THREE CHEERS FOR MORTGAGE INNOVATION!

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Inside...

I. Recent mortgage product innovation in Canada 1

II. Mortgage innovations in other countries 2

III. Core drivers of mortgage innovation 3

- Driver #1: Copying corporate and public debt innovation 3
- Driver #2: Capital market disintermediation 3
- Driver #3: A new point in the product life-cycle 4
- Driver #4: Labour force changes 4
- Driver #5: Low and stable inflation 4
- Driver #6: Rising financial sophistication 5

IV. Broader implications 5

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Canadians are beginning to see product innovation in mortgages along the lines of what is already available in other countries, but this is just the tip of the iceberg. The mortgage market of the future will likely be thoroughly unrecognizable by today's standards. Furthermore, the structure of the economy-wide household balance sheet could become thoroughly transformed with higher debt-to-income ratios and higher leverage (or debt-to-assets) made possible through a healthy, logical product mix shift without compromising debt serviceability.

It is vitally important to understand that there are sound, global drivers to this innovation, and not to misrepresent it as late-cycle improvidence. Indeed, those firms that don't have a proper understanding and that don't reposition themselves today through more effective market segmentation and product innovation will be left to compete on costs and margin alone, offering at best average profitability while their most profitable segments are nibbled away by agile competitors. To gain this understanding, it is necessary to position recent Canadian innovation in a broader global context alongside a focus on the drivers and key implications of mortgage product innovation.

I. Recent mortgage product innovation in Canada

There are four recent developments worth highlighting in Canada. First, the arrival of ***interest-only mortgages***. This product allows a household to make interest-only payments and defer principal for the introductory period of the mortgage, after which payments are adjusted higher to reflect both interest and accelerated principal repayments to make up for earlier deferred principal payments. As such, there is a significant jump in the payments at that point.

The ***sub-prime market*** is a further development and entails granting mortgages to individuals who have below normal credit quality or lack the home-market credit and employment histories usually required by traditional lenders for conventional mortgages. This market exists in the United States, the United Kingdom and Australia. It is virtually non-existent elsewhere. To call the Canadian experience a true sub-prime market is a bit of a misnomer; near-prime would be a better characterization. This is because, unlike other countries, the Canadian sub-prime market is so far targeting individuals who have just slightly below normal credit quality characteristics unlike in other markets where the target is substantially lower credit quality individuals.

Third, it is now possible to obtain a 35+ year amortization period on a mortgage, beyond the conventional 25-year mortgage that has long been available. ***Longer amortizations*** will substantially raise the total interest bill to finance a home purchase and won't make sense to everyone. But, they still have a place and offering this product is all about providing market completeness. Individuals vary in terms of the emphasis they place on present versus future consumptio, as well as to what extent they wish to leverage differing expectations for long-run real estate gains. Differences in risk tolerance may also lead some to pay down relatively low-rate debt slowly while accumulating larger portfolios of higher-yielding investments.

Some lenders are offering ***hybrid products*** with fixed ceilings on the amount of credit granted, but enable individual households to choose multiple combinations of individual mortgages and home equity lines, each with different possible terms and fixed versus variable choices. In essence, they are a step in the direction of offering custom-tailored financing options while still using conventional mortgage principles with interest- and principal-repayment.

Some of these products are being made possible by innovation at Canada's four mortgage insurers — the Canada Mortgage and Housing Corporation, Genworth Financial Canada, and new arrivals pending regulatory approval (A.I.G.U.G. Inc. and PMI Mortgage Insurance Inc.). They are mere facilitators of innovation acting in concert with global drivers. Indeed, one of the implications of innovation that will be discussed in this paper is that the world has changed since the CMHC was established in 1946. There is a weak case to be made for a Crown corporation to be involved in correcting private market failures that once restrained home ownership. As such, the CMHC should be fully privatized while pursing other complementary policy reforms.

II. Mortgage innovations in other countries

The pace of innovation and range of mortgage products now being offered in Canada pales in comparison to the rest of the world. Interest-only mortgages have long been available in the United States, but are also now available in Denmark, the Netherlands and the United Kingdom. Sub-prime lending exists in at least the United States, Australia and the United Kingdom, but is closer to true deeper subprime lending than what in Canada is thus far more appropriately viewed as near-prime lending. Much, but by no means all, mortgage product innovation started in the United States, but examples of the wave of innovation go well beyond ideas that originated stateside.

