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Corporate Barter and Economic Stabilisation

James Stodder

The Lally School of Management and Technology
Rensselaer at Hartford
275 Windsor St.
Hartford, Connecticut 06120-2991, USA

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Introduction

The few trade publications that deal with corporate barter (See IRTA, 1995a, 1995b; ***BarterNews***, 1980 to present) address the phenomenon solely from a microeconomic, individual-strategic perspective. A sparse academic literature on corporate barter has a similar orientation. A good summary of both literatures is provided by "Why is Corporate Barter?" by Nigel Healey (1996). The kind of firm motivation usually put forward for barter is:

a) an attempt to hide, from established customers, price discounts to new customers;

b) balance-sheet "window-dressing," to hide write-downs of otherwise unsalable inventory;

c) a form of monopolistic tying that decreases competition.

Basic microeconomic theory shows that there can be efficiency gains from a). A firm with price-setting power can then capture more of the surplus and avoid the deadweight losses imposed by being able to charge only a single monopolistic price. But there would still be deadweight losses from b) and c). Thus barter is usually seen as good for individual firms, but as likely to be quite bad for overall efficiency -- more "trade diverting" than "trade creating" in terms of standard (neoclassical) trade theory.

In debates on other barter-related systems such as countertrade, however, a few economists see possible microeconomic gains. Barter as countertrade may mitigate asymmetric information problems (Marin and Schnitzer 1995, Hennart and Anderson 1983). Community barter exchanges like Local Exchange and Trade Systems (LETS) may improve community information flows (Williams 1996). These microeconomic efficiencies might offset what has traditionally been seen as the "inherent" informational inefficiencies of barter.

But even if trade creating microeconomic effects predominate, the *macroeconomic* effects of barter have not been systematically investigated by this literature. This is surprising, given that one of the most common reasons advanced for corporate barter is the liquidation of unsold inventories (Healey 1996). To most barter practitioners, this is too obvious to require proof. Tom McDowell, Director of the National Association of Trade Exchanges, an association of smaller barter exchanges, expresses the common wisdom when he says,

> We're the only business not affected by the economy. When the economy gets bad, we see a surge of new members... But when the economy is in turnaround, we see growth in volume among existing members. (Gomez and Leonard 1996: 10).

McDowell's statement is partly salesmanship. But to the extent that it is true, this would tend to undermine traditional efficiency arguments against barter. Surprisingly, the cyclical behavior of barter has not to my knowledge been empirically tested. In this paper I attempt such a test.

Implications for Macroeconomic Theory and Policy

The very existence of a large market for corporate barter, much less its rapid growth, represents something of a challenge for modern economics. The inefficiency of barter is one of the keystones of monetary theory. The difficulty of finding "a double coincidence of wants" was seen by William Stanley Jevons (1875) as motivating the invention of money. Contemporary economic theorists, as in the volume edited by Starr (1989), continue to look for the "micro-foundations" of money in the search-costs of decentralized barter. These search costs can include uncertainty about the quality of heterogeneous goods offered as a *quid pro quo* (Kiyotaki and Wright 1989, Aiyagari and Wallace 1991).

These barter-search models overplay the informational advantages of money. For one thing, barter need not be decentralized, nor has it always been so. There is good historical evidence that the first extensive division of labor and the first civilizations were built around "storehouse" barter economies (Stodder 1995b). Such centralized, multilateral barter is much more efficient than decentralized, bilateral exchange, in that the former can greatly economize on real inventories (Stodder 1995a, Clower 1977, Clower and Hewitt 1996). Inventories show economies of scale, which is why large banks can safely keep their ratio of reserves over deposits lower than small banks, and closer to the regulatory minimum. In addition to inventory savings, centralized multilateral barter also saves on information, because it registers each agent's excess demands only once, not many times -- as in any decentralized market (Norman 1987, Stodder 1995a).

These microeconomic savings of centralized, multilateral barter -- in inventories, computational capacity, and time -- may be linked to a greater macroeconomic stability. If barter is indeed counter-cyclical, then it should be encouraged, rather than treated as it is by most economists and by US economic policy -- with a mixture of derision and distrust. Beyond this obvious policy interpretation, counter-cyclical efficiency would have broad implications for macroeconomic theory. Indeed, it might help resolve a basic controversy within traditional macroeconomics, that branch concentrating on the stabilization of aggregate demand.

