Potential Impacts of the Proposed Ban on Packer Ownership and Feeding of Livestock

A Special Study

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Foreword

Last December, Senator Johnson (D-SD) proposed an amendment (the "Johnson Amendment") to the farm bill that would amend Packers and Stockyards Act (PSA). Subsequently, Senators Grassley (R-IA) and Harkin (D-IA) offered a second-degree amendment to further define the wording of the initial amendment. At this time, the revised amendment is included in S. 1731, passed February 13, 2002. The House farm bill contains no such amendment.

The amendment would make it unlawful for meatpackers to own, feed or control livestock for more than 14 days prior to slaughter. Cooperatives, or entities owned by them, would be exempt if a majority of the ownership interest in the cooperative is held by active cooperative members who own, feed or control livestock and provide them to the cooperative for slaughter. The amendment also would exempt packers who slaughter less than two percent of annual slaughter of each type of livestock.

Study Methodology

This is a study of the potential impacts of the Johnson Amendment. It examines how the various segments of the hog/pork and cattle/beef industries would be affected by a ban on packer ownership, and the short and long-term impacts. The study is based on extensive reviews of economic statistics, studies and reports and interviews across the major industry sectors by experts with first-hand knowledge of the beef and pork industries

The study was commissioned by the National Cattlemen's Beef Association (NCBA) and the National Pork Producers Council (NPPC) to be an objective evaluation of both the source of the current structural change in the red meat industry, and likely impacts of the Amendment.

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Study Findings

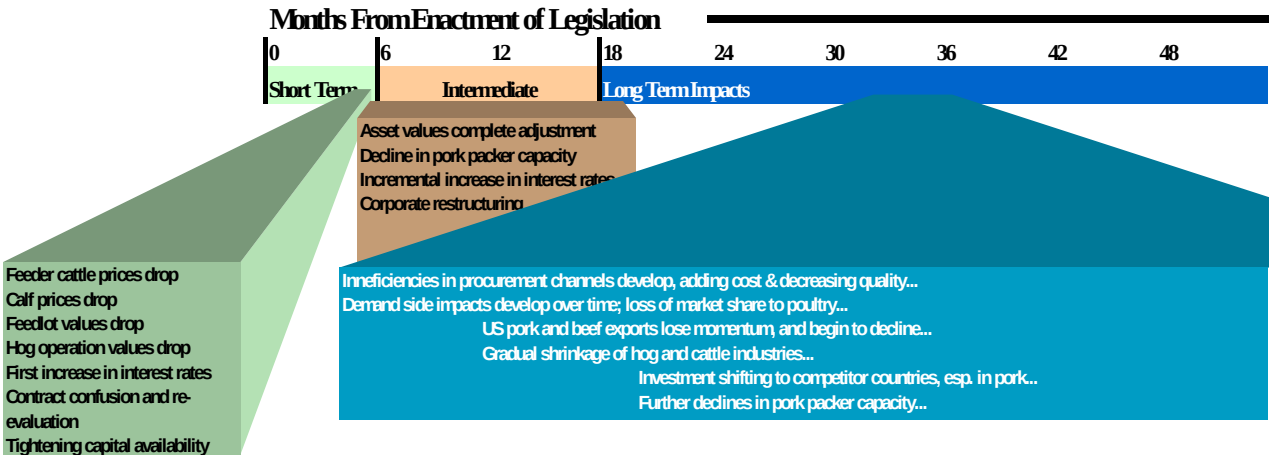
The Johnson Amendment likely would result in immediate and long-term negative impacts for all sectors of the US pork and beef industries, from independent producers to packers. No segment can expect to benefit, and each would likely face significant losses.

- The Amendment assumes that packers use livestock ownership and marketing arrangements to exert market power at the expense of independent producers, and would outlaw many common management tools, primarily packer ownership of livestock.

- This intervention would strike at the heart of recent industry advances, reducing efficiency and raising costs at all levels of production and processing. And, it could undercut recent increases in consumer demand and export sales.

- The costs of such interventions would be felt immediately, and some costs would continue indefinitely (See Diagram).

Time Line of Packer Feeding and Ownership Ban Impacts



The contrast between states with growing herds and those where swine herd numbers declined is stark. All of the principal declining states were characterized by restricted packer ownership, with no packer ownership allowed in eight of the ten. In nine of the ten rapid-growth states, there was a significant component of packer ownership of hogs while in the remaining state a strong contracting linkage was permitted between producers and packers.

10-Year Trend in US Swine Breeding Herd and Relationship to Packer Ownership of Hogs

Top 10 Breeding Herd Growth States ('000 head Dec 1)

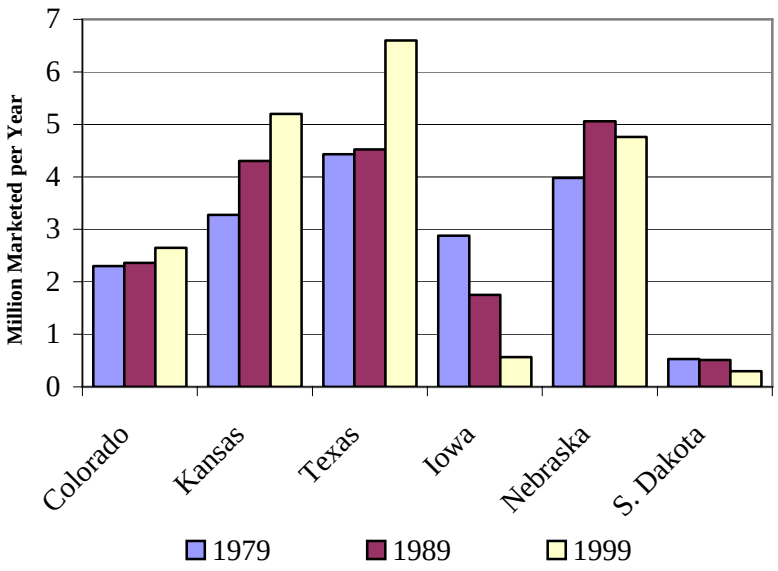
Rank	State	1992	2001	Increase %	Increase head	Packer Ownership
1	UT	6	70	1067%	64	YES
2	OK	35	340	871%	305	YES
3	WY	5	21	320%	16	YES
4	CO	55	175	218%	120	YES
5	NC	500	1000	100%	500	YES
6	TX	70	100	43%	30	YES
7	PA	105	130	24%	25	YES
8	MS	25	28	12%	3	NO
9	KS	160	170	6%	10	YES
10	MO	375	380	1%	5	YES
	Total/Avg.	1336	2414	81%	1078	

Top 10 Breeding Herd Decline States ('000 head Dec 1)

Rank	State	1992	2001	Decline %	Decline head	Packer Ownership
1	GA	155	50	-68%	-105	NO
2	TN	85	30	-65%	-55	NO
3	WI	170	65	-62%	-105	NO
4	KY	120	50	-58%	-70	NO
5	SD	235	145	-38%	-90	NO
6	IN	550	340	-38%	-210	NO
7	MI	175	110	-37%	-65	NO
8	NE	580	370	-36%	-210	NO
9	IL	700	450	-36%	-250	SMALL
10	IA	1700	1130	-34%	-570	SMALL
	Total/Avg.	4470	2740	-39%	-1730	
	US	**7109**	**6209**	**-13%**	**-900**	**23%**

Similarly, in states that have constrained investment in cattle feeding marketings have declined, while others have attracted substantial new investment (See Chart).

Cattle Marketings, Selected States, 1979-99



Amendment Costs

The study examined potential impacts of Amendment costs at all levels of the industry, and estimated cost impacts at each level. Cost impacts would differ widely, both in their timing and in their impacts. Impacts are measured at the producer level for both cattle and hogs.

- **Initial divesture** impacts would be severe but temporary, and would affect packer-owners and other livestock owners, as well.
  - For hogs, the midpoint estimate of this one-time cost is $1.2 billion, but could reach $1.8 billion or be as low as $0.6 billion depending on market conditions.
  - For feeder cattle and calves, the midpoint of this estimate is $2.4 billion, but could reach $2.5 billion or be as low as $2.3 billion.

- **Increased capital costs** across the industry as lenders increase their risk premium.
  - For hogs, the midpoint estimate of this impact is $83.5 million, but could be as high as $133 million or as low as $34 million.
  - For cattle, the midpoint estimate is $314 million, but could be as high as $523 million or as low as $105 million.

- **Reductions of packers' operating efficiency and increased risk**.
  - For hogs, the midpoint of the estimate of this impact is $1.4 billion, but could be as high as $2.16 billion or as low as $0.55 billion.
  - For cattle, the midpoint of this estimate is $90 million, but could reach $130 million or be as low as $51 million.

- **Reduced domestic demand for meats**.
  - For hogs, the midpoint of this estimate is $357 million, but could be as high as $595 million or as low as $119 million.
  - For cattle, the midpoint of this estimate is $213 million, but could be as high as $267 million or as low as $160 million.

- **Reduced export demand for meats**.
  - For hogs, the midpoint of this estimate is $469 million, but could be as high as $750 million or as low as $188 million.
  - For cattle, the midpoint of this estimate is $53 million but could be as high as $66 million, or as low as $40 million.

- **Transfer and relocation of significant amounts of pork production and ownership to Canada and Mexico.** The midpoint of this estimate is $1.1 billion, but could be as high as $2 billion or as low as $0.1 billion.

Impacts expected across the sector likely would be large, would begin immediately and could severely damage the sector's competitive position in US and overseas markets. Midpoint estimates of losses for hogs across categories, and including both temporary and continuing costs are $4.5 billion, but could reach $7.4 billion or be as low as $1.6 billion. The midpoint estimate of losses for cattle across categories could be somewhat smaller, $3.1 billion but could be as high as $3.5 billion or as low as $2.7 billion.

Impacts on States

Impacts of the Amendment would vary widely by states, depending on the size of the production and packing industries located in each. (See tables). The estimates represent losses for hog producers, and are allocated on the basis of each State's breeding herd. The allocation does not reflect situations where some adjustment to packer feeding restrictions have already occurred, but is indicative of relative impacts of the Amendment.

The losses include both loses from temporary, one-time events and those evolving from declines in competitiveness and efficiency. The estimates represent the midpoint of the ranges estimated for each state. For example, for Iowa, the mid-point estimates of all types of losses would amount to $0.8 billion, could be significantly lower or as high as $1.3 billion.

Impacts of Johnson Amendment of Hog Producers by Type of Loss, by State

State:	Capacity	Credit	Equity	Efficiency	Risk	Demand	Exports	Relocation
				million $				
IA	181	15	216	15	48	64	84	189
NC	161	13	192	14	42	57	75	168
MN	91	8	108	8	24	32	42	95
IL	70	6	84	6	19	25	33	74
NE	60	5	72	5	16	21	28	63
MO	60	5	72	5	16	21	28	63
IN	50	4	60	4	13	18	23	53
CO	30	3	36	3	8	11	14	32
KS	30	3	36	3	8	11	14	32

Impacts are midpoint of range estimates, allocated by Dec 1 2001 breeding herd share.

The losses for cattle also include both losses from temporary, one-time events as well as those evolving from declines in competitiveness and efficiency. The estimates represent the midpoint of the ranges estimated for each state. For example, for Texas, the mid-point estimates of all types of losses would amount to $0.5 billion, and could be significantly lower or as high as $0.6 billion. The estimates do not reflect situations where some adjustment to packer feeding restrictions have already occurred, but are indicative of relative impacts of the Amendment.

Impacts of losses for Cattle Producers by Type of Loss, by State

State	Demand for Feeder Animals	Cost of Credit	Loss of Feedlot Asset Value	Plant Efficiency Loss	Risk Cost	Loss of Domestic Demand	Loss of Export Demand
	----- Estimated Impact By State (in Million $) -----						
TX	244.1	59.2	167.8	9.2	7.8	40.2	10.0
KS	71.2	38.0	144.0	5.9	5.0	25.8	6.4
NE	88.1	36.6	130.3	5.7	4.8	24.9	6.2
CO	39.0	22.8	87.8	3.6	3.0	15.5	3.8
OK	91.5	14.9	29.5	2.3	2.0	10.1	2.5
SD	96.6	11.8	13.0	1.8	1.6	8.0	2.0
CA	66.1	10.7	20.9	1.7	1.4	7.3	1.8
IA	50.9	10.0	24.5	1.6	1.3	6.8	1.7
MO	98.3	9.1	0.0	1.4	1.2	6.2	1.5
ID	33.9	8.6	25.2	1.3	1.1	5.9	1.5
MT	76.3	7.1	0.0	1.1	0.9	4.8	1.2
WA	17.0	6.4	22.3	1.0	0.9	4.4	1.1
KY	50.9	4.7	0.0	0.7	0.6	3.2	0.8
AZ	10.7	4.4	15.8	0.7	0.6	3.0	0.7
NM	25.4	3.8	6.5	0.6	0.5	2.6	0.6

Impacts by Specie

The estimated range of impacts on the hog production sector varies widely, across the range of impact sources (See table). The loss of equity for farrow-to-finish operations reflects value of both facilities and hogs, on a per-sow basis.

Potential Impacts of Amendment per Head of Hogs

One time Impact on Hog Production Sector 1/	**Low**	**Midrange**	**High**
		$ per sow	
Loss of Farrow-Finish Equity Value	100.00	200.00	300.00
Recurring Impacts on Hog Production Sector 2/		***$ per barrow or gilt***	
Reduction in US Packing Plant Capacity	3.36	10.64	17.91
Cost of Credit	0.36	0.89	1.41
Plant Efficiency Loss	0.36	0.91	1.45
Risk Cost	2.10	2.80	3.50
Damage to Domestic Pork Demand	1.26	3.78	6.29
Damage to Pork Export Demand	1.99	4.96	7.93
Relocation of Investment	1.06	11.10	21.14

1/ A one time impact allocated across 6 million breeding inventory.

2/ Ongoing Impacts allocated across annual barrow and gilt slaughter.

Individual impacts may not be additive because of interactions.

The estimated range of impacts per head across the cattle sector varies widely, across the range of impact sources (See table). The loss of equity for feedlot asset values reflects value of both facilities and hogs, on a per-head basis.

Potential Impacts of Amendment per Head of Cattle

Cattle Feeding Segment ($/hd fed in one year) 1/	**Low**	**Midrange**	**High**
Loss of Feedlot Asset Value	$ 21.05	$ 25.26	$ 29.47
Calf Production Segment ($/hd. destined for feedyard) 2/			
Demand Impact on Feeder Animals 3/	$ 44.37	$ 44.37	$ 44.37
Cost of Credit	$ 2.74	$ 8.22	$ 13.69
Plant Efficiency Loss	$ 0.52	$ 1.28	$ 2.04
Risk Cost	$ 0.81	$ 1.09	$ 1.36
Damage to Domestic Beef Demand	$ 4.18	$ 5.59	$ 6.99
Damage to Export Beef Demand	$ 1.05	$ 1.39	$ 1.73

1/ A one-time impact spread across 28.5 million head.

2/ In the long-run all of these items flow back to the bottom of the marketing chain and that is what is reflected here. Short-term, the feeding sector may bear some of these costs.

These figures are estimates only and are not considered to be additive.

3/ Transitory loss, not expected to persist more than a year or two.

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Under the Johnson Amendment

- US production efficiencies decrease, resulting in declines in the industry, increasing opportunities for competing products and competing international producers who could become more efficient and better marketers than US producers. Weaker domestic and export demand could accelerate these declines.

- The US poultry industry, which has grown more than 600% since 1960 could face less competition for US markets.

- Declining margins for both packers and feeders could stimulate consolidation as higher-cost operations, most often the smallest, are forced to close.

- Investment in superior products and retail brands would be constrained and the capacity of processors to satisfy demands of rapidly consolidating retailers for greater uniformity and higher quality would decline, both in the United States and overseas.

- Very substantial immediate losses for livestock producers and narrower margins for the meatpacking industry would reduce tax revenues and increase federal and state budget pressures.

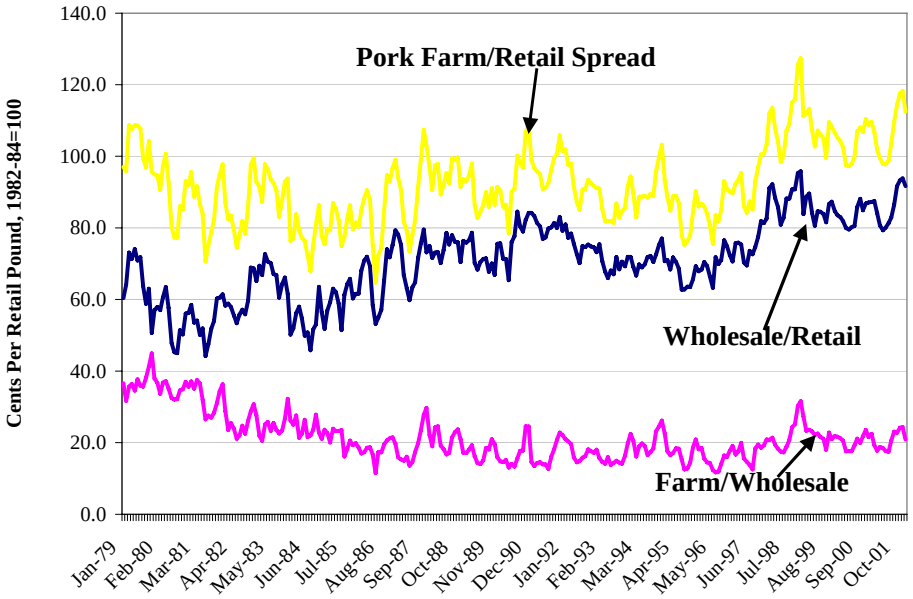
Focus of the Debate

Proponents of the Amendment appear to misunderstand the nature of the competitive forces driving change across the red meat and poultry industries today. The study concludes that primary competitive pressures among products are at the consumer level, driven by basic changes in society and domestic and international demands for quality, convenience, and services as lifestyles evolve (See Charts). The vast bulk of the change in prices and values at farm, wholesale and retail levels reflect costs of services while the farm-wholesale spread has been stable or declining for most of the past two decades as efficiency has grown. New costs packers are required to pay recent years include:

- Inspection fees and new steam vacuum procedures for carcasses, along with an acid bath that also add to costs;
- Trimming costs, with most beef now sold as closer trim (1/4 inch or less) compared to commodity trim (3/4 inch or more), thus increasing costs. And, more product now is boneless, especially beef;
- New, more expensive safety rules such as HACCP, waste water treatment and others;
- Higher labor costs in response to much tighter supplies of labor.

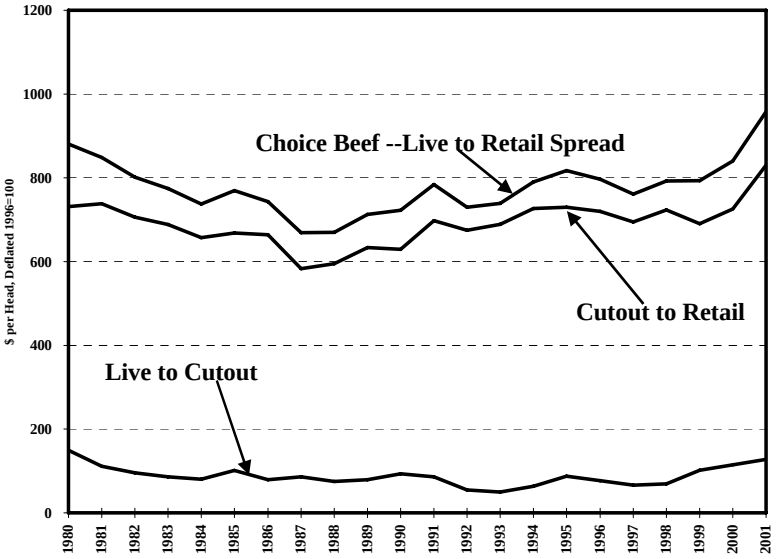
In spite of higher costs, the farm to wholesale spreads shown below are generally lower than they were in the 1980s in inflation-adjusted terms, and reflect steady increases in efficiency across the sector. Nevertheless, the legislation proposes to regulate the farm and processor levels while the major widening of the spreads has been at the wholesale-retail levels.

Pork Price Spreads, 1979-2001



Source: ERS, USDA

Beef Price Spreads, 1980-2001



The poultry industry pioneered the strategy of providing additional services to compete with other meats as an avenue to market growth in the 1950's and the red meat sectors followed that success more recently. A significant negative impact of the Amendment is that it would

constrain beef and pork industry efforts to provide the consumer-friendly products to compete with poultry at the consumer level.

The proposed Amendment would intervene at the processing and livestock production levels where product competition is mainly reflected, not where it originates. It would impose unwarranted costs where they would benefit no one, without strengthening demand, efficiency, technology, or competition. Over the longer-term, the Amendment would be unlikely to benefit any sector in the domestic beef or pork industries, and especially not livestock producers who expect wider margins and greater independence to result from this proposed legislation. The end results likely would be lower producer prices, higher costs, smaller markets and diminished returns for the foreseeable future.

The study evaluates both the source of the current structural changes in the red meats industry, and the likely impacts of the Amendment.

Transition

Proponents of the Amendment argue that the transition periods it includes would permit an orderly transfer of ownership of packer-owned livestock and facilities. The study concludes, based on extensive interviews across the industry that such a transition is quite unlikely. Instead, the proposal would have major short-term and longer-term impacts, including:

- **Divestiture of packer-owned livestock, and packer owned livestock feeding facilities**. While this would take place over transition periods for beef and pork, the impacts would be severe, immediate and persistent. They would reduce the value of livestock, livestock feeding facilities, and breeding facilities throughout the United States. By restricting packers' application of a number of strategic management tools, the Amendment would be expected to increase operating costs, reduce output and reduce returns to both packers and livestock producers.

- **Curtailment of new marketing contracts by packers**. Given the intensive factual inquiries required to assess "material participation" as required by the amendment make it impossible for packers to confidently assess the legal risks presented by existing arrangements under the Amendment. It is likely that packers who have committed to purchase livestock under long-term marketing agreements would refrain from offering new contracts to producers until the legislation is clarified or enforcement of the legislation is made clear by the USDA.

  Surveys by Iowa State University indicated that 22,748 hog producers sold more than 1,000 hogs in 2000. About one-half of the smaller producers (<5,000 hogs sold) used marketing contracts. Thus, it is clear that substantial restrictions on such contracts would have negative impacts on many smaller operations.

- **Curtailment of financing by lenders**. For similar reasons, it also is likely that lenders, which finance livestock producers, would desire time and clarification of the legislation before advancing new funds for the expansion of facilities or herds. Frequently, such expansions are based, at least in part, on the terms of long-term marketing agreements by which producers secure a buyer for their production, obtain premium prices and limit market risk. Should such arrangements become legally suspect, it is only logical to expect that lenders would not be willing to absorb this additional risk.

- **Revision of existing marketing contracts**. Should packers determine that the legislation impairs their ability to enter into long-term marketing arrangements, we would anticipate they will attempt to identify other tools to achieve the goals, which such contracts have provided them. This may require packers to attempt to renegotiate existing contracts inasmuch as the legislation does not exempt existing contracts from its scope.

- **Corporate restructurings**. Packers could also attempt to meet the terms of the Amendment via various restructurings or liquidations of selected assets. At least one packer has publicly suggested that it would cease operations at one of its plants should the Amendment be enacted. The Amendment would appear to require packers who own livestock to divest themselves of such livestock. The manner of such divestitures would likely be carefully considered by all affected packers, and likely would diminish interest in investment in the industry.

- **Litigation**. Should the Amendment be enacted, there likely would be litigation relating to this legislation brought by packers and/or producers. Challenges to the required divestiture of livestock by those packers that currently own livestock and the exemption for poultry contained in the Amendment also could be brought and would serve to reduce willingness to invest in the industry.

Intermediate Term Impacts

The intermediate impacts of the Amendment likely would be extensive and entirely negative. They would likely include:

- **A higher-cost, less efficient meat packing industry** in the future with smaller capacity to produce and process cattle and hogs. Costs would be increased by increased costs of capital, reduced plant utilization, higher price volatility and risk and reduced revenues from livestock production. The higher costs would reduce margins and lead to reduced bids for livestock. at the farm level. Lower returns at each level would reduce state and federal tax returns for the sector.

- **Reduced packer-processor investment** at both ends of the value chain, in genetics and livestock management and in branded products and market development. This likely would reduce competitiveness of red meat products in competition for US consumers'

dollar, and in export markets. It likely also would mean a reversal of current growing market shares in both markets.

- **Higher-cost, less efficient feeding and breeding industries** in response to higher capital costs for livestock feeders and breeders, reducing margins for both types of investment.

- **A smaller meat packing industry** as lower margins cause less-efficient packers to cease operations and reduce industry capacity. The higher costs would make US packers less efficient in competing with poultry at the consumer level and less efficient in competing with the Danes, Canadians, Australians, Brazilians and others for foreign markets.

- **Smaller breeding and feeding industries** as higher capital costs and weaker returns lead to reduced investment in livestock feeding and breeding, and reduced industry production capacity. The smaller industry would be more dependent on both imported livestock for slaughter and imported meats and meat products.

- **Increased vulnerability for producers in isolated production areas** as packers access to tools to manage supply flows and plant utilization are constrained.

- **Continuing advantage for poultry in the competition** for domestic and international consumers' dollars as investment in quality by the red meat sectors decline. The poultry industry would be in a position to continue to invest in quality and market development efforts while investment and development by red meat producers/processors would decline.

Potential Impacts of the Proposed Ban on Packer Ownership and Feeding of Livestock

I. Introduction

The Johnson Amendment

The Johnson Amendment (Amendment No. 2534) included in S. 1731, the Senate-passed farm bill, would amend the Packers and Stockyards Act to make it unlawful for a meatpacker to own, feed, or control livestock intended for slaughter for more than 14 days prior to slaughter.[1] Cooperatives, or entities owned by them would be exempt if a majority of the ownership interest in the cooperative is held by members that own, feed, or control livestock that they provide to the cooperative for slaughter. The amendment also would exempt packers that slaughter less than two-percent of each species of US livestock annually. The amendment does not define "owning, feeding or controlling" livestock. The use of the word "control" was immediately controversial and led to subsequent efforts to clarify this term.

Key Definitions

A major issue concerning the amendment is its scope and coverage. Many meat packers and others argue that the amendment's prohibitions are extremely broad, covering meatpacker ownership of livestock (more than 14 days before slaughter), with exceptions for certain packers and virtually all arrangements used by packers to insure adequate, high quality animals to process. One model of such a broad concept is used by USDA's Grain Inspection, Packers and Stockyards Administration (GIPSA), which focuses on impacts of "captive supplies" of livestock on the industry that is "cattle that are committed to or are owned by a packer before they are ready for slaughter."[2] GIPSA further defines captive supply as livestock that is owned or fed by a packer more than 14 days prior to slaughter, livestock that is procured by a packer through a contract or marketing agreement that has been in place for more than 14 days, or livestock that is otherwise committed to a packer more than 14 days prior to slaughter. GIPSA is beginning the rulemaking process and will soon publish this definition in the Federal Register to receive public comment.