Accordion adjustable rate mortgages offer fixed payments but uncertain maturities. The loan payments are fixed throughout the life of the loan, but the life of the loan is not known, although there is usually a limit. In essence, these mortgages allow the borrower to extend the length of principal repayment while retaining an unchanged monthly payment. Belgium is the market that comes to mind for this product.

An ***equity or savings mortgage*** allocates part of a regular payment to interest, the other part goes into a fixed interest savings, or equity, account. It can be tax-motivated, but is not always. These exist in varying forms in the United Kingdom, Netherlands and Belgium.

Offset mortgages exist in the United Kingdom and involve savings and mortgage products held in the same, or linked, accounts with savings offset against the mortgage balance.

Equity finance mortgages have recently been introduced in Australia and allow homebuyers to borrow a portion of the value of their home in exchange for a share in any capital gain when the property sells, while sharing the pain of any capital loss with investors. This essentially brings the world of equity financing to homebuying decisions.

Covered mortgage bonds are mortgage securitizations where the financial institution continues to hold the mortgage on its balance sheet, but issues secured, or "covered", bonds against its mortgage portfolio. Legal rights and the underlying loans satisfy conditions set out in a law regulating the issuance of covered bonds. A ***structured covered bond*** is similar in nature, but similar rights and risk protections are put in place through the use of derivatives contracts. These products are available in a number of markets including the United Kingdom and Spain, among others.

Green mortgages exist in the United Kingdom and allow borrowers to finance part of their home with a conventional product and to finance environmentally friendly construction and renovations with a tax-preferred product.

Reverse, or lifetime, mortgages exist in many markets and involve borrowing through a lump sum or a series of drawdowns against equity in the home. They can be a way of unlocking home equity for retired individuals without incurring transaction fees and other drawbacks associated with selling. In some circumstances, however, the lump sum payment can render an individual ineligible to participate in means-tested benefits, or face clawbacks. This is one of many problems with means-tests on social programs. Some countries alternatively use the term lifetime mortgage to describe products with long loan amortization periods.

Ultra-high loan-to-value mortgages primarily exist in the United States and involve loan values in excess of 100% of the property value at the point of purchase. The embedded assumption is that as long as standard debt-service requirements are met, the risk of what happens to house prices can be priced through loan spreads.

Negative amortization loans involve making a minimum payment that may be less than the interest-only payment, and which results in a growing loan balance. The interest rate adjusts monthly and the principal payment adjusts annually while the borrower has the option on how large a payment to make.

Tracker mortgages are loans with interest rates that are automatically adjusted in line with movements in the yield on a pre-specified market instrument. They are available in the United Kingdom, and the United States including treasury rate trackers.

Multi-currency mortgages, available in Austria, are denominated in non-euro currencies such as the Swiss franc and Japanese yen.

Hybrid mortgages offer fixed rates for the first few years, then floating rates thereafter, or vice versa.

Spain is often put forth as the reputed leader in market segmentation strategies at some of their banks. It's about as close to applying structured finance principles to the household market as anywhere. All of these forms of mortgage innovation are partly about serving under-served populations through more effective market segmentation and niche marketing. They are not all suitable products for everyone, which is what market segmentation is all about.

The challenge now lies in determining the global drivers of mortgage product innovation, not least of which through radically transforming the structure of household finances to adopt the principles of corporate financial innovation over the decades.

III. Core drivers of mortgage innovation

There are six key drivers of mortgage innovation.

Driver #1: Copying corporate and public debt innovation

Household debt markets have been slow to adopt principles that are conceptually no different than those that have long been available to businesses and governments as also argued in our paper, "The Rise of Household Inc." (July 2005). In most countries, household debt markets began to be deregulated and developed long after corporate and public debt markets. In Canada, for example, it took the National Housing Act of 1954 and the Bank Act of 1967 to deregulate household debt markets long after corporate and public debt markets had been established. Hence, the product life cycle and need for innovation lags behind in household debt markets.

