**IS IMBALANCES AND
CURRENT ACCOUNT
SURPLUSES IN JAPAN:
IN MEMORY OF
PROFESSOR RONALD I. MCKINNON**

Charles Yuji Horioka

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Charles Yuji Horioka**

Asian Growth Research Institute; National Bureau of Economic Research; and Institute of Social and Economic Research, Osaka University

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Abstract

In this paper, I find (1) that Japan showed massive and persistent current account surpluses from at least 1981 and until at least 2011, (2) that Professor Ronald McKinnon was correct, at least in the case of Japan, and that these large and persistent current account surpluses were due primarily to Japan's large and persistent IS imbalances (the excess of saving over investment), (3) that the specific causes of the IS imbalances have changed dramatically over time, and (4) that future trends in Japan's IS imbalances (current account surpluses) are difficult to project but that they will probably not change dramatically in either direction in the foreseeable future.

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**Corresponding author: Charles Yuji Horioka, Asian Growth Research Institute, 11-4, Ohtemachi, Kokurakita-ku, Kitakyushu, Fukuoka 803-0814, JAPAN.   Telephone: 81-93-583-6202.   Facsimile: 81-93-583-4602.   Email address: horioka@agi.or.jp

1. Introduction

It is indeed unfortunate that the eminent economist and Stanford University professor Ronald I. McKinnon passed away on October 1, 2014, despite being as active and as sharp as ever. Professor McKinnon's best-known contribution to economics is probably his theory of "financial repression" and his assertion that the biggest impediment to economic development is not the lack of capital but the underdeveloped financial system (see, for example, McKinnon (1973, 1993)), but he made an equally important contribution to the field of international money and finance (see, for example, McKinnon (1996) and McKinnon and Ohno (1997)).

One of the centerpieces of Professor McKinnon's contribution to the field of international money and finance was his analysis of the determinants of trade and current account balances, and it is on this topic that I focus in this paper. Thus, the objectives of this paper are as follows: (1) to briefly describe Professor McKinnon's views on the determinants of trade and current account balances, (2) to analyze economy-wide and sectoral data on trends over time in saving, investment, and IS imbalances (the excess of saving over investment) on Japan for the 1980-2013 period to see whether or not Professor McKinnon's views apply in the case of Japan, and (3) to speculate about future trends in Japan's IS imbalances (current account surpluses).

This is an important topic for at least two reasons. First, Japan showed one of the largest trade and current account surpluses in the world until China came along after 2000. Second, Japan started showing bilateral trade and current account surpluses vis-à-vis the United States in the 1970s, and these bilateral imbalances were the largest in the world in the 1980s and 1990s. This, in turn, led to growing discontent in the United States and serious trade frictions between the two countries, with many Americans believing and asserting that the imbalances were due largely to "unfair" Japanese policies such as industrial policies that fostered export industries, export promotion policies, high tariffs and other trade barriers on imports, and an undervalued yen, which promoted exports and suppressed imports.

However, McKinnon and Ohno (1997) analyzed this very issue and showed convincingly that the persistent bilateral trade and current account imbalances between the United States and Japan reflect primarily macroeconomic imbalances in the two countries, especially "the increasing American tendency to overspend and the contrasting

Japanese proclivity to underspend their respective incomes (McKinnon and Ohno, 1997, p. 37)." In fact, one of Professor McKinnon's strongest convictions was that trade and current account balances are determined primarily by macroeconomic factors such as IS imbalances rather than by industrial, commercial, and exchange rate policies, and the aforementioned finding is just one specific instance of this general conviction. One objective of this paper is to update the analysis of McKinnon and Ohno (1997) to the present and to show that their analysis still applies, at least in the case of Japan.

I sent an earlier incarnation of this paper to Professor McKinnon on October 23, 2010, and he replied as follows by email just two days later: "Your analysis of Japan's IS balances and its current account surpluses is most convincing. I agree with you on the importance of net saving balances for trade surpluses." This is, of course, not surprising given how heavily influenced my own way of thinking is by Professor McKinnon's work.

To summarize the main findings of this paper, I find (1) that Japan showed massive and persistent current account surpluses from at least 1981 and until at least 2011, (2) that Professor McKinnon was correct, at least in the case of Japan, and that these large and persistent current account surpluses were due primarily to Japan's large and persistent IS imbalances, (3) that the specific causes of the IS imbalances have changed dramatically over time, and (4) that future trends in Japan's IS imbalances (current account surpluses) are difficult to project but that they will probably not change dramatically in either direction in the foreseeable future, meaning that what will determine global imbalances is not what happens in Japan but what happens in the United States, China, and elsewhere.

The remainder of this paper is organized as follows. Section 2 is a brief survey of the relevant theoretical and empirical literature; section 3 describes the data source; section 4 presents data on economy-wide and sectoral saving, investment, and IS imbalances in Japan during the 1980- 2013 period in order to shed light on the causes of trends over time in Japan's current account surpluses; section 5 speculates about future trends in Japan's IS imbalances (current account surpluses); and section 6 is a brief concluding section.

2. A Brief Survey of the Theoretical and Empirical Literature

Two accounting identities that hold in all countries are as follows:

$$CA = S - I \qquad (1)$$
$$CA = X - M + NFI + NCT \qquad (2)$$

where CA = current account balance,

> S = national saving
>
> I = domestic investment
>
> X = exports of goods and services
>
> M = imports of goods and services
>
> NFI = net factor income (such as interest and dividends) from abroad
>
> NCT = net current transfers (such as foreign aid) from abroad

What equation (1) says is that the current account balance is determined by the domestic IS imbalance (the excess of saving over investment), just as Professor McKinnon believed and asserted. Why is this? It is because saving that is not used to finance domestic investment has nowhere to go but abroad, and when the excess of saving over investment flows abroad, this leads to a capital account deficit equal in magnitude to the IS imbalance that must be offset by a current account surplus of equivalent magnitude for the country's balance of payments to remain in equilibrium.

Moreover, as equation (2) shows, the current account balance equals the sum of the trade balance, net factor income from abroad, and net current transfers from abroad. Since, in most cases, the largest component of the current account balance is the trade balance, IS imbalances will be the primary determinant not only of the current account balance but also of the trade balance.

There is a contrary view that a country's industrial, commercial, and exchange rate policies will influence its trade and current account balances, but these equations demonstrate that such policies will not, by themselves, influence the country's trade and current account balances unless they somehow affect its IS imbalances.

