INHERENT INSTABILITY IN BANKING: THE FREE BANKING EXPERIENCE

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Introduction

Historically, even some of the staunchest proponents of laissez-faire have viewed banking as inherently unstable and so requiring government intervention. According to this view, left to unfettered market forces, banks are prone to periodic runs and failures simply because of unpredictable private decisions about the form in which individuals hold their money.

This view arose not from any explicit theory that points to an inherent problem with a laissez-faire banking system, but from experience with U.S. banking that goes back at least 150 years. In particular, the Free Banking Era (1837–63) is often cited as an example of what would happen if banking were unregulated. It was a period when banks were subject to few restrictions, fewer than any other period in U.S. banking history. And it has often been characterized as chaotic, with many different kinds of paper money, with numerous bank runs and failures, and with substantial losses and inconvenience to holders of bank notes. Some even claim that the U.S. economy would not have grown as robustly as it did late in the 19th century if the free banking system had been left in place (Cagan 1963).

In this paper we reexamine the view that banking is inherently unstable by taking a closer look at the free banking experience. Based on rather extensive empirical evidence recently accumulated on this experience, we find that the problems with free banking were not caused by anything inherent in banking. Rather, we find that the

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Cato Journal, Vol. 5, No. 3 (Winter 1986).

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problems were caused by economic shocks that caused many banks to fail but did not lead to bank runs or panics.

We proceed as follows. Since many readers may not be familiar with the Free Banking Era, first we briefly discuss how a free bank was regulated and operated and briefly review what happened under this system. Then we discuss the concept of inherent instability in banking by contrasting two common notions of it. One is that banking problems arise because of extrinsic uncertainty; bank creditors randomly decide to withdraw their funds. Enough of these withdrawals can become contagious and lead to a run on the whole system. The other notion is that banking problems arise because of intrinsic uncertainty; local real shocks reduce the value of some banks' assets, and their creditors begin to withdraw funds. Because of asymmetric information about the quality of bank assets generally, these withdrawals can become contagious and lead to a run on the whole system. Next we present evidence from the Free Banking Era on the causes of banking problems and conclude that the free banking experience did not fit either notion of inherent instability. Finally, we examine possible reasons for these findings and discuss their implications for bank regulation.

An Overview of Free Banking

Bank Laws and Operations

Before 1837, all new U.S. banks had to be chartered by a state legislature. Although these charters differed from bank to bank and from state to state, generally they established reserve and capital requirements for a bank and limited the types of loans it could make. In practice, the chartering system was a cumbersome and very political process that severely limited the number of banks opened.

The Free Banking Era derives its name from the free entry provision of the general banking laws passed by many states starting in 1837. (By 1860, a majority of the 33 states in the Union had passed such laws. See Table 1.) Free entry meant that a legislative charter was no longer required for a bank to be established. The free banking laws essentially allowed anyone to open a bank, issue their own currency (bank notes), take deposits, and make loans.

The Free Banking Era was not a period of laissez-faire banking, however, since banks established under the free banking laws were subject to certain restrictions. Most of the free banking laws were patterned on that passed by the New York legislature in 1838 (and amended in 1840). They thus contained its three regulations intended to insure the safety of free bank note issue:

- Free banks had to deposit designated state bonds with the state banking authority (state auditor or treasurer) as security for all notes issued. (Some states also allowed federal bonds.)
- Free banks had to pay specie (gold or silver) for notes on demand. Failure to redeem even one note meant that the state banking authority would close the bank and sell all of the assets deposited with it to pay off noteholders. Further, in many states, noteholders had preference over other bank creditors in terms of legal claims on the remaining assets of the bank.
- In general, free bank stockholders were liable for bank losses in an amount up to the value of their stock even though free banks were limited liability companies. This *double liability* provision meant that, if a bank failed, someone with, say, $25,000 of free bank stock not only might lose this investment, but also would be liable for an additional $25,000 of personal wealth to cover bank losses (including those on notes).

TABLE 1

STATES WITH AND WITHOUT FREE BANKING LAWS BY 1860

States with Free Banking Laws	Year Law Passed	States without Free Banking Laws
Michigan	1837[a]	Arkansas
Georgia	1838[b]	California
New York	1838	Delaware
Alabama	1849[b]	Kentucky
New Jersey	1850	Maine
Illinois	1851	Maryland
Massachusetts	1851[b]	Mississippi
Ohio	1851	Missouri
Vermont	1851[b]	New Hampshire
Connecticut	1852	North Carolina
Indiana	1852	Oregon
Tennessee	1852[b]	Rhode Island
Wisconsin	1852	South Carolina
Florida	1853[b]	Texas
Louisiana	1853	Virginia
Iowa	1858[b]	
Minnesota	1858	
Pennsylvania	1860[b]	

[a]Michigan prohibited free banking in 1840 and allowed it again in 1857.
[b]According to Rockoff (1975), very little free banking was done under the laws in these states.

SOURCE: Rockoff (1975, pp. 3, 125–30).

Under these laws, a prototypical free bank would be established and operate as follows. Suppose that a potential banker had $50,000 of capital. To establish a free bank, that person would buy state bonds with this capital and deposit them with the state auditor. In exchange, the person would receive $50,000 of notes that the new bank could issue. Presumably, these notes would get into circulation by being exchanged for other assets (loans, specie, or more state bonds, for example).

The balance sheet of a prototypical free bank would look something like Table 2. This table assumes the free banker exchanged the initial $50,000 of notes for $25,000 of state bonds and $25,000 of loans. These additional $25,000 of bonds were then deposited with the auditor for another $25,000 of notes which were finally exchanged for another $15,000 of loans and $10,000 of specie.

TABLE 2

BALANCE SHEET OF A PROTOTYPICAL FREE BANK

Assets		Liabilities and Capital	
State Bonds	$ 75,000	Liabilities: Notes Outstanding	$ 75,000
Loans	40,000		
Specie	10,000	Capital	50,000
Total	$125,000	Total	$125,000

As Table 2 clearly illustrates, the profitability of free banking was due to the leverage provided by the bank notes. Here the free banker obtained $115,000 of earning assets with only $50,000 of capital.

This example also shows that the double liability provision did not assure the safety of a free bank's notes. Here the value of the bank's assets plus the $50,000 additional liability of stockholders would be insufficient to pay off noteholders if the value of the bank's state bonds and loans fell below $15,000.

Bank Failures

In a previous study (Rolnick and Weber 1983) we presented detailed evidence on the free banking experience of four states: New York, Indiana, Wisconsin, and Minnesota. Our evidence, which was based on state auditor data, indicated that, although free banking in these states had problems, the problems were not as severe as has been thought. These were our major findings:

- Very few free bank closings involved losses to noteholders; that is, by our definition, very few *failed.*[1] Between 1838 and 1863, 709 free banks operated in the four states and 48 percent of them closed. However, only about one-third of the closings resulted in any losses to noteholders.
- Free bank notes were quite safe. For most years and most states, the expected loss from holding a randomly selected bank note for one year was zero. Further, when noteholders suffered losses, they ranged from an average of about 25 cents on the dollar in New York and Wisconsin to an average between 10 and 15 cents on the dollar in Indiana. (We exclude Minnesota here because we think our earlier loss calculations for that state are far too high. We explain why in Rolnick and Weber 1985.)
- Most of the free banks were not short-lived. Between 1838 and 1863, New York, Wisconsin, and Indiana free banks were in business a mean of 6.3 years. To put this calculation in perspective, note that Wisconsin and Indiana did not pass free banking laws until 1852. (Minnesota, excluded here too, did not pass a free banking law until 1858.)

Inherent Instability in Banking

There is no agreement on a precise definition of *inherent instability in banking.* However, the conventional view is that inherent instability means that bank runs and panics can occur without economy-wide real shocks. There seem to be two general explanations for how this can happen.

One explanation depends on some *extrinsic uncertainty* in the economy causing individuals to randomly change their demand for bank notes relative to specie for apparently irrational reasons (attributed to, for example, sunspots or animal spirits). If the direction of the demand switch is from bank notes to specie, then even good banks (banks with assets greater than liabilities) will have trouble meeting the demand for specie because only a fraction of their notes are backed with perfectly safe assets.[2] This trouble spreads as noteholders begin to worry about other banks, and this contagious effect (the bank panic) leads to widespread bank failures. An explicit model

[1]We define a free bank *failure* as a closing with losses to noteholders because a major intent of the free banking laws was to provide a safe currency. The laws made no attempt to insure depositors or stockholders against risk.