Consider some analogies. A zero-interest mortgage is too often treated as if postponed principal repayment is a shocking, novel concept. Yet it is conceptually no different than a plain-vanilla bond with coupon payments made on a regular schedule. Principal that is repaid at maturity in the case of bonds is mixed with interest after a principal-free grace period in the case of zero-interest mortgages. Another example is to view a 0% consumer loan with deferred principal repayment as being conceptually similar to a strip bond. A 0% car loan with amortized principal repayment is like a coupon-only corporate bond stripped of principal repayment, or a series of bullet bonds. An interest-only credit line is like a plain-vanilla corporate coupon bond but with an uncertain maturity. A multi-currency mortgage is like a multi-FX foreign bond.

Further, many mortgage products are now beginning to capitalize on the development of global derivatives markets in much the same way as has existed in bond markets for many years. For instance, a hybrid mortgage has embedded implicit interest rate options. An ultra-high loan-to-value mortgage is essentially just a mortgage with an embedded call option on the value of the equity in the home. Several of these products are conceptually similar to corporate bonds with embedded callable, putable and convertible options. This derivatives analogy works in completing mortgage product offerings to individuals and, through the rise of tradeable real estate securities like MBSs, is gradually allowing lenders to use options to hedge associated risks in a static or dynamic manner.

The next wave of innovation could well entail carrying the corporate/sovereign analogy further. ***Anniversary mortgages*** would be similar in concept to bullet bonds, with lump-sum payments on infrequent pre-set dates. A ***bullet mortgage*** would borrow a discounted sum today for full repayment, say, 10 years down the road. ***Accelerator or decelerator mortgages*** would require payments that gradually ramp up or down, low in the early years for, say, recent medical school graduates, or high in the early years, say for those facing windfalls or future expenses. A ***true interest-only mortgage*** with all principal repayment postponed until maturity would be like a coupon bond.

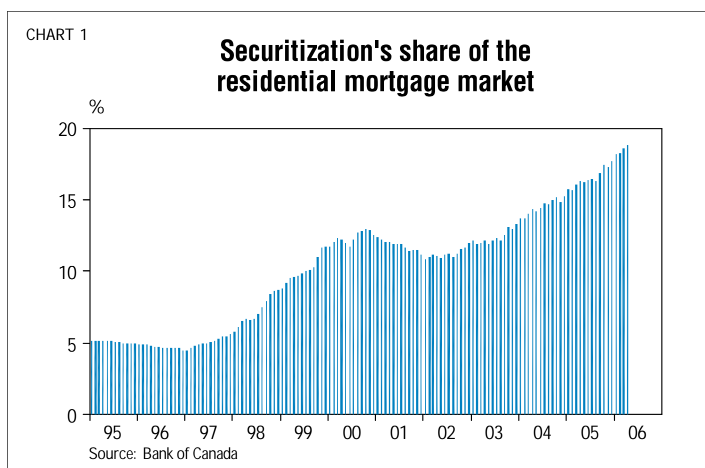
There are, however, two key differences in applying these principles to the household sector. One is the power of diversification. The law of large numbers comes into play when dealing with millions of households that offer the ability to diversify away individual credit risk often times to a far greater degree than for lumpy, concentrated corporate credits. Financial institutions will also likely have to beef up their toolset and advisory roles to the household sector to help consumers understand the risks that businesses and government have long faced in dealing with a broader array of financing products. We will return to this point in a discussion of key implications.

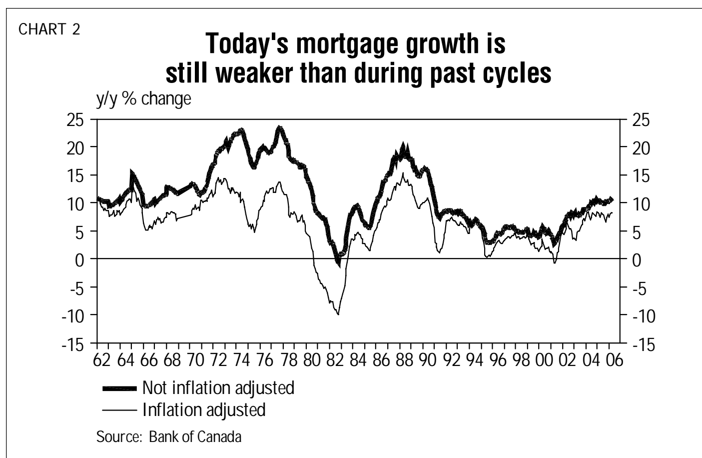
Driver #2: Capital market disintermediation

Partly because household banking markets lag behind other debt markets in their development, it took longer for a secondary market to develop that would unbundle and price risks in a manner that has encouraged innovation in corporate and public debt markets.