Two basic reasons for macroeconomic inefficiency were advanced by J. M. Keynes (1936):

> (1) Humans may be inherently limited in their ability to process or react to changing prices, so that prices stay stuck out of competitive equilibrium for long periods, with large efficiency losses. This is the "sticky price" rationale of the dominant macroeconomic school today, "New Keynesians" like Harvard's Gregory Mankiw (1993).
>
> (2) All efficiency-improving trades will not take place unless money or credit is available in the right supply and with the proper distribution. This "monetary" interpretation of Keynes was first emphasized by Robert Clower (1967) and is still being argued by heterodox but influential figures like Paul Davidson (1994) and David Colander (1996).

Both explanations might be true. Though logically independent of each other, Keynes' two rationales are not logically contradictory. The first half of his *General Theory* (1936) assumes (1) "sticky prices," which is still the dominant model in most economics textbooks and departments. The second, less-read, half of the book relies upon (2) monetary disequilibria. While not logically contradictory, the policies that derive from each explanation may be politically contradictory in practice. Keynesians who see sticky prices as important tend to advocate fiscal intervention, while those emphasizing money tend, not surprisingly, toward a more active monetary policy.

If one were able to show significant counter-cyclical activity of the $8 billion annual corporate barter market in the US, these two schools of thought would tend toward different explanations. The "sticky price" school would expect to find corporate barter allowing for increased price flexibility, perhaps in the form of deals with a hidden price-cutting component, to avoid upsetting other customers (Magenheim and Murrell 1988). The "monetary" school, by contrast, would explain barter's macro-stabilization as an alternative to having the proper distribution of money and credit to effect ordinary trade, emphasizing barter's creation of credit and conservation of cash.

It is interesting that both rationales find ready support among those knowledgeable about the barter industry. The big worry for many purchasers on barter exchanges is price-gouging, according to Paul Suplizio, president of the International Reciprocal Trade Association (IRTA), the major industry association in the US (Gomez and Leonard 1996:11). Higher prices might be desirable to the supplier for more than the obvious reasons. Higher prices could prevent write-downs of surplus inventory on corporate balance sheets, and they could compensate the seller for the reduced repurchase opportunities one faces when holding barter credits as compared to cash. State and federal tax authorities, however, are concerned for just the opposite reason -- they know that stated barter prices can be discounted for purposes of tax evasion.(1)

Barter prices may well be more flexible -- in both directions -- than money prices. Still, it would be valuable to know if barter prices show any overall bias. Surveys of executives engaged in corporate barter by Neal *et. al.* (1992) emphasize secret price cuts to favored customers as the most important explanation. Such "price discrimination," as economists call it, is the motivation for a formal model of barter by Magenheim and Murrell (1988), although they do not develop the macroeconomic implications.

Healey (1996:40), however, expressly denies that secret price cutting plays a large role in barter. Instead, he emphasizes credit creation and what might be called the coordination advantages of barter. Such coordination is provided by middlemen able to "bank" large commitments of services from declining average-cost industries like media and travel services. This supports Clower's (1977) contention that centralized multilateral barter shows inventory economies of scale.

This need for inventory coordination may involve something more than secret price-cutting. Declining average-cost industries bring "chaos" to orderly price-setting markets, playing havoc with the stable equilibria of conventional price theory (Rosser 1996). Recognizing this has led to the emergence of a "post Walrasian" economics (see Colander 1996) that finds such coordination problems, and the institutions needed to deal with them, as an unavoidable part of economic life.

Data and Estimates

Table 1 shows the time series from the IRTA (International Reciprocal Trade Association) on barter turnover and membership in North America by corporate trade companies and trade exchanges from 1974-1995. In the estimates that follow, these were adjusted to 1992 US dollars. Corporate Trade Companies are specialist middleman firms, and Trade Exchanges are more multilateral barter institutions. Note that values for 1975 are missing from these IRTA tables, and so were interpolated.