[2]We define a *perfectly safe asset* as an asset with the same price in all possible states of the world. By definition, therefore, perfectly safe assets are also perfectly liquid.

that incorporates this view of inherent instability is Diamond and Dybvig's (1983).

An alternative, but closely related, explanation for bank runs and panics relies on *intrinsic uncertainty* in the form of local real shocks and on asymmetrically informed noteholders.[3] According to this explanation, a local real shock to the economy causes the value of the assets of some banks to fall below the value of their liabilities and thus causes individuals to want to redeem the notes of these banks. The desire of these noteholders to switch to specie or to notes of other banks is quite rational, and if noteholders have full information no panic or run will result. Since the real shock is local, it does not affect the assets of some banks, so informed noteholders will not withdraw funds from them.

Asymmetrically informed noteholders, however, can turn the local shock into a bank run. If noteholders are ill-informed about the value of bank assets, then they cannot perfectly distinguish the sound banks from the unsound ones. Thus, they interpret the runs at some banks as a signal that other banks may be in trouble. That is, here as in the other explanation, bank runs are contagious because noteholders use the observation of runs at some banks to revise their views about the safety of others.

The following quotation shows that this type of explanation of bank runs corresponds to that of Friedman and Schwartz (1963, p. 308) for the events of 1930:

> A crop of bank failures, particularly in Missouri, Indiana, Illinois, Iowa, Arkansas, and North Carolina, led to widespread attempts to convert demand and time deposits into currency. . . . A contagion of fear spread among depositors, starting from the agricultural areas, which had experienced the heaviest impact of bank failures in the twenties. But such contagion knows no geographical limits.

An important additional aspect of the inherent instability which is attributed to asymmetric information is that the general fear can turn some financially sound banks into insolvent ones. Obviously, the local real shock will cause the value of some assets to fall because some banks will have to liquidate assets. With complete information, depositors with rational expectations would be able to determine the new level of asset prices, and banks with assets sufficient to cover liabilities would not be run. With asymmetric information, however, asset prices can be lower than their full information level because the specie demands of fearful depositors will cause more banks to

[3]A real shock is *local* if it only affects a particular geographic area or a particular class of assets. An *economy-wide* shock affects the entire country or large classes of assets.

have to liquidate assets. And at these lower asset prices, fewer banks will have assets sufficient to cover liabilities.[4]

Inherent Instability in Free Banking

Here we examine the empirical evidence from the Free Banking Era for its implications about the inherent instability of banking. First we examine whether the problems free banks experienced seem to be traceable to "sunspots" or to local real shocks. Then we examine whether free bank failures were contagious.

Extrinsic versus Intrinsic Uncertainty

To determine whether free bank failures were due to extrinsic or intrinsic uncertainty, we first identify periods when many free bank failures occurred. We restrict our attention to such periods because a cluster of failures would seem to be necessary for inherent instability. Next we attempt to determine whether or not a local real shock occurred before these time periods. If such a local real shock can be identified, then these failures can be assumed to be due to extrinsic uncertainty. Otherwise, the intrinsic uncertainty explanation may be more appropriate.

In a previous study (Rolnick and Weber 1984) we identified 104 free bank failures in New York, Indiana, Wisconsin, and Minnesota, and we obtained reasonably precise closing dates for 96 of these banks. In Table 3 we show these free bank failures grouped by time period. Our previous study found that most (76 of the 96) free bank failures occurred during periods of falling asset prices, as measured by large declines in the prices of either Indiana or Missouri state bonds. The breakdown of these failures by period is reproduced at the top of Table 3. At the bottom of the table are grouped the remaining 20 failures, which occurred during periods of steady or rising bond prices. Since these periods were generally longer than those of price declines, they are subdivided to exclude lengthy intervening periods when no failures occurred.

The results in Table 3 show that 80 of the 96 free bank failures seem to fall into four major clusters. (The remaining 16 failures did not occur in large groups.) Further, we are confident that three of these clusters (a total of 68 of the 80 failures) can be associated with local real shocks:

[4]It is this aspect of the local shock–asymmetric information explanation of bank runs which seems to motivate Friedman and Schwartz's (1963) emphasis on the high percentage of liabilities that many failed banks ultimately paid off after the Great Depression.

TABLE 3

FREE BANK FAILURES DURING PERIODS OF FALLING AND STABLE OR RISING ASSET PRICES, 1841–61

Periods When Asset Prices Were	Number of Bank Failures in N.Y.	Ind.	Wis.	Minn.	Four States
Falling					
Jan. 1841–April 1842	20	—*	—	—	20
May 1844–July 1846	2	—	—	—	2
July–Dec. 1854	1	11	0	—	12
March–Oct. 1857	1	0	0	—	1
June 1860–June 1861	1	1	37	2	41
Total	25	12	37	2	76
Stable or Rising					
May 1842–April 1844	3	—	—	—	3
Dec. 1847	1	—	—	—	1
Oct. 1851	2	—	—	—	2
Jan. 1853–June 1854	2	1	0	—	3
Jan. 1855–June 1856	0	3	0	—	3
Jan.–Dec. 1858	1	0	0	0	1
June–Sept. 1859	0	0	0	7	7
Total	9	4	0	7	20
All Periods	34	16	37	9	96

*A dash (—) indicates that the state did not have a free banking law during the particular period.

SOURCE: Rolnick and Weber (1984).

- *January 1841–April 1842, when 20 banks failed in New York.* The local real shock here was the possibility, which arose as early as 1839, that some states would default on their debts. In fact, Florida, Mississippi, Arkansas, and Indiana defaulted in 1841, followed by Illinois, Maryland, Michigan, Pennsylvania, and Louisiana in 1842.
- *June–September 1859, when 7 banks failed in Minnesota.* The local real shock here was the suspension of construction on Minnesota's railroads in the late spring of 1859. This caused a drop in the price of Minnesota 7s (the so-called railroad bonds) which backed the notes of several Minnesota free banks. We have determined that the failure of at least 5 Minnesota free banks was related to the suspension of railroad construction (Rolnick and Weber 1985).

- *June 1860–June 1861, when 37 banks failed in Wisconsin and 4 more failed in the other three states.* The real shock here was obviously the onset of the Civil War. The shock can be considered local in the sense that the prices of Southern state bonds were affected more than those of Northern state bonds.

One cluster of failures we have not yet been able to definitely associate with a real shock: the July–December 1854 group of 11 failures in Indiana and one failure in New York.[5] These failures may have been caused by extrinsic uncertainty. Nonetheless, of the free bank failures that occurred in clusters, 85 percent (68 of 80) seem consistent with an intrinsic uncertainty explanation of their cause.

Contagion

Either view of inherent instability in banking requires that bank failures somehow be contagious. That is, for a banking system to be inherently unstable, a run on one or more banks and their subsequent failure must lead to the failure of other banks. We test for evidence of contagion by determining whether failures in one state were followed by failures in other states. This test is suggested by Friedman and Schwartz's (1963, p. 308) view that "contagion knows no geographical limits." (Some evidence on intrastate contagion is given in footnote 7.)

The clusters of bank failures just discussed show that free bank failures were quite localized. However, only three of the four clusters can provide evidence for our test of contagion. Of our four sample states, only New York allowed free banking before 1852. So only post-1852 clusters are useful here. None of these three clusters provide evidence that bank failures are contagious. Specifically,

- Between July and December 1854, 11 banks failed in Indiana. This is almost a quarter of the 46 free banks operating in that state in July 1854, which might indicate that bank failures spread through Indiana. However, they seem to have stopped there. Only one of the 232 free banks operating in New York in September 1854 and none of the 19 banks operating in Wisconsin in July 1854 failed during this period.
- Between June and September 1859, over half of Minnesota's free banks failed (7 of the 12 banks that had issued notes by June 1, 1859). However, during this period none of the approximately

[5]Clark Warburton (1962, pp. 75–76) states that "the Bank of England had a serious gold drain in 1853 and the early months of 1854 and raised its discount rate by a series of steps from 2 per cent at the beginning of 1853 to 5½ per cent in May 1854." He also mentions a change in the U.S. balance of trade which occurred in 1854 (p. 76). However, these shocks do not appear sufficient to explain the free bank failures during this period.

390 free banks operating in New York, Indiana, and Wisconsin failed; failure seems to have been limited to Minnesota.

- Between June 1860 and June 1861, over a third of the free banks operating in Wisconsin in January 1860 failed (37 of the 107 banks). However, only one of the 273 free banks operating in New York in December 1859 and only one of the 17 free banks operating in Indiana in January 1860 failed during this period.[6] Again, free bank failures were virtually confined to one state.

