Japan's fiscal crisis and implications for imports from Korea

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Motivation

Japan currently faces a fiscal deficit of approximately 6% of GDP. Since the 1990's, the slowdown of the Japanese economy has prompted the government to undertake many fiscal stimulus measures, all of which were debt financed. Furthermore, while the decade of the 1990's and the current decade might normally have been the period when Japan began to prepare for its rapidly aging population, this has not been the case. As a consequence, Japan's current consolidated debt to GDP ratio exceeds 200%.

The government is currently considering measures to reel in this massive government debt. While Prime Minister Koizumi's much touted privatization measures will certainly help, we suggest that use of existing assets is unlikely to dramatically reduce the debt burden. Instead, Japan will have to rely largely upon austerity measures.

Korean exports to Japan appear to be highly sensitive to Japanese aggregate demand. This immediately raises the question of how Korean exports to Japan can be expected to fare in the context of Japanese austerity measures. That is the subject of this paper.

Stylized facts on the Japanese fiscal position and current policy

Japan has earned the dubious distinction of having the most indebted public sector within the G7, and also having the worst current fiscal position in terms of the government deficit. Central government debt is currently 663.8 trillion yen, or about 160% of GDP. Only Italy comes near this figure, with central government debt to GDP ratio of 130%. All other countries of the G7 have debt to GDP ratios under 100%, ranging from a low of just under 50% for the UK to 80% for France. Consolidated debt (central, prefectural and local) currently amounts to some 1,075 trillion yen, or a whopping 210% of GDP. While some of the fiscal reforms implemented earlier this decade seem to be having some influence, the fiscal deficit has fallen from 8% to 6% recently, reducing the debt burden will be a major undertaking.

Prime Minister Koizumi put his government on the line in order to push through privatization of the postal savings system. The Japanese public obviously agreed with his reform message, and gave his party the largest majority it has ever enjoyed. In principle, privatization will allow for the sale of the assets of the postal savings, the proceeds of which could be used to help retire public debt. The most optimistic analyses of asset disposal suggest that the entire consolidated public debt could be retired simply by using the proceeds from such asset sales.

Unfortunately, the most optimistic of these analyses are misguided. Many of the assets of the postal savings system that are listed as tangible and liquid are in fact neither. Japan's famous 'second budget,' the Fiscal Investment and Loan Program or FILP, is essentially financed by postal savings. The FILP is a mix of a number of government sponsored loan programs, including lending by the Housing Loan Corporation, the People's Finance Corporation and others. For the most part, this lending helps finance personal home mortgages and small and medium businesses. Unlike Japan's private banks, where investor scrutiny revealed the very large balances of non-performing loans, very little is written about the current status of a great deal of FILP loans, and therefore the 'tangible' assets of the Japan Postal Savings.

Given that much of the lending to small and medium enterprises was essentially limited to firms that otherwise had trouble borrowing, and the same can be said of public mortgage lending, it would seem reasonable to conclude that non-performing FILP lending should be at least as great in percentage terms as that of private institutions. While estimating non-performing FILP lending would make an interesting paper of itself, for our current purposes, we simply suggest that Postal Savings privatization is unlikely to prove to be the final solution to Japan's debt woes.

Government sales of land assets are also unlikely to be the golden egg. The central government holds 73.9 trillion yen of land assets at book value. While most of that land would have been acquired a very long time ago, so that market value could be many times this figure, it is likely that the vast majority of these land assets are not saleable. For example, included in the figure are government buildings and facilities that would be difficult or impossible to privatize.

The point of this discussion is to suggest that long-term fiscal austerity is a necessity. Even after a series of fiscal reforms, an increase in the consumption tax and one of the most burdensome income and estate tax systems in the world, Japan continues to endure a fiscal deficit. Moving from deficit to surplus is the first step in debt reduction, and Japan is still a long way from achieving this step. We can expect to see reductions in nominal government spending at all levels, together with increased taxation.

Indeed, the government is expected to table a proposal, to be adopted by Cabinet in July, designed to produce a balanced budget by 2011. Furthermore, the proposal is designed to produce a government surplus of 1.5% of GDP thereafter as a means of reducing government debt outstanding. While the precise details of the proposal were not available at the time of this writing, it is expected to include increases in the consumption tax, capping and secured funding for social programs, decreased central government spending and a reduction in grants to prefectures and local governments. The initial proposal calls for a reduction in annual government spending by 20% in FY2011 compared with the current fiscal year.

