
MERGERS AND ACQUISITIONS IN U.S. AGRIBUSINESS

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OVERVIEW

- 1) Objectives
- 2) Importance of M&As in Agribusiness
- 3) Brief literature review
- 4) Methods and Data
- 5) Results
 - 1) M&A sample
 - 2) Merged databases & Logit preliminary results

1) OBJECTIVES

- 1) To **describe** the M&A activity in the US agribusiness sector, during 1990-2013, covering the agricultural and food supply chain (segregated in 6 subsectors).
- (2) To **model** M&As in US agribusiness. Particularly, to identify firm characteristics that affect the likelihood to acquire a firm (*or being acquired*).



2) IMPORTANCE OF M&A IN AGRIBUSINESS



M&As history of the Food Industry (Adelaja et al. 1999)

TABLE 1. Ranking of Value and Number of M&A Deals for the Food and Tobacco Industry (1985–1995) and the Five Largest Transactions in M&A History

Ranking of Value and Number of M&A Deals (1985–1995)^a

| Year | Value of Deals | Rank (Value) | No. of Deals | Rank (Deals) |
|------|----------------|------------------|--------------|------------------|
| 1985 | 14.6 | 2 | 93 | N/A ^c |
| 1986 | 15.3 | 3 | 129 | N/A |
| 1987 | 4.7 | N/I ^b | 106 | N/A |
| 1988 | 23.0 | 2 | 136 | 10 |
| 1989 | 40.3 | 1 | 125 | 10 |
| 1990 | 9.1 | 6 | 94 | N/A |
| 1991 | 2.9 | 9 | 60 | N/A |
| 1992 | 6.4 | 4 | 117 | 8 |
| 1993 | 8.7 | 4 | 114 | 9 |
| 1994 | 7.8 | 8 | 103 | N/A |
| 1995 | 18.3 | 5 | 138 | N/A |

M&A IN AGRIBUSINESS

- Jensen (1986) uses the food industry mergers as an example, due to the high intensity of M&A activity, in the development of the free cash flow hypothesis:
"Food industry mergers also appear to reflect the expenditure of free cash flow. The industry apparently generates large cash flows with few growth opportunities. It is therefore a good candidate for leveraged buyouts and they are now occurring."
- The food industry is an industry traditionally very active on M&As. It was one of the most active industries in the mid 1980s-mid1990s mergers wave (Top ten 1985-1995, Adelaja et al. 1999)
- This trend continues in the 2000s

M&A IN AGRIBUSINESS, II

- Furthermore, the US might be in the middle of a new M&A wave. A recent report by the *Boston Consulting Group* suggests that many of the ingredients for the sixth M&A wave are in place [“Now, say some experts, a powerful sixth wave is forming” *The Economist*, 2013).
- More important, the momentum gained by M&A seems to be reaching the agribusiness sector, according to a *Financial Times* article (Terazono, 2012).
- Finally, structural changes in agribusiness, vertical integration included, have been predicted to continue occurring in the sector in the near future (Kruchkin, 2012; Boehlje et al. 2011). The likelihood of industry consolidation increases when cash has been stockpiled, as it has occurred lately (Trejo-Pech et al. 2014)

3) BRIEF LIT REVIEW ON M&As

- Why merge?
- Efficiency improvements due to economies of scale and scope
 - Conflicting empirical results. Accounting performance does not change after mergers (Ghosh 2001); accounting performance improves after mergers (Healy, Palepu, and Ruback 1992)
- Financial synergy
 - Cash-rich firms have a choice of returning the cash to investors through dividends, or reinvesting it through M&As. Servase et al. (1991), Harford (1999), and Jensen (1986) report **value destruction** by the announcement of M&A transactions by firms with excess cash.
 - However, Bruner (1988) reports that the pairing of slack-poor and slack-rich firms **create value**. Before merger, buyers have more cash and lower debt ratios than nonacquires.
 - Harford (1999) shows that the probability of being a bidder increases with cash-richness
 - All attempted acquisitions are compared with level of cash-richness (deviation from a baseline model to predict cash holdings)