For example, let us suppose that country J reduces or eliminates trade barriers (increases or eliminates import quotas) on a certain good, say, beef. This will lead to an increase in imports of beef, which, in turn, will initially reduce the country's trade surplus. However, this will cause the country's overall balance of payments to go into

deficit (assuming it was initially in equilibrium), which, in turn, will cause the country's currency to depreciate if the country adheres to a flexible exchange rate regime. This, in turn, will lead to an increase in exports, which are now cheaper abroad, and to a decrease in imports of goods other than beef, which are now more expensive at home. The country's currency will continue to depreciate until its trade surplus returns to its original level and its balance of payments returns to equilibrium. Thus, the end result will be that the country's trade and current account surpluses will be exactly the same as before, with the only difference being a change in the composition of imports and exports, with imports of the good whose trade barriers were reduced or eliminated increasing, imports of all other goods declining, and exports of all goods increasing. Thus, the reduction or elimination of trade barriers on a particular good will benefit foreign producers of that good but will hurt foreign producers of all other goods, meaning that such a policy will not necessarily increase the social welfare of country J's trading partners. Moreover, the same argument can be used to show that the elimination of industrial policies and export promotion policies would also not affect country J's trade and current account surpluses and would also not necessarily increase the social welfare of country J's trading partners.

McKinnon and Ohno (1997) corroborated these theoretical expectations by showing convincingly that the persistent bilateral trade and current account balances between the United States and Japan reflect primarily macroeconomic imbalances in the two countries, as noted earlier. Moreover, other researchers have obtained further corroboration of the theory. For example, Kawai and Takagi (2015) showed, using a vector autoregressive model of Japanese net exports, that the real effective exchange rate has only a short term (less than 3 year) impact on Japan's net exports and that the medium- to long-term level of net exports are due to fundamental factors such as saving and investment.

In sum, both the theoretical and empirical evidence demonstrate that only policies that affect IS imbalances will have a long-run impact on trade and current account balances and that industrial, commercial, and exchange rate policies will not, by themselves, have a long-run impact on trade and current account balances. The policy implication of this finding is that the only way to achieve a permanent reduction in the trade and current account surpluses of a country with persistent surpluses is to reduce the IS imbalances of that country (either by reducing its saving and/or by increasing its investment).

3. Data Source

In this section, I discuss the data source used for my analysis. All data used were taken from the National Accounts *(Kokumin Keizan Keisan)* of the Economic and Social Research Institute of the Cabinet Office *(Naikaku-fu Keizai Shakai Sougou Kenkyuusho)* of the Japanese Government.   The data for the 1980-93 period are based on the United Nations' 1993 System of National Accounts (SNA) with a benchmark year of 2000, while the data for the 1994-2013 period are based on the same SNA but with a benchmark year of 2005.

These data are available in published form as well as on-line at the following website:
http://www.esri.cao.go.jp/jp/sna/data/data_list/kakuhou/files/files_kakuhou.html

This source provides data for the economy as a whole as well as for five sectors of the economy: (1) households (including private unincorporated enterprises), (2) private nonprofit institutions serving households, (3) nonfinancial corporations, (4) financial institutions, and (5) the government.   However, for ease of exposition, I combine the five sectors into three sectors: (1) and (2) are combined and called the household sector, (3) and (4) are combined and called the corporate sector, and (5) is used as is and called the government sector.

I will use data on net saving and investment (gross saving and investment minus the consumption of fixed capital or depreciation) throughout because it is only net saving that leads to increases in net worth and only net investment that leads to increases in the capital stock.

Furthermore, I include capital transfers in saving because they are unrequited transfers that are used to finance the recipient's capital formation or capital accumulation. Examples of capital transfers are subsidies from the government to private companies for the purpose of financing capital formation and inheritance and gift taxes paid by households to the government (the latter are negative transfers from the point of view of households).

4. Trends over Time in Japan's Economy-wide and Sectoral Saving, Investment, and IS Imbalances

In this section, I present data on the level of, and trends over time in, sectoral and economy-wide saving, investment, and IS imbalances (current account balances) in Japan from 1980 until 2013 (the most recent year for which data are available) in order to shed light on the causes of the level of, and trends over time in, Japan's current account surpluses.[1]

Figure 1 and Table 1 show trends over time in the ratios of economy-wide saving, investment, IS imbalances, and current account balances to gross domestic product (GDP) in Japan during the 1980-2013 period (except that current account balances are not shown in Figure 1 because they equal IS imbalances except for a statistical discrepancy, meaning that the two are almost identical). As can be seen from this figure and table, Japan's IS imbalances (current account balances) have been in surplus in every year since 1981, ranging from 0.41% (0.45%) to 4.77% (4.86%) of GDP and averaging 2.51% (2.59%) of GDP, and the magnitude of these imbalances was especially large during the 1983-2011 period, ranging from 1.33% (1.40%) to 4.77% (4.86%) of GDP and averaging 2.77% (2.85%) of GDP. Japan's imbalances exceeded 2% of GDP in 24 (24) of the 29 years during the 1983-2011 period, exceeded 3% of GDP in 11 (12) of the 29 years, and exceeded 4% of GDP on two occasions during this period, reaching 4.16% (4.18%) of GDP in 1986 and 4.77% (4.86%) of GDP in 2007. After 2011, Japan's imbalances fell sharply, from 2.03% (2.03%) of GDP in 2011 to 1.00% (1.02%) of GDP in 2012 and further to 0.52% (0.67%) of GDP in 2013 but remained in surplus. Japan showed such persistent IS imbalances (current account surpluses) throughout the 1981-2013 period because saving consistently exceeded investment by a considerable margin, as can be verified from Figure 1 and Table 1.

Turning to trends over time in Japan's IS imbalances (current account balances), it can be seen from Figure 1 and Table 1 that there were no clear trends in these imbalances during the 1980-2013 period even though both saving and investment showed sharp downward trends throughout most of this period, with the ratio of saving to GDP declining from 17.39% in 1980 to -0.23% in 2009 (except for a temporary rebound in 1983-89) and the ratio of investment to GDP declining from 18.48% in 1980 to -3.05% in 2009 (except for a temporary rebound in 1984-90) before recovering slightly. The

reason is that saving and investment showed very similar trends over time during the 1980-2013 period, as a result of which the sharp decline in saving was largely offset by an equally sharp decline in investment, leaving the excess of saving over investment largely unchanged.

As noted earlier, Japan's IS imbalances (current account surpluses) were especially large (saving exceeded investment by an especially wide margin) during the 1983-2011 period, and I will now attempt to shed light on the causes of these imbalances by examining data on trends over time in sectoral saving and investment. Since the causes of the large and persistent imbalances were dramatically different during the 1983-1993 and 1994-2011 periods, I will consider these two periods separately.