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[1] Amendment 2534 (the Johnson Amendment) and 2837, would amend section 202 of the Packers & Stockyards Act, 7 U.S.C., paragraph 192.

[2] ***Captive Supply of Cattle and GIPSA's Reporting of Captive Supply***, Grain Inspection, Packers and Stockyards Administration, US Department of Agriculture, January 11, 2002.

However, the Johnson Amendment does not use USDA's captive supply definition. A second amendment, Amendment No. 2837 (Harkin-Grassley Amendment) was included in S.1731 in an attempt to clarify concerns raised by the opposition regarding the word 'control' in the original amendment, according to Senator Grassley.[3],[4] That provision would amend the Packers & Stockyards Act to make it unlawful for packers to "own or feed livestock directly, through a subsidiary, or through an arrangement[5] that gives the packer operational, managerial or supervisory control over the livestock, or over the farming operation that produces the livestock, to such an extent that the producer is no longer materially participating in the management of the operation with respect to the production of the livestock." This amendment contains exceptions similar to those in the Johnson Amendment for small packers and cooperatives.

The Harkin-Grassley Amendment specifically refers to "arrangements" (the Johnson Amendment did not), wording that expands the scope of the restrictions on packers so as to make unlawful any agreements, contracts, understandings or undertakings between a packer and a producer which grant the packer "operational, managerial, or supervisory control" over livestock unless the "safe harbor" provided by the Amendment is met. It would appear likely that such arrangements could include virtually all strategic alliances and marketing agreements between packers and producers. The Amendment is sufficiently broad to include long-term marketing agreements under which packers influence (dictate) producers' management decisions.

For example, by prohibiting packers from obtaining "operational, managerial, or supervisory control" over livestock through arrangements that give a packer such control, the Amendment would not require "operational, managerial *and* supervisory control" in order for a packer to potentially run afoul of the prohibition, but would mean that any arrangement which grants a packer any of these types of control could result in liability.

The Amendment includes a "safe harbor" device, a provision that producers who retain "material participation" in livestock production operations would be allowed. However, many analysts believe determination of "material participation" as required for arrangements to be legal under the amendment can be done only on a case-by-case basis.

Safe Harbor: Material Participation

The Amendment's safe harbor language provides that "arrangements" which give a packer "operational, managerial, or supervisory control" will not be deemed illegal if the producer

[3] Statement of Senator Grassley, February 11, 2002.

[4] The legal analysis in the following section depends heavily on conversations and communications with legal analysts from a number of firms, and especially communications with Phillip L. Kunkel, Attorney at Law, Hall & Bryers, P.A., St. Cloud, Minnesota.

[5] The word "arrangement" was not used in the original amendment, and must be interpreted to define the scope of the amendment to restrict packers from the use of a broad range of commercial devices, including agreements, contracts, understandings or undertakings between a packer and a producer which would grant the packer "operational, managerial or supervisory control" over livestock unless a "safe harbor" is met. Thus, arrangements could include virtually any strategic alliance or marketing agreement between packers and producer.

"materially participates" in the "management of the operation with respect to the production of the livestock... ,"

The "material participation" test has been developed in the income tax, self-employment tax and estate tax arenas and is covered by a set of detailed tax regulations, which attempt to explain the phrase in those contexts.[6] Senator Grassley's comments on the floor of the Senate on February 11, 2002, suggest that the use of this phrase to set forth the safe harbor for livestock arrangements was intentional and designed to reflect the law, which has developed in these areas. However, the following difficulties arise from reliance on this mechanism:

- There is no single definition of "material participation" under these regulations, and what constitutes "material participation". may be different, depending upon the purpose for which the determination is to be made.

  For example, the material participation regulations for determining whether an activity is subject to the "passive activity" rules set forth seven alternative tests.[7] Under these regulations, a determination that an individual has satisfied the requirements of a participation standard under any other provision of the Internal Revenue Code is *not* taken into account in determining if that individual materially participates in an activity for purposes of the passive activity rules.[8]

  Thus, this "material participation" safe harbor does not provide reliable guidance to either packers or producers since it is not clear which existing standard, if any, is intended to apply. While Senator Grassley's statement on the floor on February 11, 2002, would indicate his intention to apply the material participation standard applicable to self - employment tax rules, the Amendment does not expressly require that interpretation. And such statements by authors of legislation are not binding upon any court or the Department of Agriculture when the statutory language is ambiguous.

- Material Participation Is Based Upon Facts and Circumstances. The tax regulations upon which the Amendment's safe harbor is based expressly recognize that "whether the required material participation occurs is a factual determination, and the types of activities and financial risks which will support such a finding will vary." [9] No single factor is "determinative of the presence of material participation."[10] Thus, the Amendment attempts to clarify "control" through the use of a concept, which is inherently factual and based upon the facts and circumstances of each case. As recognized by the Tax Court in a case involving a self-employment tax determination, "[a] plain reading [of the tax regulations] indicates that each arrangement must be

[6] See e.g., Treas, Reg. §§ 1.469-5T(a); 1.1402(a)-4; 20.2032A-3.
[7] Treas. Reg. § 1.469-5T(a)(1)-(7).
[8] Treas. Reg. § i.469~5T(b)(2)(i).
[9] Treas. Reg. 20.2032A-3(a).
[10] Treas. Reg. § 20.2032A.-3(e)(2).

analyzed separately to determine whether the income from the arrangement is subject to self-employment tax."[11]

Adoption of such a test will make compliance with the Harkin-Grassley Amendment difficult for packers and producers.

- There would be no bright line to determine when a producer would, or would not, be deemed to materially participate in the management of the livestock operation under an arrangement with a packer.
- It would be difficult, if not impossible, for counsel to advise either packers or producers as to whether a contract complies with the Amendment, especially concerning the point at which an arrangement between a packer and a producer in which the packer exercises oversight over matters such as genetics, nutrition, health care, biosecurity, etc. will result in a determination that the arrangement violates the Amendment.
- Counsel will only be able to advise either packers or producers that their contemplated contracts *may* survive a challenge under the Amendment.

- Material Participation is Based Upon Actual Activities. In addition to a finding of "material participation" requiring a factual determination, such a determination can only be made after the activities have been performed. The self- employment tax regulations cited by Senator Grassley clearly and unequivocally provide that there are two requirements for a determination of material participation: (a) an "arrangement" and (b) "actual participation" to a material degree in the farming operation.[12] As a result, if the Amendment is intended to be consistent with these regulations, it is impossible to assess in advance whether an arrangement will meet the material participation test. It is not possible to determine if a producer, which enters into an arrangement with a packer, will be deemed to materially participate in the future. This will further compound the difficulty in providing clear guidance to packers and producers with respect to such arrangements.

- New Standard for Material Participation. Senator Grassley has indicated that the material participation standard intended to be applied to the Amendment is contained in the self-employment tax rules[13], but the Amendment does not expressly adopt this test. In fact, the Amendment may establish a new test for material participation since it adopts only a portion of the self-employment tax test.

  The tax regulations relating to self-employment tax clearly provide that an "arrangement" in which the owner [of the real property at issue] will participate in the "production *or* the management of the production" will meet the material participation test.[14] Under the

[11] *Dugan*, TC Memo 1994-562.
[12] See, Treas. Reg. § 1.1402(a)-4(b)(4).
[13] Treas.Reg. § 1.1402a-4
[14] Treas. Reg. § 1.1402(a)-4(b)(3)(I) {emphasis added}.

Treasury Regulations, the term "production" refers to the physical work performed and the expenses incurred in producing a commodity.[15] Thus, a producer, which performs all material "production" functions in the production of an agricultural commodity, will be deemed to "materially participate." [16]

This is not the case under the Amendment, which requires the producer must materially participate in the "management of the operation." Under the tax regulations, a similar phrase, "management of the production," refers to "services performed in making managerial decisions relating to the production, such as when to plant, cultivate, dust, spray, or harvest the crop, and includes: advising and consulting, making inspections and making decisions as to matters such as rotation of crops to be grown, the type of livestock to be raised, and the type of machinery and implements to be furnished."[17] In order to participate in the management of the production under these regulations, it appears necessary that a person must "engage to a material degree in the management decisions related to the production of [the] commodities" which are the subject of the arrangement.

Thus, under the Amendment, physical labor would not be considered in determining if a producer materially participates and only participation in management may be considered. This focus by the Amendment on the "management of the operation" may make it possible for a producer under an arrangement with a packer to meet the self-employment tax test, but not materially participate under the Amendment's test.

Some Disagreement

Not all experts agree with the foregoing analysis. For example, three Midwestern college professors[18] who also are members of local state bars have prepared and circulated an analysis of the Johnson Amendment that heavily criticizes an earlier economic evaluation of potential impacts of the Amendment.[19] The professors characterize the economists' view as a "manifest misreading of the proposed statutory language," and base their conclusions on Senator Johnson's "formal clarification that the word 'control' contained in subsection (f) of the proposed amendment." They observe that the Amendment was not designed to prohibit contracts for future delivery of livestock, but was intended to prevent packers from owning cattle outright through a subsidiary, or through arrangements (contractual or otherwise) that give them operational control over livestock except within the last two weeks before slaughter.

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[15] Treas. Reg. § 1.1402(a)-4(b)(3)(ii)

[16] id. *Gill*, TC Memo 1995-328 (poultry grower deemed to materially participate due to physical work performed under grower contract; *Schmidt*, TC Memo 1997-41 (grower under vegetable contract determined to materially participate in farming operation since he provided all labor)

[17] Treas. Reg. 1.1402(a)-4(b)(3Xiii)

[18] Roger A. McEowen, Peter, C Carstensen and Neil E. Harl., ***Proposed Legislative Ban on Packer Ownership of Livestock Mischaracterized by Economists***, undated occasional paper.

[19] D. Feuz, G. Grimes, M.L. Hayenga, S. Koontz, J.D. Lawrence, W.D. Purcell, T.C. Schroeder and C.E. Ward, ***Comments on Economic Impacts of Proposed Legislation to Prohibit Beef and Pork Packer Ownership, Feeding, or Control of Livestock,*** .Occasional paper, January 14, 2002.

Nevertheless, in their discussion of the legislative approach chosen, they admit that the legal interpretation of "control" depends on the relationship involved and that "the existence of an agency relationship is a question of fact for a jury to decide," suggesting that the definition would require case-by-case definition. The analysis discusses several types of contract settings, including those in which the "integrator" controls both the mode and manner of the farming operation, and distinguishes those from forward contracts in which the integrator does not have managerial and operational control. It concludes that many marketing contracts would likely be held beyond the scope of the legislation's ban on packer ownership or control of livestock more than two weeks before slaughter, and that "packers would still have the ability to coordinate supply chains and assure markets for livestock producers through contractual arrangements provided the contracts do not give the packer operational and managerial control over the livestock producer's production activities."

In general, the professors do not address the key questions discussed above concerning the adequacy of the Amendment's safe harbor provisions. Specifically, they do not focus on questions regarding:

- The lack of a single definition of "material participation" under the Amendment;
- The fact that material participation is based on facts and circumstances, and would use a concept which must be determined in each case, so that compliance could be extremely difficult.
- The fact that material participation is based upon actual activities, which could be impossible to assess in advance.
- The fact that the Amendment would apply a new standard for material participation, rather than the one contained in the self-employment tax rules, and may establish a new test for material participation since it adopts only a portion of the self-employment tax test.

Observation

Some have argued that the Johnson Amendment could be applied without severe disruption for the industry, but most legal analysts contacted for this study believe otherwise. They suggest that as a result of the concerns outlined above, final passage of the Amendment (as amended) would not only prohibit packer ownership of feeder livestock, but likely would have a chilling effect on livestock contracting as it exists today. Among the possible responses of affected parties are the following:

- Curtailment of New Marketing Contracts by Packers. Given the intensive factual inquiries required to assess material participation, it may not be possible for packers to confidently assess the legal risks presented by existing arrangements under the Amendment. It is likely that packers which have committed to purchase livestock under

long-tern marketing agreements would refrain from offering new contracts to produce – until the legislation is clarified or enforcement of the legislation is made clear by the USDA.

- Curtailment of Financing by Lenders. For similar reasons, it also is likely that lenders, which finance livestock producers, would desire time and clarification of the legislation before advancing new funds for the expansion of facilities or herds. Frequently, such expansions are based, at least in part, on the terms of long-term marketing agreements by which producers secure a buyer for their production, obtain premium prices and limit market risk. Should such arrangements become legally suspect, it is only logical to expect that lenders would not be willing to absorb this additional risk.

- Revision of Existing Marketing Contracts. Should packers determine that the legislation impairs their ability to enter into long-term marketing arrangements, we would anticipate they will attempt to identify other tools to achieve the goals that such contracts have provided them. This may require packers to attempt to renegotiate existing contracts inasmuch as the legislation does not exempt existing contracts from its scope.

- Corporate Restructurings. Packers could also attempt to meet the terms of the Harkin-Grassley Amendment via various restructurings or liquidations of selected assets. At least one packer has publicly suggested that it would cease operations at one of its plants should the Amendment be enacted. The Amendment would appear to require packers who own livestock to divest themselves of such livestock. The manner of such divestitures would likely be carefully considered by all affected packers, and likely would diminish interest in investment in the industry.

- Litigation. Should the Harkin-Grassley Amendment be enacted, there likely would be litigation relating to this legislation brought by packers and/or producers. Challenges to the required divestiture of livestock by those packers, which currently own livestock and the exemption for poultry contained in the Harkin-Grassley Amendment also could be brought and would serve to reduce willingness to invest in the industry.

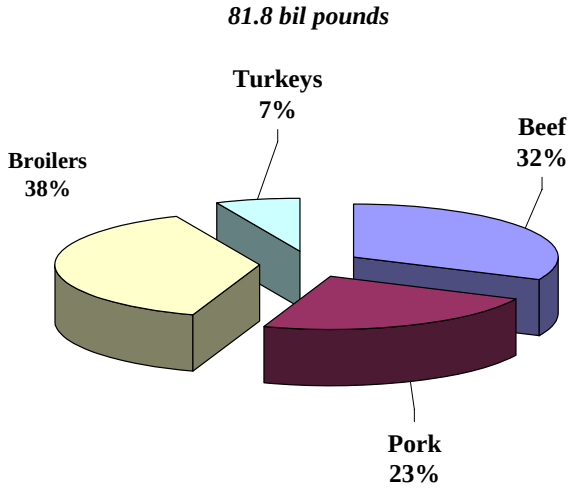
Meat Production System Extends Far Beyond Farm

The US livestock industry is quite mature and extensive. Livestock are produced in every state and contribute the bulk of farm revenues to the national agriculture and food system. While the most obvious characteristic of the system is its huge size, an equally important dimension is its sophistication. Food products and services must arrive at plants and outlets worldwide "just in time" to permit highly efficient processing and distribution, and they compete in terms of cost, quality, appearance and other characteristics, as well.

The US meat production and processing sector provided the nation nearly 82 billion pounds of meat and other products in 2001 from the four major species (beef, pork, chicken and turkeys) (Chart 1). Production of meat animal products added more than $80 billion to the US GDP in

2001. Export markets have grown very rapidly in recent years and amounted to 13% of total domestic production in 2001.

Chart 1. US Meat Production, 2001



The system is far more complex than is often understood, and is changing rapidly. Rather than simply moving commodities to market, the bulk food product value is added through processing, transportation, storage, packaging, distribution and many other services. For example, 70% of the retail value of beef or pork is added after the animal leaves the farm.

This is especially true for foods consumed away from home (the most rapidly growing component of consumer food expenditures). Of the $802 billion consumers spent for food in 2000, $360 billion (45%) was away from home. And, while consumption at home is growing 3% to 4% annually, consumption away-from-home is increasing much faster, up nearly 8.2% in 2000.

As agriculture has changed in recent decades, the livestock and meat sector has changed, as well. Economies of scale have redefined farms, livestock operations, meat packing plants and retail firms. Global competition has intensified, and consumer preferences have shifted. Amid these changes, the US livestock sector has first struggled to compete and then invested in new, more modern systems to develop and regain markets formerly lost. As these changes have been extended, the meat packing industry has become more concentrated – a trend underway since World War II, and before but recently has become even more controversial as producers have become concerned about what they see as a growing lack of independence and loss of control of management decisions.

Scope of Analysis

The result is proposed legislation that would ban direct ownership of livestock, plus possibly ban a broad class of investments by meat packers. It is that proposal that is the subject of this report.

Because the definitions are unclear and controversial, this analysis focuses on the potential impact of banning direct ownership. Additional impacts can be expected if the broadest possible definitions of control are adapted. Where possible these impacts are addressed in this report.

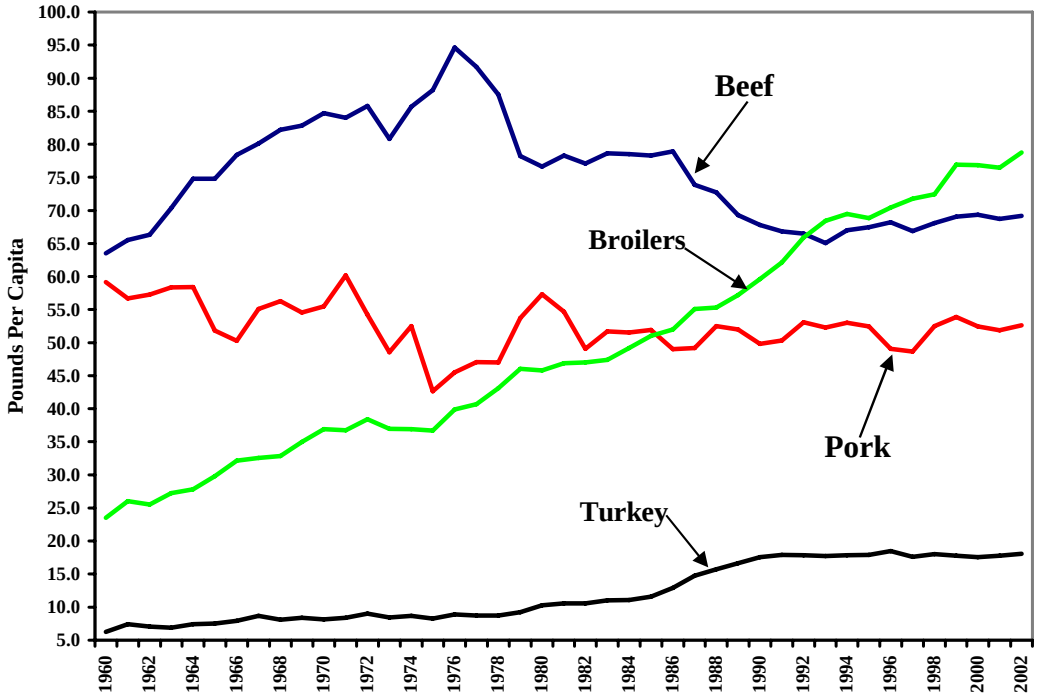
Guide to Balance of the Report

Following this introduction, Section II describes and evaluates the factors driving integration across the livestock sector today. Section III describes the sector's special vulnerability to financial problems and Section IV considers the sector's vulnerability to demand declines. Section V presents a theoretical construct that is used to facilitate analyses of impacts of the proposed legislation. Section VI examines likely impacts on the hog/pork sector, Section VII examines likely impacts for cattle/beef, Section VIII examines likely impacts of the legislation on poultry, and Section IX summarizes the report findings and conclusions.

II. Factors Driving Livestock Sector Integration

Most of the recent trends that have restructured livestock production and processing in the United States have been the result of long-standing, powerful economic trends. For example, competition among major meat products for consumers' dollars has been intense as poultry consumption expanded rapidly and steadily for more than four decades (Chart 2). From less than 25 pounds per person in 1960, consumption has grown steadily for more than 4 decades to nearly 80 pounds today. And, this competition likely will continue to be important for the foreseeable future.

Chart 2. US Consumption of Red Meats and Poultry, 1960-2002



Poultry consumption has expanded for a number of reasons, including its traditional role as the centerpiece for family meals, the industry's capacity to produce highly attractive products consistently and to do so at highly competitive prices, and the growth of markets for fast-food poultry products, all factors that likely will continue to boost poultry consumption.

Through the mid-1970s, the poultry consumption growth came primarily at the expense of red meat products. Pork consumption, for example, trended erratically lower through the mid-1970s before higher product quality and growing fast-food markets began to stabilize consumption through the early 1990s. Pork consumption trends reflect that subsector's very sharp production cycles and thus require longer periods of time to identify clear trends. However, the industry's

growing production and large and growing investment in increased product quality appear to be slowly (and cyclically) boosting consumption.

The trend for beef consumption has been similarly complex. For much of the early post-World War II period, beef was the meat of choice, driven by increasingly high quality products and stable or declining costs. Consumption that was just under 65 lbs/person in 1960 grew to more than 85 lbs by 1970, before climbing rapidly to nearly 95 lbs by 1976. From that point, however, consumption retreated rapidly, first to a new plateau in the 76 lb to 79 lb range, and then steadily downward to 65 lbs in 1993. But, from that low, beef consumption has recently began to grow, an enormously important trend reversal.

Traditionally an important component of diversified American agriculture, hog and cattle production have become increasingly specialized, larger scale and more commercial, along with poultry production and other agricultural commodity sectors, including grains, cotton and dairy products. While such trends are widely opposed by traditionalists, they reflect the fundamental capitalization of agriculture and development and use of myriad new technologies. Commercial producers who adopt new techniques early achieve higher yields, have much lower costs and receive higher prices for their products. Thus, they compete favorably for new investment capital and tend to expand more rapidly than other producers.

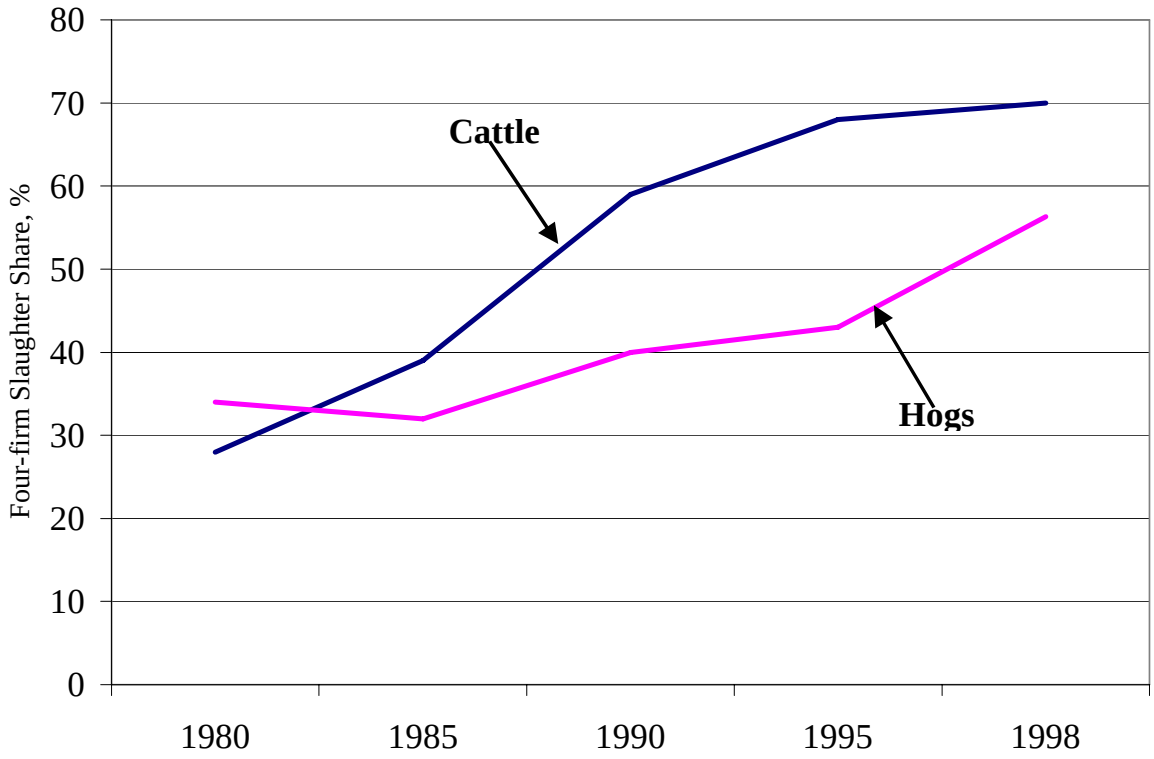
Each of these trends reflect widespread economic competition, beginning with the struggle for retail shelf space and consumers dollars (both at home and overseas), a struggle that red meat producers had lost consistently for much of the past four decades.

Intense Competition

In response, the beef and pork industries undertook extensive campaigns to produce more competitive products as investors moved to restructure these industries from top to bottom. In the process, the US pork and beef supply chains became more tightly aligned to meet competition from many different directions – from poultry, dairy and other protein products; from competing exporters in Denmark, Canada, Australia, New Zealand and Brazil who provide high levels of nutrition, uniformity, and service at highly competitive prices; and from competing processors with large-scale operations who are willing to invest in better genetics, innovative products, brands and more efficient operations.

For all production levels (cattle, hog, beef and pork industries), this transition was brutal. For example, in the dramatic shifts in both consolidation and integration that have taken place across the sector (Chart 3). These facts and trends are well known, and will not be repeated here, but a few examples are shown below. They indicate that while the structure of the cow-calf production system has not changed radically, cattle feeding and slaughter today are dramatically different than they were only a few years ago (Tables 1 and 2). For example, the number of cattle feed lots have dropped sharply (from over 112,000 to more than 94,000), very large-scale feeders that had 33% of the inventory in 1993 now account for 75% of the total, and lots with more than 50,000 head account for a quarter of the total (Table 2).

Chart 3. Meat Packer Four-Firm Concentration, 1980-98



Similarly, the cattle slaughter industry has also changed dramatically. From 971 cattle slaughter plants in 1992, the number has declined to 723 plants in 2001 (Table 2). The eight plants with capacity to slaughter more than one million head accounted for just over 30% of the slaughter in 1992. By 2001, 15 plants had more than one million head capacity and accounted for 57% of industry slaughter. And, three plants have more than 1.5 million head capacity and account for more than 14% of the slaughter. The top four plants in both cattle and hog slaughter account for the majority of slaughter, 70% for cattle and 56.3% for hogs.