Table 1: Volume of Trade by Corporate Barter Companies and Barter Exchanges, 1974-1995 (Millions of Current Dollars)

Year	Corporate Barter Companies	Regional Barter Exchanges
1974	850	45
1976	980	65
1977	1130	80
1978	1300	110
1979	1500	165
1980	1720	200
1981	1980	240
1982	2200	270
1983	2440	300
1984	2680	330
1985	2900	380
1986	3200	440

1987	3470	500
1988	3750	566
1989	4050	636
1990	4550	707
1991	5100	781
1992	5570	858
1993	6050	938
1994	6560	1084
1995	7216	1248

This IRTA data do not appear to be of the highest quality. Table 1 shows obvious rounding-off, and should be considered only a first-order approximation. Whatever biases may have colored the compilation of this data, however, the desire to prove a counter-cyclical tendency was apparently not one of them. Paradoxically, the very absence of any empirical study claiming to show such macroeconomic stabilization is a source of some confidence.

Note that high-quality data on total barter transactions carried out though the IRTA does indeed exist, but is not yet in the public domain. All commercial barter credits count as income and must be filed on Form 1099-B of the US Internal Revenue Service (IRTA, 1995c).

Price levels and all other macroeconomic data used in the regressions below are from the *US Economic Report of the President*, *1996* (web site: wais.access.gpo.gov). The final year (1995) of some series was not ready at the time of release for the *Economic Report of the President, 1996*, and was therefore taken from Commerce Department tables.

I use the 1992-based chained deflator for Services to adjust prices in the series in Table 1, although the GDP deflator gives similar results. By most accounts corporate barter is heavily weighted toward services (Healey 1996). The other series are also in real terms, using a 1992 chained deflator, as given in the *US Economic Report of the President*.

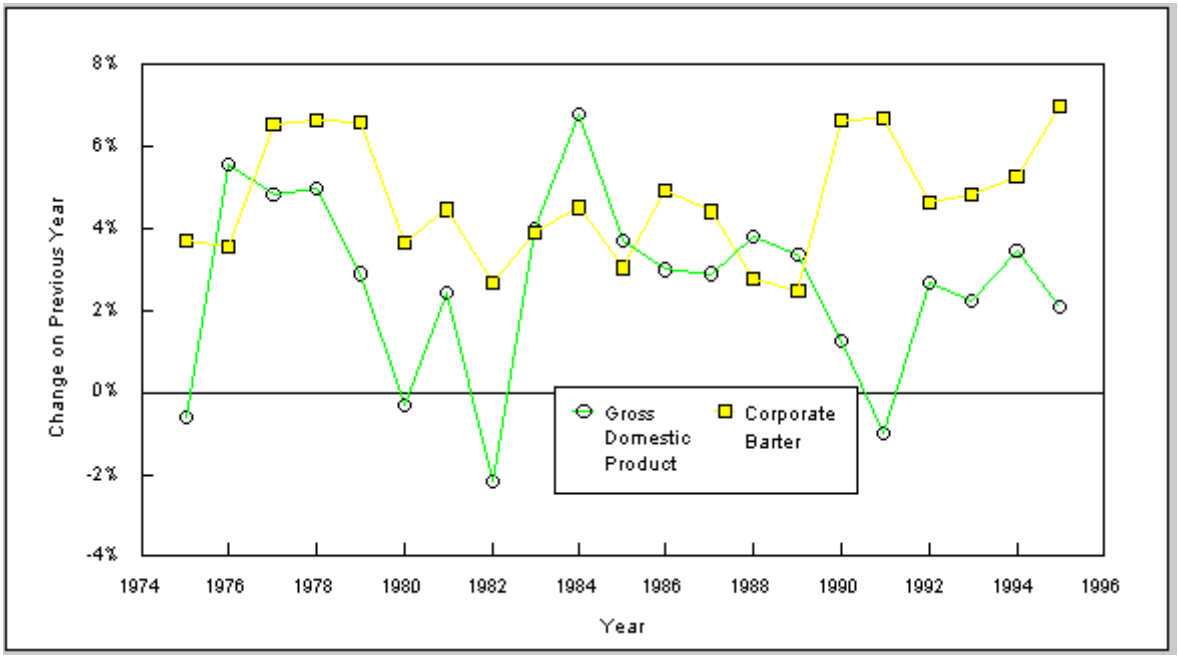
Table 1 gives values for "North American Barter," and there are indeed Canadian and Mexican "Barter Exchanges," the category in the final column. As for "Corporate Barter," however, my variable of interest, there are 22 US firms, but not a single Canadian or Mexican firm listed on the Corporate Trade Council (CTC) of the IRTA. I thus feel confident using US macro data to explain most corporate barter.