Indeed, one of the main drivers of household debt innovation in general, and mortgages in particular, has been the push towards disintermediating the core balance sheet activities of financial services enterprises. It has taken much longer for financial institutions to become disintermediated in the funding of household products than it took for that to occur in corporate markets. In essence, mortgage product innovation has been hamstrung by balance sheet limitations but is now being recast in light of the separation of funding and origination activities. Securitization (and covered bonds in other markets as previously noted) serves to free up the market to do more innovative and longer-term products than can typically be funded with short-term constraints on less diversified balance sheets.

Chart 1 provides a depiction of this trend in the Canadian context that, while significant, actually pales in relation to the experiences in other markets like the United States and the United Kingdom. About one-sixth of the Canadian mortgage market is held not on the balance sheets of mortgage originators like banks, life insurers, credit unions/caisses populaires, trust and mortgage loan companies. It is





held by private investors, pensions and other institutional investors in Canada and from abroad who own bonds used to finance mortgage holdings in separately established trusts once sold off by originators.

A further implication is that this means more efficient pricing of risks, and an overall economy-wide, or worldwide, drop in systemic risk attached to mortgage portfolios. By corollary, it may well come to mean that regulatory and economic capital requirements applied to mortgage portfolios could drop as market disintermediation and innovation move forward, or at least cancel out with risks associated with some newer products.

This trend may also come to mean fundamental changes for asset-liability management roles in corporate treasury functions of financial institutions, as well as the stage at which risk management activities are explored. The organizational structures of banks are less recognizable today than they were 10 or 20 years ago, and it is possible this will be even truer in future.

Driver #3: A new point in the product life-cycle

Simply put, the low hanging fruit in mortgage markets has already been picked and, without a greater push towards moving with the shifting needs of its client base, the Canadian mortgage industry faces serious revenue growth challenges ahead (see chart 2). When properly presented with the full flavour of cycles past and present, current mortgage growth is presenting an early warning sign. A current 11% annual rate of growth in mortgage balances may sound impressive, and it certainly is compared to much of the 1990s when consumer and housing markets languished after the fallout of the harsh early-1990s recession. But, current growth is not out of line with long-run averages and falls considerably below growth rates posted during past cyclical peaks of the late 1980s and the early- and late-1970s and is even roughly on par with the experiences of the 1960s. Furthermore, while there are pockets of overheated activity, today's growth is not occurring simultaneously with a general nationwide housing bubble.

Yet, the potential drivers of mortgage growth have never been as strong as they are at present by way of a 32-year low in the unemployment rate, generational lows on borrowing costs, rapid growth in income and wealth, growing financial sophistication and deepening financial services infrastructure. Some of these drivers are similar to those existing in the 1960s, with the key difference between then and now being that it was only in 1967 when banks were materially granted entry into mortgage and consumer lending markets through Bank Act changes of that year. The key point is that if growth records are not broken in a near-perfect alignment of the drivers, then this should raise questions about revenue growth beyond inflexion points on the core drivers themselves.

Taking the industry to the next growth stage, however, does not just mean going down-market on credit quality as is often suggested. The key for many will be to enhance product penetration in underserved segments while preserving credit quality goals.

Driver #4: Labour force changes

A large proportion of today's workforce earns cash flows that are irregular and/or difficult to predict in terms of their timing. The rise of self-employment and professionals earning bonuses and commissions are two such examples. A third might be a more educated population that postpones earning potential as some professional segments may graduate with limited short-term cash flow but valuable long-term prospects. The rise of this portion of the workforce is one reason why a growing portion of the population is unsuited to traditional corporate pension plans, but it also carries implications for credit and liquidity management products since if one is unable to perfectly plan cash flows, then fixed amortization loan plans may not be suitable. Having the ability to tailor amortization schedules to individual circumstances is a major advantage offered by such products as lines of credit and home equity loans. They give the debtor the ability to service interest payments and make lump sum principal repayments when doing so suits their cash flows.