BRIEF LIT REVIEW ON M&As II

- Why merge?
- Financial synergy, Continued
 - Combined returns are higher when acquisition combines slack-poor and free cash flow firms (Smith and Kim 1994)
 - Mergers improve the liquidity of target firms (Erel, Jang, and Weisbach 2012)
 - Liquidity mergers (e.g., high cash acquirers buying low cash targets) are more likely to occur when industry asset-specificity is high and firm asset-specificity is low (Almeida, Campello and Hackbarth, 2011)
 - Cash-out opportunity for target shareholders: liquidity constrained firms sell subsidiaries at a discount to obtain liquidity (Officer 2007)
 - Companies with large surplus cash may see the acquisition of other firms as the best application of these funds (Basmah and Rahatullah 2014)
- Other
 - Taxes, Diversification of risk, Market power

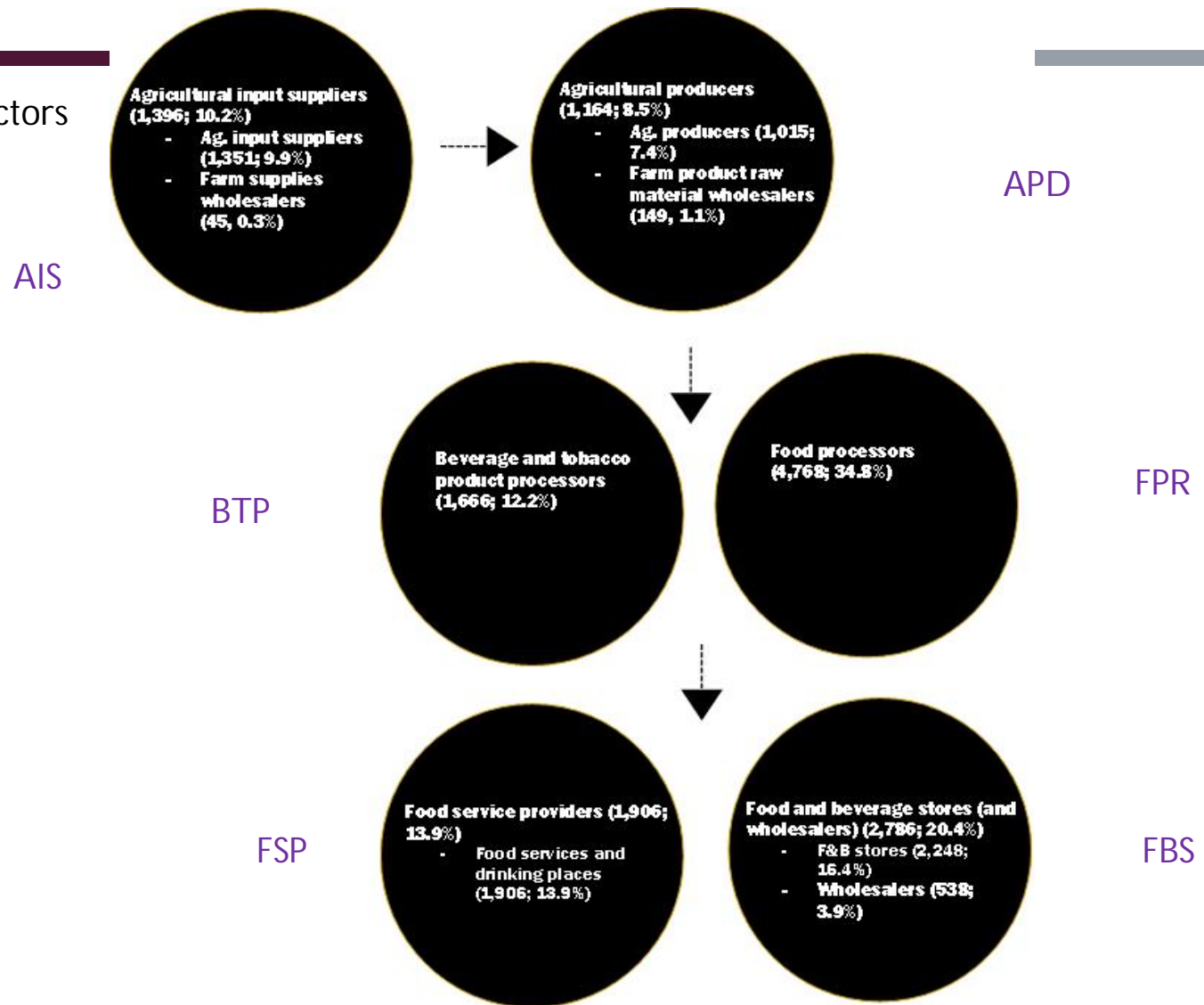
4A) METHODS

- Two large databases are merged (M&A and Financial Accounting Data)
- M&A sample described
- M&A and Non-M&A agribusinesses are compared in terms of selected financial characteristics
- Logit model is used to test the probability of acquisition

4B) DATA

- (1) M&A agribusiness sample: Securities Data Company (SDC) Thomson Financial
- (2) All agribusiness sample: Standard & Poor's COMPUSTAT for the 1990-2013 period (1970-2012 fiscal years)