4.1. Reasons for the Large IS Imbalances (Current Account Surpluses) during the 1983-93 Period

Figures 2 and 3 and Table 2 show trends over time in the ratio of sectoral saving and sectoral investment to GDP, respectively, in Japan during the 1980-2013 period, and as can be seen from these figures and table, the two main causes of the large and persistent IS imbalances (current account surpluses) during the earlier 1983-93 period were the high levels of household and government saving, which caused economy-wide saving to exceed economy-wide investment by a large margin (this finding is perfectly consistent with the aforementioned finding of Ohno and McKinnon (1997)). As shown in Figure 2 and Table 2, the ratio of household saving to GDP ranged from 8.10% to 11.00% and averaged a full 9.19% during this period, whereas it ranged from 0.21% to 6.52% and averaged only 2.71% during the 1994-2011 period. Similarly, the ratio of government saving to GDP ranged from 0.27% to 6.02% and averaged a full 3.58% during the 1983-93 period, whereas it ranged from -8.39% to 1.47% and averaged only -3.33% during the 1994-2011 period and was negative in every year after 1997.

Why were household and government saving so high during the 1983-93 period? Figure 4 shows trends over time in Japan's household saving rate (the ratio of household saving to the household disposable income) during the 1955-2013 period, and as can be seen from this figure, Japan's household saving rate has been high (in excess of 10%) from at least 1955 until at least 1995, reaching as high as 23.2% (nearly one-quarter of household disposable income!) in 1974 and 1976.[2] There has been a voluminous literature on the reasons why Japan's high household saving rate was so

high during most of the postwar period (see, for example, Hayashi (1986, 1997) and Horioka (1989, 1990, 1991, 1993, 1997, 2008)).   This literature attributes Japan's high household saving rate to a large number of factors, among them (1) the young age structure of the population, (2) the high rate of economic and income growth, (3) the inadequacy of public old-age pensions and other social insurance programs, (4) the unavailability of housing loans and consumer credit, (5) tax breaks for saving, (6) low initial levels of household wealth, (7) the government's saving promotion activities, (8) culture and tradition (especially the Confucian ethic of frugality), and (9) the bonus system of compensation whereby a large proportion of one's salary is paid in the form of semiannual bonuses.   Horioka (1989) conducts a cross-country analysis of the determinants of the private saving rate in the member countries of the Organisation for Economic Co-operation and Development (OECD) and finds that Japan's high private saving rate is due primarily to the young age structure of its population (the share of the aged in Japan's total population was the lowest among the OECD countries at the time) but that other factors also contributed toward elevating Japan's private saving rate; the same conclusions undoubtedly apply to Japan's household saving rate as well.

Turning to the reasons for the high government saving in Japan during the 1983-93 period, it was due primarily to the fact that Japan pursued very conservative fiscal policies during this period (see Noguchi (1987) for more details).   The Fiscal Act of 1947 prohibited the issuance of government bonds except to finance public works spending, but the Japanese government did even better, following a balanced budget policy and not issuing even "construction bonds" (government bonds issued for the purpose of financing public works spending) until Fiscal Year 1965.   Furthermore, the Japanese government did not issue "deficit bonds" (government bonds issued for the purpose of financing government deficits) until Fiscal Year 1975, when the First Oil Crisis of 1973-74 made it necessary to do so.   Even then, only limited amounts of government bonds were issued, and the government embarked on "fiscal reconstruction" efforts soon after it first issued "deficit bonds" in Fiscal Year 1975, recommending the introduction of a general consumption tax in October 1977, establishing a deficit reduction objective in 1980, gradually lowering the ceiling for increases in budget requests by each government ministry or agency, and establishing the Ad Hoc Council on Administrative Reform, whose mission was to recommend ways of rationalizing government, in March 1981.   Moreover, tax revenues surged during the economic boom of the late 1980s, which further reduced government deficits.

Thus, the large IS imbalances (current account surpluses) in Japan during the 1983-93 period were due primarily to the high levels of household and government saving, which are two of the most distinctive and well-known features of the postwar Japanese economy.

4.2. Reasons for the Large IS Imbalances (Current Account Surpluses) during the 1994-2011 Period

Whereas high household and government saving were the main causes of Japan's large IS imbalances (current account surpluses) during the 1983-93 period, both household and government saving collapsed during the 1994-2011 period, as already shown (see Bosworth (2012) for a discussion of the decline in household and government saving and the offsetting increase in corporate saving, to be discussed later).

Looking first at the causes of the collapse of household saving during the 1994-2011 period, Figure 4 shows that Japan's household saving rate declined precipitously during the 1994-2011 period, from 11.2% in 1994 to 0.4% in 2008 before recovering slightly to 2.7% in 2011, according to the United Nations' 1993 System of National Accounts (SNA) with a benchmark year of 2005. The share of the aged in Japan's total population was the lowest in the developed world as recently as the 1970s, and this was the main cause of Japan's high household saving rate at the time, as discussed earlier, but it increased at the fastest rate in human history and is now the highest in the world. The single most important cause of the collapse of household saving during the 1994-2011 period was this rapid population aging, as shown by Horioka (1989, 1991, 1997), but it was aided and abetted by the collapse of economic and income growth, the expansion of public old-age pensions and the introduction of the public long-term care insurance program in April 2000, the increasing availability of housing loans and consumer credit, the abolition of most tax breaks for saving in March 1988, rapid increases in household wealth holdings due partly to high household saving rates and partly to massive capital gains on land and equities, the discontinuation of the government's saving promotion activities, and the weakening of culture and tradition over time. In short, virtually all of the factors responsible for Japan's high household saving rates in the past have weakened or become inapplicable over time, and therefore it is not surprising that household saving collapsed during the 1994-2011 period (see Horioka (2008)).

The collapse of government saving during the 1994-2011 period was due primarily to the twenty-year recession that led to a stagnation of tax revenue and the need for stimulative fiscal policies (especially in 1995-96), sharp increases in social spending due to the aging of the population, and the long delays in hiking the consumption tax due to fierce political opposition (a 3% consumption tax was introduced in April 1989 but it could not be increased to 5% until April 1997 and to 8% until April 2014) (see Posen (1998) for more details). As a result, Japan's gross general government debt to GDP ratio in 2012 was by far the highest in the developed world (234.8% vs. 164.2% in Greece, 136.3% in Portugal, 136.0% in Italy, 131.3% in Ireland, and 123.8% in the United States).