Overall, these three clusters of failures show that free banking had little if any inherent instability because whatever contagion might have existed was limited to specific states. The data do not indicate that free banks experienced the type of widespread contagion that Friedman and Schwartz (1963) observed for 1930.

Why were free bank failures not contagious? That is, why did the bank failures in one state not spread to other states? A possible explanation is that the requirement that free banks keep a reserve of state bonds behind their notes provided some public information about free bank portfolios which helped noteholders distinguish good banks from bad ones when local real shocks occurred.

Consider the cluster of seven free bank failures in Minnesota between June and September 1859. The local real shock here affected only the price of Minnesota 7s (the railroad bonds discussed above), and these bonds backed the notes of five of the banks that failed. There was no reason for the Minnesota failures to spread because the public knew that Minnesota 7s did not back the notes of banks in any other state. In New York, notes were differentiated by whether they were backed by state bonds alone or by state bonds and mortgages, and after 1840 the state allowed only New York or U.S. bonds to back notes. In Indiana and Wisconsin, Minnesota 7s could have backed free bank notes, but publicly available reports by state banking authorities indicate that none did.

Next consider the cluster of 41 free bank failures between June 1860 and June 1861, which occurred mostly in Wisconsin. The local shock here was the onset of the Civil War. The important feature of this shock from the standpoint of noteholder information is that the prices of bonds of Southern states declined far more than the prices of bonds of Northern states. For example, during this period the price of North Carolina 6s declined 56 percent; Missouri 6s, 57 percent; and Virginia 6s, 59 percent. In contrast, the price of Indiana 5s declined only 20 percent. All of these state bonds were traded on the New

[6]In the above cluster discussion, all figures on the total number of operating free banks are from Rolnick and Weber (1983, p. 1088).

York Stock Exchange, so current market price information was readily available to the public.

That the rash of free bank failures in Wisconsin can be attributed to the decline in Southern bond prices is clear in Table 4. There we present a breakdown of the bonds deposited with the Wisconsin state treasurer as backing for notes as of January 31, 1860, by both the state of origin and whether or not the bank subsequently failed. (The report used to prepare this table included 107 banks, 35 of which subsequently failed.) The table shows that, on average, Wisconsin banks had a high percentage of Southern state bonds backing their notes. In particular, the banks that failed had close to 84 percent of their notes backed by Southern bonds.

Why did the Wisconsin failures not trigger failures in New York and Indiana, the other two states we examined which had free banking systems of any size at the time? We think it did not because the public knew that Southern bonds were a much smaller part of the note backing in these states than in Wisconsin. As noted above, after 1840 New York only allowed New York or U.S. bonds as backing for notes. In Indiana, the state auditor regularly reported the bond backing of notes on a bank-by-bank basis. That auditor reported on November 1, 1859, that only 44 percent of the notes of Indiana's free banks were backed by bonds of Southern states. (In addition, the average ratio of notes issued to the par value of securities deposited to back them was substantially lower in Indiana than in Wisconsin.)[7]

Conclusion

The evidence we have gathered on the Free Banking Era indicates that the problems of this period are not consistent with the view that banking is inherently unstable. Further, we have argued that the reason we did not find evidence of inherent instability is that the state bond requirement, by providing information on bank portfolios

[7]The state bond reserve requirement may have also limited intrastate contagion of free bank failures by providing noteholders with information about bank portfolios. For example, in Minnesota the banks that did not fail and had more than a nominal circulation backed their notes by bonds which held their value—either Minnesota 8s (backed by explicit taxes) or Ohio 6s. Also, in Wisconsin, on average, the banks that failed had a far higher percentage of Southern bonds backing their notes than did the banks that did not fail (Table 4). New York banks follow this pattern, too. We collected data on the bond holdings of the banks in New York during 1841–42. On average, New York banks that failed then backed their notes with a much higher percentage of bonds of states which defaulted on their debt than did banks that did not fail.

TABLE 4

PAR VALUE OF STATE BONDS DEPOSITED WITH THE STATE TREASURER BY WISCONSIN FREE BANKS, JANUARY 31, 1860

State Bonds	All 107 Banks		35 Banks that Failed in 1860 and 1861		Other 72 Banks	
Southern						
Missouri 6s	$1,974,000	(40.6)[a]	$1,016,000	(48.8)	$ 958,000	(34.5)
Tennessee 6s	738,000	(15.2)	320,000	(15.4)	418,000	(15.0)
North Carolina 6s	409,500	(8.4)	197,000	(9.5)	212,500	(7.6)
Virginia 5s and 6s	233,340	(4.8)	86,600	(4.2)	146,740	(5.3)
Louisiana 5s and 6s	150,500	(3.1)	88,000	(4.2)	62,500	(2.2)
Other Southern	62,000	(1.3)	36,000	(1.7)	26,000	(0.9)
Total	$3,567,340	(73.4)	$1,743,600	(83.8)	$1,823,740	(65.6)
Northern						
Illinois 6s	$ 542,020	(11.1)	$ 132,420	(6.4)	$ 409,600	(14.7)
Ohio 6s	225,000	(4.6)	86,000	(4.1)	139,000	(5.0)
Michigan 6s	185,500	(3.8)	60,000	(2.9)	125,500	(4.5)
Wisconsin 6s	100,000	(2.1)	39,000	(1.9)	61,000	(2.2)
Other Northern	241,500[b]	(5.0)	19,500	(0.9)	222,000[b]	(8.0)
Total	$1,294,020	(26.6)	$ 336,920	(16.2)	$ 957,100	(34.4)
All State Bonds	$4,861,360	(100.0)	$2,080,520	(100.0)	$2,780,840	(100.0)

[a]Numbers in parentheses are percentages of grand total (total for all state bonds).
[b]Includes $77,000 of bonds of Wisconsin railroads.

SOURCE: Wisconsin *Report* (1860).

to noteholders, prevented the failure of a bank or a group of banks from spreading.[8]

We recognize, however, that this is not the only plausible explanation for our findings. A competing explanation is that unregulated banking is not inherently unstable and that the U.S. free banking system closely resembled a laissez-faire banking environment. In our view, which of these explanations is correct remains an open question. We encourage further study of other banking experiences in different regulatory environments—particularly of the availability of information on the value of bank assets.[9]

Finally, a note of caution for those who argue that regulation is required to prevent banking panics: not all regulations perform this role. Contrasting the experience of the Free Banking Era with that of the National Banking System and the Great Depression makes it clear that regulations which do not provide information to holders of bank demand liabilities will not prevent bank runs and panics. In fact, as Kareken and Wallace (1978) have argued about the Great Depression, regulations which seem to provide information, but really do not, could cause bank panics rather than prevent them.

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[8]Another lightly regulated banking system was the Scottish free banking system (1727–1844) studied by Lawrence White (1984). His evidence on this system is also not consistent with the view that banking is inherently unstable. Again, good noteholder information, in this case provided by the unlimited liability of most Scottish free bankers and good information on their wealth, is a possible explanation (pp. 41–42):

> A Scottish creditor was legally entitled to the debtor's real and heritable estate as well [as the debtor's personal estate]. The amount of real and heritable estate an individual possessed could be easily determined by consulting public records. . . . It . . . enabled members of the public, if they wished, to ascertain the ultimate assets of a local banking partnership. The great security provided to creditors under Scots law helped immunize Scottish banks against any danger of a panic-induced run.

[9]Some might be willing to accept the interpretation that the state bond reserve requirement prevented bank failures from spreading, but would argue that this regulation had the undesirable side effect of increasing the number of free bank failures. They would argue that this regulation, by requiring banks to back their note issue with risky state bonds, led free banks to hold riskier portfolios than they would have without such a regulation. This issue is not addressed by the evidence we have presented. An argument against the proposition that the state bond reserve requirement increased bank failures is that free banks could still have made their notes perfectly safe by purchasing perfectly safe assets with them; that is, the regulation may not have been a binding constraint on free bank behavior (King 1983, p. 147, n. 31).

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REGULATORY TRANSFERS IN CANADIAN/AMERICAN AGRICULTURE: THE CASE OF SUPPLY MANAGEMENT

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Introduction

Despite many similarities in terms of markets, tastes, standards of living, resources, technology, education, and political orientation, Canada and the United States have quite different patterns of agricultural transfer programs. The most prominent feature of Canada's complex agricultural policy is the emphasis on mandatory marketing programs, such as the Canadian Wheat Board grain delivery quotas and supply management programs in the poultry sectors. In contrast, American farm policy, while equally complex, favors the use of price supports and acreage reduction programs, particularly for "major" farm commodities, but such markets as the U.S. poultry sectors do not enjoy any direct price or income enhancing policies.