- (1) and (2) are merged
- 2012 NAICS for agribusiness classification
- Six agribusiness subsectors: 1) agricultural input suppliers (AIS); 2) agricultural producers (APD); 3) food processors (FPR); 4) beverage and tobacco product processors (BTP); 5) food and beverage stores (and wholesalers) (FBS); and 6) food service providers (FSP)

Figure 1: Supply chain subsectors



MODEL

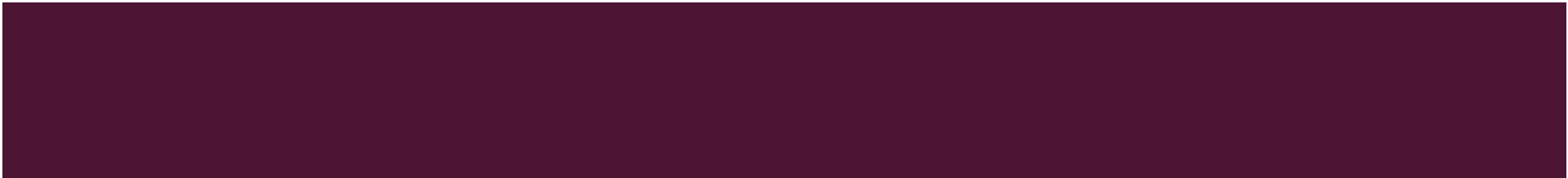
The Model is adapted from Adelaja et al. (1999). Adelaja et al. Modelled agribusiness M&A during 1985-1994. Modifications in terms of proxies and lagged determinants

- $P_i = \text{Prob} [\text{Acquirer}_{it} = 1 \mid \text{Liquidity}_{it-1}, \text{Leverage}_{it-1}, \text{Assets Efficiency}_{it-1}, \text{Cash Flow Generation}_{it-1}, \text{Firm Size}_{it-1}, \text{Historical Growth}_{it-1}, \text{Prospective Growth (or Growth opportunities)}_{it-1}]$

| Determinant | Proxy | Predictions |
|----------------------|---|-------------|
| Liquidity | Cash to Assets | Positive |
| | New Working Capital to Assets | |
| Leverage | Debt to Equity | Negative |
| Cash Flow | Operating Cash Flow | Positive |
| Size | Log of Assets at 2013 values (CPI adjusted) | Positive |
| Assets Efficiency | Sales to Assets | ? |
| Historical Growth | Sales growth | ? |
| Growth Opportunities | Market to Book Value | ? |