Since both household and government saving collapsed during the 1994-2011 period, the fact that large IS imbalances (current account surpluses) persisted even during the 1994-2011 period means that completely different factors were responsible for the large imbalances during this period. As Figures 2 and 3 and Table 2 show, the main causes of the IS imbalances (current account surpluses) during the 1994-2011 period were the high level of corporate saving and the low levels of corporate investment and government saving. Whereas the ratio of corporate saving to GDP ranged from 1.92% to 4.99% and averaged only 3.69% during the 1983-93 period, it was dramatically higher during the 1994-2011 period, ranging from 1.95% to 9.00% and averaging a full 6.37%. By contrast, whereas the ratio of corporate investment to GDP ranged from 5.08% to 14.39% and averaged a full 9.78% during the 1983-93 period, it was dramatically lower during the 1994-2011 period, ranging from -1.26% to 3.84% and averaging only 1.61% during this period. Similarly, whereas the ratio of government investment to GDP ranged from 3.60% to 5.42% and averaging a full 4.17% during the 1983-93 period, it was dramatically lower during the 1994-2011 period, ranging from 0.42% to 5.15% and averaging only 2.51%.

Why was corporate saving so high and why were corporate and government investment so low during the 1994-2011 period? Corporate saving was high because corporations wanted to improve their balance sheets and accumulate retained earnings following the financial crises. Corporate investment was low because of the 20-year recession in Japan, poor economic prospects for the future, and the shifting of manufacturing production abroad. Government investment was low because of the government's precarious fiscal situation throughout this period, because Prime Minister Junichiro

Koizumi cut public works spending sharply during his years in power (2001-06), and because the Democratic Party of Japan did likewise during its years in power (2009-12).

As shown above, Japan has traditionally shown relatively low levels of corporate saving and relatively high levels of corporate and government investment. Thus, the factors responsible for the large and persistent IS imbalances (current account surpluses) during the 1994-2011 period were *not* traditional features of the Japanese economy, and Japan was able to continue showing large imbalances even after 1993 because the economy underwent a massive structural change from a high-growth trajectory with high saving and high investment to a low-growth trajectory with low saving and low investment and because, by coincidence, the two trajectories produced roughly the same magnitude of imbalances for completely different reasons.

4.3. Reasons for the Lower IS Imbalances (Current Account Surpluses) during the 2012-13 Period

The ratio of Japan's IS imbalances (current account surpluses) to GDP fell sharply from 2.03% (2.03%) in 2011 to 0.52% (0.67%) in 2013, as Figure 1 and Table 1 show, despite an increase in the ratio of corporate saving to GDP from 7.07% to 8.21% because the ratio of household saving to GDP declined further from 2.08% to -0.06%, becoming negative for the first time since at least 1955, and because the ratio of household investment to GDP increased from -2.42% to -1.14%, as Figures 2 and 3 and Table 2 show. The ratio of Japan's IS imbalances (current account surpluses) to GDP fell even further to 0.54% in 2014, but it has been rebounding sharply in 2015 and exceeded 3% in the first 6 months of 2015. Thus, it appears that the decline in Japan's imbalances in 2012-14 may have been only a temporary phenomenon, but unfortunately, data are not yet available on sectoral saving and investment in 2014-15 so it is not possible to determine the causes of the recent rebound in Japan's imbalances.

4.4. A Re-interpretation of My Findings using Data on Sectoral IS Imbalances

Figure 5 and Table 2 show trends over time in the ratio of sectoral IS imbalances to GDP in Japan during the 1980-2013 period, and as can be seen from this figure and table, the aforementioned findings can be recast in terms of sectoral IS imbalances. Since high household saving and high government saving were the primary causes of the large IS imbalances (current account surpluses) during the earlier 1983-93 period, it

is not surprising that household and government IS imbalances were positive and large during this period.   The ratio of household IS imbalances to GDP ranged from 6.67% to 11.65% and averaged a full 9.12% during the 1983-93 period, whereas it ranged from 0.91% to 6.40% and averaged only 3.41% during the 1994-2011 period.   Similarly, the ratio of government IS imbalances to GDP ranged from -4.18% to 2.04% and averaged -0.59% (i.e., was only slightly negative) during the 1983-93 period, whereas it ranged from   -1.28% to -10.31% and averaged -5.85% (i.e., was very negative) during the 1994-2011 period.

Similarly, since high corporate saving and low corporate and government investment were the primary causes of the large IS imbalances (current account surpluses) during the later 1994-2011 period, it is not surprising that corporate IS imbalances were positive and large during this period.   The ratio of corporate IS imbalances to GDP ranged from -0.88% to 8.98% and averaged a full 4.75% during the 1994-2011 period, whereas it ranged from -11.53% to -2.42% and averaged only -6.08% during the 1983-93 period.   However, since the decline in government saving was larger than the decline in government investment during the 1994-2011 period, government IS imbalances were lower during this period than during the 1983-93 period, as noted earlier, and thus the government sector did not contribute toward elevating economy-wide IS imbalances (current account surpluses) during the 1994-2011 period.

Finally, the decline in economy-wide IS imbalances in 2012-13 was due primarily to the increase in household saving and the decrease in household investment, both of which served to increase the household IS imbalance, so it is not surprising that the ratio of the household IS imbalance to GDP declined sharply from 4.50% in 2011 to 1.08% in 2013.

Thus, all of my findings can be re-interpreted in terms of sectoral IS imbalances, which helps to solidify our understanding of what transpired.

5.   Future Trends in Japan's IS Imbalances (Current Account Surpluses)

Having discussed past trends in Japan's IS imbalances (current account surpluses) and the causes thereof, I now speculate about future trends in these imbalances (see Kawai and Takagi (2015) for more details).   There are factors that would be expected to cause

Japan's imbalances to increase as well as factors that would be expected to cause them to decrease, making it difficult to project future trends therein.

Looking first at factors that would be expected to cause Japan's imbalances to decline in the future, there are at least two such factors. First, household saving can be expected to decline even further as population aging proceeds even further. Second, corporate saving can be expected to taper off once corporate restructuring is completed and enough retained earnings have been accumulated for unexpected contingencies.

By contrast, there are at least three factors that can be expected to cause Japan's imbalances to increase in the future. First, government saving will surely increase because the Japanese government will have no choice but to achieve fiscal consolidation and reduce its sovereign debt, given that Japan's gross government debt to GDP ratio is the highest in the developed world and borders on unsustainability. Second, corporate investment will remain stagnant even after the economy recovers due to declining population, which will alleviate the need to expand the productive capacity of the economy, and the continued shift of manufacturing production abroad. Third, government investment will remain stagnant because of the poor state of government finances and because the declining population will alleviate the need for additional social infrastructure investment.

