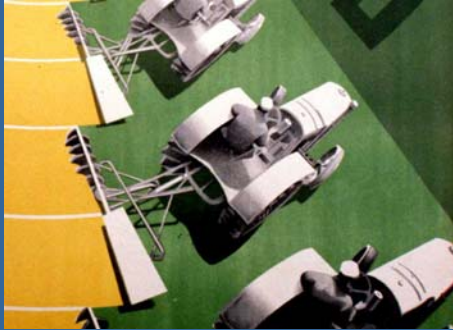


Corporate Agriculture: TNCs and the Global Food Chain



Corporate Agriculture: TNCs and the Global Food Chain

✚ Overview

1. The Development of Agriculture
2. Agri-business TNCs (The "Players")
3. The Global Food Chain

Historical Past

- Great Changes
 - Large Increase in population
 - Change in way people earn living
 - Change in speed & cost of travel

Modernization & Urbanization

- Agricultural change has been neglected
- Two fundamental differences between modern & traditional agriculture:
 - Capacity of modern agriculture to increase at a very high output rate
 - Much higher productivity of land & labour

Development of Farming Systems

- Open-field farming
 - Medieval & Modern Times
 - Traditional Farming
- Mixed farming
 - W. Europe 18th & 19th Century
- Chemical farming
 - Modern Times, beg. 19th Century, '50s

First Agricultural Revolution

- Before Industrialization & Modernization
- Europe:
 - > 75% population
 - Produce consumed by families
 - Low productivity
 - Inputs available on farm



Traditional Agriculture: Feudalism & Serfdom

- Feudalism & serfdom
- Limited specialization
- High transport costs
- Increases in output



Tragedy of the Commons

- England, beg. Industrial revolution
 - Open access, free of charge
 - Increasing use, rising average cost
 - Overgrazing



Second Agricultural Revolution

- Industrialization
 - Two important effects:
 - Rapid growth of demand
 - Purchasing inputs off farm
- Indirectly affected agriculture:
 - Attraction of jobs in town
 - Lowered transportation costs
 - Processing completed in factories



Second Agricultural Revolution

- Decrease in agricultural population
 - Britain 1720s
 - Rest of Europe 1840s
 - Britain < 10% before WWII



Third Agricultural Revolution

- Modernization
 - Traced back to first use of steam power
 - 1820s – Patrick Bell
 - 19th century, age of steam revolutionizing factory production
 - Different commercial needs between Europe & NA



Third Agricultural Revolution

- Growth of Markets:
 - Subsistence Farming:
 - Argument for rapid agricultural growth
 - Commercial farmer is a business man
 - Modern farming is a matter of accountancy
 - “Capitalism” lead into corporatization
 - Modernization & increases in output
 - Economic Behaviour



Third Agricultural Revolution

- Growth of Markets:
 - Commercialization:
 - Individuals earning more, consuming more
 - Transport & Agricultural Change
 - Decreases in transportation costs
 - *Much of change of last 200 years dependent upon reduction in transportation*
 - Also cheapened inputs to farm



Third Agricultural Revolution

- Consequences of declining agricultural population:
 - Underemployment
 - Commercialization:
 - Thomas Malthus & theory of poverty
 - Insufficient production
 - Increasing poverty



Solow Model

- Technological Change

- Measured sources of economic growth
 - Impact on productivity of countries
 - Ability to converge with developed countries
 - Basic concept:
 - As 'T' (Technology) increases, efficiency & productivity of labour increases
 - As labour increases, Malthus predicted a push back into poverty



Solow Model

- Technological Change

- Graph:



Neoclassical Two-Sector Model

- Determine effect of structural change, 'out-migration' from agriculture:
 - Engel's law: as income increases, proportion of income spent on food decreases
 - Proportion of agriculture in GNP decreases
 - *Holds for all countries that have experienced sustained development*



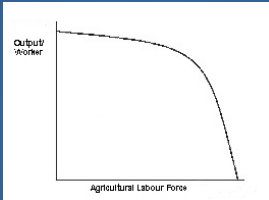
Neoclassical Two Sector Model

- Assumption: no labour surplus
 - All workers, regardless of underemployment, are somewhat employed
 - Each worker adds to agricultural output



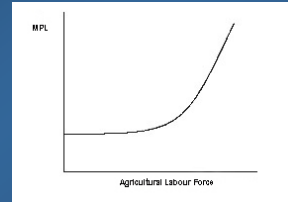
Neoclassical Two Sector Model

- Agricultural Production
 - Increase in output gradually slows for every unit of input
 - Limited land resources do lead to slightly diminishing results