Table 1. Cattle Feedlot Structure, 1993[20]-2001

Capacity	1993	1996	2001
No Operations	46,456	112,109	94,110
	% of Feedlots		
< 1000	96.1	98.1	97.8
1000-16,000	3.4	1.7	3.9
>16,000	0.5	0.2	0.3
>32,000	0.2	0.1	0.1
>50,000			0.5
No >50,000		45	51
	% Marketings		
< 1000	12.8	15.4	13
1000-16,000	30.4	28.5	26.2
>16,000	56.7	56.1	60.8
>32,000	33.3	34.6	71.9
>50,000			25.2

Table 2. Cattle Slaughter Structure, 1992-2001

	1992 Plants		2001 Plants	
	No.	*%*	*No.*	*%*
<1000	694	71.5	540	74.7
1,000-100,000	215	22.1	127	17.6
100,000-500,000	42	4.3	32	4.4
500,000-1,000,000	12	1.2	9	1.2
>1,000,000	8	0.8	15	2.1
>1,500,000			3	0.4
Total	971	100.0	723	100.0
	Slaughter			
	thous hd	*%*	*thous hd*	*%*
<1000	187	0.6	166	0.5
1,000-100,000	3,079	9.7	1,673	4.8
100,000-500,000	9,406	29.5	7,758	22.4
500,000-1,000,000	9,571	30.0	5,333	15.4
>1,000,000	9,610	30.2	19,756	57.0
>1,500,000		0.0	4,944	14.3
Total	31,853	100.0	34,686	100.0

In this struggle to compete, key characteristics of the survivors were both scale and the ability to control costs and quality factors that consumers demand. To an important extent, the meat packers who focused on product quality from the farm to the retail shelf were most likely to be

[20] 1993 data only applies to the 13 major cattle feeding states (that is the only data available prior to 1996). Data since 1996 has been specified as the US total and are noticeably larger for the reason explained.

among the survivors while those who controlled their own livestock supplies were often members of that group.

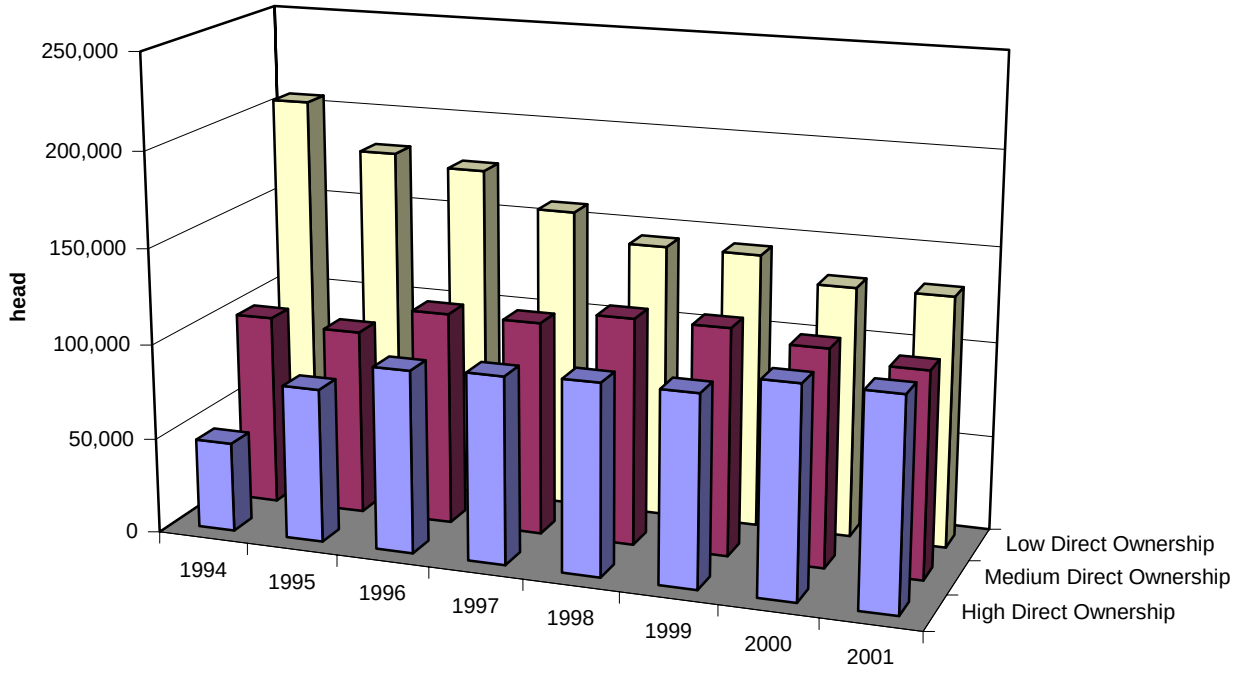
For example, an examination of the top 20 pork-packing companies as of 1994 according to their degree of direct ownership of livestock (high is >50%, medium 10-49%, and low below 10% of annual needs) describes clearly their shift to larger scale, more integrated operations from 1994 to 2001 (Chart 4). These trends indicate:

- Traditional packers (little or no direct ownership of production) declined in importance, from owning most of the sector's capacity to about one-third during the last two hog cycles.

- The "medium" direct ownership group grew until the late 1990s, but has also been declining the past two years.

- The top 20 companies in 1994 declined to 12 firms. The eight that disappeared, with one exception, did not own livestock. They have left the industry or been assimilated by one of the 12 remaining firms.

Chart 4. Hog Plant Capacity by Ownership Strategy, 1994-2001



Similarly, most of the recent dynamics of pork production have been associated with changes in the degree of integration across the supply chain. For example:

- During the decade 1992-01, the national breeding herd declined 13% (900,000 head) while pork production increased 11%, reflecting both increased productivity and live hog imports.

- The geographic changes in herd size were far from uniform (Table 3). The ten fastest-growing states added 2.4 million head during the decade. North Carolina added the largest number, 500,000 head followed by Oklahoma (305,000 head) and Colorado (120,000 head).

- Together, the ten rapid-growth states increased their sow inventory by over one million head (81%). Assuming a capital cost per sow of $3000, producers in these states net invested $3.2 billion in hog production over the decade. In nine of the ten rapid-growth states, there was a significant component of packer ownership of hogs while in the remaining state a strong contracting linkage was permitted between producers and packers.

- The contrast between states with growing herds and those where swine herd numbers declined was stark. All of the principal declining states were characterized by little or no packer ownership, with no packer ownership in eight of the ten. Nebraska and Indiana lost very large numbers, 210,000 in each case amounting for 36% of the herd in Nebraska and 38% in Indiana. In three states, the breeding herd declined more than 60% (Georgia, Tennessee and Wisconsin). However, the most dramatic declines came in Iowa and Illinois where packer-feeding restrictions are modest. Herd declines in those two large producing areas were enormous, 820,000 head (34%) for the area.

Chart 5. 10-Year Trend in US Swine Breeding Herd and Relationship to Packer Ownership of Hogs

Top 10 Breeding Herd Growth States ('000 head Dec 1)

Rank	State	1992	2001	Increase %	Increase head	Packer Ownership
1	UT	6	70	1067%	64	YES
2	OK	35	340	871%	305	YES
3	WY	5	21	320%	16	YES
4	CO	55	175	218%	120	YES
5	NC	500	1000	100%	500	YES
6	TX	70	100	43%	30	YES
7	PA	105	130	24%	25	YES
8	MS	25	28	12%	3	NO
9	KS	160	170	6%	10	YES
10	MO	375	380	1%	5	YES
	Total/Avg.	1336	2414	81%	1078	

Top 10 Breeding Herd Decline States ('000 head Dec 1)

Rank	State	1992	2001	Decline %	Decline head	Packer Ownership
1	GA	155	50	-68%	-105	NO
2	TN	85	30	-65%	-55	NO
3	WI	170	65	-62%	-105	NO
4	KY	120	50	-58%	-70	NO
5	SD	235	145	-38%	-90	NO
6	IN	550	340	-38%	-210	NO
7	MI	175	110	-37%	-65	NO
8	NE	580	370	-36%	-210	NO
9	IL	700	450	-36%	-250	SMALL
10	IA	1700	1130	-34%	-570	SMALL
	Total/Avg.	4470	2740	-39%	-1730	
	US	**7109**	**6209**	**-13%**	**-900**	**23%**

- The ten states that had sharp declines in hog production lost 1.73 million head of breeding inventory over the decade, about the same number as the total sow inventory of Poland. None had extensive packer investment in herds, and only two of the ten had even a modest degree of packer investment.

Thus, it appears that over the past decade, swine breeding growth in the US has come only in areas where packer investment is encouraged while breeding herds in states with little or no packer investment in production have declined.

Other Research on Integration

The key economic question concerning meat industry integration is whether the meat packers' investment boosts quality and develops more competitive products that expand the market for beef and pork, or whether this investment is merely an attempt by one segment of the industry to increase its returns at the expense of others. Two key pieces of evidence in this question are shifts in per capita consumption in the United States, and growth in export markets for US products. In addition, research by land grant college professors has widely addressed the question of reasons for meat industry integration, and tends to identify both "defensive" factors (i.e., cost containment) and important demand enhancing factors (improved product quality and consistency, food safety) as key reasons for meat packer investment.[21] By contrast, researchers frequently conclude that the ability to buy for lower prices is less important than controlling plant costs and increasing quality (Table 4).

Table 4. Packer Motivation for Use of Pork and Beef Marketing Contracts, 1999

	Pork	Beef
Reduce plant operating costs by improving plant scheduling	3.5	2.9
Secure higher quality animals	4.0	4.0
Secure more consistent quality of animals	4.3	4.0
Assure food safety	3.8	3.0
Long-run price risk management	3.0	2.8
Week-to-week supply/price management	3.5	2.2
Reduce costs of searching for animals to procure	3.5	2.3
Able to purchase animals for lower prices	2.3	1.8

Scale of 1 to 5, 1=not important; 5=very important

Source: Lawrence, J.D., T.C. Schroeder, and M.L. Hayenga, "Evolving Producer-Packer Customer Linkages in the Beef and Pork Industries." Review of Agricultural Economics, 23(2001):370-385.

Research results also indicate that producers believe that they receive advantages from a more tightly integrated system and larger producers tend to believe that they receive greater benefits from integrated systems than do smaller producers. Producers surveyed reported that they benefited from higher prices under marketing contracts, with this conviction held to be only slightly more important for very large hog producers than for small producers.

[21] D. Feuz, G. Grimes, M.L. Hayenga, S. Koontz, J.D. Lawrence, W.D. Purcell, T.C. Schroeder and C.E. Ward, ***Comments on Economic Impacts of Proposed Legislation to Prohibit Beef and Pork Packer Ownership, Feeding, or Control of Livestock.*** Occasional paper, January 14, 2002. This paper includes an extensive list of research papers that have investigated changes in the structure of the cattle and hog industries and reasons for these changes.

Producers often argue that meat packers own livestock primarily as a tool to force down market prices. In a detailed economic examination of that point, Professor Bruce Bullock of the University of Missouri concludes that the market-clearing price for slaughter livestock is not affected by the proportion of livestock owned by packers, and that the acquisition of "captive" livestock by contracting is not an efficient way to drive down the price of slaughter animals. He further concludes that there is no economic reason to restrict packer ownership of slaughter animals.[22]

In evaluating producer motivations for marketing contracts, researchers John Lawrence and Glenn Grimes report that "Motivations for producers entering contracts, alliances and cooperatives are somewhat different. They believe they are better paid for the quality of their animals and see advantages from reduced price risk (Table 5). Access to premiums for carcass quality is a significant motive for producers striving to increase product quality. Producers want access to carcass data as well to further improve their production management. Hog producers that have contracts are pleased with contracts and they believe they have been treated fairly by their packer partner."[23]

Table 5. Advantages/Disadvantages of Marketing Contracts Reported by Hog Producers With Marketing Contracts

	Advantages					Disadvantages	
Size Class thou hd	Access to Capital	Increased Price	Expansion	Allowed to be in Business	Reduced Price Risk	Locked Out of Higher Prices	Not Treated Fairly by Packer
1-2	2.25	3.75	2.14	2.91	3.14	2.19	1.84
2'3	2.85	3.71	2.18	2.9	3.67	2.3	1.77
3-5	2.76	3.89	2.11	2.95	3.61	2.53	2.18
5-10	3.46	4.13	2.96	3.47	4.29	2.57	2.2
10-50	3.35	3.85	2.73	3.55	3.5	2.51	2.06
1-50	3	3.9	2.47	3.18	3.73	2.45	2.04

Scale of 1 to 6, 1 = not important; 6 = very important

Source: Lawrence, J. and G. Grimes. *Production and Marketing Characteristics of US Pork Producers, 2000.* Staff Paper No. 343, Department of Economics, Iowa State University, August, 2001.

In general, agricultural economic research findings imply that trends toward integration in the cattle and hog industries have been beneficial for several reasons:

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[22] J. Bruce Bullock, ***Economic consequences of Packer Ownership of Slaughter Animals***, Professor, Agricultural Economics, University of Missouri-Columbia. Agricultural Economics Working Paper, AEWP 2001-2, Revised July, 2001. Cited with permission of the author.

[23] The study also reported that "All producer survey respondents, including both those involved with contracts and those without contracts, perceived contracts negatively impacted hog prices. They also felt contracts should be monitored more closely by USDA. However, these producers did not support making contracts between producers and packers illegal." John Lawrence and Glenn Grimes, ***Production and Marketing Characteristics of US Pork Producers, 2000***. Staff Paper No. 343, Department of Economics, Iowa State University, August, 2001.

- Reversing the negative trend in consumer demand;
- Increased information and verification of production processes used;
- Quality control;
- Improved food safety assurance; and
- Enhanced producer opportunity to add value to output.

In January, 2002 a group of prominent Agricultural Economists concluded a review of impacts of integration on industry participants by concluding that producer-processor agreements stipulating production practices and premiums and discounts from quality variation have become the standard as agriculture moves from raw, low-value commodities to value-added products. They make the observation that "The uncertainty in scheduling and pricing through traditional cash market transactions limits investment in product development and adding value both on the farm and beyond the farm gate. Long-term formal linkages reduce risks and the cost of borrowing for those that upgrade facilities and equipment to meet the changing needs of domestic and global consumers."[24]

In an effort to evaluate the source and expected persistence of forces leading to integration of the pork and beef sectors, a systematic review of key drivers was made together with objective evaluations of their importance and persistence. These are discussed in the following sections.

Integration Drivers

Industry-wide structural changes are caused by numerous factors operating singly and in combination, and in particular economic and social environments.[25] The reasons for the increasing integration observed across the industry are clear to most participants who believe that in order to survive, they must improve:

- Their product quality and level of consumer services. This required information flow (both in speed and in detail) along the supply chain allowing for quick responses to changes in consumer preferences. By quickly anticipating consumer preferences and translating these into animal and product specifications, the integrated system has been able to respond more efficiently and faster than was possible through price incentives alone.

- Their operating efficiency. The industry's large investment in fixed assets must operate near full capacity to hold down costs. To achieve such efficiency, intricate scheduling must be achieved – both to better match consumer or retailer quantity and quality requirements and to manage costs.

[24] D. Feuz, G. Grimes, M.L. Hayenga, S. Koontz, J.D. Lawrence, W.D. Purcell, T.C. Schroeder and C.E. Ward, ***Comments on Economic Impacts of Proposed Legislation to Prohibit Beef and Pork Packer Ownership, Feeding, or Control of Livestock,*** .Occasional paper, January 14, 2002.

[25] The following sections depend heavily on extensive interviews with producers, packers and lenders. The interviews, while not a scientific sample, included firms responsible for most of the meat production and processing in the United States in late February and early March, 2002.

- Their capacity to manage risks.

- Their capacity to adopt and manage technology to increase efficiency.

- Their capacity to work with large, growing and efficient retailers and in providing more affordable and/or desirable products for consumers both in the United States and their need to compete overseas.

While there are large numbers of factors that can be identified as important in contributing to livestock/meat industry integration, numerous analyses identify five as the most important. They are discussed in greater detail in the following sections.

The Demand For Quality

Beef and pork are traditional staple foods, but their current market position depends heavily on their capacity to compete with poultry products, with imported meats in domestic markets and to meet demanding specifications of consumers overseas. This capacity has improved in recent years – with leaner, more nutritious and consistent products as demanding consumers encourage branded retail and food service products that entail both brand loyalty and product liability. Today's beef and pork are lower in fat, lower in calories and lower in cholesterol than ever before – a result of new breeding and feeding techniques, a demonstration of the responsiveness of the industry to market demands as these industries move to provide leaner, cheaper, consistent quality cuts in a consumer-friendly format through controlling genetics, feed and shortening the supply chain.

The transformation of these industries — from farmer to processor to retail store or restaurant – is largely driven by consumers who buy both meat products and services.[26] Livestock quality is essential to support trends toward more branded products. Also important is the growing emphasis on new product development including items that are more convenient for consumers to use. Enhanced control over quality is essential as packers compete for financing necessary to bring new, more convenient products to markets to satisfy ever more insistent consumer demands (Table 6).

Effective satisfaction of changing consumer demand has taken on new, more insistent dimensions in recent years, including:

- Better control over food safety, with consumer preferences arising from quality (production practices) and flows through the processing facility.

[26] Martinez, Steve W. ***"The US Pork Industry: As It Changes, Consumers Stand to Benefit,"*** *Agricultural Outlook*, December 1997, pp. 20-23.

- Highly specialized preferences for "natural" of other such quality preferences. Examples include Coleman's Natural Beef (largest in the "natural category") Laura's Lean, Maverick Ranch, Harris Ranch, Meyer Natural Angus, among others.

- Identity preservation and traceability, in response to growing interest in the origins of animals and foods in relation to both quality and food safety issues.

Table 6. Packer Pork Sales By Category, 1999 [27]

	%
Retail grocery, non-branded	14.2
Branded, value-added products	14.2
Food service non-branded	7.8
Food service branded value added	2.3
Domestic processor for further processing	37.5
Export non-branded commodity sales	6.3
Export branded value added sales	1.7
Wholesaler or broker	11.7
Other	4.5

Source: ***Meat Packer Vertical Integration and Contract Linkages in the Beef and Pork Industries: An Economic Perspective,*** **American Meat Institute, May 2000, p. 76.**

Emphasis on livestock and meat quality appears to have played a significant role in reversing the long-prevailing decline in consumption in the 1990s. Other key factors behind these trends are discussed in greater detail in later sections.

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[27] Growth of chain restaurants and the continued importance of grocery store outlets provide opportunities to cater to changing consumer preferences. The introduction of bacon-topped sandwiches by hamburger chains, for example, created a new outlet for millions of pounds of bacon. Satisfying the needs of large chain restaurants requires large, uniform pork supplies on a regular schedule.

Consumers now have the ability to purchase more and higher valued meat products. The largest single market for pork today is pork for further processing, representing 37.5% of 1999 sales. These products include branded lunchmeats, further processed products under the processor or retail label, or further processed products going into food service or export markets. Branded programs by packers, a rapidly growing market segment, make up 18% of the current market volume and in the future will represent an even larger share of pork sold. These pork products must carry a higher degree of brand reputation and liability and demand higher standards to consistently satisfy end-user expectations. Within the branded products there is expected to be a switch from further processing by other companies to one of branded retail and food service pork items by packers. While most red meat is unbranded, except for processed products like sausage, ham and bacon, some new products, like Smithfield Foods *Lean Generation* brand of lean, fresh pork products provide brand name quality assurances and consistency for consumers.

Consolidating Retailers

Growing pressure from consolidating retail operations reduces margins for meat packers, processors and others. Processors and handlers report growing competition for markets, and that the recent retail consolidations have meant narrower margins for both fresh and processed products as processors compete to meet increasingly stringent retail requirements and narrowed margins.

Also, large retail chains will often only consider potential suppliers that are capable of producing the large volume of product necessary for national or regional distribution. These trends, in turn, increase pressure on processors to increase their volume while at the same time reducing their costs. The pressures to reduce costs force the search for low-cost livestock supplies (often at the expense of producer returns), thereby complicating their search for additional meat. Processors expect that these trends will continue, and point to recent trends as evidence.

Trends toward consolidation at the consumer level have been persistent and far-reaching. In just the past few years:

- Kroger acquires Fred Meyer, forms largest retailer (1999);
- Royal Ahold acquires East Coast firm, Giant Foods/Pathmark;
- Wal-Mart, together with Sam's Club expands very rapidly, becoming largest retailer by 2000. Wal-Mart's food sales for 2000 are nearly three-fold the 1996 level;[28] and
- Safeway acquires Dominick's.

Consolidation at retail probably "is about half done," say trade analysts.[29] The expectation is that the top five retailers will soon account for more than one-half of food sales and that consolidation will continue rapidly in the future (Table 7).

[28] Rod Smith, ***Food Processors, Retailers Far From Done with Consolidation***, Feedstuffs, July 2000.
[29] David Nelson, Credit Suisse First Boston, New York, July 2000.

Table 7. Supermarket Sales and Rankings, 2000

1999 Rank	2000 Rank	Company	Stores *number*	Sales *bil $*	Share *%*
7[1]	1	**Wal-Mart Supercenters**	862	57.2	11.1
1	2	**Kroger Company**	2,359	49.0	9.5
2	3	**Albertson's**	2,514	36.4	7.1
3	4	**Safeway**	1,726	32.0	6.2
4	5	**Ahold, USA**	1,208	27.8	5.4
		Top Five	8,669	202	39.3
13	6	**Supervalu**	457	23.3	4.5
8	7	**Publix Super Markets**	645	14.6	2.8
17	8	**Fleming**	164	14.4	2.8
6	9	**Winn-Dixie Stores**	1,160	13.8	2.7
	10	**Loblaw Cos.**	596	13.8	2.7
		Top Ten	11,691	282	54.8

1. Ranked number 4 when Sam's Club stores are included

Source: Supermarket News

Stabilizing Product Flow to Boost Efficiency

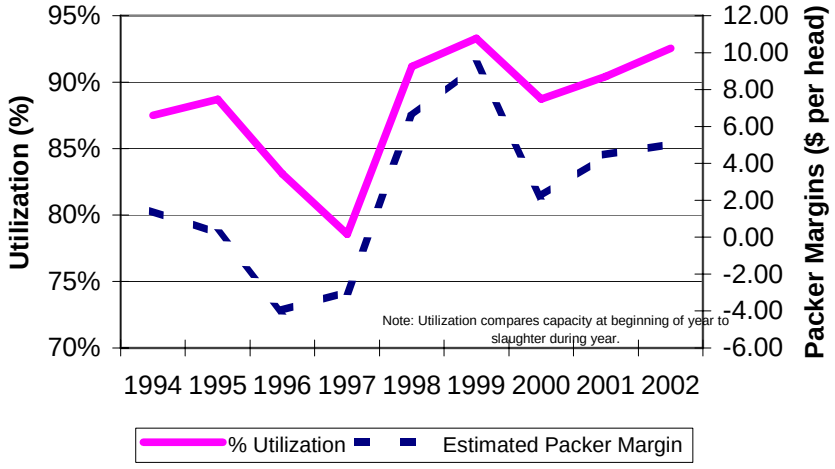
The dynamic interaction between packer capacity, livestock production, packer margins, and livestock prices are key factors in virtually all strategic decisions in the pork and beef industries. Over the past decade, it has become increasingly clear that coordinated investment decisions concerning both producers and packers lead to reductions in margin volatility. Greater coordination, either through direct investment or contracting is effective in reducing volatility and reducing chances of the extreme price swings of the last hog cycle. For highly integrated systems the odds are much lower that production will increase to the point that it swamps available slaughter capacity.

For hogs, this interplay was dramatized during the fourth quarter of 1998, when slaughter hog supplies swamped existing plant capacity. Packer margins exceeded $20 per head while the live hog price fell below $10 per cwt. The mechanism of the price collapse was simple but had enormous impacts: 1) marketings of slaughter hogs sharply exceeded all expectations, increasing beyond the Monday-Friday capacity of the industry to kill them. 2) Saturday kills had to increase dramatically in order to handle the increased supply, and product prices plummeted, as sellers tried to find a home for the additional product. 3) To cover both the difficulty in marketing the expanded flow of pork and the expense of organizing larger kills during the week and on Saturday, calculated packer margins escalated dramatically.

The relationship between capacity utilization of packing plants and calculated packer margins is strong (Chart 5). From 1995 to 1997, capacity utilization of the US pork industry dropped about 10%, during which time annual average calculated packer margins fell below break-even levels until severe losses during 1996 and 1997 prompted a series of plant closures and one major

packer's demise in 1998. As production increased dramatically in response to favorable returns, capacity utilization and margins shot dramatically higher, while hog prices fell.

Chart 5. US Pork Industry Capacity Utilization and Packer Margins, 1994-2002



Ownership to limit margin risk. Packers also invest in hog production as a natural hedge against falling packer margins.[30] In general, producers perceive risk as a cost, and a widely recognized response to price risk is to reduce output. This often develops through the use of fewer inputs, especially when firms have limited options for controlling price risk, either for inputs or outputs. So as prices or operating margins become more volatile, many firms respond by reducing output. For large packers, it is extremely difficult to offset the risk of higher hog prices from the futures market alone, because of the lack of liquidity in deferred futures contracts and direct ownership of raw production materials is one of the few practical means of reducing margin risk for such a company.

When firms are able to control market risk through alternative means, this reaction can be avoided. For many meat packers, integration between the packing and feeding stages of livestock production is seen as an effective vehicle to reduce market risk exposure and loss of such a valuable tool increases their costs, implying an increase in marketing margins that do nothing to improve demand, and thus would end up being passed on over the longer-run in the form of lower producer prices and/or higher consumer prices.

Vertical integration often attracts investors because of the negative correlation between profit margins at the packing stage and the feeding stage. Such a situation implies that low margins in one stage are associated with high margins at another stage, as is observed in pork processing and, to a lesser degree, in beef processing, as well (Charts 6 and 7).

[30] Pork company corporate statements frequently cite the revenue-enhancements from hog production during periods of reduced packer margins.