Thus, there are factors working in both directions and it is not clear whether Japan's IS imbalances (current account surpluses) will increase or decrease, on balance. It is therefore not surprising that there is no consensus regarding future trends in Japan's current account surpluses, with the Japanese government projecting continuing current account surpluses, some private institutions and think tanks projecting current account deficits by as early as 2015, some projecting current account surpluses until 2020 or even later, and academicians (such as Kawai and Takagi (2015)) projecting deficits or surpluses depending on which scenario is used. What is clear is that Japan's imbalances will not change dramatically in either direction in the foreseeable future and therefore that what will determine global imbalances is not what happens in Japan but what happens in the United States, China, and elsewhere.

One last caveat is that, because the Japanese hold a considerable amount of foreign assets, they will earn a considerable amount of investment income abroad and therefore

that Japan's trade balance will be in deficit even if its current account balance is in surplus unless its current account surplus is of sufficient magnitude.

6. Conclusion

In this paper, I (1) briefly described Professor McKinnon's views on the determinants of trade and current account balances, (2) analyzed economy-wide and sectoral data on trends over time in saving, investment, and IS imbalances on Japan for the 1980-2013 period to see whether or not Professor McKinnon's views apply in the case of Japan, and (3) speculated about future trends in Japan's IS imbalances (current account surpluses).

To summarize the main findings of this paper, I found (1) that Japan showed massive and persistent current account surpluses from at least 1981 and until at least 2011, (2) that Professor McKinnon was correct, at least in the case of Japan, and that these large and persistent current account surpluses were due primarily to Japan's large and persistent IS imbalances (the excess of saving over investment), (3) that the specific causes of the IS imbalances have changed dramatically over time, and (4) that future trends in Japan's IS imbalances (current account surpluses) are difficult to project but that they will probably not change dramatically in either direction in the foreseeable future, meaning that what will determine global imbalances is not what happens in Japan but what happens in the United States, China, and elsewhere.

Thus, Professor McKinnon's views about the determinants of trade and current account balances are correct, at least in the case of Japan, and can be used not only to analyze the causes of past trends in the current account balances of individual countries and to forecast future trends therein but also to help us to understand and predict global imbalances. Professor McKinnon's research in this area is therefore of great importance not only to economists but also to practitioners and policymakers, and he will be sorely missed for this reason as well as many others.

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Figure 1: Trends in Economy-wide Saving, Investment, and IS Imbalances, 1980-2013
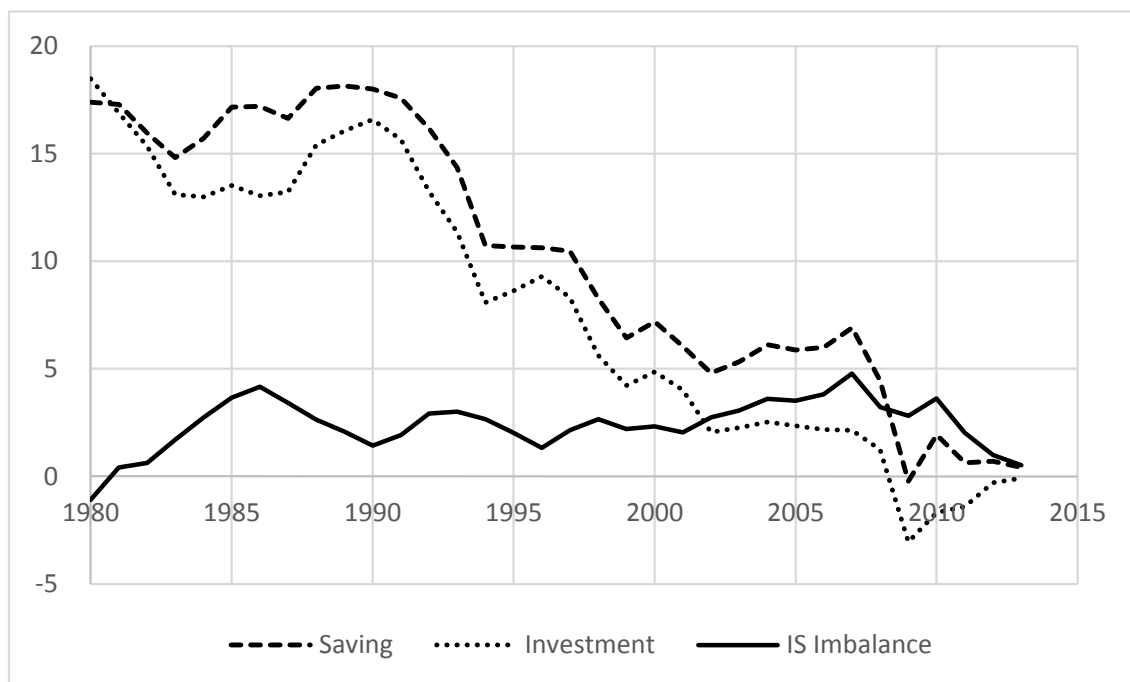
Notes: Denote the ratios of economy-wide saving, investment, and IS imbalances to gross domestic product (GDP) (in percent).

The figures for 1980-1993 are based on the United Nations' 1993 System of National Accounts (SNA) with a benchmark year of 2000, while the figures for 1994-2013 are based on the same SNA with a benchmark year of 2005.

Data Source: National Accounts *(Kokumin Keizan Keisan)* of the Economic and Social Research Institute of the Cabinet Office *(Naikaku-fu Keizai Shakai Sougou Kenkyuusho)* of the Japanese Government.   See main text for details.