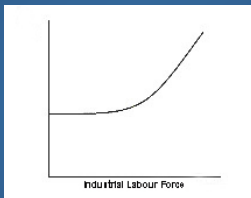
Neoclassical Two Sector Model

- MPL in Agriculture:
 - Removal of labour from agriculture increases the MPL of agriculture



Neoclassical Two Sector Model

- Industrial Labour Market:
 - As more of population transfers into the industrial section, wages increase at a slower rate



Neoclassical Two Sector Model

- In model, it is *imperative* that there is a balance between industry & agriculture from the beginning
- Outcomes from this model take us to Green Revolution and farmers trying to ease production pressure



Green Revolution

- Problems of deforestation & desertification
- Desertification:
 - Main problem is overgrazing
 - Threatens about 1/3 of world's land surface



Green Revolution

- To raise food supply quickly, increase amount of land under cultivation
- Increases in crop yields adopted by developing countries
 - "Technology-package" approach



Green Revolution

- Depends on:
 - Seeds, chemical fertilizers, pesticides & herbicides
 - Environmental problems
- Promising more than it can deliver
- Even where successful, few of hungry have benefited



Green Revolution

- Focuses on food production, does not deal with food demand
 - Does nothing to enable poor to buy food
- Use of appropriate technology in developing countries could make it a success



GMOs

- World's second Green Revolution
- 77% of world's acreage is committed to GMOs
- Problems:
 - Transgenic Escape
 - By '98, was predicted that half of America's grain industry would be using GM seeds from Monsanto



GMOs

- Example:
 - Phillipines
 - Cultivated land expanded, use of fertilizer quintupled
 - New breed of insect
 - Harder to control with insecticides
 - Rice paddies chemically degraded
 - Deaths from pesticide poisoning
 - Additional costs for farmers in the south



Agribusiness Players



Definition

- Agribusiness: Involves the manufacture and distribution of farm supplies; production operations on the farm ; the storage, processing, and distribution of farm commodities and items made from them. Generally associated with a corporation.

Current Trends



Consider This:

A company is involved in the following:

1. Loaning a farmer money to buy seeds
2. Selling seeds to the farmer
3. Leasing farm land to farmer
4. Selling farmer all the inputs i.e. machinery, chemicals, animal feed.
5. Collecting the product from the farmer
6. Processing and packaging the product
7. Distributing the finished product

Agricultural Links

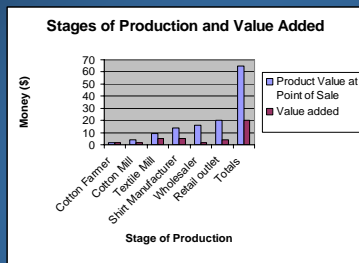
1. Input/Upstream Links:
Oil and gas companies, chemical companies, seed companies, financial institutions, banks.
2. Farmer Link:
Inputs are combined at this stage- energy, seeds, technology, and capital.
3. Downstream Links:
Grain companies, railway companies, processors, packers, brewers, retailers, and restaurants

Definition

Vertical Integration: An arrangement whereby the same company owns all the different aspects of making, selling, and delivering a product or service.

In agribusiness : “From seedling to supermarket”

How is Vertical Integration Profitable?



A Popular Mechanism

A successful (profitable) mechanism adopted by several agricultural chemical firms involves a three step process:

1. Acquire/Merge with a seed company
2. Acquire/Merge with a health sciences company
3. Genetically modify the seeds to be resistant to a chemical of choice, thereby increasing chemical sales.





Example



The case of Percy Schmeiser

- ✚ Monsanto developed a canola seed resistant to their roundup
- ✚ Schmeiser had these GM crops on his land illegally
- ✚ Someone called 1-800-ROUNDUP
- ✚ Schmeiser was sued
- ✚ Schmeiser was ordered to pay \$19,000 in damages and \$150,000 in legal fees to Monsanto



Definition



Horizontal Integration: A business strategy to increase a firm's scale by buying, building, or merging with another firm at the same stage of production of a product.

Ultimate horizontal integration creates a monopoly.

