Japan's Fiscal Crisis and Implications for Imports from Korea[*]

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Korean exports to Japan are highly correlated to Japanese GDP growth. Given Japan's large fiscal deficit and debt, there is concern that future government austerity measures may cause a collapse in Korean exports to that country. After summarizing the magnitude of Japan's fiscal woes, we investigate whether austerity measures are likely to cause a collapse in such exports. We find no statistically significant relationship between Japanese fiscal policy and Korean exports to Japan, as well as no evidence that past fiscal policy in Japan has had significant impact on Japanese GDP growth. We conclude that future Japanese austerity measures are unlikely to cause a collapse in Korean exports to Japan.

1. INTRODUCTION

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% (General Affairs Bureau, 1996).

The government is currently considering measures to reel in this massive government debt. While former Prime Minister Koizumi's much touted privatization measures have certainly helped, 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 are highly sensitive to Japanese aggregate demand, with the simple correlation coefficient between Japanese GDP growth and growth in exports of .69 for the period between 1980 and 2004. 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. In order to analyze this question we must understand the direct relationship between Korean exports to Japan and fiscal policy in the host country, as well as the indirect relationship between Japanese fiscal policy and Japanese GDP growth.

Before turning to the formal analysis of the relationships described above, it will be useful to frame the magnitude of Japan's current fiscal woes. 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, with the fiscal deficit falling from 8% to 6% over recent years, reducing the debt burden will be a major undertaking (all data are from the General Affairs Bureau of the Government of Japan).

Former 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 could be quite large. 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 (General Affairs Bureau). 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 has tabled a proposal 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 have yet to be solidified, 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 fiscal year 2005.

Until the proposals are fully enacted, 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 Korean exports to Japan are likely to be affected by fiscal austerity measures.

2. IMPLICATIONS FOR THE DEMAND FOR KOREAN IMPORTS: TESTS AND DATA

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 growth in imports from Korea are highly correlated (.68 between 1980 and 2004 as noted above). 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.

In order to determine whether Korean exports to Japan can be expected to suffer from austerity measures in that country, we must examine two relationships. The first relationship is the simple direct relationship between Japanese fiscal policy and imports from Korea. The second relationship is that between Japanese fiscal policy and Japanese economic growth, since Japanese GDP growth and growth in Korean exports to Japan are highly correlated.

Our first test is that of whether Korean exports to Japan are directly affected by fiscal policy in Japan. There are several ways of framing this, but

our benchmark test is whether Korean export growth to Japan is affected by government spending in Japan. The dependent variable is growth in Korean exports to Japan, the key explanatory variable is Japanese government spending with money growth (broad money) is the final independent variable, added here as a control. Seasonal and fixed effects are removed from both series by use of dummy variables. (We prefer the dummy variable method for removing seasonal effects, since official adjustment can alter the time series properties of the data in undesirable ways. See Hylleberg, 1986; Miron and Zeldes, 1988). Diagnostic tests performed on each series as used here indicate no evidence of unit roots, and this supported by the Durbin-Watson statistic presented with the results. This first test therefore takes the form

$$KOREXPGRO_t = \partial + \sum_{i=0}^{4} \beta_i (JGOVEXP)_{t-i} + \sum_{i=0}^{4} \beta_i (JMONGRO)_{t-i} + \in_t . \quad (1)$$

Original sources for the data series are *Economic Statistics* issued by the General Affairs Bureau of the Government of Japan, with some coming from *Quarterly Economic Statistics* of the Bank of Japan. Most were downloaded from *Datastream* for convenience, but were always checked with the original sources for accuracy. These same data are available publicly from a variety of free or for fee sources.

The benchmark estimates of (1) are presented in table 1, and alternative representations (i.e., Korean export growth as a function of growth of Japanese government expenditure, various lag structures, etc.) give robust results. Specifically, the Chi-squared test that contemporaneous Japanese fiscal expenditure and the sum of four lags of the same variable are statistically insignificant (Chi-square value of .000106 with *p*-value of .9918), and we cannot reject the null hypothesis that Japanese government expenditure does not impact imports from Korea. The result is robust to various lag structures. Furthermore, money growth, used as a control in the regression analysis, has no statistical impact on Korean exports to Japan.

Table 1   Japanese Government Spending and Import Growth from Korea

Regression in Growth Rates	1980I-2003III		
Dependent Variable Real Korean Import Growth	Mean Value –0.00047		
Variables	Coefficient	Standard Error	t-ratio
Constant	0.001	0.008	0.13
Government Spending	0.57	0.35	1.64
Lag1	–0.82	0.41	–2.01
Lag2	–0.23	0.43	–0.52
Lag3	1.44	0.43	3.37
Lag4	–0.97	0.38	–2.56
Money Growth	0.71	0.34	2.09
Lag1	0.03	0.34	0.09
Lag2	–0.42	0.35	–1.20
Lag3	–0.06	0.33	–0.17
Lag4	–0.08	0.33	–0.23
R-squared Value	0.264		
Adjusted R-square Value	0.171		
F-Stat Value	2.84		
Chi-square, Sum of government spending Value	0.00011		
Prob.	0.992		
Durbin-Watson Statistic Value	1.78		

Note: We cannot reject the null hypothesis that the sum of coefficients of Japanese government spending is zero at conventional levels with probability 0.992. There is no evidence of non-stationarity in the data series. Results are robust to lag structure and specification of government spending in either levels or growth rates. Estimated coefficients, standard errors and t-ratios contain rounding errors.