Driver #5: Low, stable inflation

There are two competing effects at work in determining the role of inflation expectations. For starters, during periods of unanticipated, volatile and high inflation like the 1970s and parts of the 1980s, borrowers were wise to feed faster debt growth than today and repay depreciated principal. In contrast, during periods of low, stable and more anticipated rates of inflation, like today, this incentive is not there. This may explain why debt growth today — whether inflation-adjusted or not — is not breaking any records since inflation is low and more stable than in the past as central banks across the world have moved to explicit or tacit inflation targeting. More importantly, low and stable inflation has substantially altered the *way* households are borrowing. Low and stable inflation rates enhance the ability to plan over longer horizons with greater certainty than in environments with huge swings in inflation and borrowing rates. Long-range planning has always been one of the touted

virtues of low and stable rates of inflation. This, in turn, opens the door to debt products with longer amortizations, and varying combinations of interest and principal repayment.

Driver #6: Rising financial sophistication

With decades of experience and greater confidence in dealing with mortgage products, households are becoming more willing to experiment with newer products. Beyond these core drivers lie secondary factors such as: growing appetite for fixed-income products as public debt dwindles in Canada; growing demand for cross-border investments including portable MBSs; greater economies of scale in spreading risks and costs of innovation in larger markets; and, more sophisticated risk practices.

IV. Broader implications

There are at least six issues associated with innovation. First, there is already evidence that financial innovation has played a role in supporting housing market activity for longer than many had anticipated. Innovation, in turn, may be partly responsible for reducing the volatility of the housing and general economic cycles. Further, global innovation may be a contributing factor to the global synchronization of housing expansions [See IMF, October 2005].

Second, extreme care should be taken when drawing monetary policy implications. Central banks can influence product pricing, they should remain focused on broad inflation measures, and they should not attempt to stymie innovation. It may well be that housing has been an underpriced asset class compared to other investments due to the historical lack of innovation and that illiquid home equity has historically been an inefficient way of saving subject to high transactions costs. Instead, to address inflationary risks presented by partial or ill-timed changes, complementary reforms must also be pursued. Doing so allows for private innovation to occur in the context of *reduced* market distortions. Examples include ending ill-advised interest deductibility through limited means in Canada and more overt ways abroad and removing capital gains taxation on financial assets, which distorts how people choose to save.

Third, there is a growing risk that a lack of understanding of the drivers of innovation will lead to political pressures that could well handicap the CMHC. If this occurs, it simply further opens the market for the other three privately owned mortgage insurers and innovation will occur anyway. Granted, the world has changed since the CMHC was established in 1946 with the policy goal of leveraging the state's credit quality for the purpose of deepening mortgage markets and raising home ownership rates. It may well be that the policy option that makes most sense is to fully privatize the CMHC.

Fourth, whether for originators or, when separate, holders, there is an increased importance attached to development of internal databases to provide the full richness of data on individual segments so that the right products and the right advice go to the right clients.

Fifth, while many forms of innovation and market segmentation could yield higher rewards for similar levels of risk compared to what is presently being accepted, some lenders may well choose to adopt a greater risk tolerance as well. Those financial institutions will face a growing need to develop broader tools than just debt-service thresholds and credit scores with limited internal datasets. A richer array of risk measures with longer horizons, complemented by stress-testing exercises, will be needed. Financial institutions will also face a growing need to offer proactive financial advice and guidance to households while delicately managing operational and reputational risks. But, it is those firms with the strongest franchises and best portfolio quality that are most able to lead this innovation.

Lastly, and perhaps most importantly to financial institutions, is that financial innovation in debt markets may well cause adverse spillover effects in wealth management services. If households are using credit products to smooth their spending, borrowing and saving requirements on a matched-needs basis throughout their lives, then this may well also smooth the lifetime distribution of wealth. Instead of a gradual run-up in wealth to peak levels prior to retirement in a classic model that has wealth accumulators giving way to wealth preservers and decumulators, the shifting of future earning power to the present through debt markets and postponement of liabilities may well mean that the pace of wealth accumulation is faster sooner in life and slower later on. This smoothing of wealth over one's lifetime also echoes modern business models based on companies with infinite lives; instead of waiting for retirement to draw on wealth, such decisions can be made regardless of age.

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