Figure 2: Trends in Sectoral and Economy-wide Saving, 1980-2013
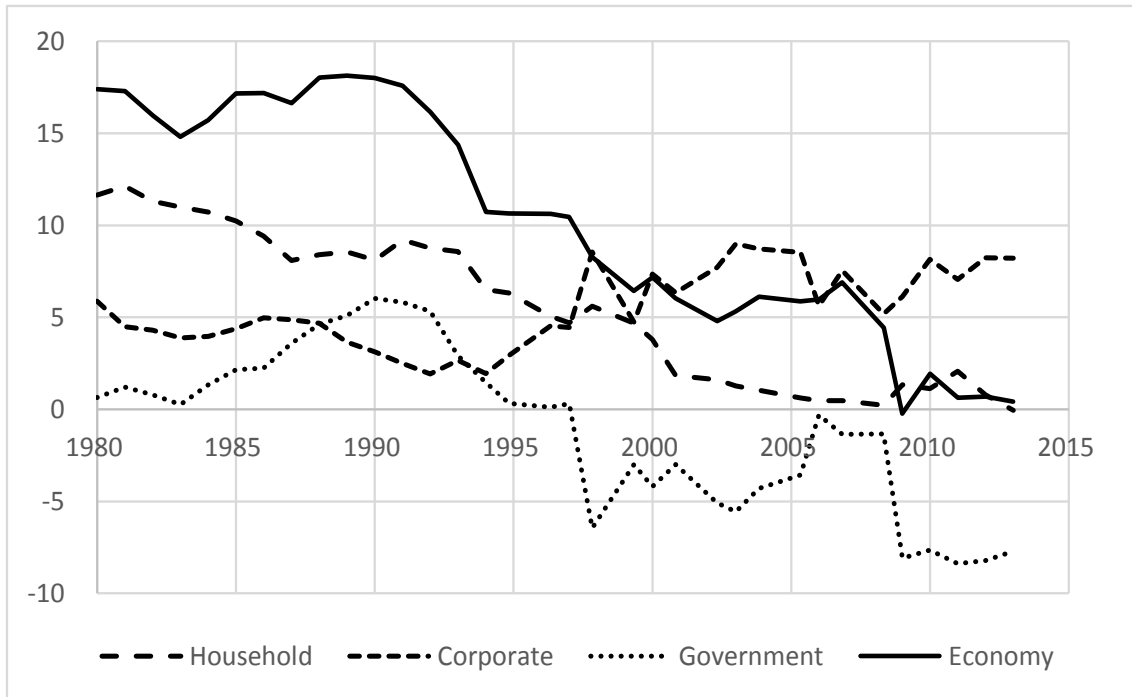
Notes: Denote the ratios of sectoral (household, corporate, and government) and economy-wide saving to gross domestic product (GDP) (in percent).

The figures for 1980-1993 are based on the United Nations' 1993 System of National Accounts (SNA) with a benchmark year of 2000, while the figures for 1994-2013 are based on the same SNA with a benchmark year of 2005.

Data Source: National Accounts (Kokumin Keizan Keisan) of the Economic and Social Research Institute of the Cabinet Office (Naikaku-fu Keizai Shakai Sougou Kenkyuusho) of the Japanese Government.　See main text for details.

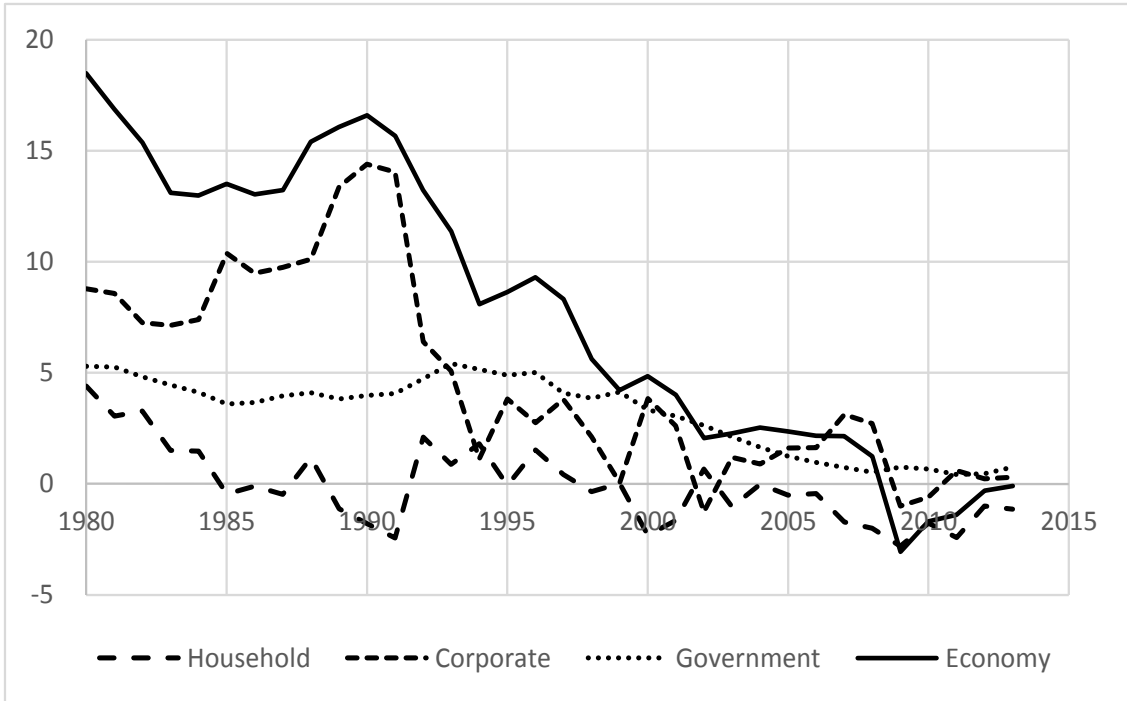## Figure 3: Trends in Sectoral and Economy-wide Investment, 1980-2013

Notes: Denote the ratios of sectoral (household, corporate, and government) and economy-wide investment to gross domestic product (GDP) (in percent).

The figures for 1980-1993 are based on the United Nations' 1993 System of National Accounts (SNA) with a benchmark year of 2000, while the figures for 1994-2013 are based on the same SNA with a benchmark year of 2005.

Data Source: National Accounts *(Kokumin Keizan Keisan)* of the Economic and Social Research Institute of the Cabinet Office *(Naikaku-fu Keizai Shakai Sougou Kenkyuusho)* of the Japanese Government.   See main text for details.