"The Urge to Merge"



Examples

- ✚ Between 1995 and 1998 Monsanto, Dupont, and Novartis spent \$30 billion acquiring agricultural biotechnology companies.
- ✚ In 1994 biotech company Agracetus got a patent for a GM form of soy beans, Monsanto wanted it, so they bought Agracetus and the patent
- ✚ Monsanto has recently acquired Holden, Gargiulo Tomato, Naturmark, Asgrow, Dekalb, Delta & Pineland, Stoneville Pedigreed, and Hartz. (All seed companies)
- Three fertilizer companies control 71% of Canada's nitrogen fertilizer production capacity:
- Four companies control 69% of the North American seed corn market and 47% of the soybean seed market (DuPont/Pioneer, Monsanto, Novartis, and Dow).



The Major Firms



Example

Some Major Agribusiness Firms:

- Monsanto
- DuPont Agriculture and Nutrition
- Cargill Incorporated
- Dow Chemical, Dow AgroSciences
- Syngenta
- ConAgra
- BASF AG



Monsanto Company

Involved in:

- ✚ Applying biotechnology, genomics, and molecular breeding technology to herbicides and seeds.
- ✚ Selling seed to farmers.
- ✚ Selling herbicides to farmers.



Monsanto Overview

- ⊕ 1901: manufacturing saccharin (artificial sweetener)
- ⊕ 1918: First Acquisition (a Commercial acid company)
- ⊕ 1947: Opens first international office in India
- ⊕ 1960: Monsanto turns it's focus on agriculture, selling herbicides
- ⊕ 1976: Round up herbicide is commercialized
- ⊕ 1982: Monsanto scientists genetically modify a plant for the first time
- ⊕ 1994: roundup ready technology incepted into the market
- ⊕ 1998: M&A spree begins- \$8 billion, began with the 1 billion acquisition of Holden seeds. "...This had a lot to do with the battle between the chemical giants for future sales of herbicides and insecticides."
- ⊕ 1998: Joint venture with Cargill to create and market new products for the grain processing and animal feeds markets.
- ⊕ At the end of 1998, Monsanto controlled 87% of the U.S. cotton-seed market
- ⊕ 2003 Sales: 3, 373, 000, 000



Dupont Agriculture & Nutrition

Involved In:

- ⊕ Crop protection through herbicides, fungicides, and insecticides.
- ⊕ Protein technologies
- ⊕ Microbial testing



Dupont Ag Overview

- ⊕ 1802: Dupont creating explosives
- ⊕ 1859: First acquisition (anthracite explosive factory)
- ⊕ 1928: Dupont Mexico formed
- ⊕ 1999: Acquire Pioneer hi-bred seeds international. Marks the beginning of incorporating biology into the company's chemistry operations. DuPont Agriculture and Nutrition is born.
- ⊕ 2003 Sales: 4, 510, 000, 000



Cargill Incorporated

Involved In:

- ⊕ Agriculture
- ⊕ Finance
- ⊕ Food
- ⊕ Industrial Products

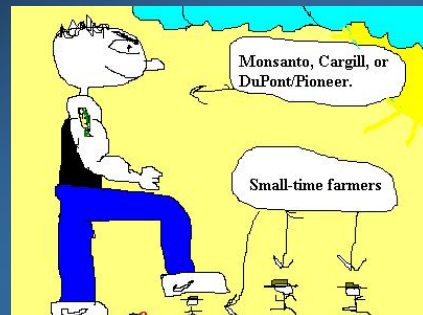


Cargill Overview

- ⊕ 1865: Cargill is born as a grain warehouse business.
- ⊕ 1893: Cargill's first major acquisition, The Superior Terminal Elevator Company.
- ⊕ 1896: Cargill expands into the coal market
- ⊕ 1928: Cargill grain company Canada is established, the first international location.
- ⊕ 1999: University of Minnesota receives a \$10 million grant from Cargill. (for genomics research)
- ⊕ Cargill is the leading Grain producer in the U.S.
- ⊕ 2003 Sales: \$59, 894, 000,000



Cartoon





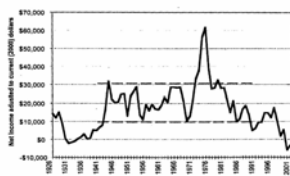
Impact of Trends

Impacts

- ⊗ Farmers feel the impact the hardest
- ⊗ farmers are becoming price-takers rather than price-makers.
- ⊗ Farmers earn five-year average return on equity rates of 0.7%, whereas agribusiness corporations earn 5%–40%.
- ⊗ Since 1974, farmers have tripled their gross incomes while their net incomes have declined (Corporations have captured all of the growth).
- ⊗ Farmers are getting the same amount of money for their product, but input prices keep rising.
- ⊗ Between 1987 and 1997, the cost to farmers of inputs increased by 86%

Farm Income Graph

Figure 1: Saskatchewan Realized Net Farm Income (per farm and adjusted for inflation)



Source: Agriculture Economic Statistics, Statistics Canada Cat. # 21-603E; Consumer Price Index, Statistics Canada Cat. # 62-010; Historical Overview of Agriculture, Statistics Canada Cat. # 93-358.