Regressions on Trade Exchange Barter failed to show any counter-cyclical trend. Healey (1996) states that Trade Exchange Barter is in smaller local networks of companies, while corporate barter often involves very large multinational companies. Besides being more dependent on local conditions, it may also be the case that Trade Exchange Barter is too much in its infancy to show any trend, other than steady growth. The Exchange data may also be of poorer quality.

A time series graph of corporate barter suggests a structural change after 1985. Barter seems to rise along with GDP or capacity utilization in or before 1985, but has no particular correlation with wholesale inventories in the first eleven years. Perhaps the first decade represented such an early stage of corporate barter that its fortunes were highly dependent upon the general health of the economy, growing only when GDP grew. Clearly this would not be counter-cyclical.

After 1985, barter appears to have moved in a counter-cyclical fashion, growing as GDP and capacity utilization fell, or as inventories rose. For independent variables in the regressions that follow, I pair inventories with either GDP or capacity utilization. From Figures 1 and 2, GDP and capacity utilization appear collinear (highly correlated), as can be confirmed. While it gives biased estimates to use both GDP and capacity utilization as independent variables in the same regression, neither is collinear with wholesale inventories (Figure 3). Inventories move *with* GDP and utilization because of expected future sales, but also *against* these variables due to surprises in realized sales.

Figure 1: CORPORATE BARTER versus GDP



Source: Dollars Bartered by North American Companies, International Reciprocal Trade Association. Note that data for the year 1975 are missing. In the present study they were interpolated. For my regressions, these nominal figures were adjusted by a 1992-based deflator for services, as explained in the text.

