The rapid rise of agricultural mechanization in Myanmar

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Myanmar recent historical context

• Recently emerging from 50 years isolation - political & economic reforms from 2010
• Least developed economy in SE Asia
• Agricultural GDP = 38%; Population 70% rural
• Conventional view of Myanmar’s rural economy is gloomy one of stagnation:
  “The level of agricultural mechanization in Myanmar is still low... not a surprise given the low wages in rural areas, the excess agricultural labor, and the still-lacking infrastructure and regulatory environment for machinery service providers... Farmers in general do not have the access to long-term capital, preventing investments in agricultural machinery” (World Bank, 2016)
• BUT, situation changing very quickly
Data sources

• Two recent household surveys:
  • Delta: Myanmar Aquaculture-Agriculture Survey 2016, 4 townships, 1100 HH
  • Rural Economy and Agriculture Dry Zone Survey 2017, 4 townships, 1600 HH

• Both aim at generating ‘benchmark’ of current status of rural economy (farm & non-farm) and recent changes within it, including mechanization

• Survey of agricultural machinery supplier businesses from main ‘cluster’ in Yangon (2016)

• Surveys of suppliers and rental service providers in Dry Zone (ongoing)
Machines displacing draft animals; Mechanized harvesting

[Chart showing percentages of farm households using machinery and draft for land preparation, threshing, and combine harvesting.]

- Land Preparation: 12% machinery, 94% draft
- Threshing: 38% machinery, 2% draft
- Combine Harvesting: 50% machinery
Combined use of machines and draft animals

- Neither: 0%
- Cattle only: 22%
- Both cattle and machine: 76%
- Machine only: 2%

Share of farmers using draft animals and machinery for land preparation
Increasing ownership of machines

Cumulative number of machines

Cumulative purchases of selected machinery (1997-2017)
Increasing value of machines owned

Real annual value of agricultural machinery purchases at 2016 prices, by year and machine type (1997-2017)
Rental services enabling access to machines

Share of farmers using machinery, by machine type, year and ownership status (2017-2007)
Share of HH using machinery by landholding tercile and type of machine
Drivers: rural-urban migration

Cumulative share of all long-term migrants by year first migrated (%), 1995-2016
Migration $\rightarrow$ large rural wage increases

Change in real daily wages for male casual workers (2012-2016)
Price of machines falling

Simultaneous improvement in access to formal financial services

- Hire purchase agreements with commercial banks began in 2013
- Agricultural land titles can be used as collateral since 2012
- Reduced capital constraints for machine suppliers, cost of credit to buyers

**Source of finance for machinery purchases (2016)**
Geographical spread of machine supply businesses

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Conclusions

• Demand side drivers: Migration; rising wages rates, labor shortages

• Supply side drivers 1: Hire purchase finance from banks; transferrable land use rights (collateral)

• Supply side drivers 2: Falling cost of machines; no restrictions or tariffs on imports

• Supply side drivers 3: Dynamic informal private rental markets (very limited reach of government rental services)

• Result 1: Extremely rapid mechanization in main agricultural zones, following crop specific patterns (power tillers and combines in main paddy growing areas, 4 wheel tractors drylands)

• Result 2: Machine access scale neutral at point of use; saves time/reduces risk; helps farms remain viable in face of rising production costs