5) RESULTS



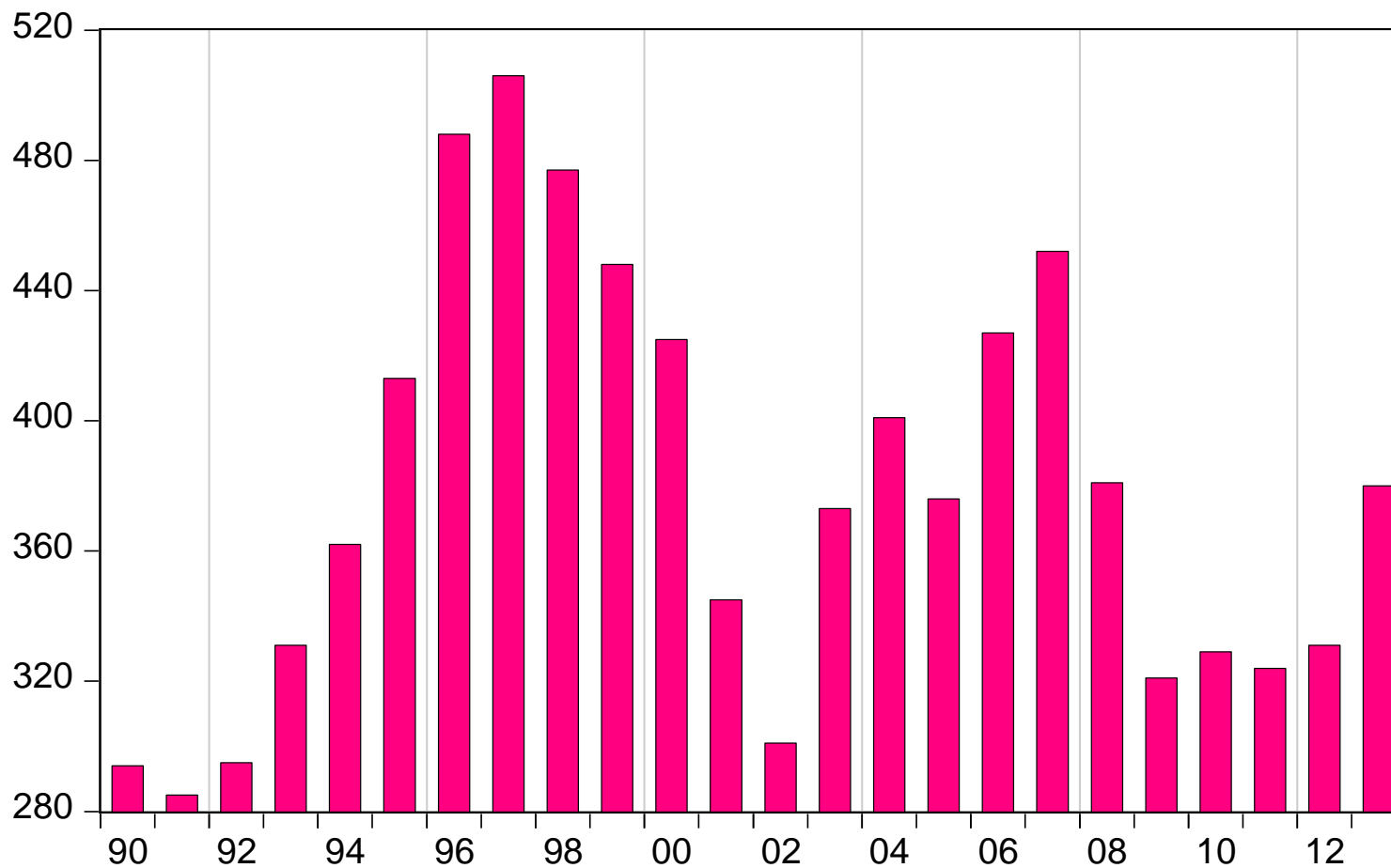


5.1) SAMPLE (1): M&A AGRIBUSINESS ACTIVITY

INCLUDES BOTH PRIVATE AND PUBLIC DEALS



M&A Deals Public and Private Agribusiness



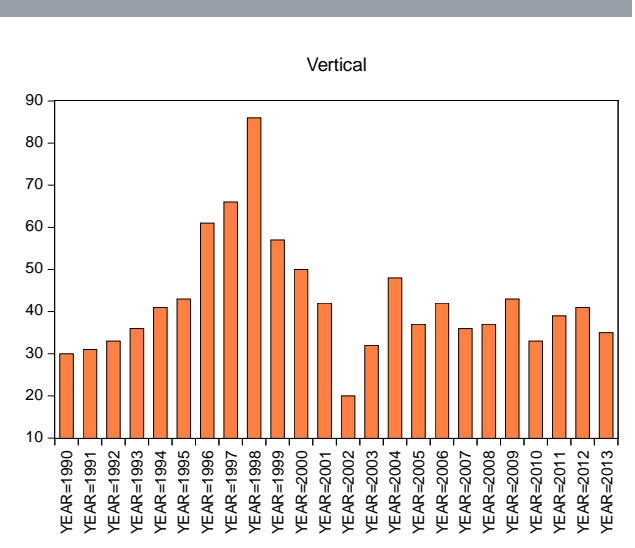