Chart 6. Relationship Between Farrow-Finish Margins and Calculated Hog Packer Margins, Monthly Average, January 1995-February 20002

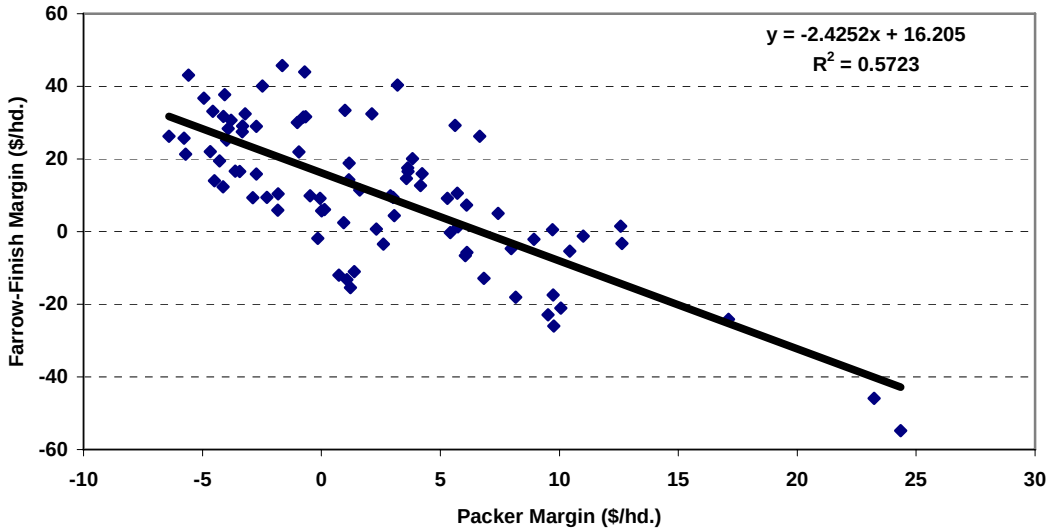
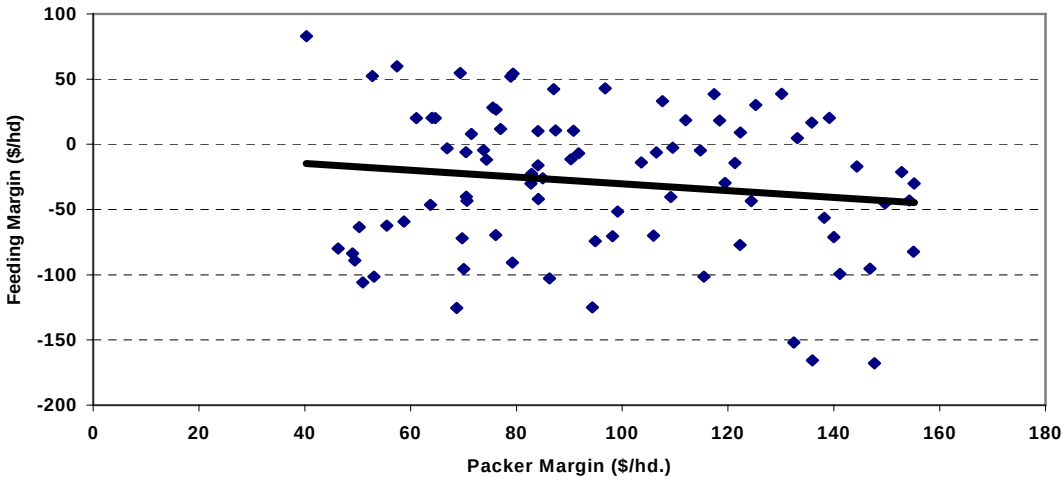


Chart 7. Relationship Between Gross Cattle Packer Margins and Gross Cattle Feeding Margins, Monthly Average, January 1995-February 2002



Since the correlation between margins is much more prominent in hogs than in cattle, the attraction for investors to merge packing and production operations is more certain. This can be seen clearly by considering packing and feeding as two separate assets from which a firm can build a portfolio and comparing that to a scenario with the smallest amount of margin risk exposure, which is a combined operation with both packing and feeding (Table 8). For both

species, feeding margins are more variable than packing margins, and negatively correlated in both cases.

Table 8. Variances and Correlation Coefficients for Monthly Average Packing and Feeding Gross Margins ($/head), Jan. 1995 through Feb. 2002

	Hogs	Cattle
Margin Variance – Packing	$38	$1000
Margin Variance – Feeding	$390	$3070
Packing-Feeding Margin Covariance	-$91	-$258
Packing-Feeding Margin Correlation	-0.756	-0.149

Chart 8. Farrow-to-Finish and Packer Margins Compared

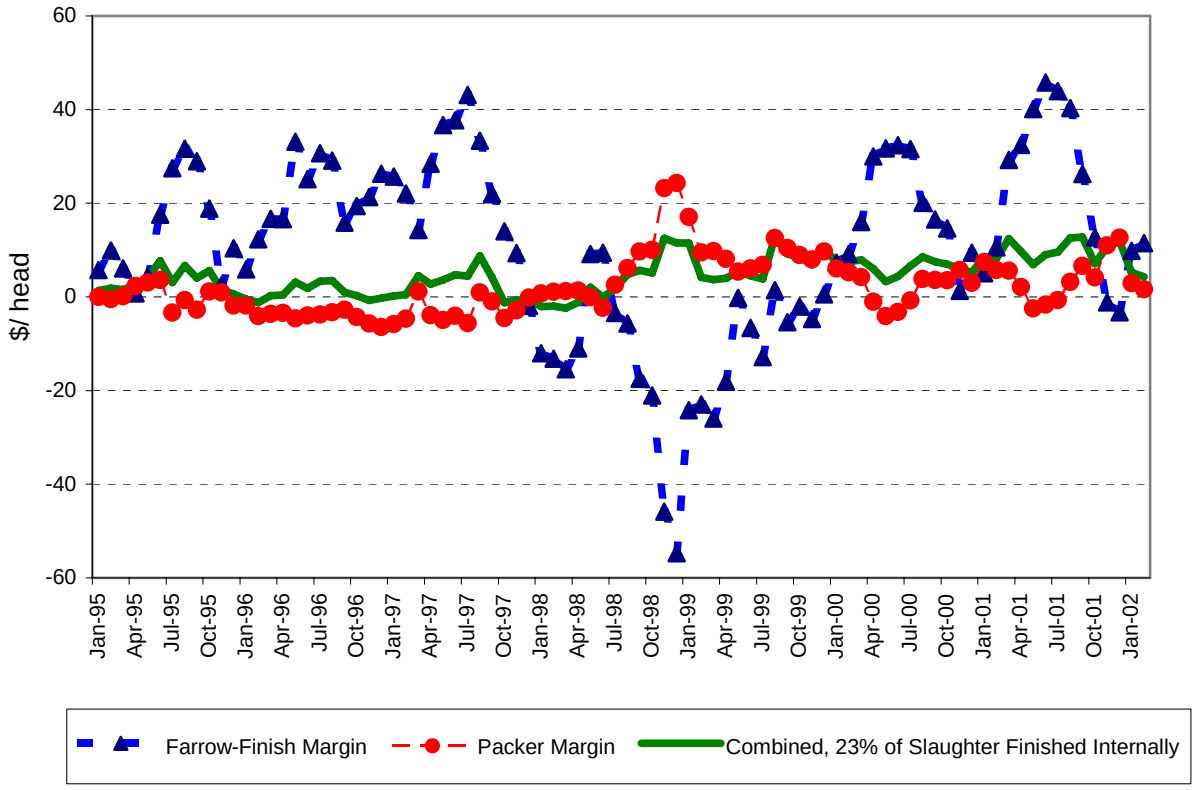
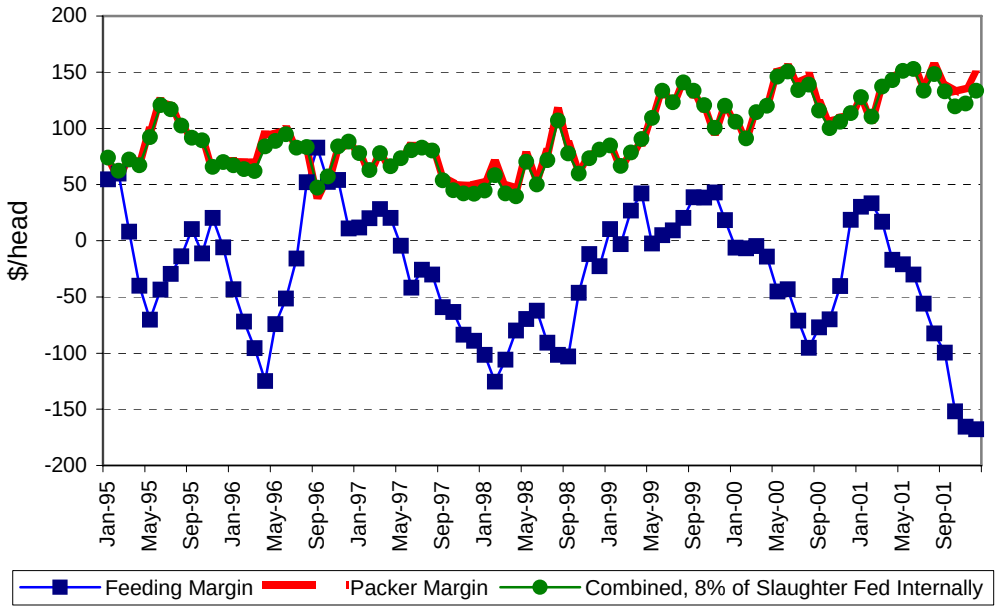


Chart 9. Cattle Industry Gross Margins, January 1995-February 2002

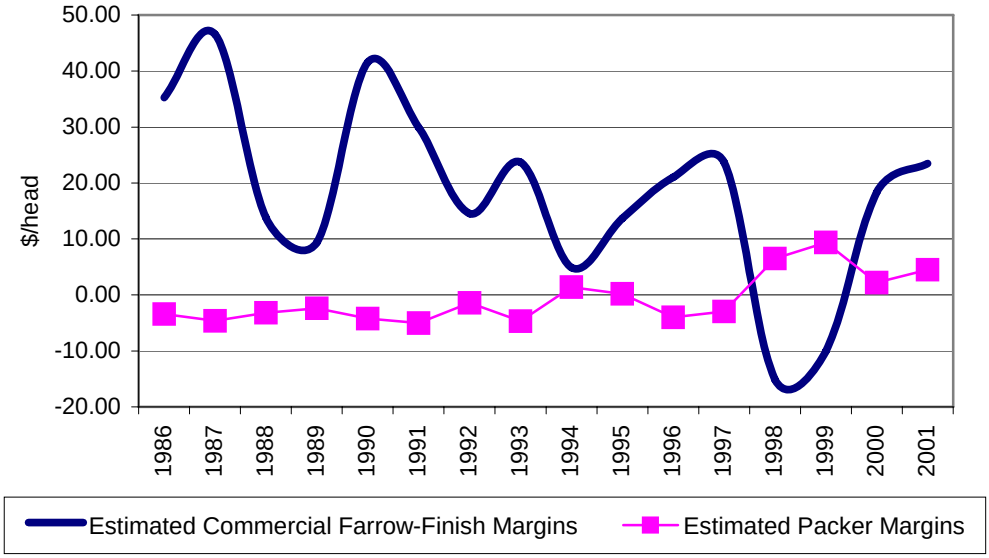


Using econometric models to identify an "optimal" portfolio with respect to overall variance for pork and beef yields a pork investment in which the packer feeds 23% of needed slaughter animals, while for beef, the optimal mix was to feed 8% of the firm's kill (Charts 8 and 9).

For hogs, the combined packing and feeding margin is far less variable than either independent margin, but such benefits are much smaller for cattle where the variance of the combined portfolio was only slightly less than the packing-only variance. For both industries, the econometrically derived optimal mix is very near the observed level. In the hog industry, packers without livestock ownership are at a significant disadvantage to competitors that do own livestock. They can expect lower average profits and higher variability in profits than those firms that do own assets in the feeding sector.

Historically, hog production returns have been much more favorable than hog slaughter returns. Not only are the highly integrated packers' returns highly dependent and positively correlated with the prevailing hog price, but based on history of packer and producer margins, their best chance of enhancing future returns and shareholder value lies in remaining directly involved and invested in the hog production sector. This is actually the case for several prominent pork processors, which financially and in risk management terms, are more accurately described as large producers with killing and processing sideline enterprises (Chart 10).

Chart 10. Annual Average Calculated Margins for Packers and Producers, 1986-2001



Thus, efforts to control risk are one of the most important drivers of increased vertical coordination in the meat packing industry. When markets are less coordinated, this misalignment can lead to wide swings in inventories and prices creating a higher degree of variability in income for farmers and packers. Increasing vertical coordination can reduce misalignments that lead to higher variability. In addition, the sharing of risks and rewards in coordinated systems may be different than in an "open" market. Research has shown that producers producing under production contracts (a form of packer ownership) receive lower returns on average than their "open" market counterparts. However, this same research indicates that the variability of returns for producers in production contracts is substantially lower than the variability of their counterpart's returns. This reduction in risk could be a substantial benefit to some producers – these risk reduction benefits would be reduced by the proposed amendment if it prohibits production (not marketing) contracts, which is likely.

Underutilization costs. There have been a number of academic attempts to identify costs of packing plant underutilization. For example, in the mid-1980s, 10% under-utilization in fed cattle plants was estimated to increase the cost of slaughter and fabrication by $3.93 per head, while 20% under-utilization would boost costs by $7.93 per head.[31] More recent estimates were $2.09 per head for 10% under-utilization and $9.11 per head for 20% under-utilization. [32]

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[31] Sersland, Claudia J. ***"Cost Analysis of the Steer and Heifer Processing Industry and Implications on Long-Run Industry Structure."*** Unpublished Ph.D. dissertation, Oklahoma State University. December 1985.

[32] Anderson, John D. and Trapp, James N. "***Estimated Value of Non-Price Vertical Coordination in the Fed Cattle Market***." Virginia Tech University, Research Institute on Livestock Pricing, Research Bulletin 2-99, February.

In 2001, steer and heifer slaughter was 28.5 million head. In that year, the impact of reducing capacity utilization by 10% would be from $59.5 to $111.9 million and a 20% reduction in capacity utilization would cost the industry $225.8 to $259.3 million.[33] Cost increases of this type that do not stimulate demand likely would be passed to consumers and producers, primarily in the form of lower producer prices, while operations working with very narrow margins likely would be closed, including smaller, regional plants with production costs already above those for larger-scale plants. This could have significant regional effects, especially on smaller producers with limited access to market alternatives.

Realizing Economies of Scale to Reduce Cost and Financial Risk

Packers indicate that they have been strongly motivated to expand and integrate with hog production operations, especially in order to maintain a supply of live animals given the large fixed costs associated with a slaughter plant and the large transaction costs of purchasing thousands of animals on a daily basis. In order to reduce their fixed cost per unit of wholesale meat, packers attempt to slaughter as many animals as possible, and the risk of short supply motivates the use of company-owned animals and contracted purchases to ensure the appropriate quantity and quality of animals arrive as needed. Transaction costs are reduced by not having to bargain over the price of each load of animals (an added attraction to contracting with pre-set prices and quality standards). As the number of providers declines, the packer's transaction costs also decline.

Much of the incentive for the rapid shift to much larger packing plant sizes over the past decade reflects an effort to capture apparent economies of size. Packers also report that they are motivated to coordinate their supply of live animals by the large fixed costs associated with a slaughter plant, and the large transactions cost of purchasing thousands of animals on a daily basis. In order to reduce their cost per unit of wholesale meat, packers attempt to maintain their throughput as close to capacity as possible. The risk of "coming up short" motivates the use of company owned animals and contracted purchases to ensure the appropriate quantity and quality of animals arrive as needed. And, transaction costs are reduced by not having to haggle over the price of each load of animals – an added attraction to contracting with pre-set prices and quality standards. As the number of livestock suppliers used declines, the packer's transactions costs also decline.

Foreign Markets/Competitiveness

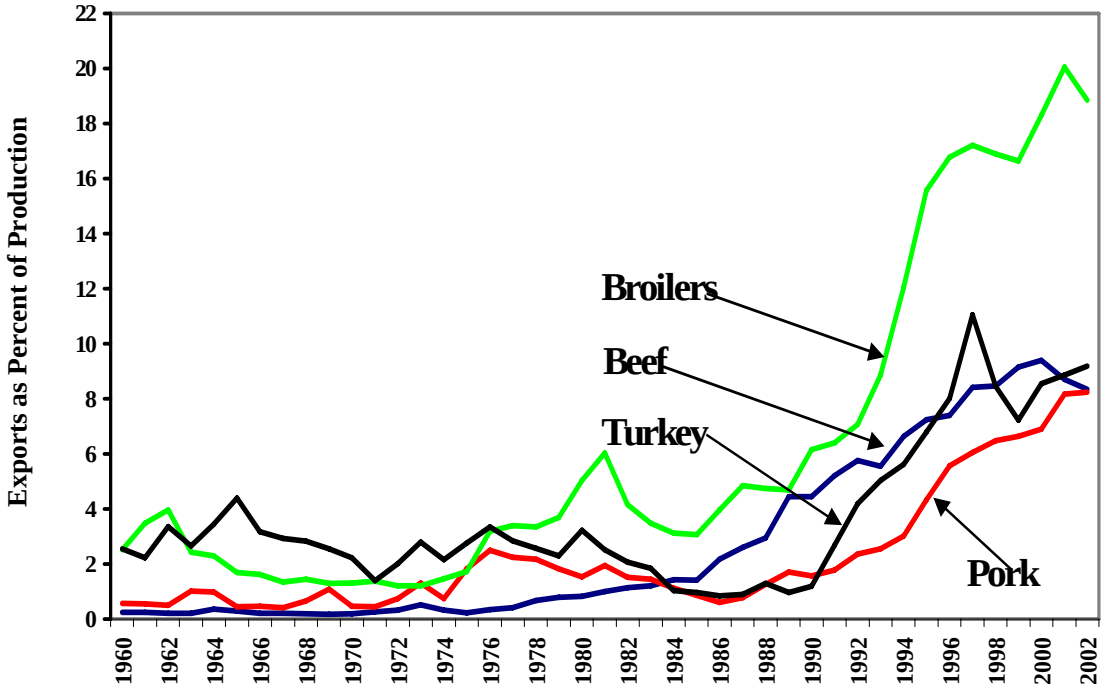
By world standards, pork consumption in the United States is quite moderate. US consumption at 67.5 pounds (carcass weight equivalent) is far below that in Denmark at 156.4 pounds and only modestly smaller than in China. Pork is the world's "meat of choice" by far, with approximately 43% share of the world's meat protein market. With many of the world's most

[33] Industry sources interviewed for this study indicate consistently that the academic estimates presented here are very conservative and would peg the increased costs of a 10% reduction at $5-7 per head and the costs of a 20% reduction at $15-17 per head. This would increase the total impact to $142.3 to $199.3 million for a 10% reduction and $427 to $484 million for a 20% reduction.

cost-efficient producers, the US pork industry is poised to capture even more of the global pork business as trade barriers fall under terms of international trade agreements like NAFTA, GATT and with the WTO.

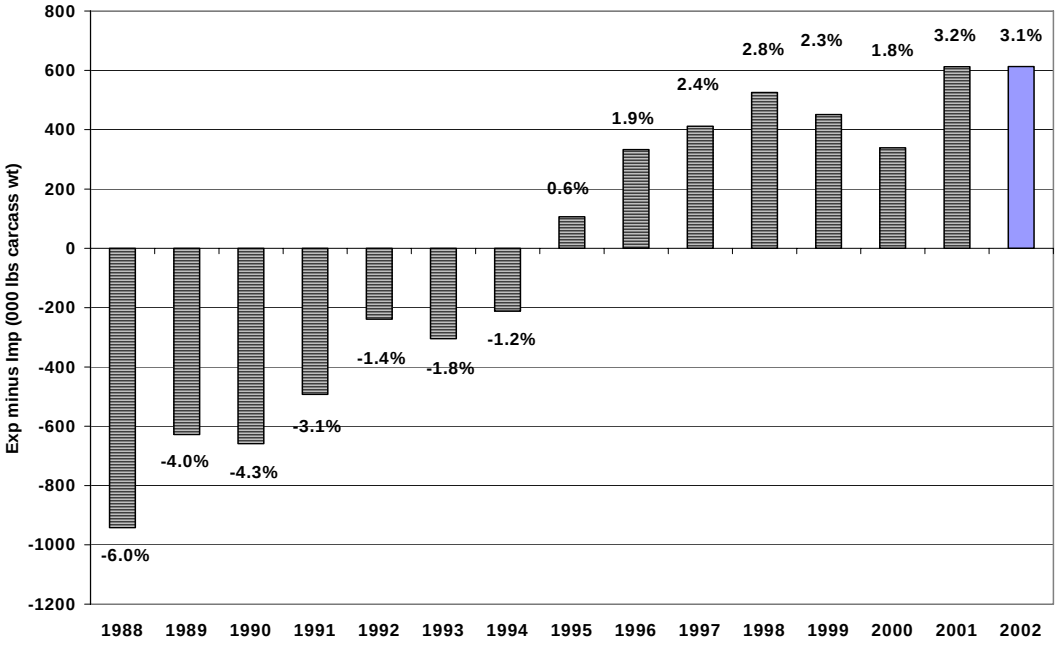
In recent years, increasingly stringent quality demands by export customers and their own brand product managers have been a growing, extremely important incentive for packers to invest to assure consistent high quality supplies of hogs. The US pork industry is steadily increasing its share of that market, exporting over 8.0% of its production in 2001 after becoming a net exporter in 1995 for the first time since 1952 (Chart 11). To satisfy export customers, pork companies must deliver reliable supplies of reasonably priced products that are tailored to customer specifications.[34]

Chart 11. Red Meat and Poultry Export Importance, 1960-2002



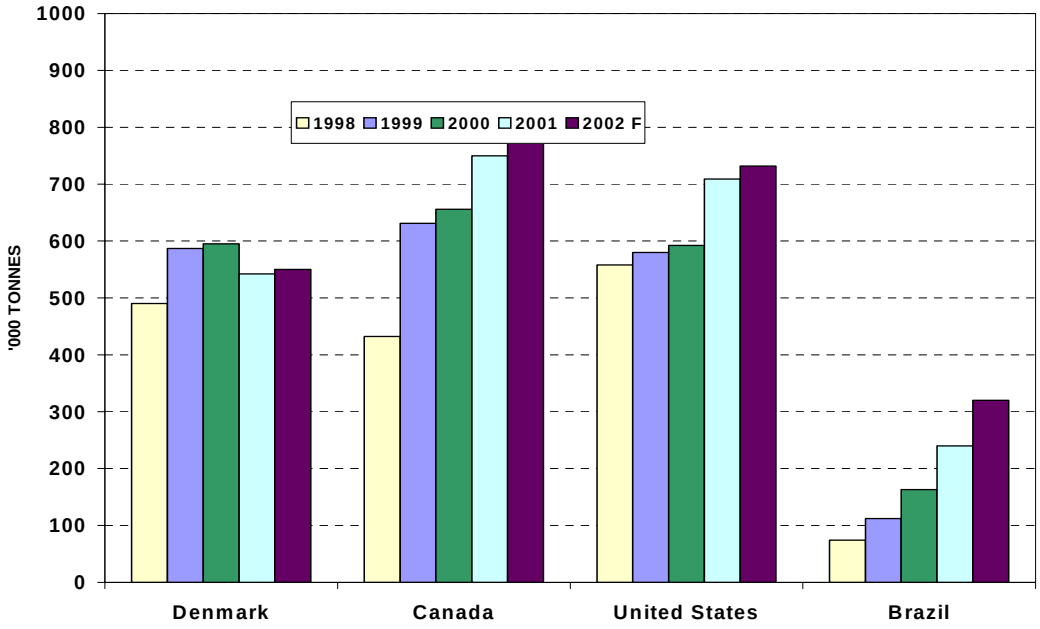
[34] Martinez, p. 26.

Chart 12. Net US Pork Exports as % of Total Production



For many years, Denmark (which exports at least 75% of its production) was the world's leading exporter of pork until the United States and Canada surpassed it in 1999. Denmark's farmer cooperatives dominate that country's entire pork packing industry, with long-term one or two-year marketing contracts for each producer (Chart 13).

Chart 13. Annual Pork Exports (Non EU for Denmark), 1998-2002



In live trade, there is a free flow of feeder and slaughter pigs from Canada to the US, under the provisions of NAFTA. In 2001, imports of feeder and slaughter swine from Canada accounted for 5.4% of US slaughter. The Canadian hog production sector is efficient and very cost competitive with the US sector, and in recent years has also benefited from a favorable exchange rate. In particular, imports of *feeder* pigs have increased dramatically in recent years, from 400,000 in 1994 to 3.2 million head in 2001. These pigs are contracted to finishing barns in the Midwest and then sold to US packers for domestic slaughter.

Protecting US Export Markets. The growing export market depends on the same factors that have helped recapture shares of domestic markets – price competitiveness, quality and consistency of supply, and focus on customer desires. Competition for key export markets (such as Japan) is extremely intense. To an important degree, all four major competing pork exporters (Denmark, United States, Canada and Brazil) have an efficient production base linked to efficient processing industries. Each has particular strengths and weaknesses:

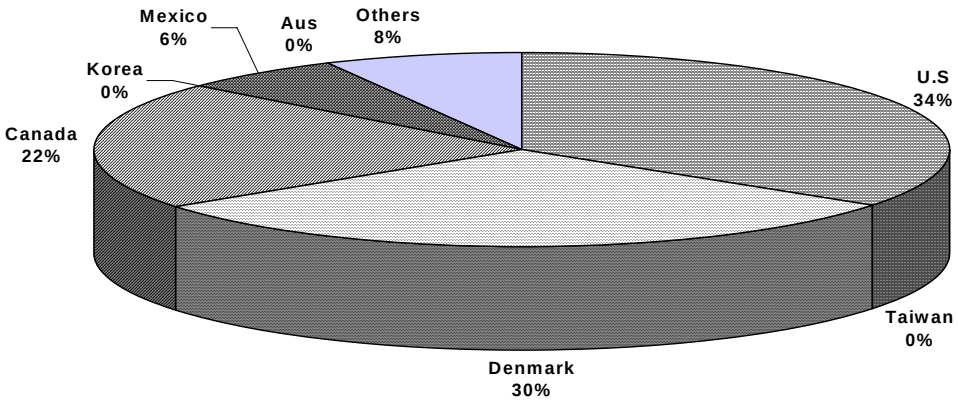
- Denmark probably has the most rigidly controlled highly integrated production system, but is also definitely the high cost supplier.

- Canada's pork system is dominated by two major players, both with a high degree of direct ownership and vertical integration, and a strong export focus, while several smaller plants also are dedicated to production for export. Since 1999, Canada has assumed the lead role in world pork exports, with the US a close second. Canada is still showing a desire to expand pork production aggressively, in contrast to the US.

- Brazil is an emerging player, but the huge gains it has made in export markets, mainly at the expense of EU countries so far, suggests that it will be a formidable competitor in coming years. It currently focuses on high volume price-sensitive markets such as Russia, but has the greatest potential for expansion among major exporters with potential to be the low cost supplier. Transportation and disease status are two major hurdles for the Brazilian companies.

None of the three major export competitors have barriers to packer ownership or vertical integration, nor does there appear to be any chance that they will do so in the future. If anything, the governments of these competitors have worked with the industry to help improve coordination and develop export markets. In terms of delivering a consistent product to a demanding customer, successful exporting nations have demonstrated the benefits of highly integrated production systems (Table 9).

