MONETARY POLICY AND THE 2% INFLATION CONTROL TARGET: THE BEST-KNOWN METHOD FOR THE CANADIAN ECONOMY

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I. INTRODUCTION

Millions of economic agents,[1] from individual consumers to large corporate institutions, participate daily in market transactions that create and sustain our Canadian economy.[2] The economy is comprised of a multitude of economic variables that interact through an interconnected chain of cause-and-effect relations. Through implementation of monetary policy, The Bank of Canada[3] attempts to directly and indirectly influence these variables to ensure that the economy is efficient, sustainable and promotes the financial wellbeing of Canadians.[4]

Understanding monetary policy and the monetary functions performed by The Bank is important to consumers for a variety of reasons. The Bank's actions in executing monetary policy affect and guide consumer behaviour.[5] Decisions made by The Bank take six to eight

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 I am grateful to Dr. Clayton Bangsund for facilitating my research on this topic that has captured my academic intrigue. This paper would not have been possible without his guidance, encouragement and support. Any errors are my own.

[1] Economic agents are people or organizations that engage in any four of the following essential economic activities: production, distribution, consumption and resource management. See: M Sentiments, "Chapter 7 – Economic Behaviour and Rationality", at 145 online (pdf): *Tufts University* < http://www.ase.tufts.edu/gdae/Pubs/te/MIC/3e/MIC_3e_Ch7.pdf>.

[2] Christopher Ragan, *Why Monetary Policy Matters: A Canadian Perspective*, (Department of Economics McGill University, 2005) at 2, online: <https://www.bankofcanada.ca/wp-content/uploads/2010/10/ragan_paper.pdf> [*Ragan*].

[3] For the purposes of this paper, the Bank of Canada will hereinafter be referred to as "The Bank".

[4] "About the Bank", online: *Bank of Canada* online: <https://www.bankofcanada.ca/about/> [*Bank About*]. See *Bank of Canada Act,* RSC 1985, c B-2, Preamble [*BOC Act*]; See generally Stephen Poloz "Toward 2021: The Power – and Limitations – of Policy", Remark, (2019), at 1, online: <https://www.bankofcanada.ca/wp-content/uploads/2019/02/remarks-210219.pdf> [*Poloz*].

[5] Regardless of consumer understanding, The Bank's decisions affect consumer behavior. The Bank's actions impact asset prices, wages, employment etc. These variables influence consumer behaviour regardless of conscious understanding. For a more in-depth description regarding how the actions of The Bank affect economic variables and consumer behaviour, see Part IV.

fiscal quarters to have an effect on the economy.[6] Accordingly, current decisions are made in response to predicted economic circumstances, thereby providing consumers information about future economic conditions.[7] Finally, The Bank's actions furnish a variety of information about economic variables that may assist consumers in making rational and well-informed decisions.[8]

In addition to the reasons provided above, gaining knowledge of monetary policy will be essential to understand the economic fate of Canada come 2021. For decades, Canada has used a 2% inflation target method to implement monetary policy.[9] This system is currently under review, and could potentially be changed or replaced upon the renewal agreement between the Federal Government and The Bank in 2021.[10]

The purpose of this paper is two-pronged: first, the paper explains monetary policy with the goal of providing consumers a deeper understanding of the subject and the necessary information to make well-informed decisions. Second, this paper argues that a 2% inflation target system along with its unconventional monetary policy tools is the best-

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[6] *Poloz, supra* note 4 at 2. See also "Monetary Policy" online: *Bank of Canada* <https://www.bankofcanada.ca/core-functions/monetary-policy/> [*Monetary Policy*].

[7] *Ibid.* Because the actions of The Bank can take six to eight quarters to have an effect on the economy, it must take current actions in response to circumstances the economy is predicted to exhibit in two years, See Bank of Canada, *Monetary Policy Report*, (pdf), by Stephen Poloz et al, (Bank of Canada: January 2019) at introduction page, online: <https://www.bankofcanada.ca/wp-content/uploads/2019/01/mpr-2019-01-09.pdf> [*2019 Report*].

[8] For a more in-depth explanation, see Part IV of this paper. The decision of The Bank can provide consumers with insight as to the future predicted cost of goods and services, value of money, employment rates, wages, etc.

[9] Carolyn Wilkins, "Choosing the Best Monetary Policy Framework for Canada", Remark, (2018), at 2, online: <https://www.bankofcanada.ca/wp-content/uploads/2018/11/remarks-201118.pdf > [*Wilkins*].

[10] *Ibid.* See also *Poloz, supra* note 4 at 6-7. For a more in-depth discussion regarding the renewal agreement see Part II.B.

method known to implement monetary policy. In my opinion, the benefits of the alternative methods to inflation-targeting do not outweigh the costs associated with moving away from a method that has proven to be historically successful and credible.