Figure 2: CORPORATE BARTER versus CAPACITY UTILISATION

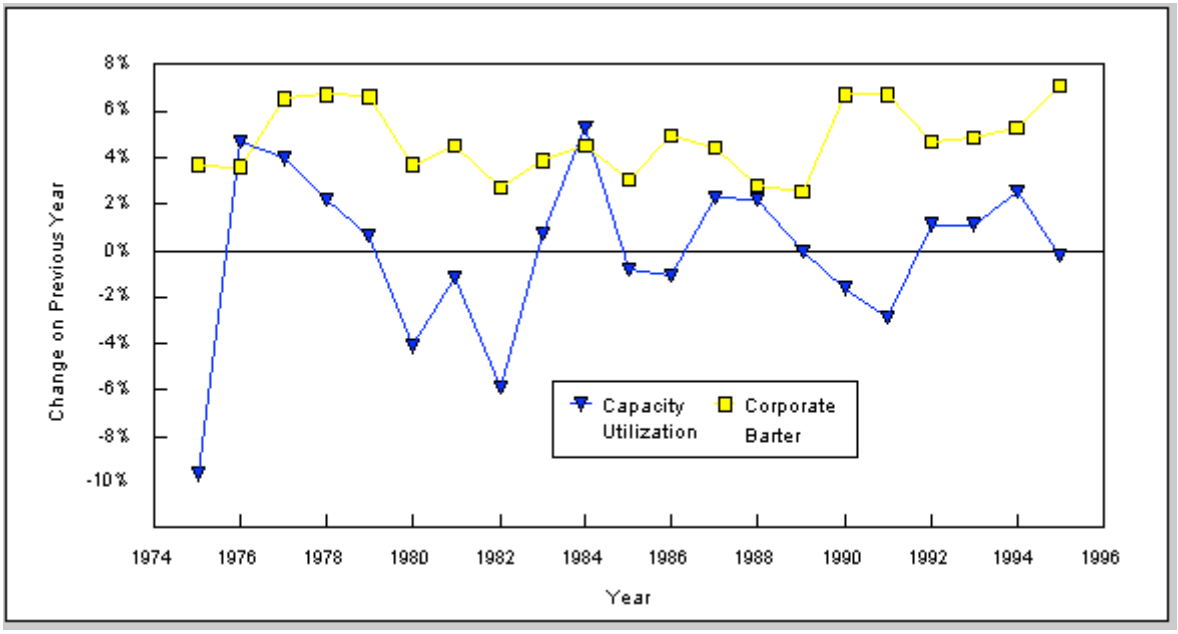
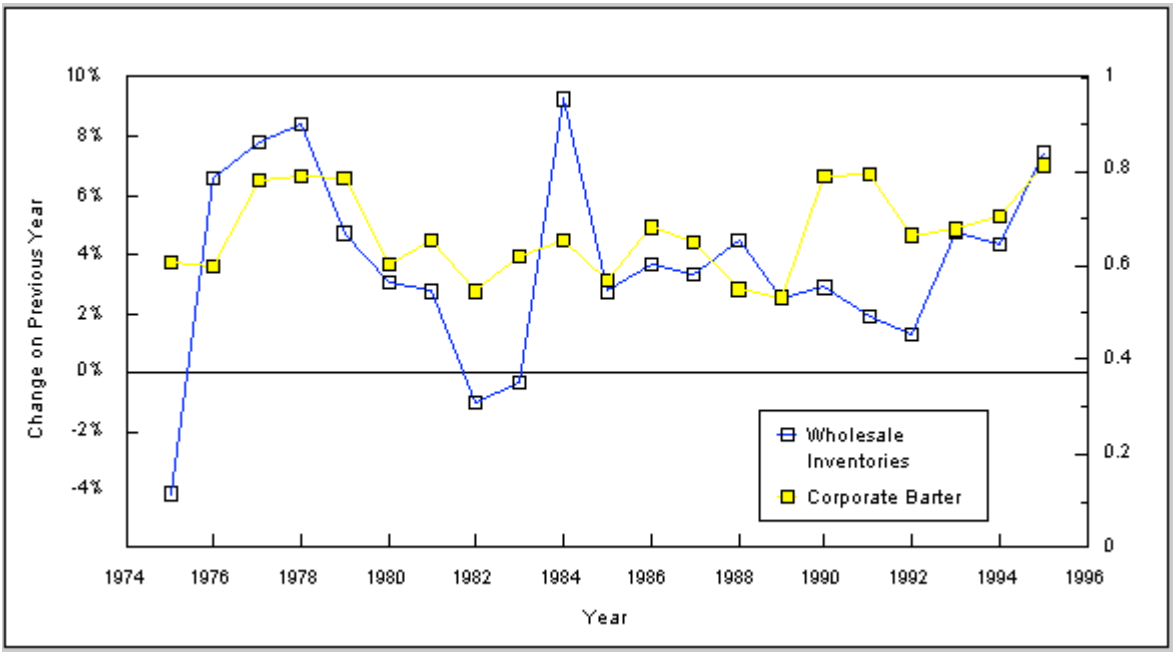


Figure 3: CORPORATE BARTER versus WHOLESALE INVENTORIES



Despite being more pronounced after 1985, the general counter-cyclical tendency is strong enough to get the expected signs and significant results in the regressions that follow, even when the entire period 1974-1995 is used without a structural break. Because of the presence of auto-regression, all the regressions use either Ordinary Least Squares with a one-period lagged indigenous variable on the right-hand-side, or a one-period auto-regressive maximum likelihood estimate.

Table 2: Corporate Barter as explained by Gross Domestic Product (GDP) and Wholesale Inventories (Dependent Variable: Corporate Barter by Trading Companies, 1974-1995)

	REGRESSION NUMBER		
	[1]	[2]	[3]
Constant	1378.19 (1.97)*	-27.966 (-0.59)	-88.656 (-1.52)
Barter, Lagged One Period	---------	1.051 (90.67)****	1.070 (68.16)****
Wholesale Inventories	17.528 (4.14)****	-------	--------
Change in Wholesale Inventories	---------	8.970 (3.04)***	7.344 (2.53)**
Gross Domestic Product (GDP)	-0.375 (-1.63)	---------	---------
Change in GDP	--------	-0.343 (-2.38)**	--------

Change in GDP <=1985	--------	--------	-0.212 (-1.36)
Change in GDP > 1985	--------	--------	-0.524 (-3.04)***
Time	123.35 (4.25)****	-------	-------
Auto correlation Coefficient (rho)	0.875 (9.12)****	------	--------
Number of Observations	22	21	21
Method of Estimation	AR1	OLS	OLS
Adjusted R-squared	0.920	0.998	0.998
Log-Likelihood	-126.700	-110.536	-108.732
Durbin-Watson Statistic	1.857***	2.013***	2.105***

(terms in parentheses are t-stats.)