Until the full details of the proposal are known, however, skepticism regarding the ability of the government to meet these targets would seem in order. The current dependency ratio in Japan is 1:4, that is, four working adults support one non-working adult. By 2025 this dependency ratio is expected to climb to 1:2, with only two working adults supporting each non-working adult

(General Affairs Bureau, 2005). Over the same time period, expenditure on national medical care is expected to nearly triple. While the government proposal is expected to include measures to increase private contributions for the various social programs, this will be politically difficult given Japan's demographic profile.

While the stylized facts outlined above would have already forced many countries into a significant crisis, Japan has been saved by its enormous wealth and current account surplus. Japan's household savings are currently about 270% of GDP, making current levels of the fiscal deficit and government debt burden sustainable. On the other hand, it is precisely because of this sustainability that Japan has avoided crisis, and has similarly avoided implementing severe fiscal austerity. While this vast private wealth has helped Japan to avoid crisis, the stage is set for rapid change. Of total household savings, approximately 68% is held by households aged 55 and older (General Affairs Bureau, 2005).

Given this relationship between household savings and the national demographic profile, we can say that the stock of household saving will begin to fall. Older households will begin to draw down savings. Even if younger households were to save as rapidly as the older households did at an earlier age (which they do not), it would be impossible for the stock of household savings to remain constant. This is not necessarily a bad thing. From the national income identities, we know that the current account surplus must equal the surplus of the flow of domestic savings versus domestic investment. That is, Japan's long-running current account surplus has largely been an outcome of demographics, and we can expect that to change. A shrinking current account surplus can be expected to reduce protectionist pressures against Japan.

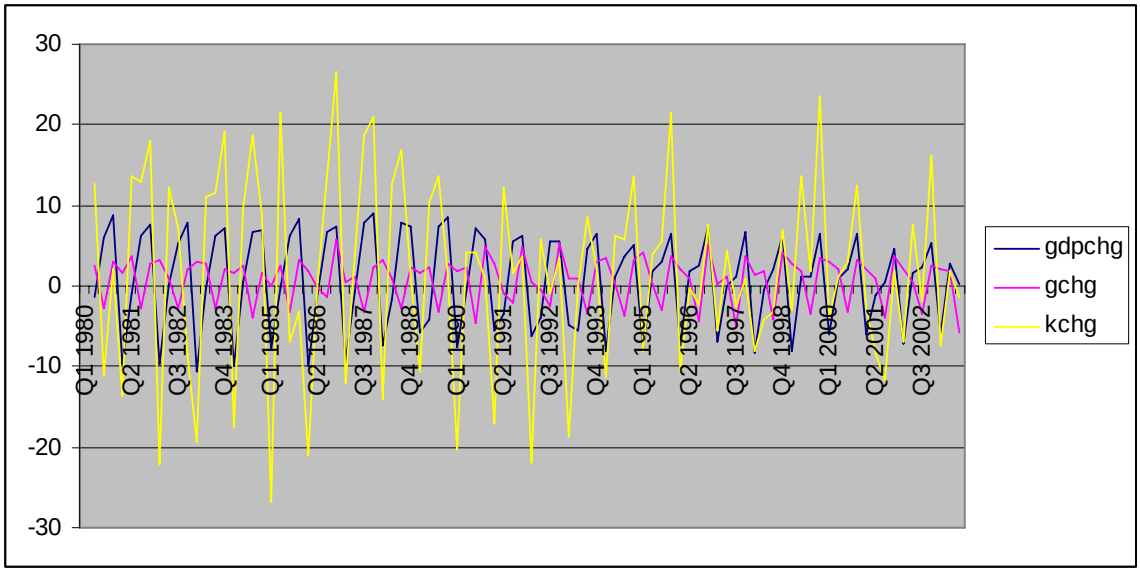
The demographic profile might also have positive implications for Japan's trading partners. As older households dis-save, they may also proportionally increase consumption as they near the

end of their life span. This result is not certain, however, and depends upon the bequest motive. Until recently, the Japanese bequest motive has remained strong, despite draconian levels of estate taxes. Increasingly, however, there has been evidence of the older generation's willingness to spend on itself. If older households do proportionally increase consumption over time, this will manifest itself in a proportional increase in spending on all forms of consumer goods, including imported goods.