Our benchmark regression therefore suggests that Korean exports to Japan will not suffer directly as a consequence of fiscal policy in that country. Furthermore, changes in monetary policy have no statistical impact on Korean exports to Japan. One might question whether there are issues of symmetry involved, since Japanese fiscal and monetary policy has been expansive since 1992, with fiscal policy particularly expansive over the period 1992-1998. It should be noted, however, that this series is quite long, from 1980-2004, a period over which there has been both expansionary and austere fiscal and monetary policy, so that symmetry is not a serious issue.

On this note, however, it is quite true that another implicit hypothesis has been imbedded, and we turn to this next.

The astute observer will no doubt note that the direct test outlined above contains the imbedded hypothesis that Japanese fiscal policy has no direct impact on Japanese growth, ergo Korean exports to Japan. This is indeed correct, and the hypothesis must be tested. We have therefore tested whether Japanese growth (with the seasonal and fixed component removed as above) is affected by government spending. Some may find the result surprising, though a little reflection suggests the results are sensible. In order to test this hypothesis, we estimate

$$JGDPGRO_t = \partial + \sum_{i=0}^{4} \beta_i (JGOVEXOGRO)_{t-i} + \sum_{i=0}^{4} \beta_i (JMONGRO)_{t-i} + \varepsilon_t. \quad (2)$$

In (2), we estimate Japanese GDP growth as a function of the growth of Japanese government expenditure. The dependent variable is therefore Japanese GDP growth, with growth in Japanese government expenditure as the key explanatory variable. Broad money growth is once again used as a control variable in estimating (2). As in the estimates of (1), the seasonal effects are dealt with in similar fashion, consistent with Hylleberg (1985) and Miron and Zeldes (1988). Data are once again obtained from *Datastream* and the original sources (General Affairs Bureau, Government of Japan and Bank of Japan). Diagnostic testing reveals no evidence of the presence of unit roots, and the regression Durbin-Watson statistic supports this.

Estimating (2), we find that we cannot reject the null hypothesis that the sum of the contemporaneous and lagged impact of such spending has no statistically significant impact on the dependent variable. The Chi-square value is 0.88 with a *p*-value of .35. Results are reported in table 2 with four lags of the spending variable, and results are robust with respect to lag structure. When we perform the estimate using levels of government expenditure rather than growth, results are similar with a chi-square value of 0.295, and *p*-value of 0.59. We can safely reject the hypothesis that Japanese fiscal policy has had significant impact on GDP growth.

Table 2   Japanese GDP % Change and Japanese Government Spending

| Regression in Growth Rates | 1980I-2003III | | |
| Dependent Variable % Change Real Japanese GDP | Mean Value | | |
Variables	Coefficient	Standard Error	t-ratio
Constant	6.65E-05	0.0016	0.041
Government Spending Growth	0.253	0.092	2.76
Lag1	0.019	0.082	0.23
Lag2	–0.141	0.082	–1.72
Lag3	–0.00096	0.08	–0.012
Lag4	0.104	0.098	1.06
Money Growth	0.10	0.07	1.37
Lag1	0.098	0.073	1.35
Lag2	–0.02	0.08	–0.25
Lag3	–0.042	0.073	–0.57
Lag4	0.015	0.072	0.21
R-squared Value	0.42		
Adjusted R-square Value	0.35		
F-Stat Value	5.7		
Chi-square, Sum of government spending Value Prob.	0.88 0.35		
Durbin-Watson Statistic Value	2.73		

Note: Estimated coefficients, standard errors and t-ratios contain rounding errors. We cannot reject the null hypothesis that the sum of current and lagged values of government expenditure growth have no statistical impact on GDP growth.

These results can be interpreted in a number of ways. Either agents are rational and expect that current government expenditure implies higher future taxation (as in Barro, 1974, 1977, 1979, 1980; Sargent, 1976) or the expenditure has been undertaken on 'unproductive' projects (i.e., those that substitute for private consumption, as in Aschauer, 1985 or Bleany *et al.*, 2001). In either case, the result is consistent with other tests undertaken in the literature (e.g., Mishkin, 1983; Aschauer, 1985; Bleany *et al.*, 2001). Alternatively, authorities may undertake fiscal expenditure packages for reasons that are more political and less economic (Patterson and Beason,

2002). To summarize the results, we first find that Japanese fiscal policy has no direct impact on Korean exports to Japan. We additionally find that Japanese fiscal policy appears to be neutral with respect to Japanese economic growth. We therefore conclude that Korean exports to Japan are somewhat insulated from changes in Japanese fiscal policy. Most importantly, this implies that future Japanese austerity measures (which are almost a certainty) will likely have little impact on Korean exports to that country.

3. POLICY IMPLICATIONS AND CONCLUSIONS

Our conclusions are simple. We have no doubt that Japanese authorities will have little choice but to enact severe austerity measures in the future in order to deal with the fiscal deficit and debt crisis. These measures are warranted by current circumstances as well as continuing demographic trends. These measures do not imply, however, that Japanese aggregate demand and economic growth will collapse. In turn, Japanese austerity does not imply that Korean exports to that country will implode. Our results confirm this observation.

These results may seem counterintuitive, but we think not on two grounds. First, the results with respect to the apparent neutrality with respect to fiscal neutrality, widely supported on empirical grounds with respect to international evidence (Bleany *et al*., 2001) suggest that agents endogenously adjust to fiscal policy changes. To concretize the Japanese case, this simply means that agents adjust spending and saving behavior in order to accommodate anticipated changes in fiscal regime. Second, and most directly related to this paper, Japanese consumers appear to behave rationally in terms of 'best source' for various consumer goods, such that changes in fiscal policy appear neutral with respect to their importing behavior. Regardless of interpretation, the results offer some comfort to Korean exporters.

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