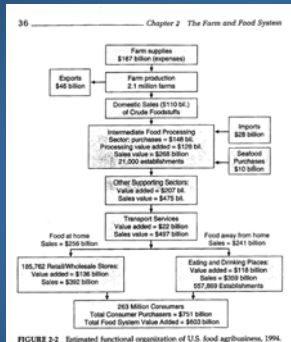
TNCs and Agri-business



TNCs and Agri-business

- ⊗ Second largest most profitable industry in the U.S.
- ⊗ Annual sales over \$400 billion
- ⊗ Biotechnology (GMOs) & seeds – basis of all crops
- ⊗ Growing concentration of ownership and control by food's largest corporations
- ⊗ Everything, from how foods are produced, processed, distributed, and marketed is directed by a few TNCs
- ⊗ TNC giants are directors/price-setters

AgTNCs - A Value-Added Agri-Business





TNCs and Agri-business

Growth Factors

- ☒ Fordism – production processes
- ☒ Mechanization and industrialization
- ☒ Concentration of ownership
- ☒ Vertical and horizontal integration → control of production, processing, distribution and marketing
- ☒ Technological innovations



TNCs and Agri-business

Vested interests & control

- ☒ \$197 million spent by Pharmaceutical Research and Manufacturers Association in 2000 to elect Republicans to office - to protect patents
- ☒ Chief Agriculture Negotiator for the U.S. in all international trade negotiations was former president of the Nat'l Oilseed Processors Assn.
- ☒ Represented all major factory farms and biotech corporations, including ConAgra, Cargill, Unilever, Procter & Gamble



AgTNCs and Trade Agreements

- ☒ AgTNCs impact North/South economies
- ☒ "North" has a comparative trade advantage due to technological and infrastructure superiority
- ☒ GATT → WTO, various trade agreements
- ☒ The AOA (Agreement on Agriculture)
 - ☒ Market access
 - ☒ Domestic support
 - ☒ Export competition



AgTNCs and Trade Agreements

- ☒ Doha round of WTO talks in Cancun
 - ☒ Singapore issues – transparency, trade facilitation, local market competition, FDI
 - ☒ FDI is major process of TNC expansion and integration
 - ☒ Agriculture subsidies, mainly EU and US, but also Canada and Australia
 - ☒ G21 stalled talks over FDI and Ag subsidization

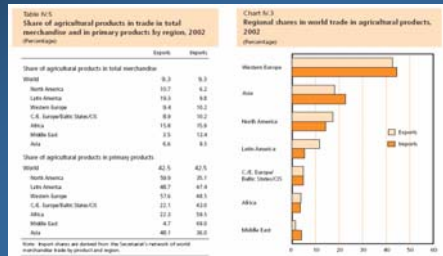


AgTNCs and Trade Agreements

- ☒ The AOA (Marrakesh Accord) - 1994
 - ☒ Main goal of AOA - to reduce/eliminate agricultural import tariffs and Quantitative Restrictions (QRs)
 - ☒ Benefits agribusiness and thus TNCs through opening the global market in Ag products
 - ☒ Cargill (largest private US company) was largely responsible for the AOA at the WTO
 - ☒ Prior to AOA there "was a proliferation of impediments to agricultural trade" (WTO)



Share of Ag Trade Globally





Subsidization & Protectionism

- ☉ Protectionism – trade policies and tariffs
- ☉ Subsidies – boards, quotas, grants
- ☉ Gives rise to industrial economy dominance in Ag despite rapid growth in food production in developing countries.
- ☉ Guaranteed investment return for TNCs prompt for greater and greater integration of production system