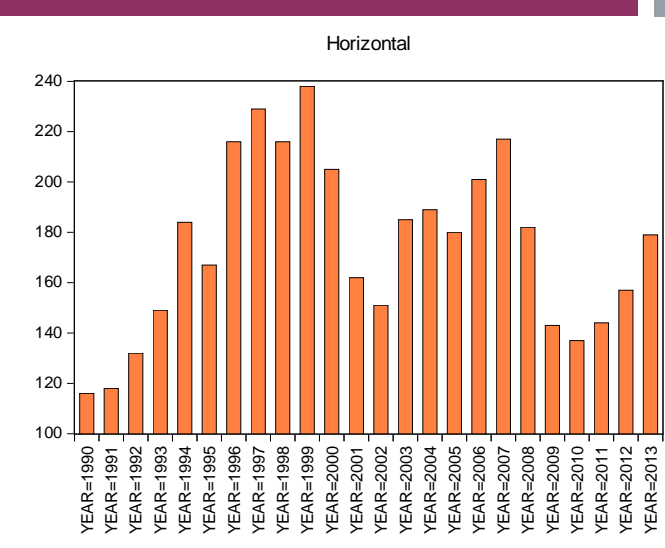
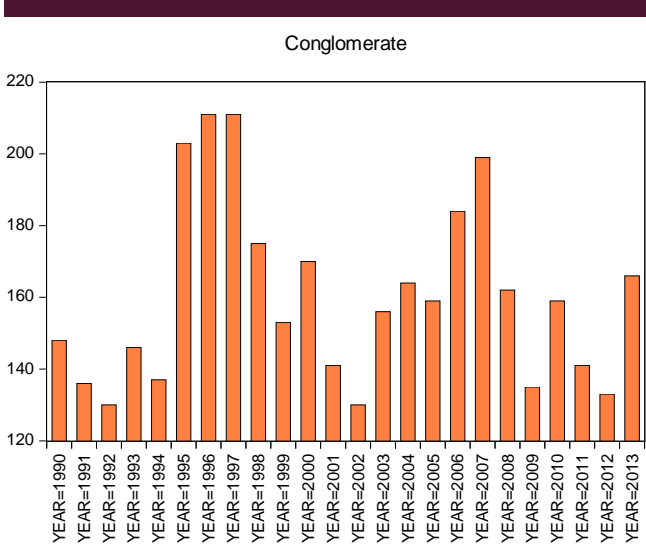
Only completed deals are considered (2013 figures could increase as there are still pending to be completed transactions).
Total: 9,065 in 24 years