While the Japanese debt crisis is an interesting topic in itself, we turn now to the key topic of this paper. We wish to analyze how, if at all, Korean exports to Japan are likely to be affected by fiscal austerity measures.

Implications for demand for Korean imports

The question addressed in this paper is simple: how will fiscal austerity affect Japan's trading partners, especially Korea? At first, the answer would seem apparent. That is, one might suggest that austerity can be expected to have a negative impact on Japanese demand for imported goods, including those from Korea. Indeed, real GDP growth and imports from Korea are highly correlated (.67 between 1980 and 2004). Furthermore, this correlation is much stronger for Korea than for imports from Asia as a whole (.45 for the same period), suggesting that Korean exports to Japan might be particularly vulnerable to any austerity measures. Such measures are robust, whether one considers the relationship in terms of levels or percentage changes, or regardless of the lag structure incorporated, though the contemporaneous relationship is particularly strong.



Thus, while it would appear that future austerity measures in Japan, especially to the extent that they may be very long-term, will be very bad news for Korean exports to that country, such a conclusion would be too simplistic. The relationship between imports from Korea and Japanese economic growth is quite strong, as one might expect. Perhaps more interesting is the fact that this relationship appears much stronger than with imports from Asia as a whole. So it would seem that Korean exports to Japan are particularly vulnerable to Japanese macroeconomic fluctuation.

That Korean exports to Japan might suffer from austerity measures seems natural, but the reality is less certain. There are really two hypotheses inherent in such a supposition. The first hypothesis is that austerity measures will have negative impact on private demand, and the second is that such negative impact, if any, will negatively impact imports of Korean goods. We will deal with the second question first, as it is the simplest.

As already noted, the simple contemporaneous correlation between growth in imports from Korea and Japanese economic growth is positive, whether measured in quarterly growth rates (.67) or in

terms of year on year growth (.60). Introducing various lag structures can yield even greater correlation, but choice of lag structure is arbitrary, so we will use contemporaneous correlation for the time being.

Regression analysis confirms the basic relationship described above. In Tables 1 and 2, we present the results of a simple model of Japanese imports of Korean goods. In Table 1, real Korean imports are modeled as a function of real Japanese GDP in levels. Seasonal dummy variables are added to control for seasonal volatility (see the chart above). Not surprisingly, this regression reveals a very strong relationship between Japanese GDP and imports from Korea. Introducing lag structures adds little to the model, and does not change the fundamental results.

In Table 2, the results of a similar model presented in the form of quarterly percentage change in real Japanese GDP and real imports from Korea are presented. Again, the results show the same basic characteristic: that imported goods from Korea are highly sensitive to GDP growth. Adding different lag structures has little effect. Using year on year growth rates yields similar results. Essentially, the underlying model presented in Tables 1 and 2 is highly robust: imports of Korean goods are highly sensitive to Japanese GDP growth.

As mentioned earlier, these results seem to differ from those for Asia as a whole and for other regions. In later work, we would like to investigate this result further, but we can speculate a bit now. Our guess would be that Korean exports to Japan tend to be concentrated in consumer goods, whereas imports from the rest of Asia (and other regions as well) may be more focused on raw materials and capital goods. If this hypothesis is correct, then it seems likely that demand for these consumer type goods may be more elastic than demand for raw materials and capital goods. If this is correct, then the high degree of sensitivity of Korean imports to Japanese aggregate demand makes sense.

Of course, the relationship between Japanese economic growth and Korean imports is not stable. Is it possible that Korean imports might react more negatively to structural or cyclical economic stagnation than to austerity induced reductions in domestic demand? It is difficult to frame this question in a way that allows us to give any kind of definitive answer, but we can shed some light on the issue. One simple, though not very informative way of looking at the problem would be to see if imports of Korean goods seem to be directly related to Japanese government expenditure. While this by no means gets fully to the austerity issue, we can at least see if demand for Korean imports is directly affected by Japanese government expenditure. On this front, the answer seems to be 'no.'The measured correlation coefficient is 'zero' to four decimal places.

Again, while not definitive, another approach might be to consider how Korean imports have responded in the past during austerity measures. The three year period from 1996 through 1998 might be viewed as such a period. From 1995, the government began to discuss austerity measures, in particular an increase in the consumption tax, aimed at mitigating the dramatic reduction in government revenues resulting from various fiscal stimulus measures. The consumption tax was raised in 1996, followed shortly thereafter by the so-called Asian Crisis and 'Asian Flu.' We might wish to compare this period with the growth slow-down of 1992-95, which was in direct response to the negative wealth effects associated with the collapse of Japanese financial markets, and not related to any austerity measures.