Methods of Estimation Levels of Significance

AR1 - 1st order autoregression, maximum-likelihood

OLS - Ordinary Least Squares

**** - significant at 0.1 percent

*** - significant at 1 percent

** - significant at 5 percent

* - significant at 10 percent

Table 3: Corporate Barter as explained by Capacity Utilization and Wholesale Inventories
Dependent Variable: Natural Log of Corporate Barter by Trading Companies, 1974-1995

	REGRESSION NUMBER		
	[1]	[2]	[3]
Constant	4.461 (8.58)****	-0.037 (0.417)	-0.048 (-0.57)
log-Barter, Lagged One Period	---------	1.001 (94.42)****	1.010 (98.80)****
log of Wholesale Inventories	1.274 (25.77)****	-------	--------

Change in log of Wholesale Inventories	---------	0.376 (2.46)**	0.290 (1.87)*
log of Capacity Utilisation	-0.648 (-5.47)****	---------	---------
Change in log Capacity Utilisation	--------	-0.158 (-1.45)	--------
Change in log Capacity Utilisation <=1985	--------	--------	-0.070 (-0.60)
Change in log Capacity Utilisation > 1985	--------	--------	-0.412 (-2.23)**
Auto correlation Coefficient (rho)	0.708 (4.66)****	------	--------
Number of Observations	22	21	21
Method of Estimation	AR1	OLS	OLS
Adjusted R-squared	0.997	0.998	0.998
Log-Likelihood	45.913	63.919	65.593
Durbin-Watson Statistic	1.701***	1.850***	1.903***

(terms in parentheses are t-stats.)

Methods of Estimation Levels of Significance

AR1 - 1st order autoregression, maximum-likelihood

OLS - Ordinary Least Squares

**** - significant at 0.1 percent

*** - significant at 1 percent

** - significant at 5 percent

* - significant at 10 percent

Turning to the change in inventories and GDP in Table 2, regression [2], the expected counter-cyclical sign on both variables is significant at the 5 percent level over the entire period. Focusing on the post-1985 period in regression [3], shows an even larger and more significant sign for changes in GDP. Because the R^2 terms and Log-Likelihoods are so close in regressions [2] and [3], however, they are statistically indistinguishable. Under standard hypothesis testing, the hypothesis that there was a structural change in 1985 is not supported at conventional levels of significance. Put another way, however, there is no significant difference between these two regressions.

Table 3 turns attention to capacity utilization. Regression [1] shows that together with wholesale inventories, the log form of these two variables explains almost all changes in the log of corporate barter, with their highly significant coefficients having the expected signs. The log-difference forms in regressions [2] and [3] are less powerful in explaining barter, with the same inconclusive evidence of structural change after 1985.

The log form of regression [1] in Table 3 means these coefficients can be interpreted as elasticity terms. A one percent rise in wholesale inventories tends to spark a 1.3 percent increase in barter, so that barter is growing almost a third faster than the trend of inventories. A one percent *fall* in capacity utilization, on the other hand, pushes barter up by a further 0.65 percent.

Conclusion and Extensions

All the regressions show the expected counter-cyclical sign. Regressing corporate barter against wholesale inventories, GDP, and capacity utilization, we find coefficients on all that are significant across the entire period 1974-1995, and especially significant when limited to the later period 1986-1995. However suggestive, the evidence of a structural change in the counter-cyclical sensitivity of barter after 1985 is not statistically compelling. The overall evidence of corporate barter's counter-cyclical nature, however, is quite strong.

Is this counter-cyclical tendency of corporate barter due to some ability to make prices more flexible, or because barter is an alternative to credit and cash? Answers to longstanding debates on the role of money and prices in macroeconomics may well turn on the answer. Empirical research -- and better data -- are sorely needed.