Chart 14. Japanese Pork Imports By Source, 2001



It is likely that industry changes that reduce packers' ability to coordinate production across the supply chain would lead to a less efficient industry, with lower quality products and would quickly lose market share to its export competitors, likely ending the string of 11 consecutive years of increasing US pork exports. Losses in market share would come in part because of the added costs of conducting business in the US, helping make competitors more price competitive.

Table 9. Pork Consumption, Selected Countries

(Pounds per person, 2000(p), Carcass Wt.)	
Denmark	168.7
Spain	144.4
Hong Kong	134.9
Czech Republic	133.8
Germany	125.2
Taiwan	94.8
Netherlands	97.0
Poland	87.3
Sweden	75.6
China	73.6
Canada	68.6
USA	**68.3**
UK	52.7
Korea	49.6
Australia	42.1
Japan	37.9
Russia	27.8
Mexico	25.4

Source: USDA, Foreign Agricultural Service

Table 10. Beef Consumption, Selected Countries

(Pounds per person, 2000(p), Carcass Wt.)	
Argentina	151.7
Uruguay	135.4
USA	**100.1**
Australia	79.6
New Zealand	77.6
Brazil	76.7
Canada	70.8
France	56.4
Italy	54.9
Mexico	51.1
Denmark	50.0
Czech Republic	49.6
Sweden	47.8
UK	45.9
Russia	33.1
Hong Kong	28.4
Japan	26.5
Korea	25.4

Source: USDA, Foreign Agricultural Service

III. Financing Modern Livestock Agriculture – A Special Vulnerability

Agriculture is an enormous user of capital, and the livestock subsectors are extremely dependent on the availability of investment capital. The agricultural sector balance sheet includes $1.2 trillion in assets in 2002, primarily land ($969 billion, 79% of total) and includes livestock and poultry assets of nearly $78 billion. Farmers likely will purchase nearly $43 billion worth of livestock and feed this year, with much of those purchases financed by commercial lenders.

Financing of agriculture has become increasingly difficult in recent years. Traditionally low returns, volatile markets and the uncertainty as to future government income supports have caused lenders to reassess their ability and interest in providing credit to agriculture and food operations. And, the structure of financial institutions has changed dramatically across the nation, and has resulted in considerable consolidation among agricultural lenders.

In an effort to evaluate potential impacts of the proposed Johnson Amendment on the livestock industry, Sparks contacted a number of large agricultural lenders. In these discussions, the following points were emphasized:

- Credit quality has eroded across agriculture since the late 1990s, making banks more cautious in their lending decisions.

- Livestock operations tend to be highly leveraged (usually around 70%) and, especially in the case of cattle feeding, are regarded as fairly risky ventures. Thus cattle feeders normally are evaluated as high-risk borrowers and are burdened with commensurately high interest rate requirements. Also, lenders remember vividly the hog market meltdown of late 1998 and the severe erosion of equity in the hog industry. Thus, they are now highly guarded concerning lending to this sector.

- While cow-calf operators tend to be less highly leveraged, they have much lower repayment capacity.

- Very large losses in the feedlot sector over the last six to nine months have drained substantial equity. Recent problems of fraud have not helped the perception of loans to the cattle industry as being highly risky in nature.

- Lenders are very concerned about the potential erosion of asset values and the effects of potential increased price volatility on equity and the ability for repayment.

- When banks perceive that higher risks are likely, they tighten their lending standards through (1) requiring more collateral for their loans and/or advancing less money and (2) raising interest rates to compensate for the increased risk to their portfolios.

Banks are diligent in their efforts to avoid risk and either reduce overall exposure or demand increased compensation when they perceive risks to be increasing.

- Lenders are not as worried about the upside potential of increased volatility (i.e. periods of higher returns) as they are concerned with capital erosion. They are deeply apprehensive about the increased severity of the periods of lower returns and the impacts these have on borrower repayment ability.

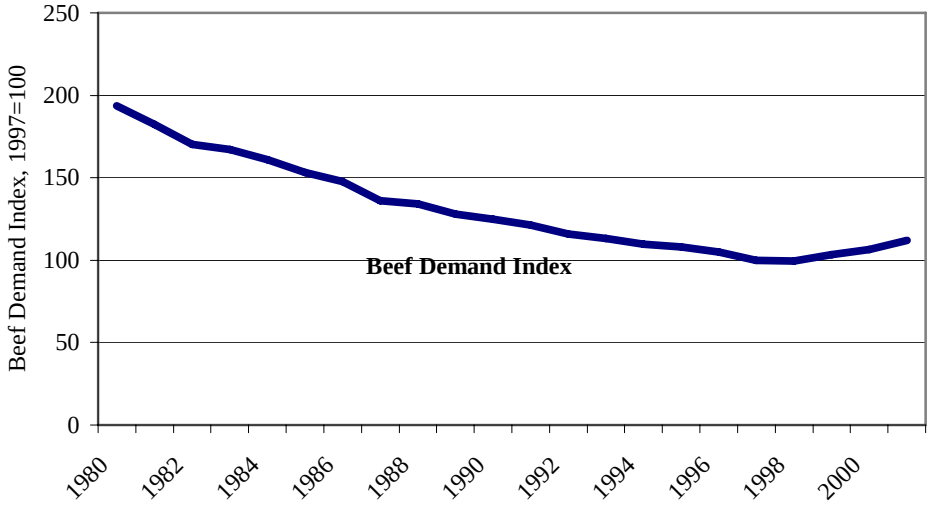
- As a result, the number of lenders willing to offer loans to the livestock industry is declining and their demands for risk premiums is growing. Changes in outlook that increase expectations of risk and price volatility in the cattle and hog sectors will lead some lenders to decide to stop providing loans to these operations.

As a result of these interviews, estimates of potential impacts of the Johnson Amendment with regards to asset values and cost of financing livestock operations are presented in the following sections. The methodology and results of these analyses were reviewed with lenders and industry experts and were regarded as generally conservative, implying that actual impacts could easily be much larger than those described here.

IV. Implications for Demand – A Second Special Vulnerability

For more than twenty years, the demand for red meats declined persistently (Chart 15). The industry has worked diligently to address the perceptions and misconceptions surrounding beef and pork, and for both, negative demand trends appear to have reversed, with the turn-around virtually unprecedented for major food products.[35] The rapid growth of strategic alliances, branded beef programs and development of value-added beef products appear to have been important in shifting this trend.

Chart 15. Beef Demand Index, 1980-2001



Consumer attitudes toward meats have been thoroughly studied by economists and others, and the beef demand reversal has received unusual attention.[36] This section focuses on demand patterns for beef in an effort to determine factors that are important to the red meat industry overall.

The demand for any food product, that is the quantity consumed, depends on a constellation of economic and social factors associated with the product and its use.[37] While estimates vary widely, most research includes the following factors determine meat demand:

- **Prices**. In general, prices decrease 1% for each 0.6% increase in beef production (consumption = production for beef). Estimates of this key relationship vary widely, but researchers have frequently found estimates in the 0.57% to 0.85% range for beef.

[35] The beef demand index is based on evaluations of beef consumption and prices adjusted for inflation. It is routinely published by the National Cattlemen's Beef Association.

[36] See, for example, Ted Schroeder, Thomas Marsh and James Mintert, ***Beef Demand Determinants***, Department of Agricultural Economics, Kansas State University, January, 2000.

[37] This discussion relies heavily on research reported in Ted Schroeder, Thomas Marsh and James Mintert, ***Beef Demand Determinants***, Department of Agricultural Economics, Kansas State University, January, 2000

The links between beef, pork and poultry are positive, indicating that these products are substitutes and that each 1% decline in pork prices causes a 0.04% reduction in beef consumption while each 1% decline in poultry prices causes a 0.02% reduction in beef consumption. Increases in prices of these substitute products causes shifts in consumption of the same magnitude, but in the opposite direction.

- **Income/Personal Expenditures**. Disposable personal income, and levels of spending are very important determinants of meat consumption. Each 1% change in personal expentitures for meats is associated with a 0.9% shift in beef consumption in the same direction. For pork, a 1% increase in expenditures causes a 0.73% increase in consumption, but for poultry each 1% increase in expenditures causes a -0.43% reduction in consumption.

- **Health Elasticity**. This is an innovative coefficient that relates an index of health articles in specific media to changes in meat consumption, with a negative link for beef (-0.15) and positive links for pork and poultry (0.12 and 0.19, respectively). In addition, it appears that beef consumption is becoming increasingly sensitive over time. The "health elasticity" for beef is estimated to have been -0.02 in 1982 and -0.15 in 1998. For pork and poultry the change was from 0.04 to 0.23 and from 0.08 to 0.32, respectively.

- **Female Labor Force**. For each 1% increase in female participation in the national labor force, beef consumption declined by 1.51% during 1982-98. By contrast, poultry consumption increased by 0.46% in response to increases in female labor force participation. These elasticities also appear to be increasing over time. For example, in 1982, this elasticity was -0.89 for beef, -0.97 for pork and 0.40 for poultry. By 1998, it was -2.59%, -1.75% and 0.49% for beef, pork and poultry, respectively.

- **Food Safety Recalls**. These events have significant impacts when they occur – for example, there were between 4 and 8 recalls per quarter during 1998, and recalls likely reduced beef consumption 0.5% in years when major recalls occurred. In addition, beef recalls have significant negative impacts on pork and poultry consumption, while pork recalls have little impact on beef consumption. In recent years, the number of recalls has been small, on average, and impacts of this factor tend not to be statistically significant. However, available research indicates that this factor poses a strong negative potential.

Declining Demand and the 1998-99 Reversal. For more than 20 years, the preponderance of factors affecting beef demand have been negative, so that the conventional quantity-price relationship have weakened steadily.[38] During the later half of the 1990s, a combination of

[38] Purcell, W. D., ***"Measures of Changes in Demand for Beef, Pork and Chicken, 1975-98."*** Research Institute on Livestock Pricing, Virginia Tech University, Blacksburg, VA, Research Bulletin, October 1998.

factors and events occurred which appear to have reversed the long-term erosion of beef demand. No singular factor can be cited as being primarily responsible for this shift; rather it almost certainly is the cumulative impact of several "demand shifters."

Beginning in mid 1999, it became apparent that consumers were willing to spend more money (pay higher prices) for a given quantity of beef than previously was the case – and were actually paying (after adjusting for inflation) higher prices for a larger quantity of beef, a classical definition of improved beef demand. The shift became noticeable in mid-1999, and has persisted for the better part of two years and is still occurring.

Key factors include:

- Changing consumer eating patterns. Persistent shifts in consumer eating patterns from home to away-from-home consumption. The away-from-home consumption has had a tendency to favor beef consumption over competing meat proteins and to diminish demand elasticity by including much greater amounts of services with the food products. This shift to expanded food service consumption has boosted beef demand significantly and sharply increased the number of outlets providing these services including steak house chains, hamburger outlets, and others.

- Active industry promotion of beef as a "safe" and "healthy" protein source. A huge commitment of beef check-off dollars for generic beef promotion and advertising as well as consumer education has had positive impacts on consumers' perception of beef. In addition, the medical community now is a supporter of "beef in the diet" and some, such as the Atkin's diet, has actually created almost a renewed "fad" for meat.

- Better quality. Just as advertising and promotion has grown, the quality of beef has improved dramatically over the past decade or more. Today's product is leaner and is trimmed closer reducing the amount of both interior and exterior fat. Very substantial investments have been dedicated to new product development with the objective of bringing products to the market that are convenient and easy to prepare (many of which are either pre-cooked or are in packages which can be prepared in the microwave oven). In other words, the beef industry is now challenging the chicken industry in areas they previously dominated.

- Economic growth. Rapid economic growth over the past four decades, two-income families with more disposable income, high employment rates, sharply advancing equity markets which created new wealth for the average investor, and positive consumer psychology all contributed to a positive economic environment for the beef industry. This became particularly important once some of the product form and convenience aspects of beef products became readily available.

At this point in time, the demand shifts of recent years seem likely to be strong and persistent, absent structural changes in the industry that weaken willingness to invest in either quality or efficiency.

V. Restrictions on Ownership or Control – A Theoretical Approach

The legal changes contemplated in the Johnson Amendment have the potential to change virtually every aspect of the US livestock and meat industry, including:

- The sector's cost structure (supply function) by limiting its capacity to control its logistics, so that plant efficiency would decline, the capacity to manage risk could decline, along with the capacity to adopt and manage technology.

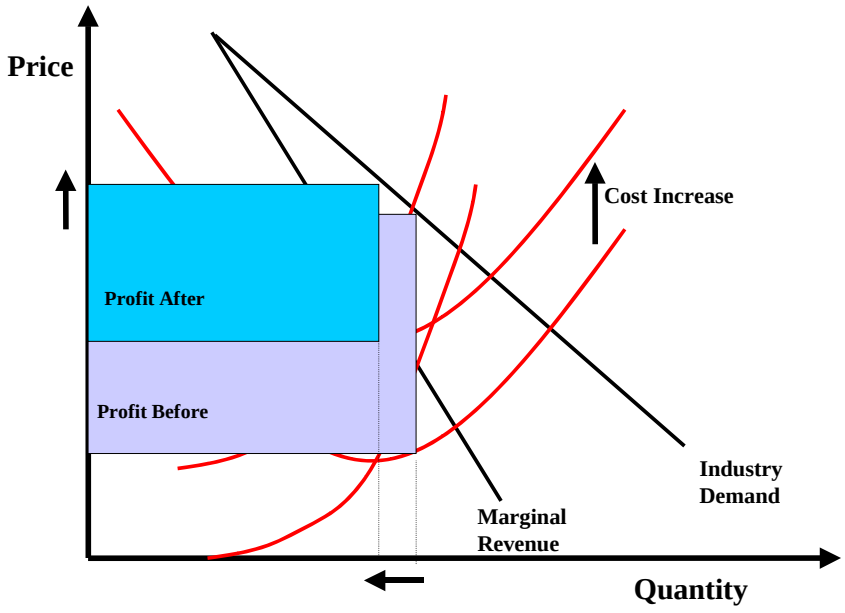
- Demand structure by limiting its capacity to control the genetics of animals purchased and produce competitive branded products; by limiting its capacity to compete effectively in overseas markets; and, by limiting its capacity to compete effectively for consumer attention with competing poultry products.

The technical concepts involved in these analyses are described in the following sections.

Economic Perspective on Packer Ownership Ban

Packers use ownership of livestock to help control unit costs in a variety of ways. If this management tool is restricted, unit costs can be expected to increase (without increasing value of the final product). For the industry, an increase in cost with no gain in revenues will diminish net revenues and returns to be shared among the industry participants (Figure 1).

Figure 1. Packer Ownership Ban Increases Costs – Output Decreases and Industry Profit Shrinks



Other initial impacts

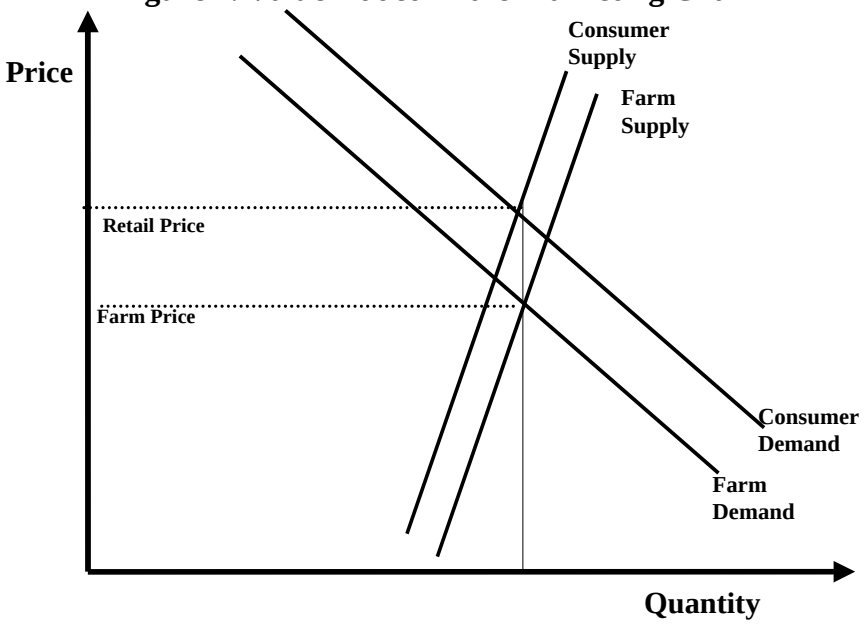
- In response to an increase in cost and reductions in returns, total output would be expected to decline further increasing costs by reducing average throughput, especially for higher-cost operations (likely, smaller operations). This cycle would likely cause operations with the highest costs to close. Those most affected would likely be the smallest, least competitive.

- Will packers simply absorb the higher costs? Not over the longer-term. The primary demand is at the consumer level, and defines in part a "derived demand" for the raw commodity at the farm (which excludes the demand for services). Similarly, the primary supply function reflects the raw commodity at the farm level while derived supply represents primary supply with costs associated with processing and marketing added at the consumer level.

  The farm level price is determined by equating derived demand (farm level demand) with primary supply (supply of the raw commodity). The retail price (the price the consumer pays) is determined by consumer demand and derived consumer supply.

  The intersection of these two equilibrium points defines the value added in the marketing chain, and the marketing margin (Figure 2).

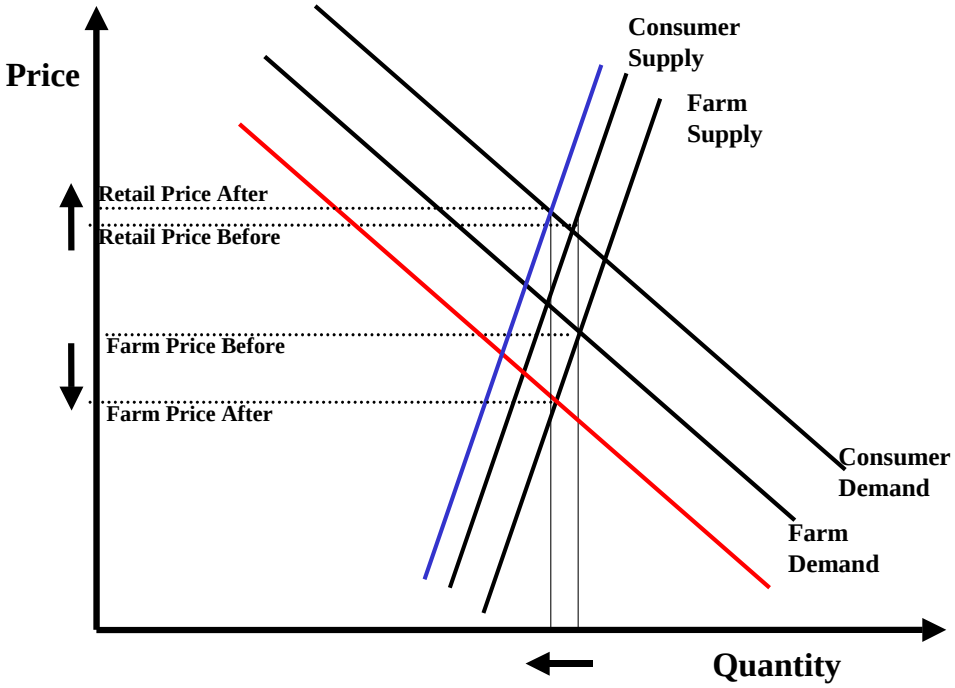
Figure 2. Value Added in the Marketing Chain



Cost increases that do not change demand effectively widen the gap between consumer and farm prices by shifting both derived curves backward (to the left) (Figure 3). In the process, a new, higher retail price is defined along with a new, lower farm price. The

cost increase is distributed both to consumers and producers. And, output quantity is reduced, as indicated earlier.

Figure 3. As Packer Ownership Increases Costs – Marketing Margin Must Grow Larger



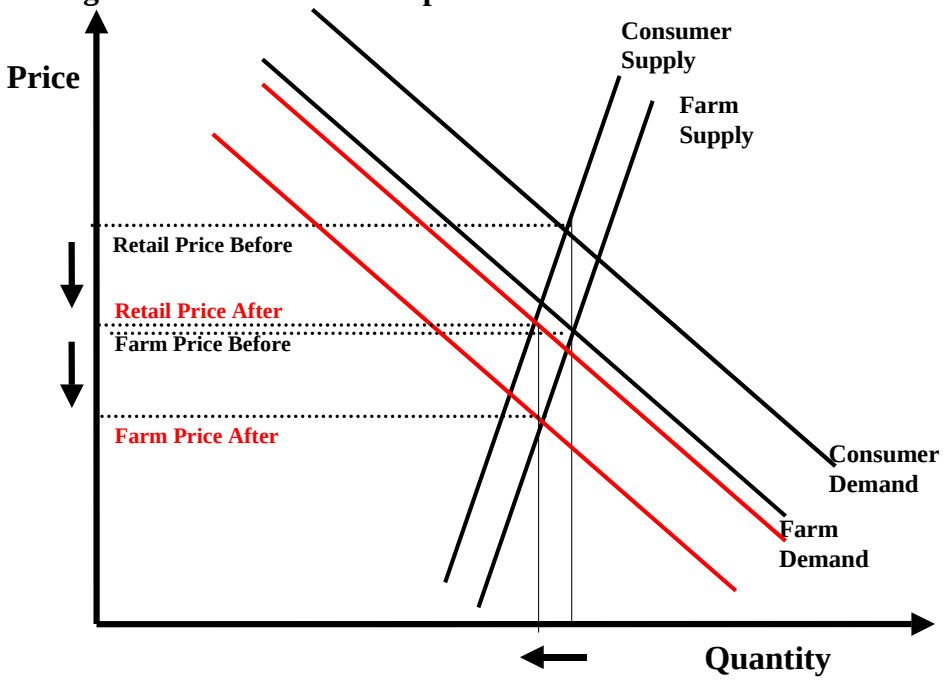
- The share of the cost increase borne by consumers and producers depends on the characteristics of supply and demand. If supply responds relatively less to prices (the curve is 'steep') than consumption does, (and the demand curve is flatter than the supply curve) then more of the increased cost will fall to the producer in the form of lower livestock prices. Conversely, if the demand curve is steeper, then the consumer will bear more of the cost.

  For cattle, the supply curve is relatively steep reflecting the long production cycle and the inability to respond quickly to price changes. However, consumer demand for beef is quite responsive to price changes, reflecting the large array of food alternatives available to consumers. Thus, it is likely that producers would bear the brunt of processing cost increases.

- This analysis suggests that increased processing costs will lead to reductions in output, lower profits, lower livestock prices and higher consumer prices.

- A decline in demand for beef or pork could occur if packers exercise less control over production reflecting a decline in quality, consistency and convenience in the end product. Such a change would shift both consumer demand and the derived farm demand lower (Figure 4). This change would reduce consumer and farm prices and lead to smaller industry output.

Figure 4. Packer Ownership Ban Causes a Decline in Demand



Summary:

Any change in cost that does not enhance demand means:

- Less profit for the industry as a whole;
- Less output for consumers;
- Smaller market share for the industry;
- Higher consumer prices; and
- Lower farm level livestock prices.

Any change that damages demand by reducing quality, consistency or other characteristics consumers prefer means:

- Reduced purchases and smaller output;
- Lower consumer prices; and
- Lower farm level livestock prices.

If, at the same time, costs rise and demand is reduced, all of these impacts would be expected. Price reactions would depend on the extent to which output is adjusted, but farm output and prices almost certainly would decline. Consumer prices, by contrast, could be higher for less product of inferior quality if farm production declines are sufficiently great.

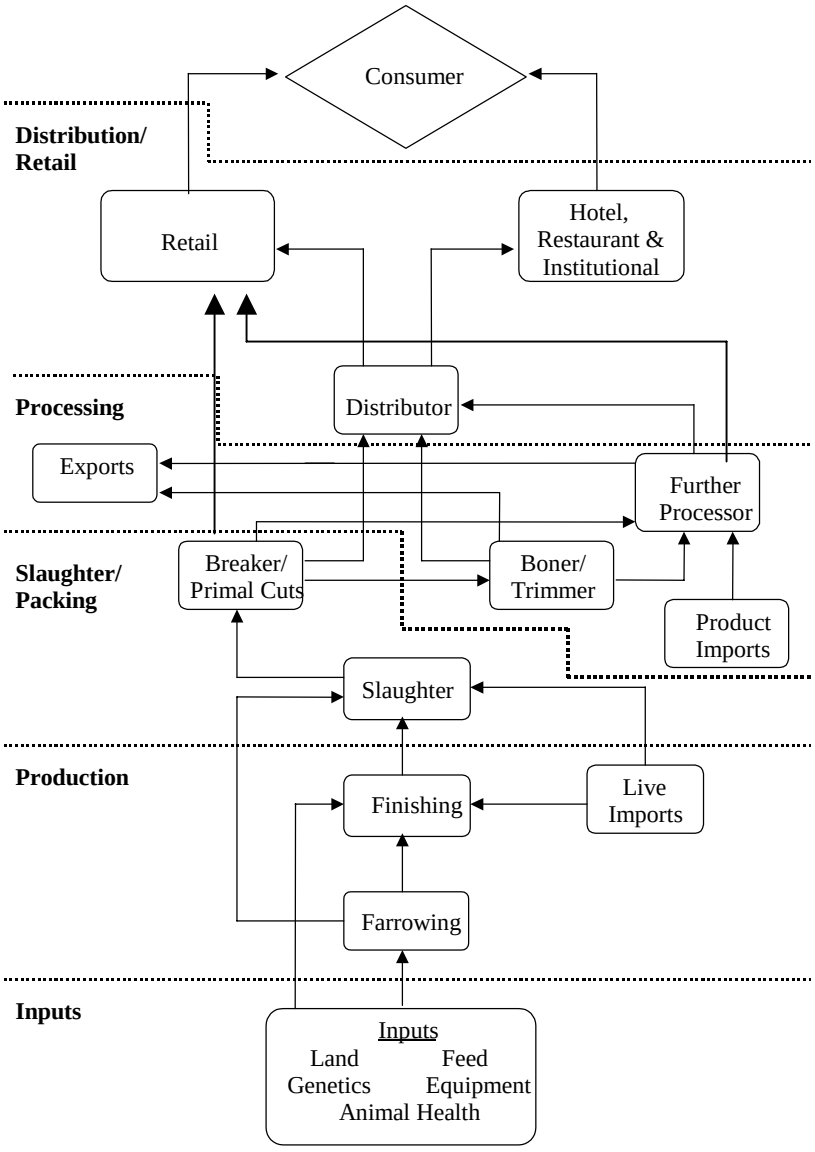
The following sections estimate more specific impacts of the Johnson Amendment on the hog/pork industry.