While the relationship between imports from Korea and Japanese growth is positive in both periods, as we would expect, it is actually weaker in the austerity and 'Asian Crisis' period of 1996-98 than it is in the 'endogenous recession' period of 1992-95. The correlation coefficient between imports of Korean goods and growth in the first period is .64, while it is .55 in the later period. While a more formal and rigorous analysis is in order, on the face of it there is no reason

to believe that imports of Korean goods are any more sensitive to austerity measures than they are to a general growth slowdown. Indeed, it appears to be the opposite.

These simple facts, while interesting, do not help us understand the more fundamental issue. That is, do we need to take it for granted that future austerity measures will have a negative impact on Japanese economic growth, and therefore on imports of Korean goods? More specifically, is there evidence that Japanese economic growth is affected by fiscal policy changes?

Japanese growth and fiscal policy

Prior to the 1990's, examining the relationship between Japanese fiscal policy and growth would have taken us into uncharted waters. Fiscal policy was generally consistent with the overall goal to maintain a fiscal balance or surplus. This was especially true after the oil shock, when Japan like most other industrial nations essentially abandoned discretionary fiscal policy as potentially inflationary.

After 1992, however, when it became clear that the negative response of the Japanese economy to the collapse of its financial markets was not just temporary, Japanese officials began to throw caution at the wind and introduced a series of fiscal stimulus packages. In particular, between 1992 and 1998, eleven such fiscal stimulus packages were introduced. There have been several other packages introduced after 1998, but the focus became increasingly structural rather than cyclical.

If we focus primarily on these first eleven fiscal stimulus packages, we might be able to infer whether fiscal policy changes affect growth and therefore demand for imports, particularly imports from Korea. Of course these fiscal stimulus packages represent the opposite of fiscal

austerity. The eleven packages referred to here included increases in government spending and reduction in taxes, whereas policy in the future will represent decreases in government spending and increases in taxes. This notwithstanding, the impact of the various fiscal stimulus measures on growth will help us to understand the relationship between fiscal policy and growth generally.

Oddly, most of the analysis of Japan's experimentation with fiscal stimulus seems to focus on measurement issues. That is, most debate centered on what the real magnitude of the various measures was. It seems to have been a forgone conclusion that the packages would have the intended impact on domestic demand. The fact that there seems to have been little impact of the packages is usually blamed on the magnitude of the various measures. This conclusion seems strange, since in hindsight we know that Japanese borrowing during the period grew rapidly, evidence that the magnitude of the packages was significant.

This lack of analysis of the relationship between the fiscal policy measures and growth is all the more strange when one considers that most industrialized nations had abandoned Keynesian style fiscal stimulus by the 1970's. That is, only Japan stands out as a laboratory for testing the efficacy of fiscal stimulus in recent time. In what follows, we ask whether the fiscal packages of 1992-98 had impact on economic growth. The conclusions from this exercise will be used in speculating as to whether future austerity measures will negatively affect growth, and therefore imports from Korea.

The eleven fiscal packages used for analysis here are outlined in Table 3. While the announced total value of the packages was over 100 trillion yen, our own estimates of the 'hard' components (based on actual borrowing needs) is about one-half that amount. In either case, the sum is not small, at roughly 10% of current GDP.

There are several ways of testing for the impact of these packages on GDP growth. The simplest way is to apply the 'two-step' procedure which was common in testing for the impact of monetary innovations during the 1980's (Mishkin, 1983). In this case, we have a system of three equations. The first equation captures trend economic growth, the second the government balance, while the third models economic growth as a function of its trend level (from the first equation) and innovations from the government balance. The system as a whole allows us to test for the impact of fiscal policy innovations on economic growth.

$$y_t = \alpha_1 + \sum_{i=1}^{n} b_i y_{t-i} + \sum_{i=1}^{m} \gamma_i Mg_{t-i} + \varepsilon_t \quad (1)$$

$$GB_t = \alpha_2 + \sum_{i=1}^{n} \delta_i GB_{t-i} + \sum_{i=1}^{m} v_i y_{t-i} + \mu_t \quad (2)$$

$$y_t = \alpha_3 + \beta \hat{y}_t + \sum_{i=0}^{n} \lambda_i \mu_{t-i} + u_t \quad (3)$$

