How the Bank of Canada Creates Money

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ABSTRACT

This paper provides a general understanding of the process by which the Bank of Canada creates money through large scale asset purchases. It analyzes a wide assortment of asset purchase programs conducted by the Bank of Canada to determine whether these programs result in an increase in the money supply, as is often claimed. It concludes that the vast majority of these programs result only in an increase in bank reserves, and not an increase in the broad money supply*.

* ***Update [June 13 2020]**: Since the original date of publication, the Bank of Canada has vastly increased the broad money supply through its expansion of the Treasury Bill Purchase Program (referred to as GTPP in this article). The conclusion of this paper, while correct at the time of writing, has therefore largely been overtaken by events and no longer holds true. The main purpose of this paper, however, was to provide a better understanding of the process by which the Bank of Canada creates money. As this process is unchanged, the remainder of this paper has been left in its original form.*

I. INTRODUCTION

As a consequence of the recent unprecedented turmoil in financial markets due to COVID-19, the Bank of Canada (BoC) has been forced to rapidly adopt new unconventional monetary policies at a far quicker pace than many analysts had previously forecast. In response to these stresses, the BoC has recently announced no less than eight different types of asset purchase programs aimed at "increasing liquidity" or "easing financial conditions" for both federal and provincial governments as well as the private sector. This has predictably led to a chorus of protests among various commentators accusing the BoC of risking future inflation through the profligate creation of money "out of thin air".

As the argument goes, when the BoC purchases assets from the government and the private sector, they do so not by transferring existing money from the BoC to the sellers of these assets, but by creating new money to fund these purchases. Simply conjuring money out of thin air at a rapid pace may indeed be a short-term solution to a disinflationary collapse, but in the long term it is often argued by critics that such actions merely create a future inflation problem of "too much money chasing too few goods". Most of these arguments, however, are inherently flawed, with its proponents having a fundamentally incorrect understanding of how money is created by the Bank of Canada. This article provides a brief primer on how the BoC creates money and disproves the majority of the mainstream arguments as to why recent BoC policies are inherently inflationary.

II. UNDERSTANDING MONEY

The definition of money is complicated and nuanced, but for the purpose of this article we can broadly organize it into two types:

1) Reserves
2) Broad Money

Reserves are a form of money that exist within the banking system and only within the banking system. They are created and destroyed at the purview of the Bank of Canada, and exist largely for the purpose of settling payments between financial institutions. Indeed, the use of reserves as a means to settle payments is further reinforced by the fact that, in Canada, reserves are known as "settlement balances". Banks hold reserve accounts at the Bank of Canada, with the BoC essentially serving as "the bank" to a collection of private chartered banks in Canada. Similar to any normal bank, deposits held in the reserve accounts of the chartered banks are assets of the chartered banks while simultaneously liabilities of the Bank of Canada.

Importantly, reserves are only ever transferred from one bank to another, and are never spent on goods and services within the broad economy. They are strictly used as a means of payment between banks. For example, when Ben transfers $1000 to Janet, Ben's bank account at Bank A is reduced by $1000 and Janet's bank account at Bank B is increased by $1000. However, because a deposit is also a liability of an individual bank, a transfer of $1000 from Bank A to Bank B reduces Bank A's liabilities and increases Bank B's liabilities. In order for the transaction to be neutral for Bank B, Bank A also transfers $1000 of reserves to Bank B such that Bank B's assets (the new reserves from Bank A) offset its new $1000 liability by the end of the transaction.

In the above example, the deposit that was withdrawn from Ben's bank account and transferred to Janet's bank account is what is known as broad money. Broad money consists of many different types of money, but for simplification, we can think of it as money that is spent on goods and services within the economy by businesses and people. It consists of physical currency and deposits held in our bank accounts, and is what most people think of when they think about the term “money”.

Because broad money is actually spent by real people on goods and services, an increase in the broad money is typically used interchangeably with an increase in the money supply, and an increase in the money supply can lead to inflation. An increase in bank reserves, on the other hand, does not lead to a general rise in the prices of goods and services because banks cannot use their reserve accounts to purchase real goods in the economy. An increase in bank reserves is unequivocally different than an increase in the money supply.