The assumption that agricultural policy is a response to some underlying need to correct a market inadequacy leads to the following question: If the production and consumption of agricultural products reflects similar supply/demand relationships and, further, exchange takes place in markets of similar structure (often prices are determined at the world level), then why are very different forms of agricultural transfer prevalent in the two countries? This question becomes more striking when it is recalled that many current policies evolved from the same historical episode—the agricultural crisis popularly associated with the Great Depression. Conceivably, Canadian and American farmers, facing similar economic problems, pro-

Cato Journal, Vol. 6, No. 1 (Spring/Summer 1986).

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ducing the same goods, and exchanging these commodities in interrelated markets that destine food products to similar consumers might be expected to end up with support policies that also are similar. After all, the "public interest" should be quite similar under such circumstances.

The goal of this paper is to address the issue of comparative Canadian/American agricultural policy. The breadth and complexity of agricultural policies in both countries make it impossible to examine all the similarities and differences here. In fact, the intention of the paper is far more modest. It deals specifically with one striking difference: the prevalence of supply management programs for specific agricultural commodities in Canada that have not been subject to any direct price or income support in the United States. We begin with a general discussion of the competing paradigms that propose to explain and interpret economic regulation.

Theories of Economic Regulation

At some risk of oversimplification, it is suggested here that five perspectives dominate academic thinking about the causes of economic regulation. These paradigms are summarized below as the public interest, Marxist, capture, interest group, and bureaucratic interest theories of economic regulation. The last four are closely related in that they all conclude that private interests determine regulatory policy. Thus, we begin with the public interest paradigm.

Public Interest Theory

The public interest theory of economic regulation has enjoyed wide implicit support from academicians and rhetorical support from policy makers. It is based on two assumptions: first, markets are fragile and tend to operate inefficiently; and second, government regulation is costless or, at least cheap (Posner 1974). Thus, regulation is the end result of a public response to some market inefficiency or inequity and is implemented to benefit society as a whole, or perhaps some important subset of society. Conceivably, in cases where minor subsets of society benefit it is because, at least implicitly, society has judged it important to provide a transfer to this group. If the regulation requires a transfer of income to a subgroup, then it must be that society is willing to pay the price of support. (This, of course, is an argument commonly used to describe the reason for the costly array of farm policies prevalent in Canada and the United States.)

This theory, at least in political rhetoric, does not provide an adequate description of economic regulation. Sophisticated policy anal-

ysis is not needed to observe that many economic regulations do not operate in any general interest or as a consequence of market inefficiencies. Rather, in many cases they benefit a select few. Any explanation for the existence of these policies, therefore, must rely on the "willingness of society to pay the price" argument.

Agriculture provides an obvious case in point. Canadian and U.S. agriculture is heavily protected and subsidized by the public through high food prices and public expenditures. Although consumer and taxpayer input may be a recognized and perhaps increasing component of American agricultural and food policy (Spitze 1978), agricultural production interests continue to dominate policy.[1] For instance, public debate about the Canadian Farm Products Marketing Agencies Act, which provided for wide-reaching supply management policies that would greatly increase the cost of food in Canada, contained no major input from consumer and agribusiness interests (Skogstad 1980). Thus, as a general theory of economic regulation, the public interest model can be discounted and, perhaps, rejected.[2] In particular, this appears to be the case with the specific agricultural policies examined here, as explained in more detail below. If regulation is not always in the interest of the public, whose interests dominate? We briefly consider four private interest arguments.

Marxist Theory

Marxists argue that identifying the relations between classes is the crucial link to understanding society and societal change. Through control of the institutions (including regulation) in society, capitalists are in a position to demand and obtain benefits in the regulatory process—in particular, the extraction of surplus from the working class. Thus, the state, the institutions created by the state, and the policies of the state reflect the interests of those who control the means of production.[3] Since the state is essentially an institution designed to facilitate surplus-extraction by the ruling class in this viewpoint, it follows that regulation is designed to systematically favor capitalists.

[1]See Gardner (1980) for a description of U.S. agricultural policy and the complex and often conflicting regulations that influence and shape American agricultural production.

[2]Complete rejection of the concept of public interest may be premature. Even authors often associated with the interest group school of thought described below have pointed out the importance of societal norms and values in policy development. For example, see Buchanan and Wagner (1977).

[3]"The state's action in maintaining and guaranteeing Capitalism as a system is therefore just another way of saying that state action, in the most general sense, is an expression of the power of the dominant class" (Nore 1977, p. 198).

Posner (1974, p. 341), however, suggests that the Marxist scenario is severely flawed because "a great deal of economic regulation serves the interests of small business—or nonbusiness groups, including dairy farmers, pharmacists, bankers, truckers, and in particular, labor unions." Perhaps the greatest weakness in the Marxist viewpoint is the failure to recognize that a capital-labor class distinction has increasingly become an inadequate description of modern society. The separation of labor and capital is not distinct. Moreover, upward mobility is not a trivial occurrence in Western economies. Thus, the search for a sufficient Marxist interpretation of modern economic life and regulation is a discouraging exercise.

Capture Theory

Proponents of the capture theory of regulation argue that the original good purposes of regulation are thwarted by the efforts of regulated firms that eventually dominate regulatory agencies.[4] In other words, regulation designed to reduce the ill-effects of market failure (monopolies or externalities, for example) leads the business interests to focus attention and resources in efforts to dampen the regulatory impact. Ultimately, the business interests might be expected to obtain benefits from regulation. That is, they "capture" the regulatory agency and use this control to promote regulation and policy in their interests.

This theory also has major flaws. In particular, it fails to explain why the industry is the only group able to organize and effectively influence or maintain control of regulation. Customers of the industry may also have strong incentives to seek benefits from regulation and "capture" the agency. The capture theory also fails to explain why the industry does not enter the political process prior to the establishment of regulation and simply prevent formation of the agency it is strong enough to capture, or, since the industry is able to capture the benefits from regulation, why it does not seek creation of an agency specifically designed to promote its interests. Moreover, it defies most regulatory experience. Much economic regulation is unabashedly designed to assist or reward a specific group in society (for example, farm policy designed to "save the family farm"). In those cases, there is no capture process, hence no explanation is provided for the existence or form of the regulation.

In a variant of the capture theory, Galbraith (1973, pp. 155–63) attributes the success of big business to the power of what he calls the "planning system"—a somewhat nebulous group of large, tech-

[4]This paragraph and the next draws heavily from Posner (1974).

nologically inclined corporations. The close association of the planning system and the state makes it easy for large firms to obtain regulatory policies that suit their needs. Galbraith ascribes the success of large firms in obtaining beneficial regulation to three sources: (1) persuasion, or advertising and public relations expertise; (2) bureaucratic symbiosis, or the mutual goals and needs of the bureaucracy and the planning system; and (3) capital-labor alliance, or the easing of conflict between capital and labor. When necessary, the planning system is able to press its demands on the state and obtain favorable regulation. However, like the capture and Marxist theories, this argument does not explain why some industries in the planning system are successful, while others are not. Further, this argument does not indicate why economic regulation also embraces segments of small business and agriculture.

Interest Group Theory

The interest group theory of regulation holds that policy results from the lobbying efforts of specific interest groups.[5] Stigler (1971) described economic regulation as a supply and demand process with political interest groups on the demand side and legislators (and their political parties) on the supply side. Regulatory legislation is designed to generate wealth transfers from unorganized or politically ineffective citizens to politically powerful interest groups. To become politically effective and seek wealth transfers, interest groups must overcome the cost of organizing and expressing their demands to legislators. Organizing costs can be substantial when large numbers of individuals are expected to benefit from the collective effort because of the need to overcome the free rider problem. Furthermore, if per capita wealth transfers are small or difficult to recognize for all potential beneficiaries, no single individual may be willing to take the initiative to organize other potential gainers. Thus, relatively small groups with large and easily recognizable potential gains per capita are most likely to overcome the cost of organizing.[6] This describes

[5]Posner (1974) has labeled this general approach the economic theory of regulation and generally credits Stigler with being the originator. This development was actually preceded by the work of Downs (1957), Olson (1965), and others from both political science and economic disciplines, that differed more in form than substance. However, the works of Stigler (1971, 1974), Peltzman (1976), and Posner (1974) were responsible for directing economists toward a much different policy perspective (for example, see Becker 1983). In particular, by explaining regulation in terms of a market with both demand and supply, a more systematic process of organization was presented.