Figure 4: Trends in the Household Saving Rate, 1955-2013
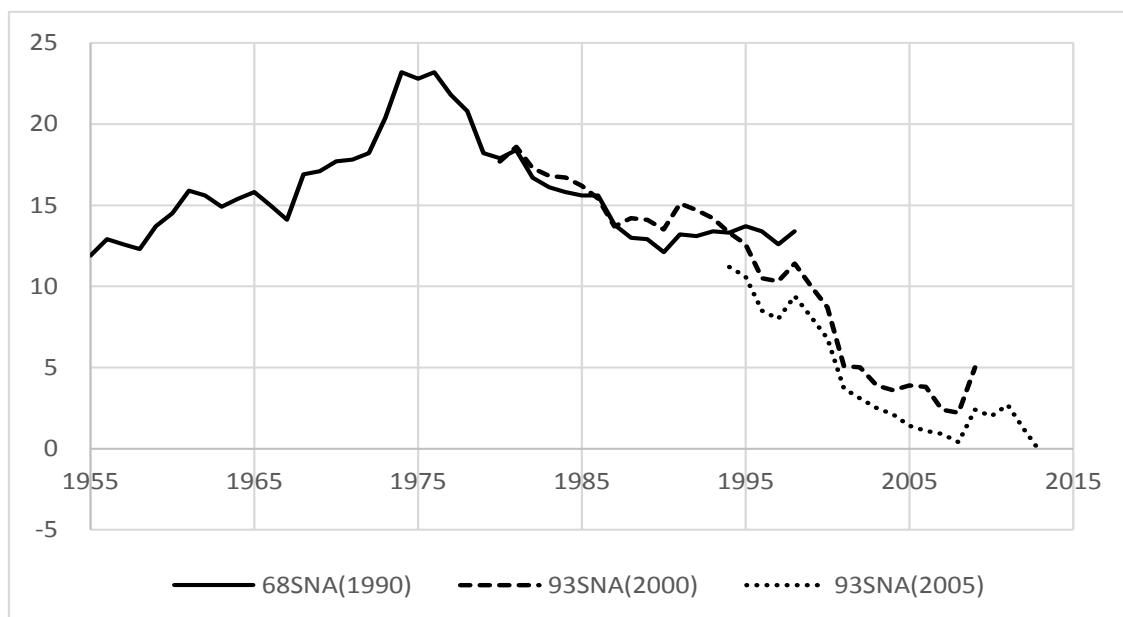
Notes: Denote the ratio of net saving to net disposable income of households including private unincorporated enterprises but not including private non-profit institutions serving households (in percent).

The solid line shows figures based on the United Nations' 1968 System of National Accounts (SNA) with a benchmark year of 1990, the dashed line shows figures based on the United Nations' 1993 System of National Accounts (SNA) with a benchmark year of 2000, and the dotted line shows figures based on the same SNA with a benchmark year of 2005.

Data Source: National Accounts *(Kokumin Keizan Keisan)* of the Economic and Social Research Institute of the Cabinet Office *(Naikaku-fu Keizai Shakai Sougou Kenkyuusho)* of the Japanese Government.   See main text for details.

Figure 5: Trends in Sectoral and Economy-wide IS Imbalances, 1980-2013
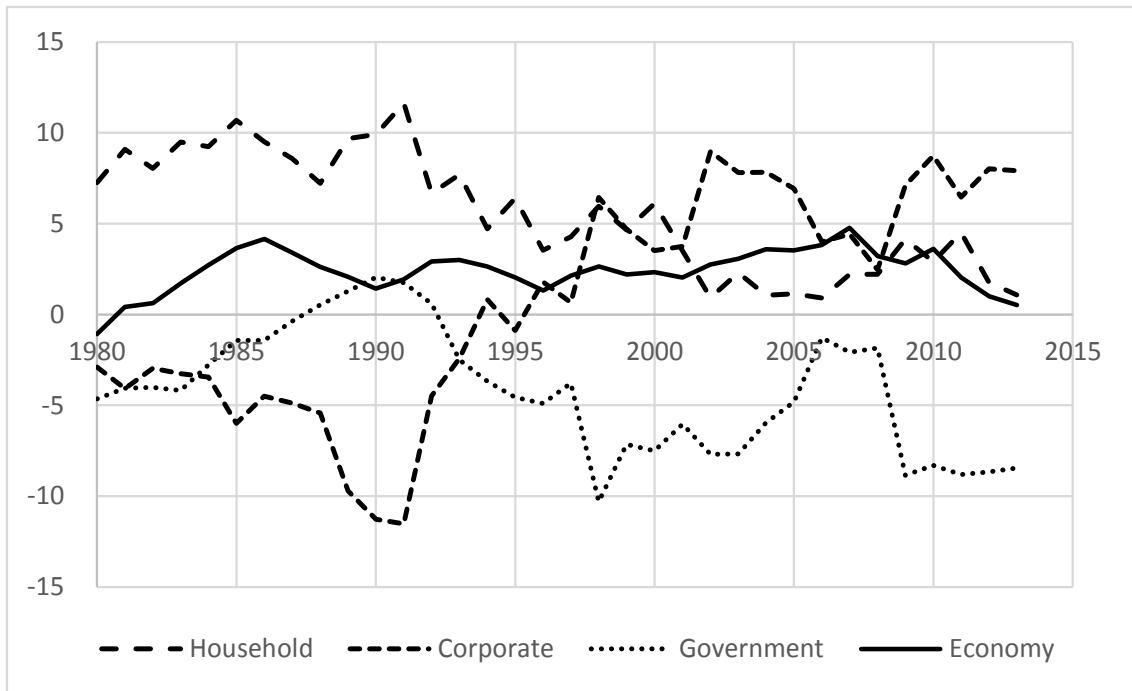

Notes: Denote the ratios of sectoral (household, corporate, and government) and economy-wide IS imbalances to gross domestic product (GDP) (in percent).

The figures for 1980-1993 are based on the United Nations' 1993 System of National Accounts (SNA) with a benchmark year of 2000, while the figures for 1994-2013 are based on the same SNA with a benchmark year of 2005.

Data Source: National Accounts *(Kokumin Keizan Keisan)* of the Economic and Social Research Institute of the Cabinet Office *(Naikaku-fu Keizai Shakai Sougou Kenkyuusho)* of the Japanese Government.   See main text for details.

Table 1: Trends in Economy-wide Saving, Investment, IS Imbalances, and Current Account Balances

Calendar Year	Saving	Investment	IS Imbalance	Current Account Balance
1980	17.39	18.48	-1.09	-1.05
1981	17.29	16.88	0.41	0.45
1982	15.98	15.36	0.62	0.66
1983	14.81	13.10	1.71	1.76
1984	15.72	12.99	2.73	2.77
1985	17.16	13.51	3.65	3.68
1986	17.19	13.03	4.16	4.18
1987	16.63	13.23	3.41	3.44
1988	18.03	15.40	2.63	2.66
1989	18.14	16.06	2.08	2.12
1990	18.01	16.58	1.43	1.46
1991	17.58	15.66	1.92	1.95
1992	16.16	13.23	2.93	2.96
1993	14.36	11.37	3.00	3.03
1994	10.73	8.08	2.65	2.69
1995	10.66	8.63	2.03	2.07
1996	10.62	9.29	1.33	1.40
1997	10.46	8.31	2.15	2.24
1998	8.28	5.62	2.65	3.03
1999	6.43	4.22	2.21	2.59
2000	7.18	4.85	2.33	2.53
2001	6.05	4.01	2.04	2.11
2002	4.80	2.05	2.75	2.83
2003	5.33	2.26	3.07	3.16
2004	6.12	2.53	3.59	3.70
2005	5.88	2.35	3.52	3.63
2006	5.99	2.17	3.82	3.93
2007	6.91	2.14	4.77	4.86
2008	4.45	1.24	3.21	3.32
2009	-0.23	-3.05	2.82	2.92
2010	1.93	-1.69	3.62	3.71
2011	0.64	-1.39	2.03	2.03
2012	0.69	-0.31	1.00	1.02
2013	0.43	-0.09	0.52	0.67
1983-1993	16.71	14.02	2.69	2.73
1994-2011	6.23	3.42	2.81	2.93

Notes: Denote the ratios of economy-wide saving, investment, IS imbalances, and current account surpluses to gross domestic product (GDP) (in percent).