The procedure used here is similar to that used in a number of studies of monetary neutrality, and is well described in Mishkin (1983). The model consists of three equations. In equation (1), real quarterly GDP growth is modeled as a function of six lags of real quarterly GDP growth, six quarters of lags of money growth, seasonal dummy variables, a time trend and a constant. The fitted values from estimates of this equation, denoted $\hat{y}_t$, are used as the underlying GDP growth trend. While (1) is essentially atheoretic, it is assumed that the relevant underlying structural variables which determine GDP growth (labor supply, investment growth, etc.) are captured in the lagged independent variables, so that the fitted values contain all relevant structural information. In (2), we similarly estimate the government balance as a function of four lags in the real government balance, lagged GDP growth, seasonal dummy variables, a time trend and a constant. Growth is included as an independent variable in (2), since automatic stabilizers and the packages themselves are already affected by economic performance. In this case, the residuals from the estimate are used to capture innovations in fiscal policy in the model for output

growth. In (3), real GDP growth is modeled as a function of its underlying trend rate of growth, estimated in (1), control variables such as contemporaneous and lagged values of real money growth, and the contemporaneous and lagged values of the policy innovation variable generated from equation (2). We need not include structural determinants of GDP growth in (3), as they are assumed to be captured in the trend growth variable. Only innovations in these underlying structural variables would have additional explanatory power. Real money growth is included as it was indeed the case that rapid money growth typically coincided with expansionary fiscal policy. As such, money growth is added as a control. (Note at this point, however, that significant coefficients on money growth should not be construed as evidence of effective monetary policy. I have included total money growth, not innovations in money growth).

The "two-step" methodology employed here, together with seasonal adjustment by the dummy variable method provides a natural solution to the simultaneous problems of high seasonal volatility in the government balance together with the issues of measurement of the fiscal stimulus packages outlined in the previous section. That is, the residuals from (2) that become the fiscal innovation variables in (3) are derived from a smoothed measure of the government balance. As such, a large value of a residual from (2) can be interpreted as a large (temporary) deviation in the government balance. Using this measure, precise magnitudes for the size or timing of expenditure for the fiscal packages outlined in Table III is irrelevant: all that matters is that the residuals in (2) are affected.

B. Data

Each time a fiscal package has been announced, the financial community and the press would expend much effort at coming up with the "true" value for expenditure. While such information is crucial for a number of purposes, it is not important for our purposes. Specifically, in testing for neutrality, we need only test whether the innovation in the government balance (regardless of

its magnitude) has impact upon subsequent economic growth. (Discussion of the opaque Japanese budgetary process and how the actual magnitude of the fiscal packages is estimated can be found in the appendix).

Data are for the period 1975 Q2 to 1998 Q3. In addition to providing a significant time series to test for neutrality and to analyze sub-periods, use of data for this time period serves analytical purposes. That is, while the focus of this paper is the effectiveness of the cluster of eleven fiscal packages announced since 1992, there is a significant history of similar fiscal policy stimulus measures dating to the mid-1970's. Furthermore, Japan's government budgetary process is somewhat unique in that a supplementary budget is always required to deal with revenue shortfalls which occur during the term of a regular annual budget. Typically, one or more such supplemental budgets are required each fiscal year, and in some cases (such as in the case for major typhoon or earthquake repair) can represent substantial increases above planned government expenditure. While many differences exist between the fiscal packages of the 1990's and earlier stimulus measures, as well as normal supplementary budgets (see Patterson and Beason, 2002), for the tests used here, we may treat them as similar. That is, any such measure can be expected to affect the magnitude of fiscal innovations as derived from (2).

Data for GDP growth are real non-seasonally adjusted quarter on quarter growth rates calculated as the log of first-differences of quarterly data. Throughout the two-step analysis, seasonal adjustment is dealt with in (1)-(3) using the dummy variable method, so as to avoid distortions inherent in official adjustments (Hylleberg, 1986). Linear time trends are included in (1) and (2) so that innovations in GDP growth and the government balance (the policy innovation) are with respect to a smoothed underlying trend. The money growth variable is quarter on quarter growth in real average outstanding M2+CD balances. The real government balance is calculated as actual revenue less actual expenditure for the quarter, deflated by the (unadjusted) GDP deflator.