[6]Others have simply accepted Stigler's argument and assumed that active groups are those which can control free riding relatively easily because they are small in number and gains to members are easily identifiable (for example, Becker 1983, p. 388).

many regulated industries composed of a small number of firms that reap large transfers as a result of regulatory limits on entry, price competition, and the like. Consumers are not likely to be effective in the political market because of their large numbers and the small, not easily distinguishable per capita transfer that might be avoided. Stigler's theory recognizes the potential for entry of effective non-industrial interest groups in cases where the free rider problem does not dominate (for example, if the group is small and/or per capita gains are large). Nonetheless, he concludes that business groups are almost always more likely to seek and obtain transfers than their customers are to avoid such transfers.

Stigler's theory did not explain why some relatively large groups, such as farmers, have been very effective at obtaining transfers through regulation. However, in a subsequent addendum to his theory, Stigler (1974) presented an explanation for transfer seeking by large interest groups. He contended that if there were considerable asymmetry of interests within an industry made up of a large number of firms, the individual incentives of *some* of the producers to act for the group would be substantial. Thus, for example, the largest firms in a highly concentrated industry may have strong incentives to take the initiative in seeking regulatory transfers because their share of the expected gains will be large. Stigler renamed the free rider problem the "cheap rider problem" to stress the idea that large potential gains for some, but not all, members of a group can provide sufficient incentives for those individuals to seek regulation, even if many others obtain small benefits without contributing to the transfer-seeking effort.[7] For example, the common observation that farm policy tends to favor large producers and increase farm income inequality suggests perversity in the public interest view but is quite consistent with asymmetric interests.

The interest group theory of regulation does have a major conclusion that corresponds closely to the Marxist and capture theories. Business groups typically have stronger per capita incentives (usually because of smaller group membership and frequently because

[7]Wilson (1980) has pressed this point even further. He pointed out that even when interests are not narrowly focused a "skilled entrepreneur" may serve as a "vicarious representative of groups not directly part of the legislative process" (1980, p. 370). Thus, a single individual may claim to be representative of a widely dispersed and unorganized group if the benefits, perhaps in terms of personal satisfaction rather than monetary gain, are sufficient to induce that individual to specialize as a political entrepreneur. There clearly are a few "consumer advocates," "environmental activists," and others who appear to have had some impact on regulation, but relative to the magnitude of overall regulatory transfers their impact is modest.

of considerable asymmetry) to overcome organizing costs than do consumer groups. Therefore, given the potential transfer of consumer surplus as an incentive, an industry is more likely to organize and seek favorable regulation than consumers are to avoid it. This conclusion is strengthened considerably with recognition that regulation typically generates other conflicts besides the obvious one over consumer surplus.[8] In fact, producers may be able to obtain transfers through regulation from nonconsumer surplus sources (Benson and Faminow 1986). This occurs when producers are not the resource owners in an increasing cost industry. What is typically called producer surplus, therefore, is really resource supplier surplus, and it is transferable. In such cases the rents that can be obtained through regulation include a transfer from resource suppliers as well, and therefore exceed the losses consumers (or resource suppliers) bear. Under such circumstances the interest group conflict over regulatory policy potentially will involve the two ends of the vertical transformation of resources into consumption against the middle, but the aggregate incentives of the group in the middle (the producers) are greater than the separate incentives that the two ends (consumers and factor-owners) face to avoid such regulation.[9]

Posner (1974) added to Stigler's analysis by stressing that the decision to enter the political market for regulation is like any investment decision. Resources will have to be used to generate the expected benefits (although, as the rent-seeking paradigm stresses, these resources are consumed to produce a welfare-reducing transfer rather than a welfare-enhancing increase in physical output). Thus, the decision to enter into any collective action depends on the opportunity cost of the resources that would be used in the transfer-seeking process. A group may effectively organize to seek very small per capita transfers if the transfers are large *relative* to the membership's opportunity costs. This explains, to a large degree, the high level of political activity by senior citizens' groups.

One other explanation for the successful organization of many interest groups is that organization costs "are like start-up costs. Once they are borne, they do not affect marginal costs" (Tollison 1982, p. 590). Some groups have strong incentives to bear these start-up costs, which may be unrelated to their efforts to obtain favorable regulation.

[8]There may also be competition between members of a group or industry over group allocation of transfers (for example, who gets quota rights). See Benson (1983) for an examination of the role played by competing banking organizations in the development of U.S. bank merger regulation, for instance.

[9]See Benson and Faminow (1986) for a detailed examination of this argument, including consideration of the implications of more than three interest groups.

Labor unions and many trade associations fall into this category. Once organized, for whatever reason, such groups are likely to perceive only minor marginal costs in seeking wealth transfers through economic regulation.

The likelihood of entry into the political market for wealth transfers generated through regulation might be summarized and expressed algebraically as

$$S_i = S_i(N_i, T_i, K_i, D_i, B_i), \frac{\partial S_i}{\partial N_i} < 0, \quad \frac{\partial S_i}{\partial T_i} > 0, \frac{\partial S_i}{\partial K_i} < 0, \frac{\partial S_i}{\partial D_i} > 0, \frac{\partial S_i}{\partial B_i} > 0, \quad (1)$$

where S_i represents the probability that group i will organize and/or its representatives will seek regulatory benefits. This is a function of: N_i, the number of potential members of the group; T_i, the potential per capita transfer to the group's members (or perhaps the transfer away from the group that its members wish to avoid); K_i, the opportunity cost of the resources the group would use in seeking transfers, which may include consideration of the probability that another group will oppose this group's demands; D_i, the distribution of the potential transfer among the group's membership measured by something like a Herfindahl Index (for example, as $D_i \rightarrow 1$ a few members expect to obtain large gains, while $D_i \rightarrow 0$ implies a relatively even distribution of the gains); and B_i, the benefits from organizing that do not come through the regulatory process.

One criticism of the interest group theory as it has developed from Stigler (1971) to Peltzman (1976) and most recently to Becker (1983) is that it treats the government itself as a costless transfer mechanism. In particular, the institutions and people involved in the regulatory process have no impact on the outcome of the process. Hirshleifer (1976), in commenting on Peltzman (1976), pointed out that regulators themselves constitute an interest group that benefits from regulation, and indeed regulatory authorities behave much like any other interest group in trying to influence passage of laws delegating regulatory powers (Benson 1983). Some writers attribute considerably more influence to regulators—be they civil service bureaucrats or appointed regulatory commissioners—and propose a bureaucratic theory of regulation.

Bureaucratic Theory

McKenzie and Macauley (1980, p. 298) "contend that much regulation is purposefully designed by public bureaucracies to make the private sector inefficient, increasing the relative attractiveness of the

public sector." This bureaucratic theory of regulation (also see Clarkson and Murio 1978; Russell and Shelton 1974; Echert 1973; and Hilton 1972 for models wherein the interests and behavior of regulators play central roles) falls into the general grouping of private interest theories (including Marxist, capture, and interest group theories) but in this case the private interest of those doing the regulating dominates. The interests of the regulators are, of course, a function of the institutional incentives they face. Thus, the bureaucratic theory of regulation draws upon Niskanen's (1972) theory of bureaucracy. Bureaucratic regulators are typically assumed to be budget maximizers (McKenzie and Macauley 1980; Eckert 1973) because such incentives as salary, power wielded, prestige associated with the position, and other perquisites of office are an increasing function of the size of the regulatory bureau as measured by budget.[10] Such incentives can lead to inefficient forms of regulation and excessive levels of regulation relative to what is desired, say, by the median voter (McKenzie and Macauley 1980) or by politically powerful interest groups (Benson 1983).

