

CANADIAN LONG-TERM REAL INTEREST RATES

(a report prepared for TD Securities and TD Bank by Charles Freedman¹)

Executive Summary

1. Introduction

Various measures of the long-term real interest rate in Canada and elsewhere have shown a trend decline since the mid-1990s, a tendency that received increased attention in the middle part of this decade when long-term nominal and real interest rates in the United States did not respond in the traditional way to the tightening of monetary policy. This paper addresses a number of questions relating to the movements in long-term real interest rates in Canada and abroad. First, what has been the role in the decline of the long-term real interest rate of the various factors noted in the literature, and, to the extent that it can be determined, what is their relative importance? Second, what is the relative importance of global factors as opposed to domestic factors in explaining movements of Canadian long-term real interest rates? Third, looking forward about 10 years, what can be said about the likely movements of the factors that drive real interest rates, and what is the projected outcome for the long-term real interest rate in Canada?

2. Analytic approach

There are two relationships that underlie the long-term real rate of interest – one from a domestic perspective and one from a foreign perspective. From a domestic perspective, the long-term real interest rate is equal to the average expected future short-term real interest rates in the country over the time period under consideration, plus the relevant risk premiums. These risk premiums – the term risk premium, the inflation risk premium (in the case of an unindexed bond), the fiscal risk premium, the liquidity risk premium, and the premium for maturity preference – are related to domestic considerations. From a foreign perspective, the domestic long-term real interest rate is equal to the foreign long-term real interest rate plus the expected change in the real exchange rate plus premiums for country risk (including, most importantly, relative risks

in the country in which the investment is taking place compared to those in the country in which the investor resides) and currency risk.

Both of these relationships have to be satisfied at the same time. The way that this can be done is to think of these relationships as being only part of a general equilibrium framework in which interest rates and exchange rates (as well as other variables) adjust to satisfy a number of equilibrium conditions. That said, in different situations, the explanatory factors in the domestic relationship or in the foreign relationship can play the more important role in explaining movements in real interest rates.

More generally, there are four factors that appear to be particularly important in affecting how closely domestic real interest rates track foreign real interest rates following foreign and domestic demand shocks. These factors are the openness of the economy; the extent of the spillover of global demand shocks into domestic demand; the expected duration of domestic and global demand shocks; and the degree of substitutability in financial markets. The more open the economy, the larger the spillover from global demand shocks into domestic demand, the greater the substitutability in financial markets, and the longer the expected duration of domestic and global demand shocks, the closer real interest rates in the small home country will track real interest rates in the large foreign country. Thus, in a large country such as the United States, one would expect shocks to domestic factors to play a larger role than in a small open economy such as Canada, where shocks to global factors would be likely to play the more important role, but not necessarily to dominate totally.

3. Explanatory factors for past and future developments in global and Canadian long-term real rates of interest

There are four main hypotheses in the literature to explain the decline in global long-term real interest rates over

the past decade. These are the saving glut, the reduction in inflation volatility, the reduction in overall volatility in the economy (most notably in output), and specific investment decisions by holders of international reserves and/or pension funds. In addition, there is a factor that has received less attention globally but that has been important in the case of Canada, namely the improved relative fiscal situation.

The most commonly cited hypothesis in the literature on the low long-term real interest rates has been the saving glut hypothesis. The basic argument is that, over the last few years, *ex ante* (or desired) savings have exceeded *ex ante* (or desired) investment worldwide. The emphasis on global developments derives from the perception that the low interest rate environment over the last few years is a global phenomenon, affecting many countries, and therefore that the explanation must come from a worldwide phenomenon. In the classic model in which real interest rates are determined over the long run by real developments, namely factors affecting real savings and real investment, an upward movement in the desired level of savings relative to the desired level of investment would result in a decline in real interest rates. The latter would tend to reduce savings and/or increase investment in order to bring about a balance between savings and investment and hence to equilibrate the savings-investment relationship.

There are two variants to this explanation. One focuses on the movement in savings while the other focuses on investment developments. There is an important issue as to whether saving or investment developments are the more important in bringing about the resulting saving glut.