VI. Ownership/Feeding Ban Impacts on the Hog/Pork Industry

Sector Overview

The US pork supply chain consists of distinct segments spanning the use and conversion of several basic raw material inputs to the sale and consumption of quality pork products. The traditional view of the sector focuses on live animal production and the packer slaughter and processing segment. However, the modern hog-pork system is far more complex (Figure 5):

Figure 5. Hog Production and Marketing Supply Chain



The US breeding herd includes 6 million head of sows and boars. Packers own at least 1.387 million head with another 92,000 head jointly owned by packers/producers. Thus combined packer ownership is nearly 24% of the US breeding herd (See Charts 16, 17, and 18).

- During the period December 2000 – November 2001, the US pig crop was 101.6 million hogs. Pigs produced from sows owned or partially owned by packers amounted to 30.3 million hogs (20.5 pigs/sow/year). The percent of the US pig crop generated by the integrated operations accounted for about 30% of total barrow and gilt production.

- In 2001, 3.2 million head of Canadian feeder pigs were imported, fed and slaughtered within the US. Also, 2.1 million head of hogs were imported for slaughter. Thus, Canadian hogs provided 5% to 6% of total US slaughter.

- In 2001, commercial US hog slaughter was 97.9 million head (plus an additional small number slaughtered on farms) for a total slaughter of about 98 million head. Barrow and gilt slaughter made up 96.6% of the total kill (94.6 million head). Sow slaughter totaled 3.052 million, and boar and stag slaughter amounted to 324,000 head.

- The value of total hog slaughter in 2001 was $12.0 billion. Canadian origin production accounted for $640 million. About 95% of the total live market value of hogs in 2001 came from sale of barrows and gilts.

Processing

The conversion of live hogs into pork products creates additional value in the pork product chain:

- Total pork production in 2001 (carcass weight basis) was 19.1 billion pounds.

- The annual average pork cutout value $0.67 per pound with gross value of pork output totaling $12.8 billion dollars.

- Raw material for pork production (hogs) cost $12.0 billion dollars, implying that $800 million was added by slaughter, exclusive of by-product values which amount to about $7.40 per head in 2001 or about $2.83/cwt live basis.

Impacts of Johnson Amendment on the Hog/Pork Sector

While it is not possible to estimate with precision the impacts of the Johnson Amendment on the hog/pork industries, some very major potential impacts are clear and are described in the following sections. This information is based on reviews of secondary information, economic studies and interviews across the livestock and meat industry. In general, these impacts are

anticipated to fall into two primary categories, those that change the industry's cost structure and those that affect demand.

Cost Changes

While both processors and packers have invested heavily in efforts to reduce cost and increase efficiencies in recent years, a number of these investments have been through increasing economies of size, greater operational efficiency, reducing operating risk by better managing supply throughput and by investing in better technology, both in the form hog genetics and in more efficient plants. The Johnson Amendment would threaten many of these. Cost increases will be passed down to producers in lower hog prices and up to consumers in higher pork prices, with no benefit to any link in the production chain.

- **Plant operations and efficiencies**. Very rough estimates of the cost of underutilization presented in earlier sections suggest that even a small underutilization of packing plants would represent a major cost to the industry. The efficient scheduling of production is at least as important for pork packing as it is for beef. Plants with a high degree of vertical coordination and packer-owned supplies reduce procurement expenses dramatically. Plus they are able to schedule their own deliveries to prevent costly downtime during the shifts. We estimate the loss in operation efficiencies could range from $0.50 per hog to $2 per hog from this legislation, with the impact varying greatly by firm.

- **Risk management**. To sustain investment in packing facilities, packers must maintain reasonably steady margins or risk collapse. A key mechanism used to manage margin risk is to invest in hog production, an investment that the proposed legislation would prohibit. The value of this natural hedge to the industry as a whole in terms of more stable margins is just around $4 per head.

  Risk management costs can be estimated by comparing the situation for the industry when it is operating near the risk-minimizing level of packer ownership with a situation when packer-ownership is prohibited and the packer must bear the cost of risk management directly. For hogs, the optimum ratio is about 23% and for cattle it is around 8%.

  With 23% packer ownership, average gross returns are $4.76 per head with variability of gross returns (risk) at $16.27 per head, implying that the packer wishes to operate where the long-run risk reward ratio is 3.41 (16.27/4.76). Without the option of livestock ownership to reduce risk, the packer faces a significantly higher variability in gross returns of $38.03 per head, a risk level that requires average gross returns of $11.15 per head in order to offset risk, and implies an increased gross margin $6.39 (11.15-4.76) to reach the desired level. Packers likely will attempt to recover such costs from hog prices, and some from additional charges to customers. If 60% of this cost is charged back to producers, long-run hog farrow-finish margins would be $3.82 per head less than if packers were able to use livestock ownership to manage risk, or about $3 per head to $5

per head. For the sector, total impact on the industry due to lost risk management opportunities likely is between $284 mil and $473 mil per year.

- **Costs of Capital.** Based on recent swine cost-return budgets (Kansas State University, October 2001) and an interest rate of 8%, the interest cost on breeding/genetics is $14.70 per sow. Interest on one-half the variable costs is $27.13 per sow, while the interest on buildings and equipment amounts to $136.15 per sow, adding to total interest cost of $177.98 per sow.

  One of the key impacts of the Johnson Amendment likely will be to stimulate agricultural lenders to raise interest rates to reflect the increased risk of investing in a more volatile sector. Based on the foregoing calculations, the cost of each 1% increase in interest rate would be $22.25 per sow. The January 1, 2002 sow and bred gilt inventory was six million head. Thus each 1% increase in interest rate would cost hog producers $133.5 million.

  The potential Impact of higher interest rates on hog producers is summarized below. Assuming 8% base interest rate, each one percent increase would then increase:

o Cost of 1% increase in interest rate	22.25	($/sow)
o Sow and bred gilt inventory, Jan 1, 2002	6000	(thousands)
o Total impact on hog producers	133.5	($million)

- **Availability of additional equity**. The Johnson Amendment would require that packers divest their direct ownership of at least 1,386,500 head of sows and likely would need to sell part ownership of another 100,000 sows worth about $223 million ($150 per head.) Trade sources indicate that the packer-owned sow facilities are valued at about $2000 per sow while replacement facilities would cost more than $3000 per sow. The 1.4 million sows packers own outright are worth about $2.8 billion. Developing capital sources to replace these assets would be difficult and likely would lead to a substantial decapitalization of the sector given current economic conditions in the overall economy and across agriculture.

  It is not possible to estimate the potential impact of a forced divesture on asset values, which would be determined on a case-by-case basis. However, if packer owned sows were devalued by 10%, $280 million of equity would be lost, and all hog production assets would be affected indirectly. For example, the impact of even a 5% erosion in sow asset values for the non packer owned sow asset base would also be very large, likely well in excess of $500 million.

Demand Impacts

While there is convincing evidence that integration has been successful in increasing pork quality and boosting demand, it is far from clear that all recent progress in this area would be lost. However, to estimate the risk to the industry of such losses, an estimate of the immediate

impact of a 1% reduction in demand must be calculated (reflected in terms of a reduction in price imposed with no change in quantity produced). Such a shift implies:

- A $0.62 per cwt reduction in the price of barrows and gilts, and a reduction in value of production of $113 million;
- A $0.39 per cwt reduction in the price of sows slaughtered, and a $5.66 million reduction in value for the industry.
- A $0.35 per cwt reduction in the price of boars slaughtered, and a $0.37 million decline in value for the industry.
- A reduction in value of product sold across the industry (farm to wholesale) of $251 million.

Loss of Export Markets. A major impact of the Amendment likely would be less export sales. The string of 11 consecutive years of increasing US pork exports could quickly end, in part because competitor nations would become more cost competitive as the US industry restricts the packers cost management tools, and especially if it limits the ability of US packers to control quality and product characteristics. The loss of market share could be dramatic, particularly in Japan. A 10% reduction in export volume would result in a 0.8% increase in domestic pork supplies, deducting about $2 per cwt from the national lean hog value.

Structural Impacts

These are long-term, potentially major impacts that would change the course of the US pork industry permanently.

Loss of Packer Capacity. The amendment likely will promote disinvestment in the pork-processing sector leading to continuing decline in packer capacity and a lack of new investment. The higher cost structure and inability to benefit from ownership and strong vertical linkages will prompt closure of older plants and would have direct and negative impacts on hog prices. For every 1,000 head lost in packer capacity, the national lean hog price likely will be reduced by $0.29 per cwt on an annual basis. Although packer capacity affects hog prices at all times of the year, the price impact is by far the largest in the 4th quarter when hog marketings peak. Total impact to the primary producer sustaining such losses could be long lasting.

Industry Relocation and Increased Sourcing of Hogs from Neighboring Countries. Packers that depend heavily on their own hogs may source more hogs from Canada and Mexico, and could invest in production directly in those countries. Several of the affected companies already own production or processing operations in Canada, Mexico, or both. The governments in these countries pose no barrier to packer ownership of hogs and the pork industries in the other NAFTA countries are expanding.

VII. Ownership/Feeding Ban Impacts on the Cattle/Beef Industry

Sector Overview

The beef supply chain is the most complex in agriculture (Figure 6). It includes a cattle inventory of 96.7 million head (January 1, 2002) dispersed among more than one million individual operations. Cow herds are frequently small, with 91% smaller than 100 head and the average about 41 head, but there are 0.8 million operations including 33.1 million head (Table 10).

Table 10. Cow/Calf Sector Size Structure, 1989-2001

Number of Cows	1989	1993	1997	2001
		% Operations		
< 100	92.9	92.1	91.6	90.6
100-200	6.6	7.3	7.8	8.7
>200	0.5	0.6	0.6	0.7
Number of Cows		***% Inventory***		
< 100	54	52.1	49.8	48
100-200	33.5	35	36.2	37.1
>200	12.5	12.9	12	14.9

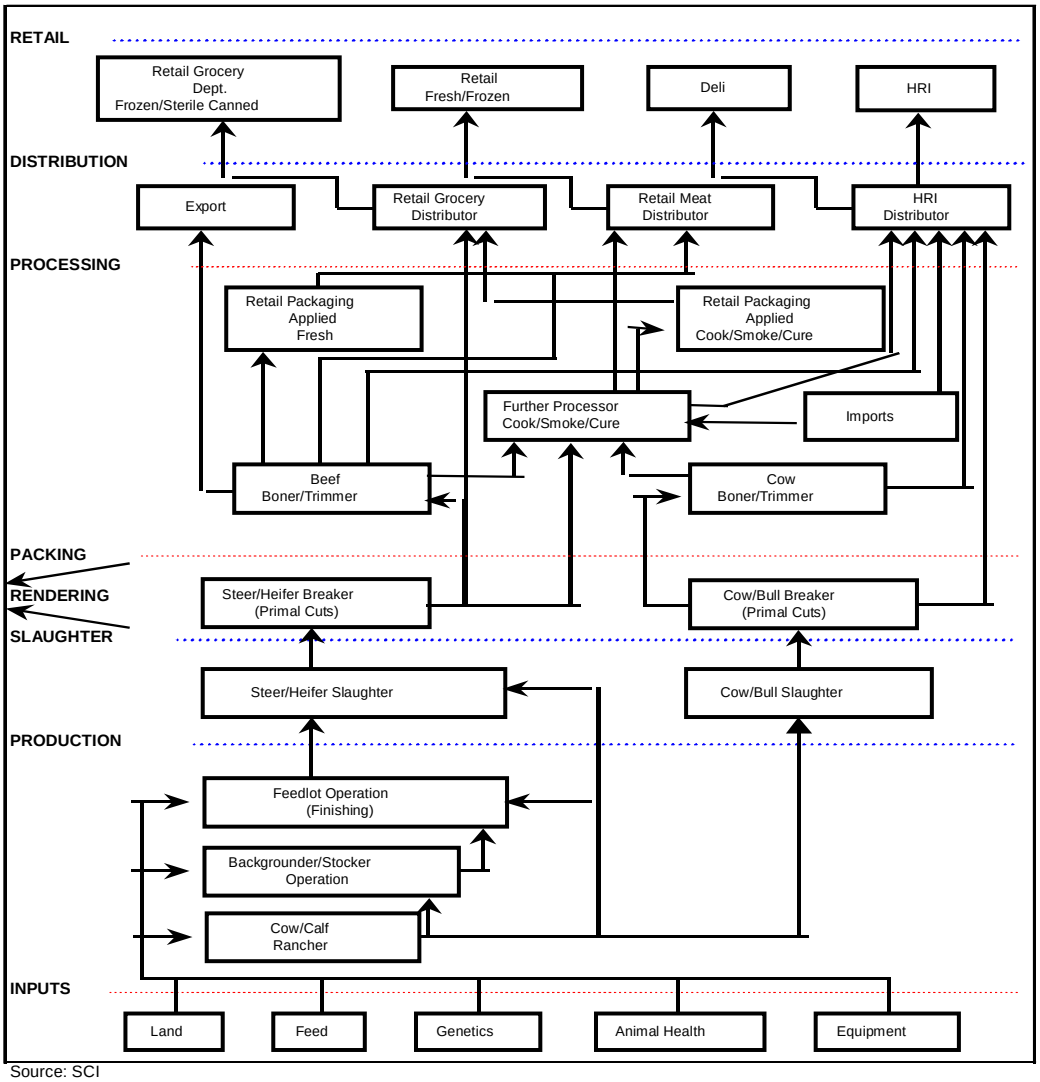
Also:

- The 2001 calf crop (beef plus dairy) was 38.3 million head last year, and provided nearly 27 million feeders that moved through 94,100 feedyards.

- Nearly 27 million head of fed cattle were merchandised through 723 packing plants (along with an additional 7.8 million head of non-fed cattle) for a total of 35 million head.

- This system produced 26.1 billion pounds of beef to be distributed to both domestic and foreign markets.

Figure 6. Cattle and Beef Marketing Chain



Source: SCI

Cattle Feeding

- Livestock of both domestic and international origin are fed and slaughtered in the United States. The fed cattle supply of 28.13 million head also includes 0.8 million head of fed cattle imported from Canada.

- Published and survey estimates of packer owned feedlot capacity along with reported marketings indicate that packers owned about 1.6 million head (nearly 6%) fed cattle slaughter in 2001. That number would be greater if partnership arrangements with private feedyards or cattle feeders were added, but likely totals no more than 8% to 8.5% of fed cattle slaughter.

- At an average price of $72 per cwt, the value of fed cattle marketings in 2001 was $24.7 billion.

Processing

- Beef production, with boxed beef at an average of $122.36 per cwt of carcass, implies steer and heifer beef production valued at $26.6 billion in 2001.

- The value of by-products is extremely important to meat packers, and averaged $8.53 per cwt of live animal in 2001. At an average live weight of 1220 pounds, this credit is worth $2.9 billion. Total value of boxed beef and by-product is $29.5 billion.

Impacts of Johnson Amendment

The following sections focus directly on expected impacts of passage of the proposed legislation. Impacts are estimated on the basis of reviews of secondary information, economic studies and interviews across the livestock and meat industry. In general, they fall into two primary categories, those that change the industry's cost structure and those that affect demand.

Cost Changes

While both processors and packers have invested heavily in efforts to reduce cost and increase efficiencies in recent years, a number of these investments have been through increasing economies of size, greater operational efficiency, reducing operating risk by better managing supply and throughput and by investing in better technology, both in the form of cattle quality and in more efficient plants. Virtually all of these would be threatened by the proposed Johnson Amendment.

While it is not possible to estimate specifically the impacts of the Johnson Amendment on beef processors, some examples can be described. By restricting packers' ability to control livestock supplies, the Amendment would certainly increase risk and price volatility, and thereby increase the cost of capital. Since such impacts cannot be estimated with precision, likely interest rate increases are equally difficult to quantify (although, they would certainly be expected to rise). The following sections estimate the cost to US livestock producers of each 1% increase in interest rates for cattle producers.

Cattle feeders: The analysis for 2001 uses a representative 725-pound medium frame #1 feeder steer with prices and costs from USDA using industry standards:

- The average price, basis Dodge City, for feeder steers placed on feed and then marketed during 2001 was $89.22 per cwt. This puts the average cost of the feeder steer at $646.85 per head.

- Feed cost (corn, alfalfa, protein supplement plus feed mill markup) amounted to $156.50 per head.

- The representative steer is fed an average of 150 days.

- Industry average producer equity is 30%. Financing normally covers one-half of the feed costs (accumulated over time on feed). Thus, the cost of each 1% increase in interest rate is $2.18 per head.

- During 2001, feedlot marketings were nearly 23.4 million head. This means that each 1% increase in interest rate would cost cattle feeders $52.1 million annually.

Summary Impact of higher interest rates on cattle feeders:

	2001	
Feeder cattle cost	89.22	($/cwt) lagged by placement month
Feeder cattle weight	725	(lbs)
Total cost of feeder cattle	646.85	($/hd)
Producer equity	30%	
Feed cost	156.60	($/hd)
Days on feed	150	(days)
Cost of 1% higher interest rate	2.18	($/hd)
Feedlot marketings	23391	(thousands)
Total impact on producers	52.1	($millions)

Cow-calf operators: Based on a January 2001 Iowa State University livestock enterprise budget with 9% interest, the interest on feed and other operating costs is $14.24 per cow. The interest on the value of the herd is $85.68 per cow, giving a total interest cost of $99.92 per cow. Thus the cost of each 1% increase in interest rate would be $11.10 per cow. The January 1, 2002 inventory estimate was 33.1 million head. Therefore, each 1% increase in interest rates would cost cow-calf producers, on an annualized basis, $367.5 million.

Summary impact of higher interest rates on cow-calf operators, assuming 9% interest rate:

Interest on feed and other costs	14.24	($/cow)
Interest on herd	85.68	($/cow)
Total interest cost	99.92	($/cow)
Cost of 1% increase in interest rate	11.10	($/cow)
Jan 1, 2002 inventory of beef cows	33100	(thousands)
Total impact on cow-calf producers	367.5	($millions)

Annual cost of each 1% increase in interest rate to cow-calf producers and cattle feeders would total $419.6 million.

Availability of additional equity. Based on industry estimates, there are at least 750,000 cattle owned by packers at any one time. To maintain beef production following a ban on such ownership, additional capital of $562 million would be required ($750 per head for 750,000 head). To maintain a 30% producer equity position would require the industry to add $168.8 million in new equity to replace the ownership of these cattle. Agricultural lenders interviewed indicate that this would be extremely difficult, and could lead to lender insistence on a higher equity position by the producers, further increasing the amount of necessary capital.

Divestiture of packer interests in cattle feeding operations could pose an additional problem. Finding the customers with the capital and risk-taking ability to turn these operations into 100% custom feedyards would likely be difficult if not impossible and could lead to their operation at very low capacity levels for a long period of time.

Based on industry interviews and secondary information, cattle feeding operations that would be immediately affected by a ban on packer feeding have feeding capacity of at least 735,000 head of cattle. At an asset value of $150 per head, the total current asset value of these feedyards amounts to $110.3 million. However putting this amount of feedyard capacity on the market over a short period of time would severely depress asset values. In addition, a recent announcement by National Farms of their intent to sell all of their feedyards (270,000 head feeding capacity, $40.5 million in asset value) on the market. This would mean that more than one million head of feedyard capacity would have to change ownership over a relatively short period of time. This likely could be accomplished only by severely reducing asset values and the industry in total.

USDA estimates total feedlot capacity at 16 million head. This would put the current asset value of the cattle feeding industry at $2.4 billion. A fire-sale disposal of one million head capacity would reduce the asset value of the entire industry. For each 10% reduction in asset value, $240 million in equity is lost, since packers would be more likely to sell feedyards rather than retain them empty or near empty. Industry experts suggest that these feedyards would have to be discounted by up to one-half of their value in order to find new ownership. In such cases, one could argue that the asset value of the non-packer owned feedyards would be reduced by at least one-third, or more than $750 million.

- **Plant operations and efficiencies**. There have been a number of academic attempts to identify costs of packing plant underutilization. For example, in the mid-1980s, 10% under-utilization in fed cattle plants was estimated to increase the cost of slaughter and fabrication by $3.93 per head, while 20% under-utilization would boost costs by $7.93

per head.[39] More recent estimates were $2.09 per head for 10% under-utilization and $9.11 per head for 20% under-utilization. [40]

In 2001, steer and heifer slaughter was 28.5 million head. In that year, the impact of reducing capacity utilization by 10% would be from $59.5 to $111.9 million and a 20% reduction in capacity utilization would cost the industry $225.8 to $259.3 million.[41] Cost increases of this type that do not stimulate demand are likely to be passed to consumers and producers, primarily in the form of lower producer prices, while operations working with very narrow margins likely would be closed, including smaller, regional plants with production costs already above those for larger-scale plants. This could have significant regional effects, especially on smaller producers with limited access to market alternatives.

- **Estimated Impacts on Feeder Cattle Prices.** A ban on packer ownership of cattle prior to 14 days before slaughter, with the requirement that inventories be liquidated within 180 days would have an immediate chilling impact on feeder cattle prices.

  - Packer ownership accounted for about 1.6 million head or nearly 6 percent of fed cattle slaughter in 2001, and partnership arrangements with private feedyards or cattle feeders, would boost that number to 8% to 8.5% of fed cattle slaughter. The initial impact of a ban on packer ownership would be to reduce feeder cattle demand by about 1.6 million head. Prices would be expected to decline enough to entice other buyers for those cattle.

  - Feeder cattle prices are determined primarily by feeder cattle supplies, the cost of feed, and expected fed cattle prices with the supply of feeders usually the dominant price determinant, although its impact on sales prices is often modified by changes in feed costs. For example, each $0.10 per bushel change in corn prices, other things equal, will change prices for 750 pound feeder steers by about $.60 per cwt in the opposite direction. Similarly, a $1 per cwt change in expected fed cattle prices shifts feeder cattle prices by about $1.50 to $1.75 per cwt in the same direction (Chart 16). This relationship between availability of feeders (supply) and feeder cattle prices is both strong and stable. For example, feeder cattle supplies increased about 1.2 million head on January 1, 1995 compared to a year earlier, and average feeder prices declined about $9.85 per cwt during 1995 compared to 1994. Each one million head

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[39] Sersland, Claudia J. ***"Cost Analysis of the Steer and Heifer Processing Industry and Implications on Long-Run Industry Structure."*** Unpublished Ph.D. dissertation, Oklahoma State University. December 1985.

[40] Anderson, John D. and Trapp, James N. *"Estimated Value of Non-Price Vertical Coordination in the Fed Cattle Market."* Virginia Tech University, Research Institute on Livestock Pricing, Research Bulletin 2-99, February.

[41] Industry sources interviewed for this study indicate consistently that the academic estimates presented here are very conservative and would peg the increased costs of a 10% reduction at $5-7 per head and the costs of a 20% reduction at $15-17 per head. This would increase the total impact to $142.3 to $199.3 million for a 10% reduction and $427 to $484 million for a 20% reduction.

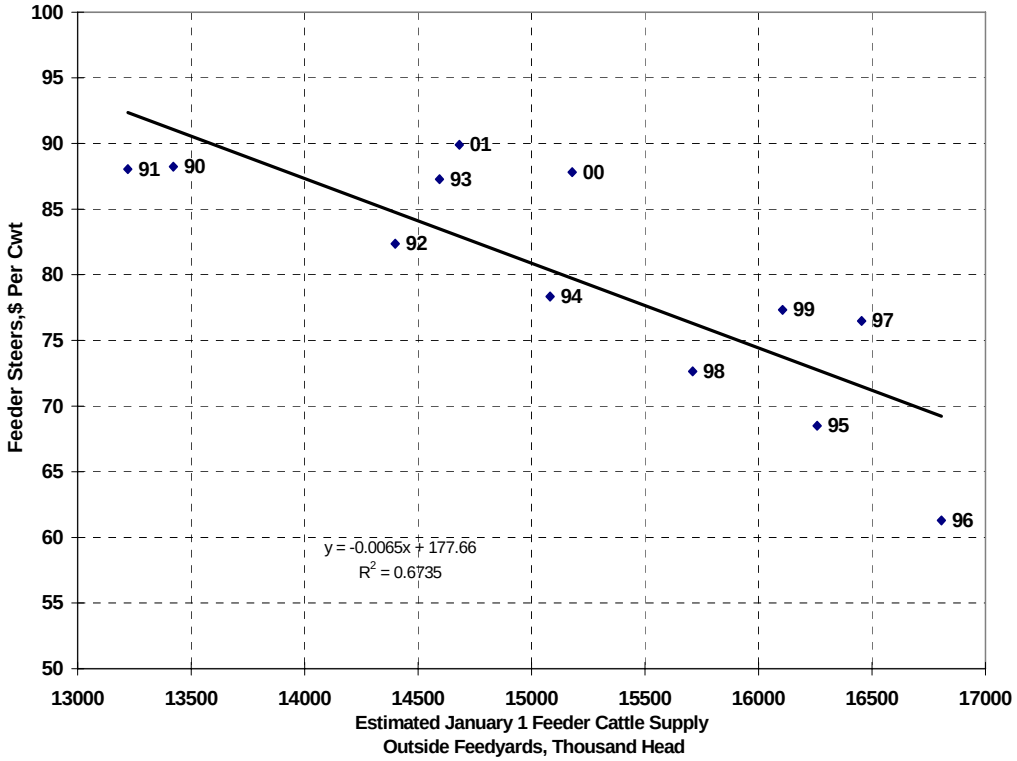
change in feeder cattle supply tends to change the average annual price by about $6.50 per cwt.

- There have been five years since 1980 in which feeder cattle supplies have increased by a half million head or more from the previous year. Price declines during the subsequent year have ranged from a little over $1 to nearly $10 per cwt and averaged $6.54 per cwt (Chart 16).

- A conservative estimate of the immediate impact of the Johnson Amendment is a reduction in feeder demand over the course of a year by about 1.5 million head. To absorb that larger supply implies a reduction in feeder cattle prices by about $9.75 per cwt or about $73 per head for a 750-pound feeder steer.

- In recent years, an average of 13 million head of feeder cattle weighing more than 700 pounds have moved into feed yards. At $73 per head, a $9.75 per cwt reduction in price would cost the industry nearly $950 million.