The government balance measure is multiplied by –1 such that the estimated coefficient on the fiscal innovation variable in (3) can be interpreted in the natural way, i.e., an increase in the fiscal innovation (increase in the fiscal deficit or reduction in the surplus) is positively related to an increase in GDP growth.

Results

The system (1)-(3) is estimated using a two-step procedure as in Barro (1977). While there is some efficiency loss resulting from use of the two-step procedure, estimated coefficients are consistent and unbiased (Mishkin, 1983). As such, results from the simple two-step procedure are reported in Table 4. The contemporaneous policy innovation variable is statistically insignificant at traditional levels in the full sample, and the same is true of the sub-sample for 1975-1991, and that for 1992-1998.

Of course, the relevant test for neutrality here is actually the joint test of the significance of the contemporaneous and lagged policy innovation variables. We normally believe that such policy is lumpy and takes time to implement, and that the response is typically delayed as well. As such, we allow several periods for the response, and test for the response jointly over time. In (3) we have allowed for the possibility of the response working over the current period and six time lags.

For the full sample, we cannot reject the null hypothesis that the estimated coefficients on the policy innovation are zero. On the other hand, we must reject the null hypothesis that the summed value of the estimated policy innovation coefficients is equal to zero. Note, however, that this second result is driven by significant (but very small) *negative* estimated coefficients on the first and fourth lags of the policy innovation variable. In other words, an innovation in

expenditure (increase in net deficit above trend levels) actually has a small negative impact upon real output growth. We will return to the implications of this finding later.

We apply the same methodology to the two sub-periods as well. The findings are generally consistent with those for the full sample, though the overall character of the two sub-periods differs. For the first sub-period, we find that we cannot reject the null hypothesis that the estimated coefficients for the policy innovation variable equal zero either individually, jointly or in their sum.

For the second sub-period, we find joint significance of the innovation variables, and this result is clearly driven by the estimated coefficient on the first lag of the policy innovation variable. Note that this estimated coefficient, while significant, is of negative sign and very small. It is not possible to reject the hypothesis that the sum of the value of the estimated coefficients differ from zero.

While the issue of neutrality is easily dealt with in the results from Table 4, interpretation of the estimated coefficients is problematic. Specifically, the dependent variable in equation (3) is GDP growth. Were the policy innovation variable similarly measured as a rate of growth, interpretations would be straight forward. Unfortunately, the policy innovation must, by necessity, be measured as deviations of the government balance from trend, with the growth rate of this variable containing no useful information for the purposes of testing policy effectiveness. Thus, for the results in table I, we may draw conclusions about the significance of the individual, joint or summed estimated coefficients, but the magnitudes of the estimated coefficients provide no guidance.

There is no complete solution to the issue of interpretation of magnitudes, but a partial solution is to measure the fiscal stimulus innovation as a ratio of GDP. Thus, in equation (2), the government balance is measured as the ratio of the negative value of the nominal deficit or surplus to nominal GDP. The innovation term therefore captures the deviation of this ratio from trend. Results using this measure of fiscal innovation are provided in Table 5. Overall, the results are quite consistent with those for Table 4. For the full sample, we find that we are unable to reject the null hypothesis that the estimated coefficients on the policy innovation variable are jointly significantly different from zero. We reject the null hypothesis that the sum of the estimated coefficients on the policy innovation variable sum to zero, though again this is due to the presence of a significant *negative* estimated coefficient on the first lag. For the second sub-sample, we cannot reject either of the null hypotheses.

The conclusions are clear. The perceived lack of impact of the various fiscal packages during the Heisei slowdown of the 1990's in Japan is not the result of policy inaction, but rather policy ineffectiveness. The result is robust across time periods, suggesting that the neutrality has less to do with magnitudes than with the response of agents to increases in fiscal deficits. The fundamental issue is that fiscal policy innovations appear to have been ineffective since 1975, and that this has, if anything, intensified during the 1990's.

Note that the estimated coefficients on the policy innovation variable, when significant, were negative and significant. At first this seems nonsensical; after all, we would expect the weakest result to be no impact, not negative impact. Considering the present context in Japan, however, the observed reaction may be justified. With each announced package, agents note an increased tax liability, but also fear for the increase in unfunded pension liability. Along with deficit financed spending, government authorities are also increasing allocations of the FILP to provide subsidized loans to small businesses, students and households- many of which will be unable to

repay the loans. It is loans such as these that represent the bulk of the "assets" which support the public pension system.