Those who have emphasized the role of savings behaviour as central to the saving glut have focused on a number of elements that might explain the world rate of desired savings declining less than the world rate of desired investment. These include the increasing importance in the world economy of those countries that have high rates of saving, most notably East Asian countries. A second source of strength in the saving rate has been the sharply increased income of oil exporting countries over the last few years. A third element of the strength in saving rates has been the high corporate saving rates as profits have been very high relative to historical standards. Also, the strength of demographically-driven household savings in economies with aging populations may have contributed to the relative strength of world desired savings.

What are the likely future developments in the world

saving rate? One factor in the direction of maintaining or perhaps increasing the desired level of global saving would be the projected increase over time in the relative importance in the world economy of those developing countries that have traditionally had very high rates of saving. Offsetting this to some extent is likely to be the increased desire for consumption on the part of households in these countries as more of them move up the income ladder. Moreover, to the extent that countries such as China act to improve the safety net underpinning the welfare of their population, households will have less need to save for precautionary purposes. The net result for world saving of these conflicting developments is hard to predict, but they will certainly be a key factor in the outcome.

Views as to the likely developments in world savings would have to include some projection of future fiscal outcomes. Because of the important political element in such developments, it is very difficult to make accurate forecasts of this factor. The underlying political and economic pressures will likely prevent the budgetary situation in most countries from getting out of control, but many countries may continue to run fiscal deficits of the size that we have seen in the recent period. And many of the developing and emerging countries tend to be reasonably conservative in their budgetary policies, and this will have a favourable impact over time on world fiscal outcomes, especially as they become a larger part of the world economy.

Demographic factors in advanced economies may also have offsetting effects. On the one hand, in line with the lifecycle hypothesis, the aging of the population in industrialized economies should eventually lead to lower rates of saving, as retirees run down their accumulated assets in retirement. However, the increase in life expectancy (and the uncertainty surrounding individual life spans) and the desire by retirees and prospective retirees to leave an estate to their progeny may cause some offset to this tendency to dissave. As well, if the increases in asset prices (both housing and equities) of the last few years, which have been an important factor in underpinning high rates of household expenditure and low rates of household saving out of income, do not persist, there will be pressure on households to increase their rates of saving.

It is difficult to come to a firm view on the outcome of these various pressures on world saving. Over time, it will be important for participants in financial markets to track the factors that drive the world saving rate as one of the key elements in determining the global real interest rate. I

believe that the factors affecting world saving will move only gradually and that the world saving rate will likely rise gradually from current rates, but will remain somewhat lower than average historical rates.

World intended investment appears to have been low relative to historical experience. In most major industrial countries, corporate capital investment has failed to match increases in corporate cash flow in recent years, as businesses remained cautious in spite of their improved balance sheet position. Similarly, Japanese investment was restrained following the collapse of the speculative bubble in the early 1990s. And investment in many emerging countries in Asia (excluding China) remained subdued after the financial crisis of the late 1990s. In some countries, the strength of new residential construction provided some offset to the weakness in corporate investment.

Among the factors that have been suggested for the dearth of new investment opportunities in advanced economies is the effect of slowly growing or declining workforces and capital-labour ratios that are already high. As well, the increasing desire of corporations to improve their balance sheet rather than to engage in new real investment may have been related to “the increasing competitiveness of the environment for individual corporations” (Rajan, 2006), even though the overall macroeconomic environment remained favorable. While the circumstances in many developing countries are exactly the opposite of those in advanced economies (rapidly growing workforces and low capital-labour ratios in these countries), the cautious attitudes following the financial crises of the late 1990s and some concern on the part of domestic and foreign lenders about the safety of investments in some of these countries may have lessened the tendency towards higher investment that might have been expected in these countries. And foreign direct investment in particular may have been restrained (relative to what it might have been) by the uncertainties of the legal and institutional arrangements in emerging economies. Finally, in some areas, such as telecoms, past excessive investment may still be in the process of being worked off.

Looking forward, one might expect higher investment rates in the emerging/developing economies in line with the demographic situation in those countries relative to those in advanced economies, accompanied by higher foreign direct investment as confidence increases in the stability of these countries. And improved financial infrastructures in developing countries will contribute both to the rise in

foreign direct investment inflows and increased opportunities for domestic investment and residential construction. Thus, over time the differing demographic pressures on advanced and emerging economies will likely lead to substantially increased investments in developing and emerging economies by lenders in industrialized countries, provided that the institutional and legal environment and the financial infrastructure of developing and emerging economies are supportive of such foreign investment. In addition, as the cautious attitudes resulting from the financial crises of the late 1990s dissipate and the over-investment in the high-tech area is worked off, the relatively low investment ratios in many emerging economies are likely to reverse. All these developments should act in the direction of appreciably increased world investment rates.

