.17	0.00	5.59	3.35	100	179
Diploma/university	26.67	0.00	53.33	0.00	0.00	0.00	0.00	6.67	13.33	100	15
Rural Industry											

Agri = agriculture, ind = industry, serv = services

Source: Authors' calculations based on data from Rand Corporation (various years), Indonesia Family Life Survey

Less and less new entrants choose their first job in rural agriculture, but those who did many remain in the sector over time

Proportion of New Entrants who Work in Rural Agriculture

1997	2000	2007	2014
38.36	37.90	26.12	11.63

Employment Transformation of Rural Agricultural Workers, 2007–2014

Rural Agriculture	Rural Industry	Rural Services	Urban Agriculture	Urban Industry	Urban Services	Unemployed	Housekeeping	Out of Labor Market	Total
47.00	17.19	13.37	3.20	1.84	2.59	0.08	6.94	6.60	100



Younger rural agricultural workers have higher tendency to move to non-agricultural sectors both in rural and urban areas

Main Job in 1997 and Age	Main Job in 2014										Number
	Rural Agriculture	Rural Industry	Rural Services	Urban Agriculture	Urban Industry	Urban Services	Unemployed	Housekeeping	Out of Labor Market	Total	
Rural Agriculture											
1-15	21.15	28.85	25.00	1.92	5.77	5.77	0.00	7.69	3.85	100	52
16-30	33.91	19.62	19.62	5.48	4.04	6.20	0.00	9.24	1.59	100	691
31-45	39.26	18.22	14.61	7.57	2.90	4.84	0.09	8.71	3.79	100	1,136
46-60	34.82	11.61	9.04	5.40	2.16	4.18	0.00	11.74	21.05	100	741
61+	19.60	5.03	4.52	6.03	1.01	0.50	0.00	7.04	56.28	100	199

Agri = agriculture, ind = industry, serv = services

Source: Authors' calculations based on data from Rand Corporation (various years), Indonesia Family Life Survey

...for the poor, starting at rural industry and services gives better opportunity to move out to urban non-agriculture sectors

Main Job in 1997 and Poverty Status	Main Job in 2014										Total	Number
	Rural Agriculture	Rural Industry	Rural Services	Urban Agriculture	Urban Industry	Urban Services	Unemployed	Housekeeping	Out of Labor Market			
Rural Agriculture												
Not poor	34.20	16.53	14.20	6.27	2.76	5.27	0.00	9.60	11.12	100	2,104	
Poor	37.57	14.80	12.85	6.28	3.35	3.07	0.14	9.22	12.57	100	715	
Rural Industry												
Not poor	15.06	17.65	18.35	7.29	10.12	18.35	0.71	7.53	4.94	100	425	
Poor	16.09	16.09	16.09	4.60	11.49	16.09	0.00	11.49	8.05	100	87	
Rural Services												
Not poor	16.89	10.58	26.21	6.12	5.73	16.89	0.00	9.03	8.54	100	1,030	
Poor	21.54	13.85	25.38	3.08	4.62	18.46	1.54	3.85	7.69	100	130	