If we add to these fears on the part of the taxpayer the widespread recognition that Japan's troubles are structural rather than cyclical, then these results become even more reasonable. That is, if indeed the current slowdown in Japan represents a structural adjustment, and this is widely recognized by agents, then the fiscal packages have been purely wasteful and represent a major contribution to Japan's structural deficit and debt burden. Perhaps the combined worries of a large and growing unfunded pension liability together with a large structural fiscal deficit has provided the incentive for agents to dramatically increase their precautionary savings at the margin, giving rise to the results found here. Fears of some bureaucrats in the Ministry of Finance that such measures were essentially wasteful are perhaps well founded.

A final possible explanation for the results can be found in the finance literature. It has been found that stock returns do not always follow the predicted pattern in the face of corporate restructuring announcements. That is, share prices and returns sometimes decline after such announcements (Chen,et.al., 2001). The reasoning is that a restructuring announcement may be interpreted as a sign of financial fragility, rather than signaling positive changes by management. Perhaps fiscal stimulus measures in Japan have had the same effect- signaling the fragility of the Japanese economy and stimulating greater precautionary savings by households.

In any event, the very small magnitudes we have found should be interpreted as implying essentially no impact of the stimulus measures, which brings us back to the current issue of likely austerity measures and imports from Korea.

Japanese austerity and imports from Korea.

The discussion above suggests that fiscal stimulus measures during the last decade had little impact on Japanese aggregate demand. If this result is symmetric, then there may be little negative impact of austerity measures on aggregate demand and therefore on imports from Korea. If one considers the likely reasons for the neutrality result, it seems quite likely that a symmetric result is possible. That is, the best explanation for the neutral reaction to fiscal stimulus measures is that consumers expected higher future taxation, and/or viewed much of the expenditure as a substitute for private expenditure. To the extent that this is reversed with future austerity measures, there may be little impact on aggregate demand.

That is, Japanese consumers have already 'taken the hit' by increasing savings balances in response to higher anticipated taxes. Furthermore, reduced public expenditure may require greater private expenditure to make up for the loss, especially in areas like health care and care for the aged. If this view is correct, future austerity measures may be welcomed by the taxpaying consumer in Japan, and aggregate demand and imports of goods from Korea may not suffer.

Table 1
Japanese GDP and Imports from Korea

Regression in levels	1980I-2003III		
Dependent Variable real Korean Imports			
Variable	Coefficient	Standard Error	t-ratio
Const.	-128.03	38.7	-3.31
GDP	.0046	.0003	14.75
Q1	-.956	17.43	-.55
Q2	11.85	17.67	.68
Q3	3.46	17.25	.20
R-square adjusted	.71		
F-stat	57.26		

Table 2
Japanese GDP % Change and Korean Imports % Change

Regression in % change	1980I-2003III		
Dependent variable % change real Korean imports	Coefficient	Standard Error	t-ratio
Variable			
Const	1.61	3.39	.34
GDP % change	1.035	.434	2.55
Q1	-5.84	6.31	-.87
Q2	5.93	3.94	1.51
Q3	-1.90	2.51	-.76
R-square adjusted	.55		
F-stat	29.66		

Table 3
Japan's Economic Stimulus Packages, 1987-1998

DATE	TOTAL YEN (Trillion)	HARD COMPONENT YEN (Trillion)
May 1987	2.0	2.0
August, 1992	10.7	8.6
April, 1993	13.2	10.6
September,1993	6.3	5.1
February,1994	15.2	7.2
February,1995	1.6	1.6
April-May,1995	2.7	2.7
September,1995	14.0	7.9-9.0
December,1996	2.7	2.7
December, 1997	15.85	2.85
April, 1998	16.6	NA
TOTAL	100.85	51.25 - 52.35

Source: The Fiscal Structure Reform White Paper (1998), *Asahi Nenkan* (various), *Asahi Shinbun* (November 17, 1998). See Note 1 regarding the 1987 package.

Table 4 Empirical Results

Neutrality tests: Output growth as a function of own trend, monetary growth, fiscal innovation, seasonal dummy variables and time trend.