The bureaucratic theory of regulation has occasionally been treated as being in conflict with the interest group theory; it has been proposed that either interest groups or bureaucrats dominate (Weingast and Moran 1983). In fact, however, the two theories are complementary, and the bureaucratic theory can easily be incorporated into the more general interest group approach (Benson 1983; Benson and Greenhut 1986). Bureaucrats have incentives to overregulate and regulate inefficiently, and such incentives would dominate if they went unchecked. Those who represent the demands of interest groups (congressmen and members of Parliament), on the other hand, wish to avoid such inefficiencies and excesses in the regulatory process in order to generate "efficient" transfers such as those predicted by Peltzman (1976), Becker (1983), and Gardner (1983). These representatives establish the institutional framework (incentives) within which the bureaucrats must function, and appropriate the agencies' budgets. Thus, they attempt to control the regulatory agencies, but as Niskanen (1975) pointed out for agencies in general, legislators face a constrained maximization problem. Bureaucrats simply cannot

[10]Commissioners, on the other hand, have often been viewed as "squawk minimizers" who attempt to minimize controversy and, therefore, their work load because their income is generally not tied to the size of their agency, in contrast to a bureaucratic manager (Hilton 1972; Eckert 1973). However, power, prestige, and other perquisites are directly related to budget size (and by expanding staff a commissioner may reduce work load anyway), so while incentives faced by commissioners may differ in magnitude, they do not differ in direction (Benson and Greenhut 1986).

be perfectly monitored by elected representatives who also must gauge the demands of the wide variety of special interests, determine the political strength of competing demands, produce sufficient rhetoric, visibility, and transfers to raise campaign contributions that will lead to reelection, and so on. As a consequence, bureaucrats can have some influence on the outcome of the regulatory process (Benson 1983), without having the dominant influence Weingast and Moran (1983) feel the bureaucratic theory implies. In addition, of course, those in government may form powerful political interest groups themselves that may increasingly determine what governments do, while the influence of private sector interest groups declines in a relative sense (Benson 1984).

The Case of Supply Management

Supply management is, in many ways, an extremely powerful tool for reallocating income. In Canada, supply management is prevalent at the national level in the production of the major poultry commodities—eggs, broilers, and turkeys. The case of grain is somewhat different. Most Canadian grain production is regulated by Canadian Wheat Board delivery quotas that specify delivery conditions (location, time, amount) for Board grain but do not directly control off-Board grain (for example, cattle feed). Of course, through control of export-oriented grain marketing indirect influence on off-Board markets is exerted. The major livestock commodities (cattle, hogs, and sheep) are not subject to direct marketing restrictions; there are provincial hog marketing boards, but they do not have formal power to set prices. Poultry sector control involves direct production quotas. The omnibus Farm Products Marketing Agencies Act (FPMAA) authorized national supply management policies in the poultry sectors.

On the surface these policies contrast sharply with the United States, where, for instance, the poultry sectors enjoy no comparable government support. Furthermore, the most well known (costly) U.S. farm programs (wheat, corn, other grains, dairy, cotton, rice, wool and mohair, and honey) have price support systems that encourage production of surpluses, which are purchased by the government. Such programs, however, exist for only slightly more than one-third of the types of commodities produced by U.S. farmers (although they are the "major" commodities planted on 80 percent of U.S. cropland). Many other crops (especially such specialty crops as fruits, vegetables, and nuts) are controlled by marketing orders that establish quality standards, regulate the flow of products to primary markets by diverting produce to secondary markets, and facilitate marketing

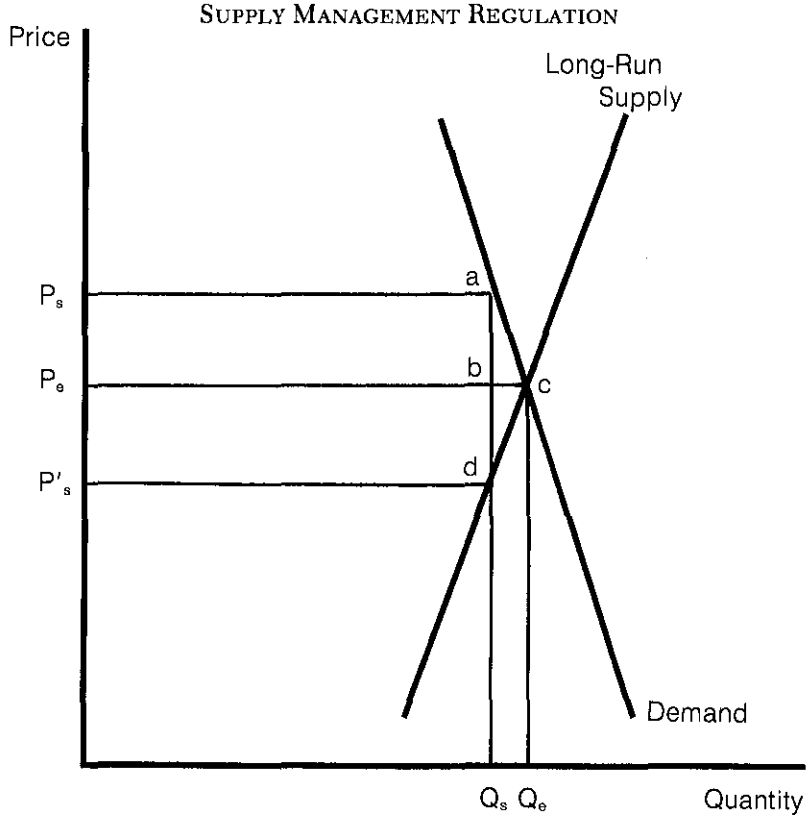
practices (for example, container standardization), rather than directly restrict supply to enhance prices. Thus, regulation of many U.S. farm commodities corresponds loosely to the Canadian system, with the primary difference being that production is not directly restricted. In addition, neither country provides any major price or income support to one major commodity—beef cattle. Policy differences, therefore, are not as significant as one might expect when examining the most visible agricultural programs.

The passage of the FPMAA in January 1972 was, and remains, a controversial decision. Four years after the first proposed legislation, this act created the umbrella national marketing legislation to legitimize the use of supply management to enhance and stabilize farm income. Despite the attractiveness that higher and more stable income levels would appear to hold for Canadian agricultural interests, "[t]he bill provoked unprecedented controversy and contention" (Skogstad 1980, p. 91). The Canadian Cattlemans Association, the Saskatchewan Stock Growers Association, and the hog marketing boards in the western provinces strongly opposed the inclusion of livestock in the blanket legislation (Skogstad 1980). In addition to debate about the general merits of supply management and what sectors to include, groups that supported the concept of the FPMAA insisted that the marketing board representation be explicitly designed to be responsive to producer interests.

The transfer consequences of supply management in Canadian poultry markets are illustrated in Figure 1 and Table 1. The competitive equilibrium in a market (P_e and Q_e in Figure 1) is prevented by restricting total production to some level such as Q_s through a quota system, thus raising price to P_s. Empirically, the result is a small deadweight loss, abdc (see Table 1), and a large transfer from consumers, $P_s abP_e$ (Veeman 1982; Schmitz 1983). A large transfer from resource suppliers also occurs, as explained below. Note, furthermore, that the values in Table 1 represent one year's transfers, so over time the value of such programs to producers can be very large.

We use 1979 data provided by Veeman for eggs, broilers, and turkeys. Long-run adjustments take place rapidly in these markets as compared with many other agricultural markets. Thus, the supply estimates using one year's data are likely to approximate the long-run functions. Unlike many agricultural industries where land owned by farmers appears to be the resource that claims the bulk of the rental return to a regulatory restriction, production in these three industries uses relatively little land. For example, the purchase of processed feed represents about 72 percent of broiler production costs (Henson 1982). Depreciation and interest expenses can be used

FIGURE 1
SUPPLY MANAGEMENT REGULATION



as a proxy for the shares of broiler production costs that can be allocated to producer-owned land and capital resources. Based on Henson's data, these account for about 5–6 percent of broiler production costs. The percent share of production costs attributable to farmer-owned resources for the turkey and egg industries are similar, although there are differences in production processes. For example, turkey production typically requires relatively more land resources (land usage is still minimal when compared with other agricultural sectors and with total costs), and egg production employs more specialized automatic equipment. Thus, considerable transfers from resource suppliers are possible, provided supply is not highly elastic.

The estimated loss to buyers and resource suppliers in terms of both transfers and deadweight losses, and the rents available to producers, assuming producers own none of the resources that cause the upsloping long-run supply, have been calculated in Table 1. These rents (transferred from resource owners) are likely to be biased

TABLE 1

PRODUCER GAINS AND CONSUMER AND RESOURCE LOSSES UNDER CANADIAN SUPPLY MANAGEMENT IN THE POULTRY MARKETS

Commodity	P_s-P'_s ($ Cdn)	Producer Rent[a]	Consumer Transfer Loss[b]	Resource Owner Transfer Loss[c]	Deadweight in Producer (Resource Owner) Surplus	Loss[d] in Consumer Surplus
		($ million Cdn)				
Eggs	0.07	29.472	26.525	2.947	0.015	0.138
(dozens)	0.12	50.523	38.314	12.209	0.091	0.286
	0.25	105.257	98.100	7.157	0.137	1.884
Broilers	0.07	60.831	41.711	19.120	0.915	0.238
(pounds)	0.12	104.282	72.787	31.495	1.394	3.213
	0.16	139.042	100.338	38.704	2.357	6.151
Turkeys	0.04	9.026	4.401	4.625	0.075	0.074
(pounds)	0.26	58.666	35.841	22.825	3.033	4.871

[a]Corresponds to $P_s adP'_s$ in Figure 1.
[b]Corresponds to $P_s abP_e$ in Figure 1. Therefore, to find the transfer from resource suppliers, subtract the consumers transfer loss from producer rents.
[c]Corresponds to $P_e bdP'_s$ in Figure 1.
[d]Total deadweight loss requires summation of these two columns, the first of which corresponds to bcd and the second to acb in Figure 1.