Many economists and pundits miss this important distinction between reserves and broad money. They believe that an increase in reserves increases “circulating” money which leads to inflation. This has led many commentators to suggest that recent BoC operations which have drastically increased bank reserves will over time lead to higher inflation. In some cases these critics do indeed realize that bank reserves are not spent directly on goods and services, but argue instead that an increase in reserves allows banks to expand the money supply in other ways through private loans. Indeed, a recent piece carried in the *Financial Post* by economists from the C.D. Howe Institute makes exactly this argument[1].

While it is true that chartered banks are able to increase broad money through the creation of loans, bank lending is not reserve-constrained in a modern economy. No bank refuses a loan to a customer because they do not have enough reserves on hand. Banks loan first and find reserves later. What constrains lending is the willingness of the bank to take on credit risk and the credit-worthiness of a willing borrower. The notion of bank reserves being a precondition for bank lending has long since been disproven and was thoroughly debunked by the Bank of England itself in 2014[2]. Unfortunately, it is a myth that still lives on to this day.

II. HOW THE BANK OF CANADA CREATES MONEY

Because the creation of bank reserves by the Bank of Canada does not lead to inflation, while the creation of broad money does, it is critical to understand the exact process by which asset purchases by the Bank of Canada create either reserves, broad money, or both. There are three general ways in which the Bank of Canada creates money through public and private sector asset purchases. These three methods are described below.

Method 1: Asset Purchases Directly from the Federal Government

The purchase of assets directly from the Government of Canada (GoC) is unique from other asset purchases in the public and private sector due to the fact that the Government of Canada holds a deposit account directly with the Bank of Canada. This account is known as the Consolidated Revenue Fund (CRF), the deposits of which are assets of the government and liabilities of the BoC. Although the CRF is not technically classified as a reserve account by the Bank of Canada[3], it is nevertheless functionally equivalent and will thus be treated as one for the purpose of this paper.

When the BoC purchases a $1M government bond or bill directly at auction in the Primary Market, it credits the government’s account at the BoC with $1M of deposits, and the BoC, in return, acquires $1M of GoC bonds or bills. At the end of the transaction the net worth of the BoC remains unchanged, with a corresponding increase in both assets (the bond or bill) and liabilities (the deposit now owed on demand to the government, held in its account at the BoC). The government, similarly, experiences no change in its net worth as a result of the transaction, acquiring an equivalent amount of assets (the new deposits in its account at the BoC) and liabilities (the money now owed to the BoC due to the bond sale). At the end of the $1M bond purchase, the government now has $1M in newly created reserves in the CRF, with the resulting change to the BoC and GoC balance sheets as follows:

<u>Bank of Canada:</u>
Change in Assets = +$1M in government bonds
Change in Liabilities = +$1M in government deposits
Change in Net Worth = None

<u>Government of Canada:</u>
Change in Assets = +$1M in government deposits
Change in Liabilities = +$1M government bonds
Change in Net Worth = None

At first glance, it may appear that the bond purchase resulted only in new reserves being created for the government. In other words, if one were to stop here, it would appear that the transaction resulted only in an increase in reserves, and not an increase in the broad money supply. However, to fully understand the implications of the money-creation process, it is necessary to look further to the precise moment when the government draws down their account at the BoC to spend the funds on goods or services.

When the government writes a $1M cheque to the private sector, the individual or business deposits this cheque in their bank account at Bank A which causes an increase in their deposits by $1M. As was previously explained in Part I, because a deposit is a liability of Bank A, normally the sending bank would also transfer $1M of its reserves to the receiving bank (Bank A in this case). However, because the sending bank is in this case the Bank of Canada, an entirely different operation is undertaken to offset Bank A's new liability. Rather than reserves being transferred from the BoC to Bank A, $1M of government deposits are instead transferred from the CRF to Bank A's reserve account at the Bank of Canada. The resulting change to the balance sheets of Bank A and the BoC are as follows:

<u>Bank of Canada:</u>
Change in Assets = None
Change in Liabilities = -$1M in government deposits, +$1M in bank reserves
Change in Net Worth = None

<u>Bank A:</u>
Change in Assets = +$1M in bank reserves (from the government CRF account)
Change in Liabilities = +$1M in private sector deposits
Change in Net Worth = None

And of course, by spending down its deposits on goods and services, the net worth of both the GoC and the private sector change by offsetting amounts:

<u>Government of Canada:</u>
Change in Assets = -$1M (deposits paid to Bank A's reserve account)
Change in Liabilities = None
Change in Net Worth = -$1M

<u>Private Sector:</u>
Change in Assets = +$1M (deposits received for goods or services rendered)
Change in Liabilities = None
Change in Net Worth = +$1M

We can see now that as a result of the $1M GoC bond purchase by the BoC in the Primary Market, not only have deposits increased by $1M, but so have reserves. Consequently, when the BoC purchases bonds directly from the government, they increase both broad money and bank reserves by an equivalent amount.