Before major new studies are complete, however, a couple of policy implications appear fairly obvious. First of all, the scorn in which barter is often held by government and even bartering corporations themselves needs to be reevaluated. Healey (1996) found it difficult to interview officers at corporations heavily involved in barter, and this is consistent with the image of barter as an underworld of secret deals, tax avoidance, and accounting tricks. The price-discrimination rationale for barter modeled by Magenheim and Murrell (1988) may strengthen in times of weakening demand, but a counter-cyclical tendency is not easily explained by other, truly illegal, practices.

Many financial innovations burst onto the world with a "buccaneering" air, but are no less efficient for that. There is certainly corruption and fraud associated with corporate barter, as there is in abundance in the international countertrade with which it is often compared. Long scorned and prohibited from export credits by the World Bank and the US Government, countertrade is now justified in major empirical studies (Hennart and Anderson 1993, Marin and Schnitzer 1995) as a crucial confidence-building measure between firms in different countries. Yet these important studies dismiss the traditional rationale for countertrade -- that it conserves scarce foreign currency. They thus fail to consider its possible macroeconomic benefit.

If the counter-cyclical tendency of corporate barter springs mainly from its power to substitute for domestic money and credit, this would be even more important for international barter. After all, there are no convertibility worries for purely domestic trade, and sovereign risk means that credit is usually more readily available for domestic than international trade, *ceteris paribus*. So if it is the relaxing of credit and monetary constraints that makes domestic barter counter-cyclical, these would seem to be even more important as a motivation for international countertrade.

Other new forms of barter-related finance are the LETS (Local Exchange and Trading Systems) set up over the last decade in many developed countries. LETS are promoted as a development tool for depressed regions, and statistical evidence from the United Kingdom (Williams 1996), Australia (Castles 1994), Poland (Cox *et al*. 1996) and Switzerland (Stutz 1984), shows that the inter-household, incompletely monetized, informal sector of these economies is counter-cyclical. Such a counter-cyclical tendency is likely to be due to credit-creation, not price-discrimination, as in the model of Magenheim and Murrell (1988). This is because households and firms in such a network will have repeated interactions, and ready access to information (gossip) about each other's actions.

This informal sector provides not only a safety net, but one that tends to expand when most needed. Yet it is also one that, until recently, had tended to decline with the growth of national income and the welfare state. This "disembedding" of the economy from social life, the economic historian Karl Polanyi (1944:73) claimed, made highly monetized systems intrinsically unstable, unlike traditional non-monetized economies. A growing "neo-traditionalist" sector of barter may actually help strengthen the monetized formal sector, rather than being a drain upon it.

Such a macroeconomic stabilization argument for a Polanyian "re-embedding" of the economy runs counter to the rationales sometimes adduced by Williams (1996) and other researchers on LETS-type communitarian exchange. The economic benefits of LETS are often advocated in terms that (at least to a neoclassically-trained economist, such as myself) seem not so much stabilising as protectionist, more "trade diverting" than "trade creating", and thus inefficient. The politics of international trade show quite clearly that these distinctions are not obvious to most people, and they are certainly not paramount in the minds of many communitarian advocates (for instance see the archives of econ-lets). One implication of this paper is that the economic efficiency case for LETS and other barter-type networks

may be much stronger than most advocates realise.

Whatever the source of barter's apparent macroeconomic stabilization, economic theory and policy can no longer afford to ignore it. Adjusting for inflation in Table 1 with the GDP deflator, North American corporate barter has grown better than twice as fast as US GDP, with a real annual growth rate of 5.45 percent, compared to 2.67 percent for GDP over the same period. This $6.5 billion a year industry is still too small a tail to wag the dog of a $6.7 trillion US economy, or even to help much in stabilizing it. International barter-related trade, on the other hand, is quite substantial. There are no hard figures on countertrade, but most economic specialists (Marin and Schnitzer 1995) put it at 10 to 20 percent of world trade. Barter is big enough to matter.

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ENDNOTES

1. Much of barter occurs off the books entirely, eluding both fees to the barter exchange and taxes to the government. This is recognized by both exchange operators and tax officials (Gomez and Leonard 1996:11). The figures used for the present study, based on tax returns, will therefore understate the true extent of barter. **Back to text**

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