SOURCE: Developed from data provided in Veeman (1982, p. 29).

slightly upward, since producer ownership probably accounts for somewhere between 5 and 10 percent of the resources, and perhaps even more. Thus, 5–10 percent of the values in resource supplier transfers in Table 1 actually are not transfers, but true reductions in producer surplus. We also indicate the deadweight loss in producer (resource supplier) surplus since it is assumed to be a loss to resource owners. Estimates are made for different price levels to demonstrate that the transfers clearly depend on the strength of the regulation.

Critical to the theoretical arguments and empirical estimates presented above is the supply elasticity used to generate the linear supply function. Veeman assumed that the supply elasticity was 1.0 in each of these markets. This assumption is reasonable although perhaps high, given other empirical estimates. For example, in Harling and Thompsons's (1983) review of the literature on estimated supply elasticities for poultry and eggs in Canada, estimates for poultry ranged from 0.12 to 1.01 and between 0.03 and 0.94 for eggs. Observed supply elasticities in regulated industries also may be high relative to what the elasticity of the competitive supply curve would be, because of the capitalization of regulatory generated rents into the price of producer-owned resources (Benson and Faminow 1986). However, Borcherding and Dorosh (1981) argue that econometrically estimated supply elasticities for eggs in Canada are too low. The basis of their argument is that all input factors of egg production (including expertise) have a perfectly elastic supply, so that the egg supply function should also be perfectly elastic. Table 2 shows calculated producer rent values under alternative elasticity assumptions. The estimates in Table 2 clearly indicate the relationship between the elasticity of supply and the size of the economic transfers from resource suppliers.

The Basis for U.S.–Canadian Policy Differences

Why are policies in place to protect poultry sectors in Canada but not in the United States? The perspectives provided by the five theories discussed above are useful in examining the question of why this regulatory transfer program was established in Canada. Clearly, the public interest theory of regulation cannot be rejected simply because a small deadweight loss arises and a large transfer to poultry producers from both consumers and factor owners occurs. Perhaps a consensus actually does exist in Canada that farmers deserve such costly transfers. However, there are reasons to doubt that this is public interest regulation. First, poultry farmers are being favored at the expense of some other farmers—for example, those producing

TABLE 2

PRODUCER GAINS AND RESOURCE OWNER LOSSES UNDER CANADIAN SUPPLY MANAGEMENT, GIVEN ALTERNATIVE SUPPLY ELASTICITIES FOR EGGS

Supply Elasticities for Eggs	P_s-P'_s	Producer Rent	Consumer Transfer Loss	Resource Owner Transfer Loss	Deadweight in Producer (Resource Owner) Surplus	Loss in Consumer Surplus
	($ Cdn)	($ million Cdn)				
0.1	0.130	54.734	26.525	28.209	0.284	0.138
0.5	0.077	32.419	26.525	5.894	0.031	0.138
1.0	0.070	29.472	26.525	2.947	0.015	0.138
1.5	0.068	28.629	26.525	2.104	0.011	0.138
20.0	0.063	26.525	26.525	0.000	0.000	0.138

SOURCE: Developed from data provided in Veeman (1982, p. 29).

cattle. Thus, the public consensus would have to be one of favoring poultry farmers over those producing cattle. Second, some vertical integration has developed in the poultry sectors. Farms that produce eggs as inputs for bakeries and other processed foods are often owned by those food processors. Some large wholesalers of chickens and turkeys process and package birds from their own farms. And finally, of course, no matter what the political rhetoric is, the lobbyists for such regulations are the farm groups who receive the transfers, not the consumer (or supplier) groups who give them. Thus, "public opinion" is frequently the farmers' (and their political representatives') expression of what "public opinion" should be. Some version of the special interest theories of regulation, therefore, would appear to apply.

We have already rejected the Marxist theory of regulation, but note that the above description of the transfer process in these markets is itself incomplete. We describe a potential three-group conflict (consumers, poultry farmers, and input suppliers) since the largest transfers can be so grouped. In fact, these markets and the competition for transfers within them are much more complex. There has been, for example, competition within the poultry industries for the allocation of quota rights (and therefore transfers). In addition, there can be several different groups of input suppliers and even consumers for each of these products, and there are also middlemen. The food retailing industry in Canada is highly concentrated. Mallen (1976) estimated the 1973 four-firm concentration ratio in Canadian food retailing to be 44 percent. Analysis of market shares for 32 large urban areas resulted in four-firm concentration ratios of 71 percent. On a regional basis the market concentration is often considerably higher, ranging from 66 percent in Ontario to 90 percent in the Prairie provinces of Alberta, Saskatchewan, and Manitoba. Most of the four-firm market share in Canada's western provinces is accounted for by a single firm. Beyond that, the fast-food market for broilers in Canada at the time of the legislation was dominated by one firm—Kentucky Fried Chicken.

Clearly, some of these highly concentrated, relatively asymmetric middlemen buyers of poultry products might fit the Marxist definition of capitalists, as might poultry farmers, given the relative capital intensity of production (and many input suppliers, for that matter), but middlemen interests frequently conflict with those of farmers when it comes to regulation. Along with farmers, middlemen (supermarkets, restaurants, and the like) may desire output restrictions to raise retail prices, but they will not want high wholesale prices. Thus, "capitalists" would appear to be in conflict with each other over the

allocation of the potential transfers described above. In his analysis of marketing boards in Ontario, McManus (1979, p. 47) concluded, on the basis of what was admittedly sketchy evidence, that "the available information seems to indicate that in the broiler industry we have two monopolistic sectors dealing at arm's length with each other and engaged in some strategic conflict over the division of monopoly rents." (See Benson and Faminow 1986, for the implications of more than three vertically linked interest groups in the context of the interest group theory of regulation.) The simple capital versus labor view of regulation clearly does not apply in this case.

One can also question the capture theory as an explanation of supply management in Canadian agriculture. Farmers did not capture the regulators after they were set up to provide some sort of national welfare-enhancing service, such as protecting consumers, controlling monopoly, or reducing externalities. The original purpose of agricultural legislation, despite occasional claims of intent to insure the supply of consumer necessities, was obviously to bolster the income of farmers. The capture theory does not generalize to agricultural policies, even if it appears to explain some other types of economic regulation.

We now turn to the interest group theory of regulation. Supply management systems establish cartels (Borcherding and Dorosh 1981).[11] The incentives of producers to organize and seek legal support of such a cartel, reflected in Table 1, are obviously strong. It would appear that in Canada these incentives are sufficiently strong for the producers to bear the costs of organizing and demanding such regulation, while potential opposition groups have not effectively organized. Of course, similar potential transfers (in per capita terms) would appear to face producers in U.S. poultry markets. The question then becomes why, if the interest group theory is valid, have U.S. poultry farmers failed to obtain the same types of transfers that their Canadian counterparts receive (of course, the same kind of question should be asked of anyone claiming that public interest, Marxist, or capture theories explain such regulation). Clearly, a bill granting the

[11]An effective supply management program provides an industry with mandated cartel power, although, of course, the problems and costs associated with maintaining and policing the cartel may not be trivial. A relatively weak cartel must rely upon input-restricting measures, such as U.S. programs to reduce planted acreage. If member output can be more directly regulated (for example, through marketing restrictions), then the possibility of cheating against the cartel is diminished and the monopoly power more complete. Potent supply control is a necessary but not sufficient prerequisite for an effective cartel. It is not sufficient because the magnitude of enforcement costs also require consideration.

right to establish a legal cartel is enviable legislation. Therefore, in developing the case for (and against) an interest group explanation of Canada's supply management system in poultry-related markets we shall simultaneously address the question of why U.S. markets are not similarly regulated. We concentrate on the summary of the interest group model presented in equation 1.