Overall, it would appear that the main source of the saving glut has been relatively low intended investment rather than relatively high intended saving. Nonetheless, looking forward, the factors driving both intended saving and intended investment will play a role in the movements of long-term real interest rates. While some of the driving factors over the last few years may be long-lasting, others are likely to become less important or even disappear over time.

Looking forward, the combination of somewhat higher saving rates and appreciably higher investment rates should result in the reduction of the saving glut and somewhat higher real interest rates. The upward pressures on long-term real interest rates from movements in desired world saving and investment should in principle be gradual, and probably not overly strong. However, sudden changes in market views with respect to the fundamental factors driving world saving and investment could lead to abrupt changes. Also, it is extremely unlikely that a reversal of the global saving glut would return long-term real interest rates to the levels of the 1980s and 1990s because of the other factors that have also contributed to the decline in world real interest rates over recent years, factors to which we now turn.

With the decline in inflation and in inflation volatility in the 1990s and 2000s in both industrialized and emerging economies, there was a gradual decline in expected inflation as well as in the uncertainty surrounding inflation. The result of the increased confidence of investors that central banks would act to maintain the low rates of inflation that had been achieved was a decline in the inflation risk premium attached to conventional bonds. This decline in the

inflation risk premium was probably an important factor in reducing nominal interest rates and the proxy for real interest rates derived from conventional bond rates, but not the proxy for real interest rates derived from the rate of return on indexed bonds. Looking forward, while there may be some reversal in the decline in the inflation risk premium if central banks are faced in the future with unfavorable shocks that they cannot easily offset in the short run, the commitment of central banks to maintaining low rates of inflation and to countering upward pressures on inflation over time should prevent the inflation risk premium on conventional bonds from rising very much from their current low levels. However, given the current low level, there would be little expectation of a further decline in the inflation risk premium.

A decline in overall economic volatility, in particular output volatility, would likely result in a decline in the term risk premium. Given that the reduction in output volatility in recent years has been widespread internationally, the decline in the term risk premium likely played some role in the global decline in long-term real interest rates. Looking forward, it does not seem that there is much possibility of further declines in the term risk premium. Whether it will increase from the current low level will depend in large part on whether the lower volatility of the economy as a whole that we have seen over the last few years can be maintained. For those who explain the lower volatility of the economy as a result of fewer and/or smaller shocks than in past decades, there is a considerable likelihood of a reversal in the lower term risk premium since there is little reason to expect a continuation of this more benign environment over the long run. In contrast, for those who attribute an important role in the reduction of economic volatility to better policy, most notably to monetary policy that has kept inflation low and stable and has thereby avoided many of the distortions associated with high rates of inflation, the likelihood of a substantial increase in term risk premiums in the future is much less.

The two types of investor preferences that have received most attention in the literature on long-term real interest rates are the purchases of US treasuries by foreign countries as they accumulated foreign exchange reserves and the tendency for pension funds and other long-term institutional investors to shift into longer-term debt. The effect on interest rates on specific financial instruments of supply effects and demand preferences depends on the substitutability across financial instruments. The

greater is the substitutability, the less is the effect of such supply and demand pressures, as other participants in financial system change their positions in financial instruments to take advantage of any interest rate effects. Substitutability is greater in the longer run than in the shorter run, as new instruments and techniques are developed to take advantage of interest rate spreads resulting from supply and demand pressures. Thus, while shifts in asset demand related to official capital flows and pension fund investments may have had some short-run effects on specific interest rates, they are unlikely to have played an important role in the longer-term global developments.

A very important factor in the movement of Canadian long-term real interest rates relative to those in other countries, most notably the United States, appears to have been the improvement in the fiscal track in Canada that began with the February 1995 budget of the federal government. Looking forward, if Canadian fiscal outcomes continue to be better than their US counterparts, the apparent negative fiscal risk premium on Canadian government bonds relative to their US counterparts that seems to be developing could well continue. In such a case, the Canadian long-term real interest rates would be lower than those in the United States, other things being equal. This effect on interest rates would be the result of the relatively low fiscal risk premium in Canada, rather than specifically linked to the supply of long-term debt provided by the federal government. Thus, even if the better fiscal position resulted in a reduction only in short-term debt issued by the federal government, the lower fiscal risk premium should result in a reduction in the long-term real interest rate. Moreover, if Canadian inflation performance in the future is as good as, or better than, the US inflation performance, lower real interest rates in Canada than in the United States would also translate into lower nominal interest rates in Canada than in the United States.