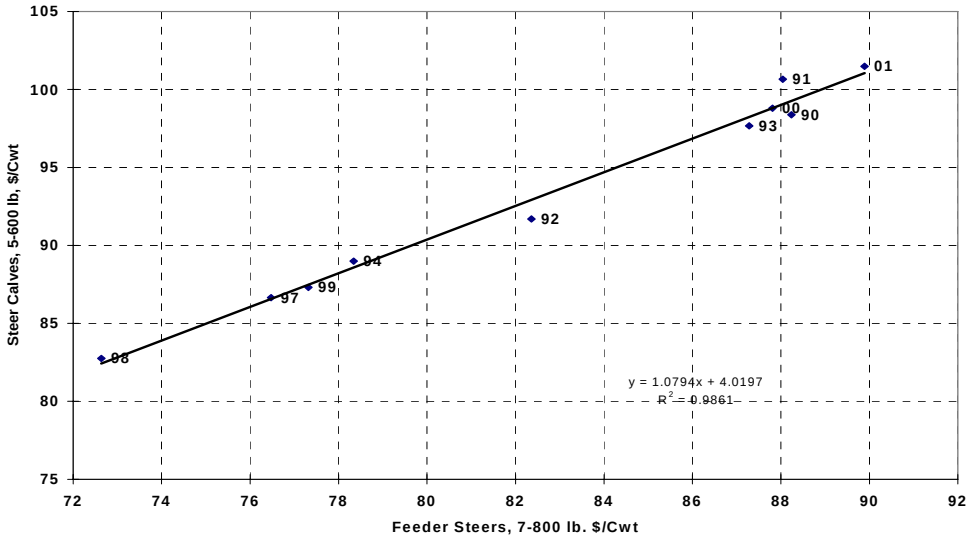
Chart 16. January 1 Feeder Cattle Supplies and Average Price 700-800 Pound Steers, Oklahoma City



- A decline in feeder cattle demand would depress calf prices, as well as the value of the cow herd, a trend that would lead to further liquidation of breeding stock[42]. While calf prices, like feeder cattle prices, are sensitive to changes in feed costs, they reflect feeder supplies and prices very directly. A diminution of 700-800 pound feeder steer prices by nearly $10 per cwt would have an equally depressing effect on calf prices (Chart 17). Typically, prices for feeders and calves move in the same direction – increases in feeder cattle prices will pull calf prices higher as well, while declines in feeder prices will depress calf values. For each $1 change in feeder steer prices, calf prices tend to change by about $1.08 per cwt in the same direction. So, a reduction in feeder prices by $9.75 per cwt would be expected to reduce calf prices by about $10.50 per cwt.

- On January 1, 2002 there were approximately 15.8 million calves weighing 500 pounds or less on US farms and ranches. At 450 pounds average weight, the price impact of a packer feeding ban on this segment of the industry would be $47.25 per head or net loss in inventory value of about $745 million.

Chart 17. Feeder Steer Prices in Relation to Feeder Calves: 500-600 lb. Steer Calves, 700-800 lb. Feeder Steers Annual Average, Oklahoma City



- **Plant operations and efficiencies**. Even 10% underutilization of beef packing plants would represent a cost to the industry of perhaps $200 million. And, it is likely that such a cost increase would be primarily passed to cattle producers in the form of lower prices. Transaction costs are reduced by not having to bargain over the price of each load of

[42] The most recent example of the price-depressing effects of high feed costs is 1995/96 when corn prices skyrocketed to the $5 per bu. area which pressured prices for 500-600 pound steer calves to within $3-$4 per cwt of 700-800 pound feeder steer prices. In contrast, since 1990 (excluding the high feed cost years of 1994 and 1995) prices for 500-600 pound feeder steers averaged $10.60 per cwt higher than market prices for 700-800 pound feeder steers.

animals (an added attraction to contracting with pre-set prices and quality standards). As the number of providers declines, the packer's transaction costs also decline.

There has been substantial academic research attempting to identify costs of underutilization. For example, in the mid-1980s, 10% under-utilization in fed cattle plants was estimated to increase the cost of slaughter and fabrication by $3.93 per head, while 20% under-utilization would boost costs by $7.93 per head.[43] More recent estimates were $2.09 per head for 10% under-utilization and $9.11 per head for 20% under-utilization. [44]

In 2001, steer and heifer slaughter, steer and heifer slaughter was 28.5 million head. In that year, the impact of reducing capacity utilization by 10% would be from $59.5 to $111.9 million and a 20% reduction in capacity utilization would cost the industry $225.8 to $259.3 million.[45] Cost increases of this type that do not stimulate demand are likely to be passed to consumers and producers, primarily in the form of lower producer prices, while operations working with very narrow margins likely would be closed, including smaller, regional plants with production costs already above those for larger-scale plants. This could have significant regional effects, especially on smaller producers with limited access to market alternatives.

- **Risk Management Costs**

Risk management costs for cattle are estimated in much the same manner as for hogs, by comparing the situation for the industry when it is operating near the risk-minimizing level of packer ownership with a situation when packer-ownership is prohibited and the packer must bear the cost of risk management directly. For hogs, the optimum ratio is about 23% and for cattle it is around 8%.

For cattle, the long-run risk-reward ratio is $978/$93 = 10.51 (using ***gross*** margins which do not include the costs of kill and fabrication). Using the same approach described for hogs, beef packers would require $1.49 more per head to compensate for the increased risk (between $31 million and $52 million per year.

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[43] Sersland, Claudia J. ***"Cost Analysis of the Steer and Heifer Processing Industry and Implications on Long-Run Industry Structure."*** Unpublished Ph.D. dissertation, Oklahoma State University. December 1985.

[44] Anderson, John D. and Trapp, James N. "***Estimated Value of Non-Price Vertical Coordination in the Fed Cattle Market***." Virginia Tech University, Research Institute on Livestock Pricing, Research Bulletin 2-99, February.

[45] Industry sources interviewed for this study indicate consistently that the academic estimates presented here are very conservative and would peg the increased costs of a 10% reduction at $5-7 per head and the costs of a 20% reduction at $15-17 per head. This would increase the total impact to $142.3 to $199.3 million for a 10% reduction and $427 to $484 million for a 20% reduction.

- **Implications for Beef Demand**

The industry has worked diligently over the last several years to improve beef in the eyes of the consumer and address many of the perceptions and misconceptions surrounding beef. Beef demand was in steady decline from 1960's through the late 1980's. However, during the late 1990's, this very long-standing trend appears to have reversed so that beef demand now is growing.[46] The rapid growth of strategic alliances, branded beef programs and development of value-added beef products appear to have been important in shifting this trend.

Impacts on domestic beef demand of a packer ownership ban

- Demand for beef has increased considerably since 1998, by an amount worth perhaps $10/cwt. to live cattle prices. An estimated $4 of that is due to product improvement brought about by better coordination in the vertical marketing chain, including both alliances and direct ownership of livestock by packers).
- An estimated 15% of that amount would be lost if packer ownership and coordination within the marketing chain reduced, about $0.60 per cwt of finished cattle.
- For the 28.5 million head slaughtered annually, a loss of $213 million is implied with a range from $160 million to $267 million.

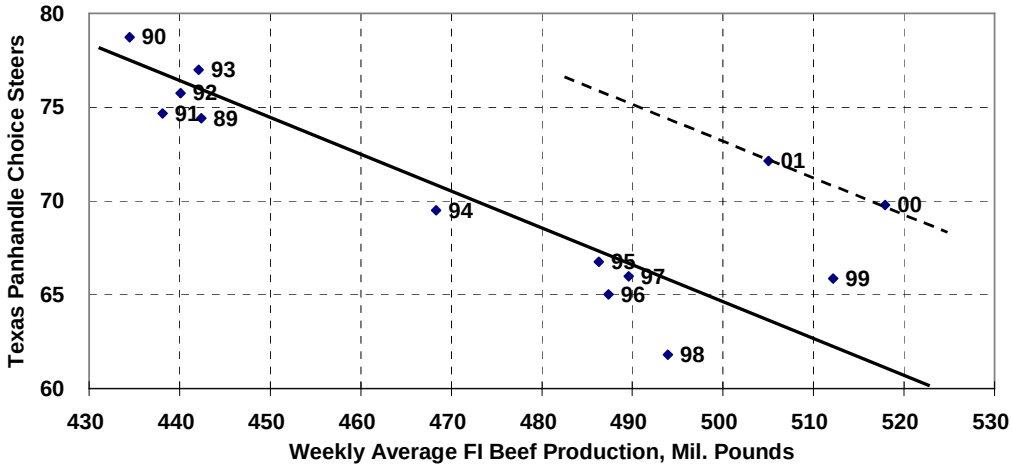
Export demand also would be affected:

- Demand increased considerably since 1998, by an amount worth perhaps $10/cwt. to live cattle prices with an estimated $1 of the increase in price due to greater export demand arising from more consistent product offerings overseas. This is a direct result of better coordination in the vertical marketing chain, includeing alliances as well as direct ownership of livestock by packers.
- An estimated 15% of the $1 demand gain would be lost if packer ownership were banned thus damaging coordination within the marketing chain, about $0.15/cwt of cattle.
- For the 28.5 million fed cattle marketed, the loss would be $53 million with a likely range from $40 million to $66 million.

Price Impacts. The improvement in beef demand translated into higher prices for fed cattle (Chart 18). As beef production increased during 1998-2000, cattle prices strengthened, as well suggesting further growth in demand. While production declined in 2001 compared to 2000, cattle prices averaged higher than the prior year. In fact, the change in relationship would suggest that fed cattle prices are $8-10 per cwt. higher than they would be under the demand scenario prior to 1999. Early evidence for 2002 would suggest that beef demand is holding close to the levels of last year.

[46] The beef demand index is based on evaluations of beef consumption and prices adjusted for inflation. It is routinely published by the National Cattlemen's Beef Association Research Institute.

Chart 18. Choice Steer Price vs. Weekly Average FI Beef Production



Impacts of Johnson Amendment. The branded beef programs and development of new, value-added beef products are dependant upon a constant or growing supply of consistent, quality beef carcasses. Packers have been using their own feeding programs, alliances with producers and contracting of various means to achieve the consistency and quality attributes necessary to make the programs and products successful. If some or many of these methods of assuring supply are hampered or disappear because of the Johnson Amendment, there is genuine fear that beef demand could be damaged in the long run. This would cause a shift back downward in the relationship between cattle prices and beef production. Cattle producers would receive lower prices for their cattle in comparison to the current environment.

Based on 2001 domestic steer and heifer slaughter of 28.1 million head, every $1/cwt decline in fed cattle prices due to decreased beef demand would reduce the revenues of cattle feeders by $343 million. This would, in turn, lead to a negative impact on feeder cattle and calf prices and erode the value of the nation's beef cow herd.

VIII. Impacts of the Ban on Poultry

While the Johnson Amendment would attempt to turn back integration in the cattle and hog industries, it does not include the poultry industry in its prohibitions. In fact, it ignores the benefits the US broiler industry has derived from vertical coordination and integration, which has led to higher productivity, lower prices, and increasing demand and larger markets.

Changes in the broiler industry have been dramatic over the past four decades since it began to attract large amounts of commercial capital to invest in higher technology and broader markets. For example:

- Commercial broiler production has grown by more than 440 percent since 1960, with 8.4 billion broilers slaughtered in 2001. When higher average liveweights and better yields from improved processing methods are factored in, production of broiler meat has expanded by 618 percent since 1960.

- Driving the production expansion has been the increased consumption of broiler meat both on an absolute basis and as a percentage of meat consumption. In 1970, US per capita broiler consumption was 36.9 pounds (retail weight basis), accounting for 19% total consumption of red meat and poultry. For 2001, broiler consumption is estimated at 77.2 pounds per person, about 38 percent of total meat consumption.

- The rapid growth in demand for broilers was fueled by the capacity of broilers and chicken parts to compete with beef and pork for consumers' dollars. A major factor was production efficiency and the capacity to offer better and better price values compared with other meats. Additionally, poultry is viewed by consumers as versatile, convenient to prepare, and healthy.

- The single most defining characteristic of the US broiler industry is its high degree of vertical integration. Processors control the production process, either by owning or contracting each stage from breeding stock to market-ready products.

In the 1950's, most poultry meat marketed was a by-product of egg production. As production of chickens specifically for meat began, the infant broiler industry was segmented with the major stages producing meat as separate businesses. Independent feedmills, hatcheries, farms, and processors each sold products in a separate market.

Over time, these independent businesses were combined by "integrators", who reduced costs by coordinating the production of each stage. As a result, an industry once characterized by tens of thousands of small, specialized businesses became characterized by hundreds of vertically integrated firms. Through horizontal integration, however, that number was reduced to about 50 by the 1990's.

Drivers of vertical integration in the broiler industry include:

- Capital and credit requirements, reduced costs per unit produced, improved quality control, better alignment of output with other stages (particularly slaughter and processing), and reduced operation uncertainties as to capital inputs and market outlets.

- The larger volume base facilitates management, service, research, and marketing. The industry's integration led directly to improved productivity at lower cost.

- Improved productivity and efficiency enabled the industry to produce and market chicken at prices, which did not appreciate as fast as overall consumer prices, or prices of production inputs such as labor, feed, and energy. While the consumer price index (CPI) has increased 5 fold since 1960, retail prices for chicken rose only 134 percent.

- Advances in breeding, nutrition, housing, equipment, disease control, and management have all helped reduce the real (inflation adjusted) cost of production of broilers over the past 40 years. Furthermore, the slaughter and processing segments of the broiler industry have benefited from uniform, high-quality birds and more stable production throughout the year.

Most broiler grow-out farms are privately owned, but operate with contracts to produce broilers for an integrating firm. Contract growing allows the farm operator to avoid or minimize three major risks of independent operation: 1) unusually high mortality, 2) high feed costs, and 3) low market prices or the lack of a buyer for live birds. In addition, access to capital for a farm operation is enhanced through contracts, which demonstrate to lenders farmers' ability to pay.

The advantages to the integrating firm are the lower overall cost of production from shifting capital investment in grow-out facilities to other parties, the small farmer’s special tax provisions and the efficiencies gained by the higher motivation level of a self-employed farmer versus hourly labor. While specific contract terms vary among growers, the contractor generally provides baby chicks, retains ownership of the broilers, assumes responsibility for marketing of the birds, and pays for grow-out services. The firm also supplies feed, supervision, medication, and disinfectants, and assumes most cash losses. The grower provides labor, housing, equipment, fuel, litter, and miscellaneous items. Generally, there is a mechanism for bonus payments to growers for superior feed conversions, lower mortality, and other management related productivity factors.

Cattle and Hog Integration

While chicken producers have benefited extensively from integration themselves, they also have benefited indirectly from the lack of integration in the beef and pork industries in the past. However, recent improvements in consistency of red meat products, and marketing efficiencies through vertical integration and vertical coordination efforts have served to notify broiler producers that they no longer have a virtual monopoly on the advantages of vertical integration such as branding, promotion, and marketing (investment in which has resulted in demand

creation for chicken over the years). Following the improvements from additional efficiency and more competitive beef and pork products, legislated changes could reverse these competitive shifts, which may serve to further stimulate growth of poultry consumption at the expense of pork and beef. The proposed legislation would inhibit the beef and pork industry from stimulating additional demand growth.

IX. Summary and Conclusions

This is a study of likely impacts of the "Johnson Amendment" (Amendment No. 2534) included in S. 1731, the Senate-passed farm bill. It was based on extensive reviews of economic studies and reports, and on interviews with meat packers, livestock feeders, livestock breeders, agricultural lenders and others across the industry in late February and March, 2002.

Study Findings

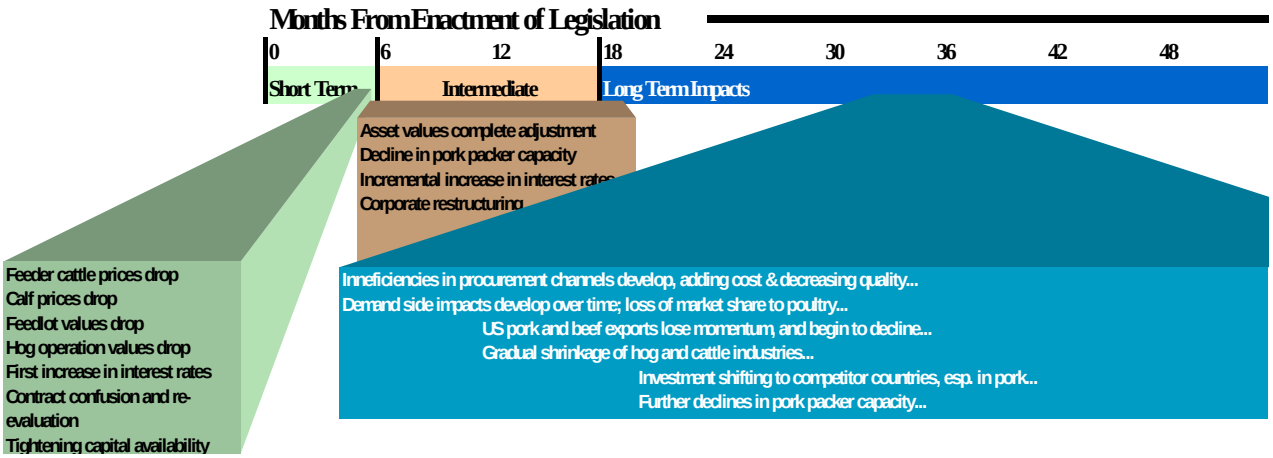
The Johnson Amendment likely would result in immediate and long-term negative impacts for all sectors of the US pork and beef industries, from independent producers to packers. No segment can expect to benefit, and each would likely face significant losses.

- The Amendment assumes that packers use livestock ownership and marketing arrangements to exert market power at the expense of independent producers, and would outlaw many common management tools, primarily packer ownership of livestock.

- This intervention would strike at the heart of recent industry advances, reducing efficiency and raising costs at all levels of production and processing. And, it could undercut recent increases in consumer demand and export sales.

- The costs of such interventions would be felt immediately, and some costs would continue indefinitely (See Figure 7).

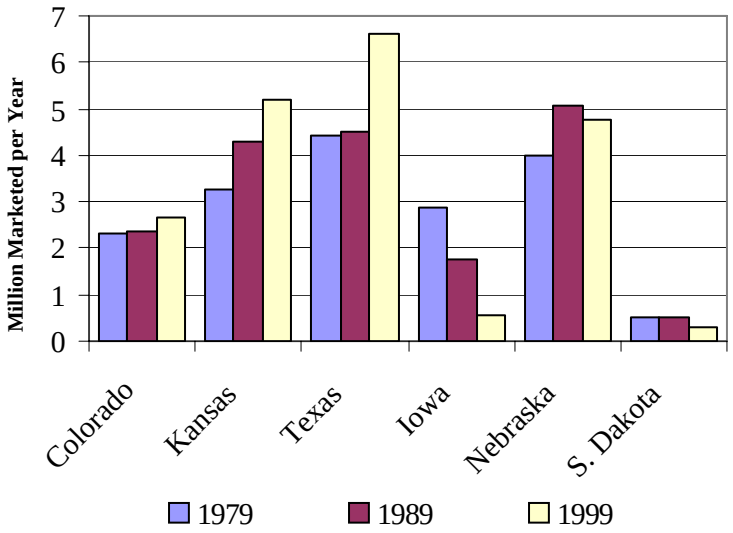
Figure 7. Time Line of Packer Feeding and Ownership Ban Impacts



The contrast between states with growing herds and those where swine herd numbers declined is stark. All of the principal declining states were characterized by restricted packer ownership,

with no packer ownership allowed in eight of the ten. In nine of the ten rapid-growth states, there was a significant component of packer ownership of hogs while in the remaining state a strong contracting linkage was permitted between producers and packers. Similarly, states that have constrained investment in cattle feeding have declined, while others have attracted substantial new investment (See Chart 19).

Chart 19. Cattle Marketings, Selected States, 1979-99



Amendment Costs

The study examined potential impacts of Amendment costs at all levels of the industry, and estimated cost impacts at each level. Cost impacts would differ widely, both in their timing and in their impacts. Impacts are measured at the producer level for both cattle and hogs.

- **Initial divestiture** impacts would be severe but temporary, and would affect packer-owners and other livestock owners, as well.
  - For hogs, this one-time cost could range from $0.6 billion to nearly $1.8 billion depending on market conditions.
  - For feeder cattle and calves, it would likely be about $1.7 billion, and loss of feedlot asset value could range from $0.6 billion to $0.84 billion.

- **Increased costs** of capital across the industry as lenders increase their risk premium.
  - For hogs, this impact could range from $34 million to $133 million.
  - For cattle, it could range from $105 million to $523 million.

- **Reductions of packers' operating efficiency and increased risk**.
  - For hogs, this impact could range from $233 million to $468 million.
  - For cattle, it could range from $51 million to $130 million.

- **Reduced domestic demand for meats**.
  - For hogs, this impact could range from $119 million to $595 million.
  - For cattle, it could range from $160 million to $267 million.

- **Reduced export demand for meats**.
  - For hogs, this impact could range from $188 million to $750 million.
  - For cattle, it could range from $40 million to $66 million.

- **Transfer and relocation of significant amounts of pork production and ownership to Canada and Mexico**, for losses ranging from $0.1 billion to $2 billion.

Impacts expected across the sector likely would be large, would begin immediately and could severely damage the sector's competitive position in US and overseas markets (Tables 11 and 12). Losses for hogs across categories, and including both temporary and continuing costs are estimated to range from $1.6 billion to $7.4 billion. Losses for cattle across categories could be somewhat smaller, from $2.7 billion to $3.5 billion.

Table 11. Impacts of the Proposed Amendment on Cattle and Beef

Cattle and Beef	**Rate Change**	**Impact per Head**	**Total Industry**	**Range of Estimates:**	
				Low	**High**
	%	***$ per hd***		***mil $***	
Drop in demand for feeder cattle		73	950		
Drop in demand for calves		47	745		
Total Price Impact (One time)			1,695	1,695	1,695
1% Increase in cost of credit			419		
Lowest likely credit impact	0.25%		105	105	
Highest likely credit impact	1.25%		523		523
Loss of feedlot asset value				600	840
Plant efficiency impact of 5-10%				20	78
Risk and uncertainty impact				31	52
Impact from loss of domestic beef demand 1/				160	267
Impact from lost export demand				40	66

1/ Includes only direct ownership impacts. If effective marketing contracts are disallowed, then this impact could increase to as much as $1.2 billion.

Table 12. Impacts of the Proposed Amendment on Hogs and Pork

Hogs and Pork Industry		Total Industry mil $	Low Range of Estimates	High Range of Estimates	Type of Impact
Reduction in US Packing Plant Capacity (6000-32,000 head)			318	1,694	recurring
1% Increase in cost of credit		133			recurring
Lowest likely credit impact	0.25%	34	34		
Highest likely credit impact	1%	133		133	
Loss of farrow-finish equity value (5%-15%)			600	1,800	one time
Plant efficiency impact ($0.50/hd - $2.00/hd)			34	137	recurring
Loss of natural hedge and other risk management impacts ($3-$5)			199	331	recurring
Impact from loss of domestic pork demand (range 1%-5%)			119	595	recurring
Relocation of investment or hog sourcing to Canada and Mexico			100	2,000	recurring
Impact from lost export business (range 5% -20%)			188	750	recurring

Impacts on States

Impacts of the Amendment would vary widely by states, depending on the size of the production and packing industries located in each. The estimates represent losses for hog producers, and are allocated on the basis of each State's breeding herd (Table 13 and Charts 20, 21, and 22). The allocation does not reflect situations where some adjustment to packer feeding restrictions have already occurred, but is indicative of relative impacts of the Amendment.

The losses include both loses from temporary, one-time events and those evolving from declines in competitiveness and efficiency. The estimates represent the midpoint of the ranges estimated for each state. For example, for Iowa, the mid-point estimates of all types of losses would amount to $0.8 billion, could be significantly lower or as high as $1.3 billion.