TYPE OF MERGERS

| TYPE | Deals | % |
|---------------------|--------------|------------|
| Conglomerate | 3,849 | 42% |
| Horizontal | 4,197 | 46% |
| Vertical | 1,019 | 11% |

Definitions:

- Horizontal: Both the buyer and target belongs to the same major agribusiness industry
- Vertical: Buyer and target are agribusiness but from different major industries
- Conglomerate: The buyer or the target is an agribusiness, but not both
- Deals include both private and public firms (M&A **buyer or target** agribusiness during 1990-2013)

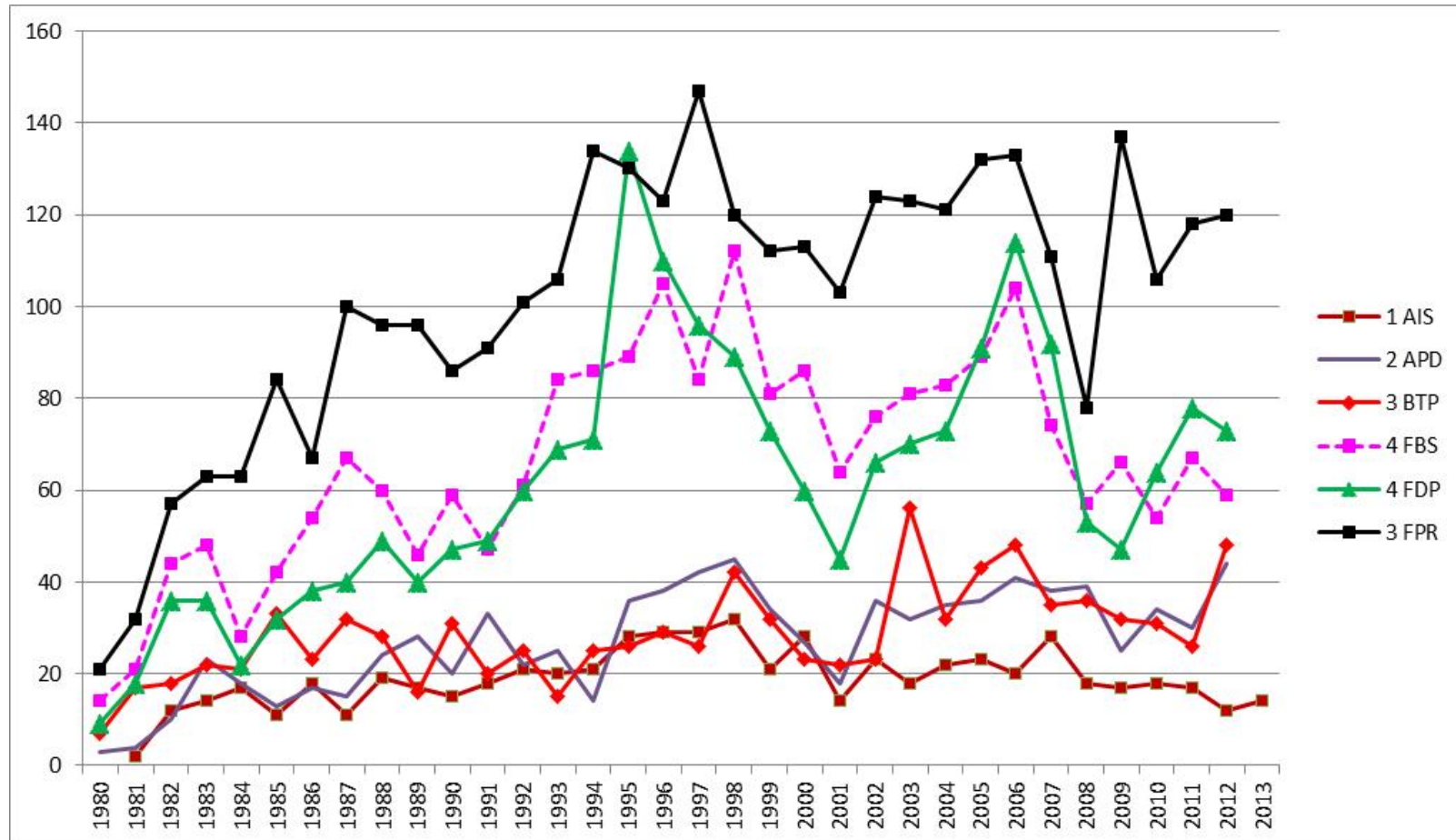


Horizontal transactions increasing lately

| Major Industry -Acquirers | Deals | % |
|--|--------------|----------|
| Ag. input suppliers | 632 | 7% |
| Ag. producers | 484 | 5% |
| Beverage and tobacco product processors | 635 | 7% |
| Food and beverage stores (and wholesalers) | 1,290 | 14% |
| Food processors | 2,181 | 24% |
| Food service providers | 1,140 | 13% |
| Other industries (No Agrib) | 2,703 | 30% |
| Total | 9,065 | |

| Major Industry -Targets | Deals | % |
|--|--------------|----------|
| Ag. input suppliers | 638 | 7% |
| Ag. producers | 731 | 8% |
| Beverage and tobacco product processors | 705 | 8% |
| Food and beverage stores (and wholesalers) | 1,697 | 19% |
| Food processors | 2,547 | 28% |
| Food service providers | 1,601 | 18% |