Method 2: Asset Purchases from Non-Banks (excluding the Federal Government)

Because non-banks do not hold reserve accounts at the Bank of Canada, asset purchases by the Bank of Canada from non-banks happen differently than those from banks. When the Bank of Canada purchases an asset from a non-bank entity (such as a person, business, or institution), it writes a cheque to the non-bank entity who then deposits this cheque in an account held at Bank A. This causes a new deposit to be created for the non-bank entity and simultaneously creates a new liability for Bank A. In order to offset this new liability, Bank A takes this cheque to the Bank of Canada for payment, and the Bank of Canada subsequently credits the reserve account that Bank A holds at the Bank of Canada with newly created reserves.

For example, at the end of a transaction involving a $1M bond purchase by the Bank of Canada from a non-bank entity, the resulting balance sheet changes are as follows:

<u>Non-Bank Entity:</u>
Change in Assets = -$1M in bonds (to the Bank of Canada), +$1M in deposits
Change in Liabilities = None
Change in Net Worth = None

<u>Bank A:</u>
Change in Assets = +$1M in bank reserves (from the Bank of Canada)
Change in Liabilities = +$1M in deposits
Change in Net Worth = None

<u>Bank of Canada:</u>
Change in Assets = +$1M in bonds
Change in Liabilities = +$1M in bank reserves
Change in Net Worth = None

The above example shows that Bank of Canada asset purchases from non-bank entities increases both deposits and bank reserves commeasurably. Not only did the $1M bond purchase by the Bank of Canada increase broad money by $1M, it also simultaneously increased bank reserves by $1M as well.

Method 3: Asset Purchases from Banks

Chartered banks hold reserve accounts at the Bank of Canada, which makes asset purchases by the Bank of Canada far more straightforward than either Method 1 or Method 2 described above. This is because when the Bank of Canada purchases assets from a chartered bank, it simply credits the bank's reserve account at the BoC. In this manner, the Bank of Canada gains an asset (the security purchased) and a corresponding liability (the newly created bank reserves), and the bank simply changes the composition of its assets (selling a security in exchange for reserves).

A transaction by which the Bank of Canada purchases $1M in government bonds directly from Bank A results in the following balance sheet changes for Bank A and the Bank of Canada:

Bank A:
Change in Assets = -$1M in government bonds, +$1M in bank reserves (from the Bank of Canada)
Change in Liabilities = None
Change in Net Worth = None

Bank of Canada:
Change in Assets = +$1M in government bonds
Change in Liabilities = +$1M in bank reserves
Change in Net Worth = None

Thus operations by which the Bank of Canada purchases assets from a bank results in an increase in reserves, and no increase in broad money. In other words, asset purchases from banks do not increase the money supply.

Overview of Bank of Canada Money-Creation

Methods 1 through 3 describe the various ways that Bank of Canada asset purchases create money, including the type(s) of money created through each individual operation. Whether the end result is the creation of bank reserves, broad money, or both, depends entirely on the method utilized by the Bank of Canada. A summary is provided in Table 1 below.

Table 1: How Money is Created by the Bank of Canada

Type of Bank of Canada Asset Purchase	Adds to Bank Reserves	Adds to Broad Money (Money Supply)
Method 1: Asset Purchases Directly from the Federal Government	X	X
Method 2: Asset Purchases from Non-Banks (excluding the Federal Government)	X	X
Method 3: Asset Purchases from Banks	X	

III. UNDERSTANDING DEALERS

When the Bank of Canada purchases assets, it acquires financial securities either directly from issuers at auction in the primary market, or from market participants re-selling securities in the secondary market. These acquisitions are largely performed through securities dealers, who serve a critical role as intermediaries helping to facilitate market transactions and ensuring market liquidity. Dealers perform their role as market-makers by purchasing securities for their own inventories from sellers in either the primary or secondary market, and subsequently re-selling these same securities to buyers at a later date.