The figures for 1980-1993 are based on the United Nations' 1993 System of National Accounts (SNA) with a benchmark year of 2000, while the figures for 1994-2013 are based on the same SNA with a benchmark year of 2005.

Data Source: National Accounts *(Kokumin Keizan Keisan)* of the Economic and Social Research Institute of the Cabinet Office *(Naikaku-fu Keizai Shakai Sougou Kenkyuusho)* of the Japanese Government.   See main text for details.

Table 2: Trends in Sectoral Saving, Investment, and IS Imbalances, 1980-2013									
Calendar	Household Sector			Corporate Sector			Government Sector		
Year	Saving	Investment	IS Imbalance	Saving	Investment	IS Imbalance	Saving	Investment	IS Imbalance
1980	11.65	4.39	7.25	5.88	8.79	-2.91	0.65	5.30	-4.66
1981	12.13	3.05	9.09	4.50	8.57	-4.07	1.21	5.26	-4.05
1982	11.31	3.28	8.03	4.31	7.26	-2.96	0.80	4.81	-4.01
1983	11.00	1.51	9.48	3.88	7.13	-3.26	0.27	4.45	-4.18
1984	10.71	1.47	9.25	3.96	7.41	-3.45	1.35	4.11	-2.77
1985	10.24	-0.46	10.70	4.38	10.38	-5.99	2.17	3.60	-1.43
1986	9.41	-0.11	9.52	4.99	9.48	-4.49	2.24	3.66	-1.43
1987	8.10	-0.48	8.58	4.88	9.75	-4.87	3.58	3.96	-0.38
1988	8.41	1.18	7.23	4.69	10.12	-5.43	4.63	4.11	0.52
1989	8.55	-1.13	9.68	3.66	13.37	-9.71	5.11	3.82	1.29
1990	8.12	-1.78	9.90	3.12	14.39	-11.26	6.02	3.98	2.04
1991	9.21	-2.44	11.65	2.50	14.04	-11.53	5.81	4.06	1.75
1992	8.77	2.10	6.67	1.92	6.40	-4.48	5.33	4.73	0.60
1993	8.57	0.87	7.70	2.66	5.08	-2.42	2.92	5.42	-2.49
1994	6.52	1.80	4.72	1.95	1.13	0.82	1.47	5.15	-3.68
1995	6.32	-0.07	6.40	2.94	3.82	-0.88	0.32	4.88	-4.56
1996	5.07	1.53	3.54	4.54	2.75	1.79	0.11	5.02	-4.90
1997	4.71	0.43	4.28	4.46	3.80	0.66	0.30	4.09	-3.79
1998	5.60	-0.35	5.95	8.55	2.12	6.43	-6.45	3.86	-10.31
1999	4.68	0.03	4.66	4.76	0.06	4.70	-3.00	4.14	-7.14
2000	3.80	-2.31	6.11	7.35	3.84	3.51	-4.19	3.32	-7.51
2001	1.84	-1.65	3.49	6.35	2.61	3.75	-2.99	3.05	-6.04
2002	1.61	0.67	0.93	7.72	-1.26	8.98	-5.07	2.64	-7.71
2003	1.27	-1.04	2.31	9.00	1.19	7.81	-5.55	2.12	-7.67
2004	1.05	-0.01	1.05	8.72	0.89	7.84	-4.30	1.65	-5.95
2005	0.63	-0.50	1.14	8.54	1.61	6.93	-3.57	1.24	-4.81
2006	0.47	-0.44	0.91	5.64	1.64	4.00	-0.31	0.97	-1.28
2007	0.49	-1.72	2.20	7.55	3.12	4.43	-1.35	0.74	-2.09
2008	0.21	-2.00	2.22	5.18	2.72	2.46	-1.34	0.52	-1.86
2009	1.33	-2.81	4.14	6.13	-1.00	7.12	-8.08	0.76	-8.84
2010	1.14	-1.77	2.90	8.14	-0.60	8.74	-7.64	0.67	-8.31
2011	2.08	-2.42	4.50	7.07	0.60	6.47	-8.39	0.42	-8.81
2012	0.79	-0.99	1.78	8.25	0.23	8.01	-8.21	0.45	-8.66
2013	-0.06	-1.14	1.08	8.21	0.30	7.91	-7.71	0.75	-8.46
1983-1993	9.19	0.07	9.12	3.69	9.78	-6.08	3.58	4.17	-0.59
1994-2011	2.71	-0.70	3.41	6.37	1.61	4.75	-3.33	2.51	-5.85

Notes: Denote the ratios of sectoral (household, corporate, and government) saving, investment, and IS imbalances to gross domestic product (GDP) (in percent).

The figures for 1980-1993 are based on the United Nations' 1993 System of National Accounts (SNA) with a benchmark year of 2000, while the figures for 1994-2013 are based on the same SNA with a benchmark year of 2005.

Data Source: National Accounts *(Kokumin Keizan Keisan)* of the Economic and Social Research Institute of the Cabinet Office *(Naikaku-fu Keizai Shakai Sougou Kenkyuusho)* of the Japanese Government. See main text for details.

Endnotes

[1] See McKinnon and Ohno (1997), Bosworth (2012), and Bosworth and Collins (2015) for a similar analysis for the United States, Huang and Tao (2015) for a similar analysis for China, Kawai and Takagi (2015) for a similar analysis for Japan, and Bosworth and Kawai (2015) for a useful survey of all countries.

[2] Note that the household saving rates shown in Figure 4 are not directly comparable to the figures on household saving shown in Figure 2 and Table 2 because the denominator is household disposable income rather than GDP and because the saving of private non-profit institutions serving households is not included.