Subsidization & Protectionism

- ☉ EU and US subsidization of agricultural production is between \$300-350bn
- ☉ EU – Common Agriculture Policy → will expand funding (subsidization) until 2013
- ☉ US Farm Bills → billions for export promotion went to large agribusiness and TNCs, not small farmers
 - ☉ 1996 & 2001 - \$5.5 bn
 - ☉ 2004 – \$13.5bn



Subsidization & Protectionism

- ☉ 1935 - Agricultural Adjustment Act was amended to allow Secretary of Agriculture to restrict Ag imports to protect domestic prices
- ☉ Protectionism - US protects orange growers against imports from Brazil for instance
- ☉ Even the small farmer in the US wants to see an end to subsidization and a free market system in Ag crops



Subsidization & Protectionism

- ☉ Subsidies to farmers in the US based on production and size of farms, so recipients who benefit are the TNCs and their factory farms
- ☉ Subsidies allow agricultural production to be dumped domestically and globally at cut-rate prices
- ☉ Mexico flooded with massive imports of corn and beans since NAFTA despite local production
- ☉ European subsidized meat is exported which then destabilizes pastoral economies (e.g. West Africa)



Industrial Agriculture

The industrialization of agriculture	
Structural dimension	Primary process responses Outcome
Intensification	Purchased inputs (capital) replace labour and substitute for land, increasing dependence on agro-inputs industries Mechanization and automation of production processes Application of developments in biotechnology
Concentration	Fewer but larger farming units Production of most crops and livestock concentrated on fewer farms, regions and countries Sale of farm produce to food processing industries – increasing dependence on contract farming
Specialization	Labour specialization, including the management function Fewer farm products from each farm, region and country

Source: Bowler (1985a).



Factory (Intensive) Farming

- ☉ Factory Farms → fewer and fewer but larger and larger farms, usually incorporated
- ☉ Predominantly owned by large MNCs
- ☉ Vertical and horizontal integration
- ☉ MNCs also own patents to the seeds and produce the fertilizer and pesticides used, and own the processing facilities
- ☉ Inputs → Transformation (Processing) → Distribution → Consumption (global food table)
- ☉ “Barley-to-bacon” strategy



Factory (Intensive) Farming

- 650 million animals raised on factory farms in US each year
- 164 billion kilograms of manure produced each year
- Largest factory hog farm in US produces 3 million pigs/year
- Large grain farms now thousands of acres
- Intensification and specialization of farming are key indicators of degree of industrialization of agriculture



Factory (Intensive) Farming

- Tremendous growth rates, resulting in
 - Cheap food
 - Huge demand
 - Competitive markets
- Development often shaped by cultural and social pressures and forces (cheap food, land use)
- Economic pressures on small farmers (diminishing returns to costs) and push-pull factors force them off the farm
- Land is then consumed into larger corporate operations (either TNC or associated producer)



Corporate Agriculture

TABLE 2-6 Number, Population, and Size of Farms in the United States

Year	Number of Farms ^a	Farm Population (000)	Average Farm Size (Acres)	U.S. Population on Farms (%)
1920	6,518,000	31,974	147	30.1
1930	6,546,000	30,529	151	24.9
1940	6,350,000	30,547	167	23.2
1950	5,648,000	23,048	213	15.3
1960	3,962,000	15,365	297	8.7
1970	2,924,000	9,712	383	4.8
1975	2,521,420	8,864	420	4.2
1980	2,439,510	6,051	426	2.7
1985	2,292,530	5,355	441	2.2
1990	2,140,420	4,591	461	1.9
1991	2,105,060	4,632	467	1.8
1992	2,095,740	4,665	468	1.8
1993	2,083,000	4,645	469	1.8
1994	2,065,000	4,605	471	1.8
1995	2,073,000	4,623	469	1.8

SOURCE: Economic Research Service, USDA.

^aOver time the Bureau of the Census has used varying definitions of a farm. In 1959, 1964, and 1969, places of less than 10 acres were counted as farms if estimated sales of agricultural products for the year amounted to at least \$250, and places of 10 acres or more were counted as farms if their sales amounted to at least \$50 per year. The Census definition of a farm was changed in 1974 to an establishment that had or normally would have had sales of agricultural products of \$1000 or more.