The role of dealers is critical to understanding how the Bank of Canada creates money, as a significant quantity of securities purchased by the BoC are acquired through these dealer networks. As we know from Section II above, if dealers are non-bank entities, these asset purchases add to both the money supply and to reserves using Method 2. If, on the other hand, dealers are considered to be banks, then Bank of Canada security purchases from dealers add only to reserve balances using Method 3, and do not increase the money supply at all.

The answer to the question of whether securities dealers are banks or non-banks, however, is not entirely straight-forward. It turns out that the dealer system in Canada is somewhat of a mixed bag of bank and non-bank participants. For example, TD Bank, RBC Bank, Desjardins Securities, and Casgrain & Company Limited, are all designated primary dealers of Government of Canada debt securities, yet only some of these dealers are banks, while others are clearly non-bank entities. Whether or not the money supply increases with Bank of Canada asset purchases would therefore appear to hinge on exactly which specific dealer the security was purchased from, complicating matters significantly.

Fortunately, the dealer network in Canada is dominated by the "Big Six", consisting of RBC Dominion Securities, TD Securities, Scotia Capital, BMO Nesbitt Burns, CIBC World Markets and National Bank Financial[3]. While the Big Six dealers are technically investment arms of the major Canadian banks, for the purpose of understanding changes to the money supply due to Bank of Canada asset purchases, investment arms of banks can safely be considered to be banks themselves[5].

The fact that most dealer business in Canada is run through the Big Six allows us to somewhat simplify our understanding of the money-creation process engendered by Bank of Canada asset purchases. It allows us to say that, for the most part, when the Bank of Canada acquires assets from securities dealers, they are purchasing these securities from banks. As such, the sale of assets by dealers to the Bank of Canada increases bank reserves, generally speaking, and not the money supply.

IV. BANK OF CANADA ASSET PURCHASE PROGRAMS

Recent asset purchases by the Bank of Canada in response to the COVID-19 pandemic have been wide and varied[6]. This sections summarizes each of the various programs as they pertain to the money-creation processes discussed in Section II above.

Government of Canada Bond Purchases (GBPP)

As part of the GBPP, the Bank of Canada purchases Government of Canada bonds in the secondary market from dealers (ie. primarily banks). The GBPP is what most commentators refer to as "QE".

Canada Mortgage Bond Purchase Program (CMBP)

The CMBP is independent from the Canada Mortgage Bond purchases made by the Bank of Canada for balance sheet management purposes. Unlike CMBs purchased for balance sheet management purposes, the CMBP purchases CMBs in the secondary market from dealers (ie. primarily banks).

Bankers' Acceptance Purchase Facility (BAPF)

As part of the BAPF, the Bank of Canada purchases Bankers' Acceptances in the secondary market from dealers (ie. primarily banks).

Provincial Money Market Purchase Program (PMMP)

As part of the PMMP, the Bank of Canada purchases provincial government treasury bills and short-term promissory notes directly from the provinces in the primary market.

When provincial governments issue short term debt, they offer these securities to buyers in the primary market through “syndicates”. Syndicates are a collection of securities dealers typically headed by one of the Canadian Big Six. As such, Bank of Canada acquisitions of provincial bills and notes in the primary market are generally purchased from banks.

Provincial Bond Purchase Program (PBPP)

As part of the PBPP, the Bank of Canada purchases Provincial bonds in the secondary market from dealers (ie. primarily banks).

Corporate Bond Purchase Program (CBPP)

As part of the CBPP, the Bank of Canada purchases corporate bonds in the secondary market from dealers (ie. primarily banks).

Government of Canada Treasury Bill Purchase Program (GTPP)

The Bank of Canada routinely purchases Treasury Bills from the Government of Canada at auction in the primary market to offset its expanding bank note liabilities. The GTPP increases the quantity of Treasury Bills the Bank of Canada purchases from 25 percent of auctioned securities to 40 percent of auctioned securities.

The Bank of Canada acquires Government of Canada Treasury Bills directly from the Federal Government.

Commercial Paper Purchase Program (CPPP)

As part of the CPPP, the Bank of Canada purchases commercial paper in both the primary and secondary market from dealers (ie. primarily banks).