| Other industries (No Agrib) | 1,146 | 13% |
| Total | 9,065 | |

M&AS BY US AGRIBUSINESS SUBSECTORS (BOTH PRIVATE AND PUBLIC US TARGETS)



M&A VALUE OF TRANSACTIONS

| Acquirer Ind | Mean | Median | Obs. |
|--|-------|--------|-------|
| Ag. input suppliers | 307.0 | 26.6 | 244 |
| Ag. producers | 163.8 | 12.6 | 184 |
| Beverage and tobacco product processors | 746.5 | 40.0 | 244 |
| Food and beverage stores (and wholesalers) | 251.5 | 33.8 | 406 |
| Food processors | 320.2 | 33.0 | 811 |
| Food service providers | 56.7 | 11.0 | 544 |
| All | 281.4 | 20.0 | 3,654 |

Number of observations is reduced

MEANS OF PAYMENT (% PAID IN CASH)

| Ind Acquirer | Mean | Median | Obs. |
|--|------|--------|------|
| Ag. input suppliers | 85.3 | 100 | 100 |
| Ag. producers | 79.4 | 100 | 81 |
| Beverage and tobacco product processors | 82.5 | 100 | 98 |
| Food and beverage stores (and wholesalers) | 82.6 | 100 | 147 |
| Food processors | 88.8 | 100 | 410 |
| Food service providers | 82.3 | 100 | 230 |
| All | 87.0 | 100 | 1656 |

Number of observations is reduced

STOCK RETURNS AFTER ANNOUNCEMENT DATE (BUYERS)

| | 1 Day After Ann | 1 Week After Ann |
|-----------|-----------------|------------------|
| Mean | 0.015 | 0.030 |
| Median | 0.000 | 0.001 |
| Std. Dev. | 0.375 | 0.626 |
| N | 3,212 | 3,212 |