Variable	Full Sample Coefficient (T-statistic)	1975 Q2-1991 Q4 Coefficient (T-Statistic)	1992 Q2-1998 Q3 Coefficient (T-Statistic)
Constant	-.0048 (-.46)	.0017 (.10)	.298 (1.52)
$\hat{y}$	1.041 (9.74)	1.001 (5.85)	.713 (1.76)
Nikkei	.00000008 (.365)	.0000002 (.975)	-.000006 (-1.3)
Mg	-.162 (-1.62)	-.032 (-.35)	1.08 (1.08)
:	.00000015 (.181)	-.0000004 (-.43)	.0000002 (.076)
Lmg1	-.03 (-.3)	-.019 (-.20)	.429 (.764)
Lmg2	-.046 (-.53)	-.0246 (-.32)	.279 (.65)
Lmg3	-.004 (-.05)	-.011 (-.15)	.470 (.708)
Lmg4	-.078 (.96)	.024 (.32)	-.014 (-.032)
Lmg5	-.013 (-.16)	-.028 (-.38)	.425 (1.01)
Lmg6	-.026 (-.31)	-.024 (-.30)	.761 (1.73)
L:1	-.000003 (-3.7)	-.000001 (-1.14)	-.000008 (-3.94)
L:2	-.0000005 (-.599)	.0000009 (.95)	-.000006 (-.94)
L:3	-.0000007 (-.93)	.0000003 (.36)	-.000005 (-1.02)
L:4	-.000004 (-1.77)	-.000001 (-1.33)	-.000002 (-.73)
L:5	-.0000006 (-.79)	.0000004 (.42)	-.000005 (-1.34)
L:6	-.00000014 (-.16)	-.0000005 (-.47)	.000001 (.28)
R^2	.99	.995	.998
D-W	1.77	1.67	1.94
Chi-square sum	6.99	.367	1.29
T-statistic sum	-2.64	-.61	-1.13
Chi-square joint	16.96	5.01	20.03
Mean of Dep Var	.0082	.01	.0028

Wald chi-square test on null hypothesis that contemporaneous and lagged policy innovation differ insignificantly in their sum or jointly. Appropriate test on the sum is the T-test. Chi-square provided for reference.

Table 5
Empirical Results
Neutrality tests: Output growth as a function of own trend, monetary growth, fiscal innovation, seasonal dummy variables and time trend. Fiscal innovations measured as ratio to GDP

Variable	Full Sample Coefficient (T-statistic)	1975 Q2-1991 Q4 Coefficient (T-Statistic)	1992 Q2-1998 Q3 Coefficient (T-Statistic)
Constant	-.00399 (-.367)	.0003 (.016)	.323 (1.56)
$\hat{y}$	1.047 (9.72)	.998 (5.88)	.809 (2.01)
Nikkei	.00000008 (.357)	.0000002 (.892)	-.000006 (-1.5)
Mg	-.173 (-1.696)	-.083 (-.86)	1.191 (1.197)
:	.073 (.964)	-.012 (-.153)	.067 (.193)
Lmg1	-.064 (-.56)	-.0044 (-.044)	.602 (.979)
Lmg2	-.0083 (-.095)	-.0029 (-.037)	.38 (.83)
Lmg3	-.028 (-.362)	-.041 (-.57)	.41 (.57)
Lmg4	.042 (.54)	-.0068 (-.92)	.041 (.093)
Lmg5	.0022 (.028)	-.014 (-.19)	.614 (1.29)
Lmg6	-.015 (-.176)	-.0026 (-.33)	.873 (1.61)
L:1	-.266 (-3.614)	-.128 (-1.72)	-.83 (-3.28)
L:2	-.065 (-.87)	.015 (.195)	-.86 (-1.28)
L:3	-.106 (-1.41)	.016 (.21)	-.65 (-1.22)
L:4	-.062 (-.83)	-.49 (-.65)	-.297 (-.76)
L:5	-.072 (-.95)	-.0039 (-.05)	-.36 (-.936)
L:6	-.098 (-1.19)	-.108 (-1.32)	.131 (.286)
R^2	.99	.995	.998
D-W	1.77	1.69	1.99
Chi-square sum	8.095	1.406	1.62
T-statistic sum	-2.8	-1.86	-1.2
Chi-square joint	17.81	5.15	16.62
Mean of Dep Var	.0082	.01	.0028

Wald chi-square test on null hypothesis that contemporaneous and lagged policy innovation differ insignificantly in their sum or jointly. Appropriate test on the sum is the T-test. Chi-square provided for reference.

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