V. ASSET PURCHASES AND THE MONEY SUPPLY

Given the broad and sweeping nature of Bank of Canada asset purchases in response to the COVID-19 pandemic, many commentators have clearly failed to distinguish between the different forms of money created from the various security acquisitions conducted by the Bank of Canada.

Table 2 provides a summary of each individual Bank of Canada asset purchase program, along with the type(s) of money created (Method 1, 2, or 3 from Section II) as a result of each acquisition.

Table 2: Asset Purchases and the Money Supply

Bank of Canada Asset Purchase Program	**Method 1**: Asset Purchases Directly from the Federal Government		**Method 2**: Asset Purchases from Non-Banks (excluding the Federal Government)		**Method 3**: Asset Purchases from Banks
	Adds to Bank Reserves	Adds to Broad Money	Adds to Bank Reserves	Adds to Broad Money	Adds to Bank Reserves
Government of Canada Bond Purchases (GBPP)	-	-	Negligible*	Negligible	**Yes**
Canada Mortgage Bond Purchase Program (CMBP	-	-	Negligible	Negligible	**Yes**
Bankers' Acceptance Purchase Facility (BAPF)	-	-	Negligible	Negligible	**Yes**
Provincial Money Market Purchase Program (PMMP)	-	-	Negligible	Negligible	**Yes**
Provincial Bond Purchase Program (PBPP)	-	-	Negligible	Negligible	**Yes**
Corporate Bond Purchase Program (CBPP)	-	-	Negligible	Negligible	**Yes**
Government of Canada Treasury Bill Purchase Program (GTPP)	**Yes**	**Yes**	-	-	-
Commercial Paper Purchase Program (CPPP)	-	-	Negligible	Negligible	**Yes**

* Bank of Canada purchases from security dealers are mainly conducted through the "Big Six" dealer network consisting of RBC Dominion Securities, TD Securities, Scotia Capital, BMO Nesbitt Burns, CIBC World Markets and National Bank Financial. A minimal amount of purchases may be conducted via Non-Bank dealers, which are deemed "negligible" for the purpose of this analysis.

As shown in the table above, virtually all of the asset purchase programs conducted by the Bank of Canada serve to increase reserve balances within the banking system, and not the broad money supply. The Bank of Canada has generally refrained from directly increasing the quantity of money within the real economy, rendering their operations for the most part as non-inflationary.

VI. CONCLUSION

Since reserves have no bearing on future inflation, and Bank of Canada asset purchases have almost exclusively increased reserve balances within the banking system, it is clear that Bank of Canada asset purchases have largely been non-inflationary in nature. This is to say that virtually all of the emergency measures undertaken by the Bank of Canada in response to COVID-19 have served merely to increase bank reserves and not the money supply.

Many commentators continue to make the claim that the Bank of Canada is "printing money" via large scale asset purchases and that a highly inflationary outcome is therefore inevitable. These critics are wrong on this very fundamental fact. Reserves are not money that is spent on goods and services and does not influence prices within the real economy. Only increasing the money supply can directly stoke future inflation, and only a small sliver of the Bank of Canada's asset purchases directly adds to the type of money that people and businesses actually spend within the real economy.

Other commentators readily admit that reserves are not spent directly on goods and services, but instead claim that an increase in reserves can indirectly lead to an increase in the broad money supply by stimulating additional commercial bank lending. In this they are equally wrong. As was discussed earlier in this paper, and as the Bank of England has already thoroughly shown through their own research, modern banks are not reserve-constrained in their lending practices, choosing to lend first to credit-worthy borrowers and look for reserves later.

We are therefore led to the unmistakable conclusion that if the Bank of Canada wishes to directly stimulate inflation by directly increasing the broad money supply, they must alter the composition of their asset purchase programs. Assets must increasingly be purchased from the Government of Canada in the primary market at auction, similar to the current Treasury Bill purchase program, or from non-bank securities dealers in either the primary or secondary market. In the absence of such actions, the Bank of Canada will fail to directly counteract the natural deflationary forces engendered by the COVID-19 pandemic through either QE or their other large scale asset purchases.

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5. The Bank of Canada has confirmed through correspondence that securities purchased from the investment arm of a bank are for all practical purposes purchased from the parent bank itself.

6. https://www.bankofcanada.ca/markets/market-operations-liquidity-provision/covid-19-actions-support-economy-financial-system/