5.2) SAMPLE (2): M&A AND ALL AGRIBUSINESS MERGED DATA

INCLUDES BOTH PRIVATE AND PUBLIC DEALS



ALL AGRIBUSINESS SAMPLE (COMPUSTAT)

| Subsector | Firms sample period | | Firms as of 2012 | | Firm-years sample | | Sales sample | | Assets sample | |
|-----------|---------------------|------|------------------|------|-------------------|------|--------------|------|---------------|------|
| AIS | 109 | 11% | 33 | 10% | 1,396 | 10% | 2,170.8 | 10% | 2,789.2 | 16% |
| APD | 100 | 10% | 28 | 8% | 1,164 | 9% | 1,315.7 | 6% | 909.0 | 5% |
| FPR | 345 | 35% | 105 | 32% | 4,768 | 35% | 5,069.3 | 23% | 3,984.4 | 22% |
| BTP | 134 | 13% | 49 | 15% | 1,666 | 12% | 4,919.7 | 22% | 6,634.8 | 37% |
| FBS | 178 | 18% | 47 | 14% | 2,786 | 20% | 7,026.8 | 32% | 2,410.6 | 14% |
| FDP | 129 | 13% | 70 | 21% | 1,906 | 14% | 1,367.9 | 6% | 1,125.4 | 6% |
| AGB | 995 | 100% | 332 | 100% | 13,686 | 100% | 21,870.3 | 100% | 17,853.4 | 100% |

Sales and assets expressed in 2012 dollars value, in US million.

AIS: agricultural input suppliers; APD: agricultural producers; FPR: food processors;

BTP: beverage and tobacco product processors; FBS: food and beverage stores (and wholesalers);

and FDP: food service providers.

MERGED DATA (PUBLIC FIRMS)

- Total **1,215** agribusiness **buyers** in both datasets
- Total **225** agribusiness **targets** in both datasets
- Most targets seem to be private firms



ACQUIRERS VS. NON-ACQUIRERS

STATISTICAL DIFFERENCES



| | Acquirer | Non-Acquirer | P Value | N = 1 (Acq) | N = 0 (Non-Acq) |
|--|--------------|--------------|---------|-------------|-----------------|
| Cash to Assets <i>t-1</i> | 0.082 | 0.096 | 0.000 | 1,108 | 11,479 |
| Cash Flow to Assets <i>t-1</i> | 0.075 | 0.011 | 0.005 | 1,108 | 11,455 |
| Leverage <i>t-1</i> | 0.291 | 0.356 | 0.001 | 1,052 | 10,767 |
| Market to Book <i>t-1</i> | 1.960 | 1.964 | 0.988 | 1,079 | 9,602 |
| Size <i>t-1</i> | 3.076 | 2.569 | 0.000 | 1,108 | 11,479 |
| Sales to Assets <i>t-1</i> | 1.829 | 1.977 | 0.002 | 1,108 | 11,479 |
| Sales growth <i>t-1</i> | 0.170 | 1.200 | 0.603 | 1,092 | 10,469 |
| Net Working Capital to Assets <i>t-1</i> | 0.068 | 0.007 | 0.094 | 1,089 | 11,310 |



LOGIT MODEL –PRELIMINARY RESULTS



| | Estimate | P Value | Estimate | P Value |
|--|----------|---------|----------|---------|
| Intercept | -3.272 | 0.000 | -3.492 | 0.000 |
| Cash to Assets <i>t-1</i> | -0.841 | 0.098 | | |
| Cash Flow to Assets <i>t-1</i> | 2.561 | 0.000 | 2.470 | 0.000 |
| Leverage <i>t-1</i> | -0.398 | 0.100 | -0.242 | 0.295 |
| Market to Book <i>t-1</i> | 0.024 | 0.224 | 0.024 | 0.209 |
| Size <i>t-1</i> | 0.443 | 0.000 | 0.470 | 0.000 |
| Sales to Assets <i>t-1</i> | -0.088 | 0.001 | -0.089 | 0.001 |
| Sales growth <i>t-1</i> | -0.002 | 0.596 | -0.001 | 0.446 |
| Net Working Capital to Assets <i>t-1</i> | | | 0.586 | 0.024 |
| McFadden R-squared | 0.041 | | 0.041 | |
| Obs. With Dep. Variable = 1 | 1,019 | | 1,001 | |
| Obs. With Dep. Variable = 0 | 8,504 | | 8,370 | |