The difference in the size of the poultry sectors in the two countries is substantial. It is clearly more difficult (costly) to organize the larger number of U.S producers than the smaller number of Canadian poultry farmers. Some small commodity groups in the United States (for example, hops, spearmint oil, Florida celery) have organized and obtained supply management marketing order systems, while larger commodity groups, even when successful in obtaining income support (for example, wheat and corn), have failed to achieve effective cartel arrangements. The N_i term in equation 1 appears to be important. (Note that expansion of N_i to encompass several related variables such as absolute number, geographic dispersion, and contracting costs may be appropriate.)

The FPMAA was passed in 1972, but by 1949 the Federal Agricultural Products Marketing Act, along with complementary provincial legislation, had created the legal framework under which effective marketing boards could be established. To a large extent negotiation to establish supply management controls under the auspices of the FPMAA involved negotiation with provincial marketing boards already in existence. Clearly a small numbers advantage was present in Canada under this arrangement.

Furthermore, the potential transfers may not be as similar for the U.S. and Canadian markets as one might expect. The size of the potential gain from cartelization depends highly on the underlying supply and demand elasticities. If demand is more elastic in the United States, then the potential gains from cartelization are lower than if a less elastic demand prevailed.[12] Estimation and comparison of the relevant demand functions are difficult because the distortion due to existing policies prevents estimation of the "true" relationships. However, some anecdotal evidence can be provided. Canadian per capita consumption of chicken is greater than in the United States, despite the higher real prices paid in Canada. This suggests that Canadian demand is relatively inelastic. Hence, cartelization and supply management would be more effective in raising cartel

[12]For more discussion on this point see Gardner (1983), Faminow and Benson (1984), Borcherding and Dorosh (1981), and Benson and Faminow (1986).

revenues, leading to higher relative per capita gains and a greater incentive to organize.

The opportunity cost of obtaining favorable regulation also appears to differ substantially for Canadian and U.S. poultry farmers. This does not mean that a single unit of a farmer's time (or resources) is worth more in one country than in the other. Rather, it appears that U.S. poultry farmers may have to expend considerably more resources to obtain political support than do their Canadian counterparts. Geographic asymmetry in production, for example, is more pronounced in the United States than Canada. A major share of U.S. production is located in the southeastern states, but in Canada the geographic distribution of poultry production is much more closely tied to the geographic distribution of the population. Geographic asymmetry in the United States implies not only that organizing costs could be relatively low, but also that political influence will be more expensive. Many elected parliamentarians in Canada have poultry farmers in their election districts, and, therefore, direct voter and campaign support (or threats of opposition) can be effective. U.S. poultry producers, on the other hand, are likely to be able to directly offer *both* votes and campaign contributions in the election of only a relatively few senators and congressmen. Of course, campaign contributions (and bribes) to congressmen and senators in other districts can be effective. Money has considerable purchasing power in the political marketplace, but votes (and threats of political disturbances like strikes and riots) also are important (Posner 1974). It may take more money (or in terms of opportunity costs, a greater sacrifice of resources or goods and services that could be purchased) for American poultry farmers to achieve the kind of benefits that exist in Canada. Vote trading (logrolling) is certainly commonplace in the United States and plays an integral role in the passage of special interest legislation (Benson 1981), but few logs have to be rolled when each elected representative has a direct reelection interest in a particular group's welfare.

These characteristics of the U.S. and Canadian poultry markets are important factors in explaining the political success of Canadian poultry farmers and lack of success by U.S. producers. However, the relative cost of obtaining favorable regulation may also be influenced by the differences in the organization of political processes between the two countries. In particular, we suggest that the necessary lobbying procedure in a parliamentary system may systematically favor the ability of specific producer groups to obtain highly favorable cartel legislation. The U.S. representative system, in contrast, may make passage of this form of legislation relatively more costly.

Our argument is based on the observation that the focus of policy formulation in a parliamentary system is quite narrow, primarily originating within the Cabinet (and in some cases, the inner-Cabinet). Enforcement of party line voting and, therefore, the relative lack of logrolling insures that members of Parliament in the governing party support a bill, even if the legislation is not conducive to reelection of individual members.[13] In short, consensus or majority support is not necessary in a parliamentary system. Cabinet members with party clout can push through legislation and exert pressure on party members for support, even if the best interests of some are not promoted. Of course, this does not suggest that a parliamentary government can be unresponsive to opposing viewpoints. Rather, we wish to emphasize the *relative* power of compulsion provided in the parliamentary system.

It would be relatively more difficult to pass similar legislation in the United States for these commodities because of their narrow focus. The relative concentration of U.S. poultry production in the southeast insures a regional orientation. Passage of cartel-creating legislation that would primarily support specific commodities concentrated in a specific region would entail large trade-offs of support. This would be costly for legislators from the southeast.

The argument presented here implies, in contrast to the Stigler-Peltzman-Becker theory of interest group regulation, that political institutions do make a difference, at least insofar as they influence the cost of wielding political influence and the incentives to organize and seek such influence. Regionally concentrated commodity groups have obtained marketing arrangements in the United States, but their influence on prices through production regulation is generally less direct than in Canada. "Orderly marketing" through product quality restrictions and diversion of some production to secondary markets is utilized to affect product flows, but not the aggregate level of production. Other factors, such as organizing costs and demand elasticities, may entirely explain the policies that have evolved. Thus, the institutional considerations discussed here should be viewed as suggestions for further study. However, supply management of agricultural products has been prevalent in other parliamentary democracies such as Australia, New Zealand, and the United Kingdom. In nearly every case, the commodity interest groups are relatively small

[13]We are not suggesting that American style pork-barrel politics does not exist in Canada. There is evidence that it does (MacNaughton and Winn 1981; Thompson and Stanbury 1984). Rather it appears that this type of behavior operates under different incentive structures and constraints due to the parliamentary system design.

when compared with those in the United States, and therefore less costly to organize.

There are no compelling reasons to suspect that the final two variables in equation 1 are substantially different between the United States and Canada. The importance of asymmetry (beyond geographic considerations) is difficult to ascertain. In both countries vertical integration in the poultry sectors is prevalent and industrial ownership and/or control of production is substantial. Unfortunately, data limitations and disclosure laws do not permit detailed analysis of this point. Furthermore, there is no obvious reason to suspect that *nonpolitical benefits from organizing* differ for Canadian and U.S. poultry farmers.

Finally, let us briefly consider the bureaucratic theory of regulation. Clearly, in its extreme form, wherein bureaucrats' interests alone determine the outcome of the regulatory process, this theory does not appear to provide a powerful explanation of the phenomena examined here. The inefficiencies created within the Canadian poultry sectors seem relatively small, at least as measured by deadweight losses. Additional inefficiencies may arise, of course, if, for example, the quota system leads to production by either inefficiently large or small producers given scale economies and diseconomies in these markets (see Benson and Faminow 1986, for examination of this potential source of inefficiency). Nonetheless, we cannot totally discount the potential for some bureaucratic influences, just as we cannot totally discount the role of government institutions. Supply management schemes appear to require relatively large bureaucracies to manage. Thus, supply management should be favored by budget maximizers, and Canada's agricultural bureaucracy is larger than that of the United States, relative to the size of the agricultural sectors of the two countries. When a regulatory system is favored by both powerful interest groups and members of the bureaucracy, one cannot say whose interests dominate. However, it is interesting to note that various government officials have tried to impose supply management on the beef cattle industry over the protests of those in the industry. This effort supports the assumption that bureaucrats *wish* to be budget maximizers, but its failure suggests that regulation's outcome cannot move very far from that desired by political interest groups.

Conclusion

This paper argues that an interest groups approach to policy helps explain the existence of supply management cartels in the Canadian

poultry sectors. It is difficult to contend that supply management in these sectors can be defended on the basis of the public interest or other leading theories of regulation. The magnitude and direction of the transfers render such arguments unbelievable.

The transition of the interest group theory, largely developed on the basis of American experience, is not completely smooth, however. Differences in interest group characteristics and incentives may be sufficient to explain why, in the poultry sectors, we have cartelization in Canada and not in the United States, but differences in the structures of political institutions and the power of bureaucrats might also matter. Tentatively, it would appear that the political institutions inherent to each country affect the form and extent of agricultural policy intervention. It should also be noted that the reversal of the policies may be facilitated by the underlying political system. Whereas extended and costly campaigns are necessary to reduce U.S. agricultural transfers, parliamentary systems may be able to reverse previous policies quite quickly.

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