Clusters and Concentration

- Concentration (depth) of industries
- Attractive to FDI (research, corporate)
- Economies of scale, returns to investment
- Trade interdependencies
- Spatial and communication advantages
- Innovation and technological advances



Food Clusters

- Oresund food cluster in Denmark and Scania (southern Sweden)
- Fastest developing food cluster in Europe
- Fifth largest R&D area in EU
- Infrastructure (roads, services, research and education facilities) supported and funded by government (this is a major pull for TNCs)
- 11 universities in the region



Food Clusters

- Oresund region – all sectors of food industry spatially located here
- “Plate-to-plough” – primary production, food processing, packaging, production machinery, distribution, warehousing, quality control, R&D, education
- Denmark exports 3X more Ag and food products in relative terms than any other country in the world



Food Clusters

- ☉ Southeast Asia now the broiler chicken capital of the world – supplies KFC with chickens for their ASEAN operations
- ☉ Supplies a large part of the DCs demand
- ☉ South America, especially Brazil, now soya capital of the world



Global Food Chain



Global Food Chain

- ☉ "The technologies and political power of the Northern agro-industrial complex have significantly shaped the structure of the global food economy."

(McMichael, "Hungry For Profit")



Global Food Chain

- ☉ Food is one-tenth of total global trade, worth USD \$1.1bn/day, over \$400bn per year
- ☉ Wheat, coarse grain, rice, meat, dairy products, and sugar equals 50% of the world food trade
- ☉ Edible oils, beverages account for most of the rest



Global Food Chain

- ☉ Importance of edible oils & sugars
 - ☐ Mid-20th century, processed foods use increased dramatically
 - ☐ This fueled "out-sourcing" for raw materials and substitutes
 - ☐ The substitutes were used in fast food processing, and the fast food industry took off
 - ☐ Originally just TV dinners, then KFC, McDonald's, Burger King, Wendy's, ad nauseum
 - ☐ Global presence → Russia, China, S. America, Asia



Global Food Chain

- ☉ Supermarkets filled with produce and food products from every corner of the globe: Australia, Africa, South America, Europe, Asia
- ☉ Ready-to-go meals contain a "world of food"
- ☉ Corporate giants of distribution – Safeway (largest supermarket chain in North America) and Tesco
- ☉ But there are consequences



Global Food Chain - Consequences

The industrialization of agriculture	
Structural dimension	Secondary consequences Outcome
Intensification	Development of supply (requisites) cooperatives Rising agricultural indebtedness Increasing energy intensity and dependence on fossil fuels Overproduction for the domestic market Destruction of environment and agro-ecosystems
Concentration	Development of marketing cooperatives New social relations in rural communities Inability of young to enter farming Polarization of the farm size structure Corporate ownership of land Increasing inequalities in farm incomes between farm sizes, types and locations State agricultural policies favouring large farms and certain regions
Specialization	Food consumed outside region where it was produced Increased risk of system failure Changing composition of the workforce Structural rigidity in farm production

Source: Bowler (1985a).



Global Food Chain - Consequences

- ☼ Tesco forces prices lower through reverse auctions
- ☼ Safeway involved in largest labour dispute since the auto industry unionized
- ☼ Wal-Mart creates a feeding frenzy through "rollback" of prices that drive small industry out of business or force it to re-locate to where there is an economically advantageous labour market (i.e. "sweatshops")



Global Food Chain - Consequences

- ☼ Control of the "food chain" is being concentrated in ever-fewer hands
- ☼ Full, seamless integration from seed to supermarket
- ☼ Eg., Monsanto and Cargill formed a partnership → controlled seed, fertilizer, pesticides, farm finance, grain collection, grain processing, livestock feed processing and slaughtering, and several processed food brands.



Global Food Chain - Consequences

- ☼ Farmers in EU and North America used to receive 45% - 60% of money spent on food. Today, that ratio has dropped to 3.5%-7%.
- ☼ Dumping undercuts local farmers in LDCs and forces them to become importers even if the food products are natively grown and produced
- ☼ GMO and TNC seed control = loss of biodiversity
- ☼ Subsidization displaces indigenous farmers - rural dispossession - forces populations to urban centres, creating massive slums
- ☼ In 2001, over 88 million Chinese farm workers migrated from rural to urban centres*



Embeddedness

- ☼ TNCs are integrally connected to, and imbedded in, the global food chain, through vertical and horizontal integration, regional, national, and global trade deals, FDI in developed countries and NIEs, local and global political influences, and overwhelming control of the important functions of agricultural production.
- ☼ The TNC today is a powerful global force, similar to the mercantile companies of pre-industrial times, sourcing for new and cheaper resources, dominating or affecting global economies and local cultures, and shifting the global economic map.



The Corporation