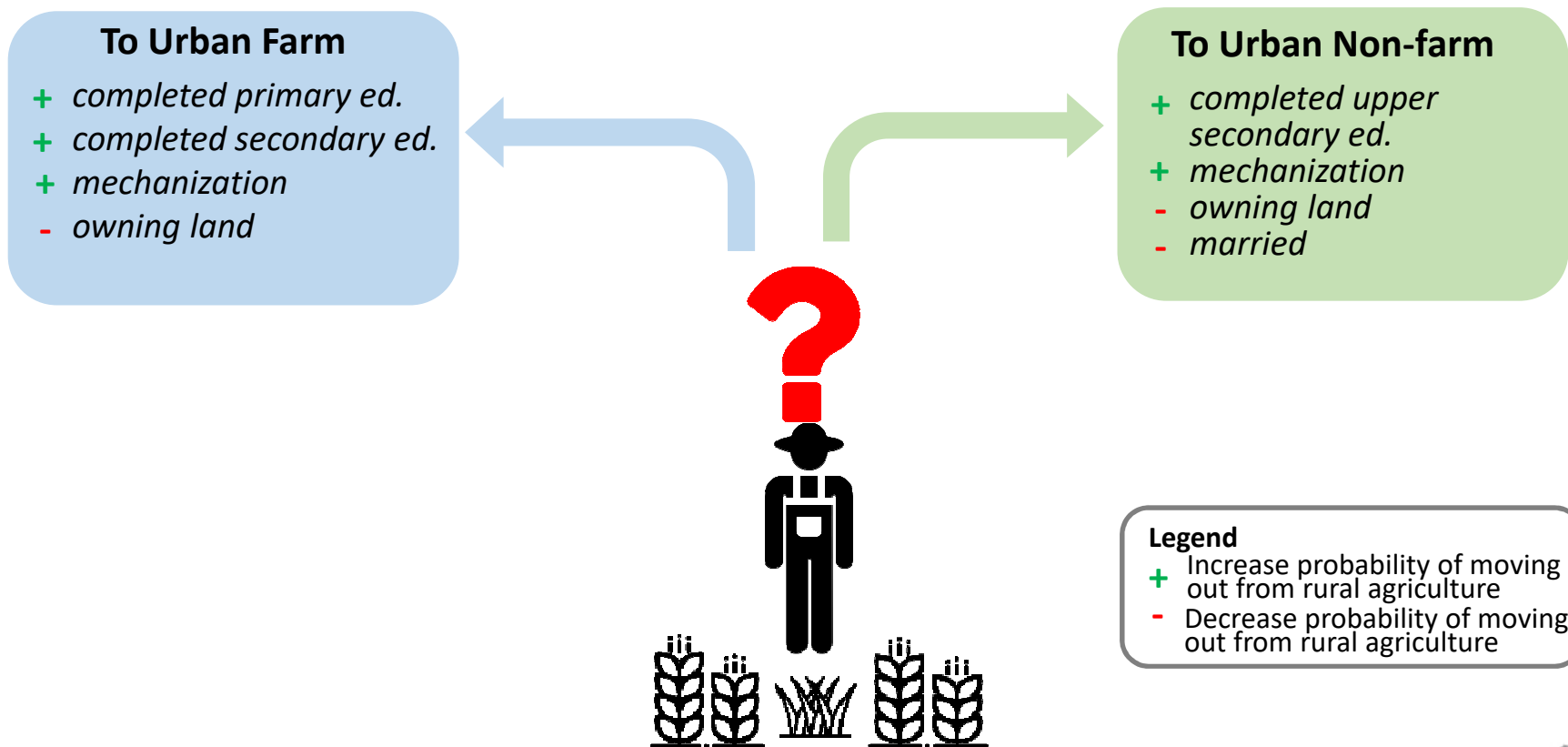
Source: Authors' calculations using data from Rand Corporation (various years), Indonesia Family Life Survey.

...we investigate more by conducting determinant analysis and focus on more recent period (2007-2014)

- Are there any specific individual and household characteristics that drive workers to more likely to move out of (or stay in) rural agriculture?
- Are there any non-household factors that might pull or push rural agricultural workers to move out of rural agriculture?



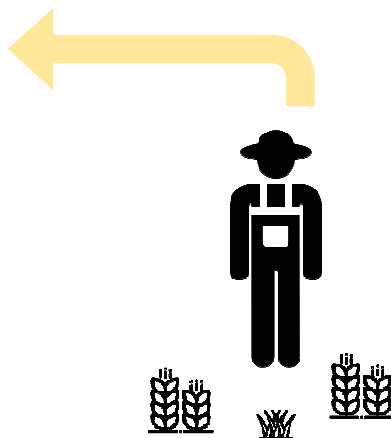
High educational attainment, mechanization, and not owing land push farm workers to seek urban non-farm jobs



...on the other hand, increasing terms of trade, plantation expansion, and mechanization push people to rural non-farm activities

To Rural Non-farm

- + *plantation expansion*
- + *terms of trade (NTP)*
- + *mechanization*
- *age*
- *male*
- *grow horticultural*



Legend

- + Increase probability of moving out from rural agriculture
- Decrease probability of moving out from rural agriculture

...these facts are important, since moving to non-farm activities is part of the transformation path



Conclusion

- Over the long run, significant structural transformation is evident in the Indonesian economy. However, it has been characterized by faster output than employment shifts from agriculture to industry and services
- People who started working in the rural agriculture sector have the lowest probability of moving to other sectors, especially to urban-located sectors
- We find that having second job, owning land, plantation expansion, and higher farmer terms of trade increase the probability of rural agricultural workers moving to non-farm sectors within rural areas
- Among the major factors that increase the probability of workers moving out of rural agriculture, education level is a strongest driver of employment mobility
- We also find that agricultural mechanization play significant role to speed up employment transformation

Policy Recommendations



Encourage faster employment transformation away from rural agriculture

- a) Expand education in rural areas up to the senior secondary level
- b) Invest more in agricultural mechanization to increase productivity and reduce the demand for agricultural workers



Diversification of agricultural products

- a) Promote more productive crops to replace staple crops to avoid unemployment as an undesirable effect of mechanization



Provide more investments in rural areas to diversify economies

- a) Create more opportunities for rural agricultural workers to take up a second job, which will then increase the probability of them moving to nonfarm sectors

Thank You

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