4. Summary and conclusions

In sum, it would appear that the explanation for the developments in real interest rates globally and in Canada over the last decade or so is multifaceted, with no one single explanation able to account for all the relevant phenomena. The saving glut has been a key factor in the decline of the global real interest rate over the period under examination, along with the declines in the inflation risk premium and the term risk premium. Demand and supply preferences for specific assets or specific terms to

maturity might help to explain developments in the rates of return on particular assets in certain countries, but do not rank in importance with the other factors.

Movements of global real interest rates (largely caused by the saving glut and the worldwide decline in term and inflation risk premiums) played a key role in the decline in Canadian real interest rates. In addition, the improvement of the fiscal situation in Canada relative to that in the United States contributed importantly to the fact that Canadian long-term real interest rates declined more over the period than did US long-term real interest rates. It is likely that the declines in the term risk premium and the inflation risk premium in Canada were not much different from the declines in these risk premiums elsewhere, and therefore the relative movements in these risk premiums were unlikely to have contributed much to the relative decline in Canadian long-term real interest rates.

Looking forward, the level of Canadian long-term real interest rates that is likely to prevail a decade from now will depend both on global developments and on specifically Canadian developments.

I would expect US long-term real rates 10 years from now to be higher than the lows that they reached of about 1% to 1½% and even than the current levels of about 2% to 2½%, and that they would be in the neighborhood of 3%, somewhat above the long-term real rates of about 2 2/3% prevailing in the relatively stable 1961 to 1965 period.¹ This projection is somewhat higher than the level that prevailed during the reference period because the United States no longer has the advantages of having the only large open financial market in the world, and being by far the largest economy in the world and the center of the world financial system. As well, its internal and external debt situations are far worse than in the earlier period. The nominal long-term rates corresponding to those projected real rates would be about 5%, assuming that the explicit or implicit target rate of inflation is set at 2 percent. If inflation rates should rise and/or become more volatile, I would expect real rates to be somewhat higher than this projec-

tion and nominal rates to be higher by a greater amount. If target inflation rates in the United States should be reduced below 2%, it would likely have little effect on long-term US real interest rates, but would result in lower long-term US nominal interest rates.

As far as Canadian long-term real interest rates are concerned, possible deviations from global rates could arise from differences in inflation volatility or economic volatility relative to those elsewhere. The most likely outcome in my view is that inflation volatility and economic volatility remain subdued in Canada in much the same way as elsewhere, and therefore idiosyncratic developments arising from these types of volatility in Canada would not be a source of deviations of long-term real interest rates in Canada from long-term global real interest rates. What is more likely is that Canada will adhere to a better fiscal track than the United States and therefore will be able to maintain slightly lower real interest rates than in the United States because of a lower fiscal risk premium. The projection would therefore be on the order of 2¾% in Canada. As is the case with the global projection, I believe specific demand and supply characteristics of Canadian debt will not be very significant in the longer run although they could influence short-run movements in long-term real interest rates. If the target rate of inflation remains at 2%, this would imply a long-term nominal rate of interest in the neighborhood of 4¾%.

The implication of the above analysis is that both US and Canadian yield curves should have small positive slopes on average, as a result of the small remaining term risk premium, inflation risk premium, and, where relevant, fiscal risk premium. Over time, as aggregate demand movements put upward and downward pressure on inflation relative to explicit or implicit inflation targets, the yield curve will have periods of negative and positive slope.

Of course, there is a great deal of uncertainty surrounding these projections. What is most important in assessing them is to remember that they are conditional on the assumptions contained in the above discussion.

Endnotes for the title

- ¹ Scholar in Residence, Economics Department, Carleton University, Ottawa, Canada; formerly Deputy Governor, Bank of Canada. I would like to thank Deming Luo for very helpful research assistance, and Don Drummond and John Murray for very useful comments on an earlier draft of this report.

Endnotes for the executive summary

- ¹ The choice of 1961 to 1965 as a reference period is based on the fact that it succeeded the economically more volatile 1950s and preceded the period of rising inflation that began in the second half of the 1960s.