Chart 20. US Swine Marketings, Number ('000 head) and % of Total for the Top 10 States, 2000

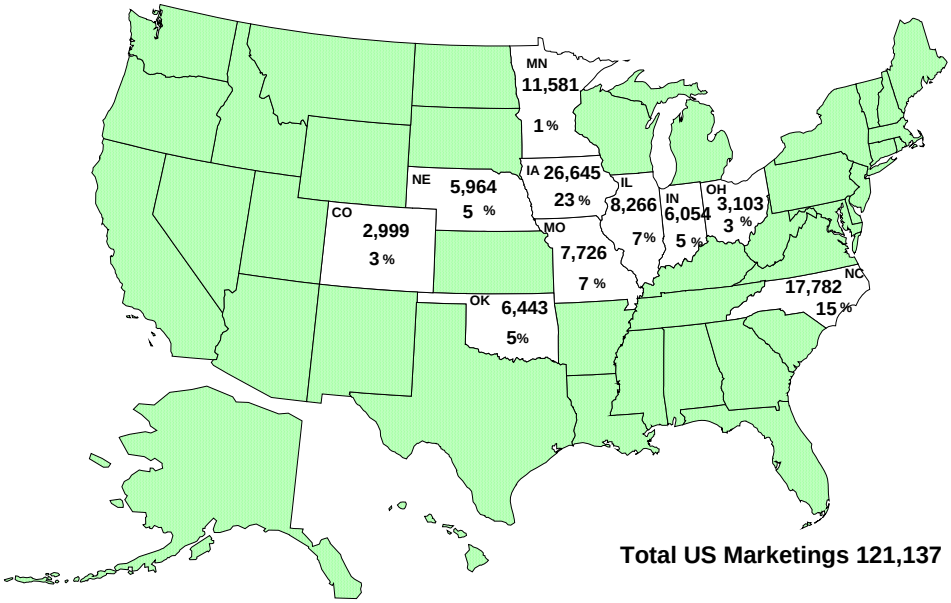


Chart 21. US Swine Breeding Herd Inventory, Number ('000 head) and % of Total for the Top 10 States, 2001

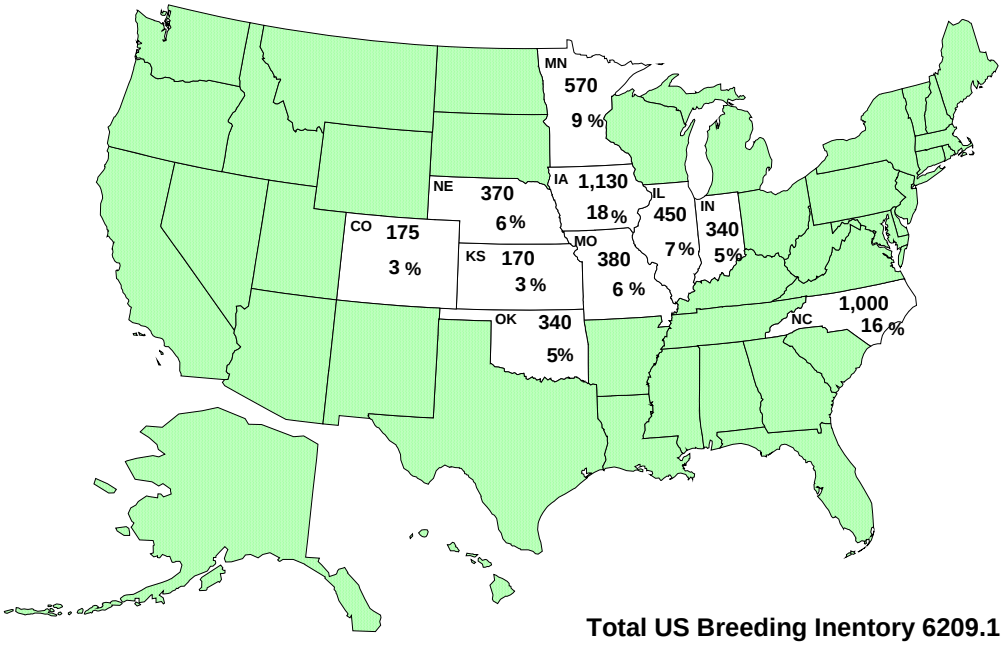


Chart 22. Federally Inspected Hog Slaughter and % of Total for the Top 10 States, 2001

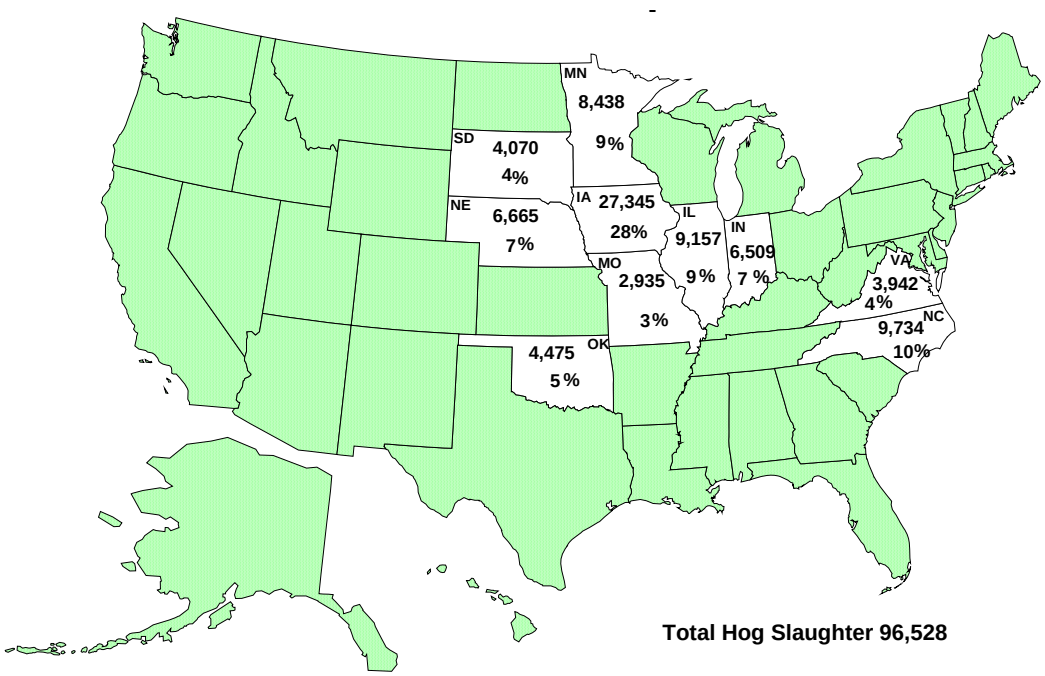


Table 13. Impacts of Johnson Amendment of Hog Producers by Type of Loss, by State

State:	Capacity	Credit	Equity	Efficiency	Risk	Demand	Exports	Relocation
IA	181	15	216	15	48	64	84	189
NC	161	13	192	14	42	57	75	168
MN	91	8	108	8	24	32	42	95
IL	70	6	84	6	19	25	33	74
NE	60	5	72	5	16	21	28	63
MO	60	5	72	5	16	21	28	63
MO	60	5	72	5	16	21	28	63
IN	50	4	60	4	13	18	23	53
CO	30	3	36	3	8	11	14	32
KS	30	3	36	3	8	11	14	32
Other	211	18	252	18	56	75	98	221

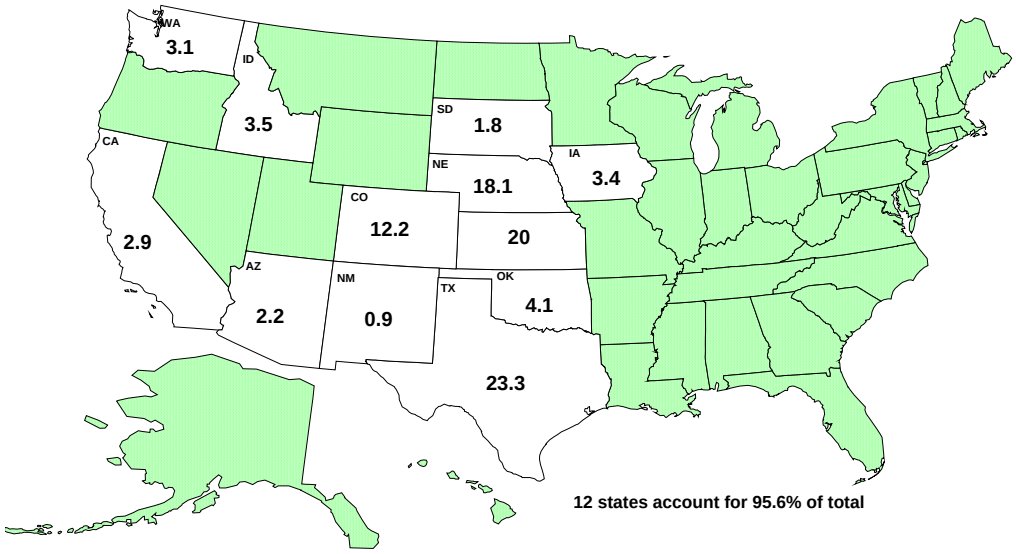
Impacts are midpoint of range estimates, allocated by Dec 1 2001 breeding herd share.

The losses for cattle also include loses from both temporary, one-time events and those evolving from declines in competitiveness and efficiency. The estimates represent the midpoint of the ranges estimated for each state. For example, for Texas, the mid-point estimates of all types of losses would amount to $0.5 billion, could be significantly lower or as high as $0.6 billion (Charts 23, 24, and 25 and Table 14).[47] The estimates do not reflect situations where some

[47] **How State Impact Table Were Constructed --Beef example.**

adjustment to packer feeding restrictions have already occurred, but are indicative of relative impacts of the Amendment.

Chart 23. US Fed Cattle Marketings by State, 2001 (% of Total)



- The cattle impacts of a packer ownership ban were classified according to which segment of the industry they fell upon: either calf production or feeding. Some impacts were judged to fall across the entire industry.
- Calf production was estimated on the basis of the percentage of calves born in each state that were eventually destined for beef marketing channels in 2001, based upon:
    - Annual calving rates for each state (Calf Crop/Total Cows)
    - The calving rate was multiplied by the number of beef cows in each state to get an estimate of the beef calf crop.
    - The calving rate was multiplied by the number of dairy cows in each state to get an estimate of the diary calf crop.
    - All of the beef calf crop and ½ of the diary calf crop (males) was assumed to be headed for beef marketing channels. Then totals were converted to percentages by state to estimate the percent of calf production that was destined for beef marketing channels located in each state.
- The percentage of fed cattle marketings by state was used to distribute the impacts that fell upon the feeding sector.
- The Overall Impact Index is a combination of the calf production percentage and the feeding industry percentage for each state. It is a proxy for the percentage of beef industry activity in a particular state.
- Only the top 15 states (those with an Overall Impact Index greater than 1%) were reported in the table.
- The midpoint of the range for each identified impact of a packer ownership ban (demand effect, risk effect, etc.) was then distributed according to the percentage of the relevant segment residing in each state. For example, the impact on feeder cattle demand was assumed to fall mostly on the calf production segment so that impact was distributed according to the percentages in the "Calf Crop Destined for Beef Marketing Chain" column.
- Impacts for states were not summed because of differences in their nature and potential interactive effects that are not quantifiable.

Chart 24. Percent of US Calf Crop Destined for Beef Marketing Chain for the Top 10 States, 2001

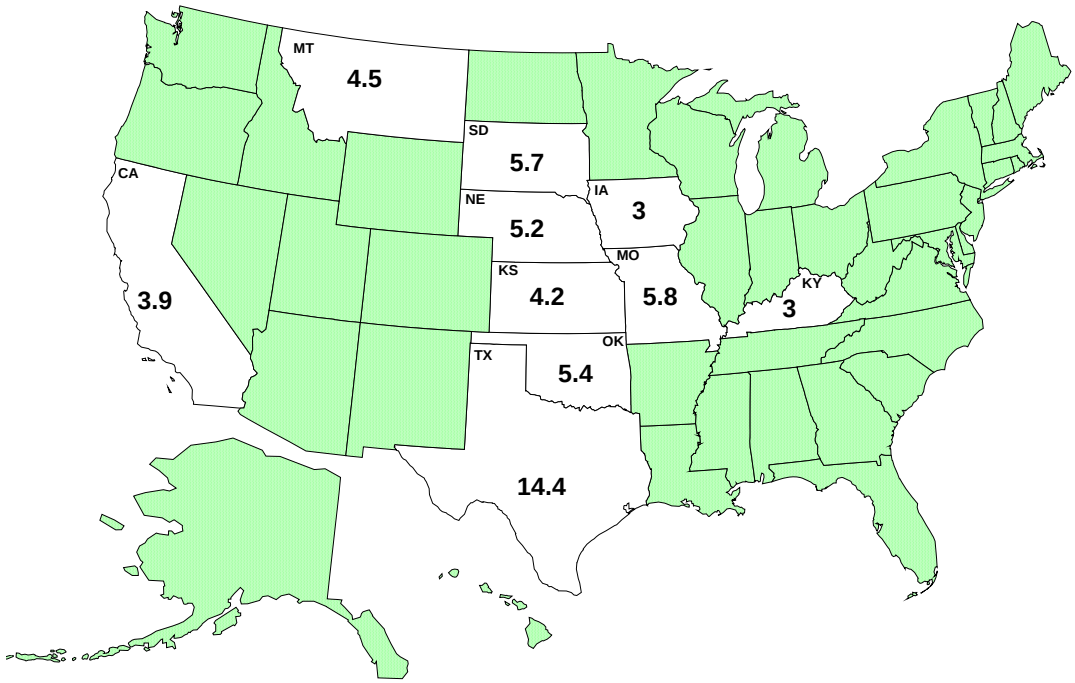


Chart 25. Overall US Cattle Impact Index (%), 2001

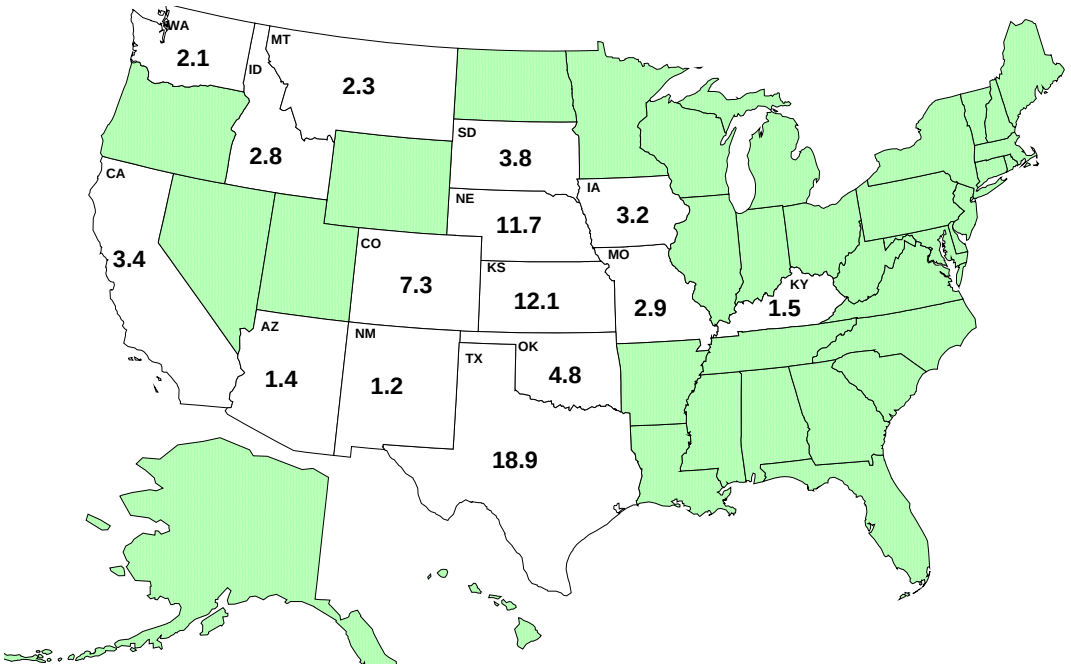


Table 14. Impacts of losses for Cattle Producers by Type of Loss, by State

State	Demand for Feeder Animals	Cost of Credit	Loss of Feedlot Asset Value	Plant Efficiency Loss	Risk Cost	Loss of Domestic Demand	Loss of Export Demand
	----- Estimated Impact By State (in Million $) -----						
TX	244.1	59.2	167.8	9.2	7.8	40.2	10.0
KS	71.2	38.0	144.0	5.9	5.0	25.8	6.4
NE	88.1	36.6	130.3	5.7	4.8	24.9	6.2
CO	39.0	22.8	87.8	3.6	3.0	15.5	3.8
OK	91.5	14.9	29.5	2.3	2.0	10.1	2.5
SD	96.6	11.8	13.0	1.8	1.6	8.0	2.0
CA	66.1	10.7	20.9	1.7	1.4	7.3	1.8
IA	50.9	10.0	24.5	1.6	1.3	6.8	1.7
MO	98.3	9.1	0.0	1.4	1.2	6.2	1.5
ID	33.9	8.6	25.2	1.3	1.1	5.9	1.5
MT	76.3	7.1	0.0	1.1	0.9	4.8	1.2
WA	17.0	6.4	22.3	1.0	0.9	4.4	1.1
KY	50.9	4.7	0.0	0.7	0.6	3.2	0.8
AZ	10.7	4.4	15.8	0.7	0.6	3.0	0.7
NM	25.4	3.8	6.5	0.6	0.5	2.6	0.6

Impacts by Specie

The estimated range of impacts on the hog production sector varies widely, across the range of impact sources (Table 15). The loss of equity for farrow-to-finish operations reflects value of both facilities and hogs, on a per-sow basis.

Table 15. Potential Impacts of Amendment per Head of Hogs

One time Impact on Hog Production Sector 1/	**Low**	**Midrange**	**High**
	$ per sow		
Loss of Farrow-Finish Equity Value	100.00	200.00	300.00
Recurring Impacts on Hog Production Sector 2/	***$ per barrow or gilt***		
Reduction in US Packing Plant Capacity	3.36	10.64	17.91
Cost of Credit	0.36	0.89	1.41
Plant Efficiency Loss	0.36	0.91	1.45
Risk Cost	2.10	2.80	3.50
Damage to Domestic Pork Demand	1.26	3.78	6.29
Damage to Pork Export Demand	1.99	4.96	7.93
Relocation of Investment	1.06	11.10	21.14

1/ A one time impact allocated across 6 million breeding inventory.

2/ Ongoing Impacts allocated across annual barrow and gilt slaughter.

Individual impacts may not be additive because of interactions.

The estimated range of impacts per head across the cattle sector varies widely, across the range of impact sources (Table 16). The loss of equity for feedlot asset values reflects value of both facilities and hogs, on a per-head basis.

Table 16. Potential Impacts of Amendment per Head of Cattle

Cattle Feeding Segment ($/hd fed in one year) 1/	Low	Midrange	High
Loss of Feedlot Asset Value	$ 21.05	$ 25.26	$ 29.47
Calf Production Segment ($/hd. destined for feedyard) 2/			
Demand Impact on Feeder Animals 3/	$ 44.37	$ 44.37	$ 44.37
Cost of Credit	$ 2.74	$ 8.22	$ 13.69
Plant Efficiency Loss	$ 0.52	$ 1.28	$ 2.04
Risk Cost	$ 0.81	$ 1.09	$ 1.36
Damage to Domestic Beef Demand	$ 4.18	$ 5.59	$ 6.99
Damage to Export Beef Demand	$ 1.05	$ 1.39	$ 1.73

1/ A one-time impact spread across 28.5 million head.

2/ In the long-run all of these items flow back to the bottom of the marketing chain and that is what is reflected here. Short-term, the feeding sector may bear some of these costs.

These figures are estimates only and are not considered to be additive.

3/ Transitory loss, not expected to persist more than a year or two.

Under the Johnson Amendment

- US production efficiencies decrease, resulting in declines in the industry, increasing opportunities for competing products and competing international producers who could become more efficient and better marketers than US producers. Weaker domestic and export demand could accelerate these declines.

- The US poultry industry, which has grown more than 600% since 1960 could face less competition for US markets.

- Declining margins for both packers and feeders could stimulate consolidation as higher-cost operations, most often the smallest, are forced to close.

- Investment in superior products and retail brands would be constrained and the capacity of processors to satisfy demands of rapidly consolidating retailers for greater uniformity and higher quality would decline, both in the United States and overseas.

- Very substantial immediate losses for livestock producers and narrower margins for the meatpacking industry would reduce tax revenues and increase federal and state budget pressures.

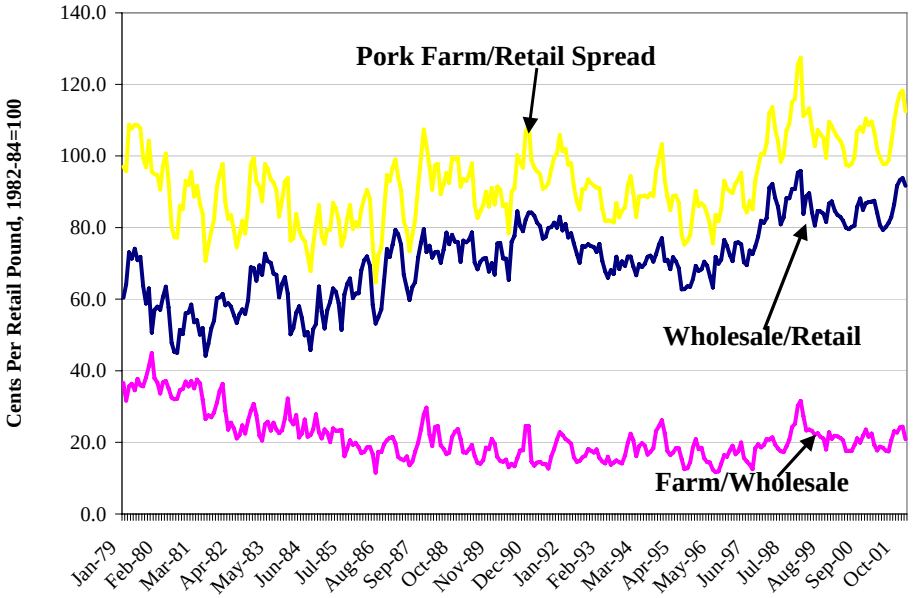
Focus of the Debate

Proponents of the Amendment appear to misunderstand the nature of the competitive forces driving change across the red meat and poultry industries today. The study concludes that primary competitive pressures among products are at the consumer level, driven by basic changes in society and domestic and international demands for quality, convenience, and services as lifestyles evolve (Charts 26 and 27). The vast bulk of the change in prices and values at farm, wholesale and retail levels reflect costs of services while the farm-wholesale spread has been stable or declining for most of the past two decades as efficiency has grown. New costs packers are required to pay recent years include:

- Inspection fees and new steam vacuum procedures for carcasses, along with an acid bath that also add to costs;
- Trimming costs, with most beef now sold as closer trim (1/4 inch or less) compared to commodity trim (3/4 inch or more), thus increasing costs. And, more product now is boneless, especially beef;
- New, more expensive safety rules such as HACCP, waste water treatment and others;
- Higher labor costs in response to much tighter supplies of labor.

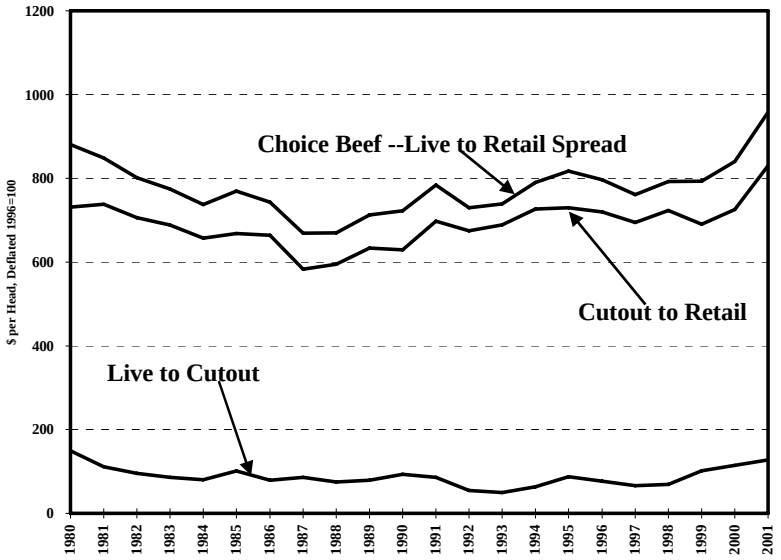
In spite of higher costs, the farm to wholesale spreads shown below are generally lower than they were in the 1980s in inflation-adjusted terms, and reflect steady increases in efficiency across the sector. Nevertheless, the legislation proposes to regulate the farm and processor levels while the major widening of the spreads has been at the wholesale-retail levels.

Chart 26. Pork Price Spreads, 1979-2001



Source: ERS, USDA

Chart 27. Beef Price Spreads, 1980-2001



The poultry industry pioneered the strategy of providing additional services to compete with other meats as an avenue to market growth in the 1950s and the red meat sectors followed that success more recently. A significant negative impact of the Amendment is that it would constrain beef and pork industry efforts to provide the consumer-friendly products to compete with poultry at the consumer level.

The proposed Amendment would intervene at the processing and livestock production levels where product competition is mainly reflected, not where it originates. It would impose unwarranted costs where they would benefit no one, without strengthening demand, efficiency, technology, or competition. Over the longer-term, the Amendment would be unlikely to benefit any sector in the domestic beef or pork industries, and especially not livestock producers who expect wider margins and greater independence to result from this proposed legislation. The end results likely would be lower producer prices, higher costs, smaller markets and diminished returns for the foreseeable future.

The study evaluates both the source of the current structural changes in the red meats industry, and the likely impacts of the Amendment.

Transition

Proponents of the Amendment argue that the transition periods it includes would permit an orderly transfer of ownership of packer-owned livestock and facilities. The study concludes, based on extensive interviews across the industry that such a transition is quite unlikely. Instead, the proposal would have major short-term and longer-term impacts, including:

- **Divestiture of packer-owned livestock, and packer owned livestock feeding facilities**. While this would take place over transition periods for beef and pork, the impacts would be severe, immediate and persistent. They would reduce the value of livestock, livestock feeding facilities, and breeding facilities throughout the United States. By restricting packers' application of a number of strategic management tools, the Amendment would be expected to increase operating costs, reduce output and reduce returns to both packers and livestock producers.

- **Curtailment of new marketing contracts by packers**. Given the intensive factual inquiries required to assess "material participation" as required by the amendment make it impossible for packers to confidently assess the legal risks presented by existing arrangements under the Amendment. It is likely that packers who have committed to purchase livestock under long-term marketing agreements would refrain from offering new contracts to producers until the legislation is clarified or enforcement of the legislation is made clear by the USDA.

  Surveys by Iowa State University indicated that 22,748 hog producers sold more than 1,000 hogs in 2000. About one-half of the smaller producers (<5,000 hogs sold) used marketing contracts. Thus, it is clear that substantial restrictions on such contracts would have negative impacts on many smaller operations.

- **Curtailment of financing by lenders**. For similar reasons, it also is likely that lenders, which finance livestock producers, would desire time and clarification of the legislation before advancing new funds for the expansion of facilities or herds. Frequently, such expansions are based, at least in part, on the terms of long-term marketing agreements by which producers secure a buyer for their production, obtain premium prices and limit market risk. Should such arrangements become legally suspect, it is only logical to expect that lenders would not be willing to absorb this additional risk.

- **Revision of existing marketing contracts**. Should packers determine that the legislation impairs their ability to enter into long-term marketing arrangements, we would anticipate they will attempt to identify other tools to achieve the goals, which such contracts have provided them. This may require packers to attempt to renegotiate existing contracts inasmuch as the legislation does not exempt existing contracts from its scope.

- **Corporate restructurings**. Packers could also attempt to meet the terms of the Amendment via various restructurings or liquidations of selected assets. At least one packer has publicly suggested that it would cease operations at one of its plants should the Amendment be enacted. The Amendment would appear to require packers who own livestock to divest themselves of such livestock. The manner of such divestitures would likely be carefully considered by all affected packers, and likely would diminish interest in investment in the industry.

- **Litigation**. Should the Amendment be enacted, there likely would be litigation relating to this legislation brought by packers and/or producers. Challenges to the required divestiture of livestock by those packers that currently own livestock and the exemption for poultry contained in the Amendment also could be brought and would serve to reduce willingness to invest in the industry.

Intermediate Term Impacts

The intermediate impacts of the Amendment likely would be extensive and entirely negative. They would likely include:

- **A higher-cost, less efficient meat packing industry** in the future with smaller capacity to produce and process cattle and hogs. Costs would be increased by increased costs of capital, reduced plant utilization, higher price volatility and risk and reduced revenues from livestock production. The higher costs would reduce margins and lead to reduced bids for livestock. at the farm level.

- **Reduced packer-processor investment** at both ends of the value chain, in genetics and livestock management and in branded products and market development. This likely would reduce competitiveness of red meat products in competition for US consumers' dollar, and in export markets. It likely also would mean a reversal of current growing market shares in both markets.

- **Higher-cost, less efficient feeding and breeding industries** in response to higher capital costs for livestock feeders and breeders, reducing margins for both types of investment.

- **A smaller meat packing industry** as lower margins cause less-efficient packers to cease operations and reduce industry capacity. The higher costs would make US packers less efficient in competing with poultry at the consumer level and less efficient in competing with the Danes, Canadians and Brazilians for foreign markets.

- **Smaller breeding and feeding industries** as higher capital costs and weaker returns lead to reduced investment in livestock feeding and breeding, and reduce industry production capacity. The smaller industry would be more dependent on both imported livestock for slaughter and imported meats and meat products.

- **Increased vulnerability for producers in isolated production areas** as packers access to tools to manage supply flows and plant utilization are constrained.

- **Continuing advantage for poultry in the competition** for domestic and international consumers' dollars as investment in quality by the red meat sectors decline. The poultry industry would be in a position to continue to invest in quality and market development efforts while investment and development by red meat producers/processors would decline.