This paper is divided into six parts, the first being this introduction. Part II introduces The Bank and monetary policy. It briefly describes The Bank, its creation, purpose and structural design, and explains monetary policy, introducing the reader to the following concepts: inflation, growth output, consumer price index, the reason to target inflation, the inflation-control target and the overnight rate. Part III introduces the reader to the Large Value Transfer System[11] and examines how this system fosters effective monetary policy. Also discussed in this part are the different actions The Bank may take using the LVTS to achieve monetary policy goals, specifically: maintaining the operating band; varying the amount of settlement balances; and participating in overnight repurchase and reverse-repurchase agreement transactions.[12] Part IV of this paper discusses the effect The Bank's actions have on the macroeconomic environment, and the interconnectivity between the overnight rate and a number of economic variables. It demonstrates why The Bank will change the overnight rate; in essence, Part IV explains monetary policy. Part V discusses current concerns raised regarding the effectiveness of inflation targeting as a system to implement monetary policy. It examines the strain the system may be displaying and

[11] The Large Value Transfer system will be referred to as the LVTS throughout this paper.

[12] Overnight repurchase agreements are often referred to as overnight repos whereas overnight reverse-repurchase agreements are often called overnight reverse-repos. This terminology will be used throughout. See Cory Garriot & Kyle Gray, *Canadian Repo Market Ecology Staff Discussion Paper,* (Bank of Canada: March 2006) at 1, online: <http://publications.gc.ca/collections/collection_2016/banque-bank-canada/FB3-6-2016-8-eng.pdf> [*Garriot & Gray*].

methods proposed as possible alternatives to the inflation targeting system. Although inflation targeting may currently be restricted in conventional application, given the availability of unconventional monetary policy tools available and the empirical documented historical success of inflation targeting, this method remains the most credible way to effect monetary policy. Part VI sets out some closing remarks.

II. THE BANK OF CANADA & MONETARY POLICY

In order to comprehend the material discussed throughout this paper, the reader must first understand The Bank of Canada and the important role it plays within Canadian society. It is imperative that the reader understand monetary policy and why the implementation of monetary policy is one of The Bank's core functions. This part briefly introduces The Bank and monetary policy to equip the reader with this fundamental knowledge.

A. THE BANK OF CANADA

The Bank of Canada was established during, and in response to, the Great Depression of the 1930s.[13] The *Bank of Canada Act*[14] received royal assent in July 1934 and The Bank opened for business in March 1935 as a privately owned institution.[15] From 1938 to date, The Bank has been a Crown Corporation owned by the federal government.[16] Regardless of

[13] "The Bank's History", online: *Bank of Canada* <https://www.bankofcanada.ca/about/history/> [*Bank History*].
[14] *Bank of Canada Act,* RSC 1985, c B-2 [*BOC Act*].
[15] *Bank History, supra* note 13.
[16] *Bank About, supra* note 4.

ownership, The Bank retains independence to carry out its mandate free from political influence.[17]

The purpose of The Bank, as dictated by the preamble of the *BOC Act*, is to "regulate credit and currency in the best interests of the economic life of the nation."[18] It is Canada's central bank with its principal role being to promote the economic and financial welfare of Canadians.[19] Both statements are broad and non-descriptive, giving The Bank a wide scope of powers and responsibilities.[20] The Bank carries out many functions within its four main areas of responsibility[21], with monetary policy being the overarching theme that affects all actions taken.[22]

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[17] *Bank About, supra* note 4. Although The Bank will collaborate with the federal government in setting the inflation target, it is within the purview of The Bank's independent decisions and actions that monetary policy is effected to achieve the target.

[18] *BOC Act, supra* note 4, Preamble.

[19] *Bank About, supra* note 4.

[20] *Poloz, supra* note 4 at 1. To view the enumerated powers of The Bank, see also *BOC Act, supra* note 4, s 18. The Bank may not participate in actions listed in *BOC Act*, s 23.

[21] The four main functions of The Bank are as follows: 1. monetary policy, 2. promoting a safe, sound, and efficient financial system, 3. designing and issuing Canada's currency; and 4. serving as banker and fiscal agent for the Government of Canada. See *Bank About, supra* note 4.

[22] Although the four areas may appear separate, monetary policy is arguably the overarching guiding principle that affects the operation of its other powers. For example, promoting a safe, sound and efficient financial system encompasses the actions The Bank will take to maintain the overnight rate in the LVTS. See "Framework for Market Operations and Liquidity Provisions" online: *Bank of Canada* <https://www.bankofcanada.ca/markets/market-operations-liquidity-provision/framework-market-operations-liquidity-provision/> [*Framework Liquidity*]. In regards to the currency function, the distribution of banknotes dovetails with the amount of money supply circulating in the economy. See "Core Functions: Currency" online: *Bank of Canada* <https://www.bankofcanada.ca/core-functions/currency/>. Being the federal government's bank, The Bank will neutralize the effect net government disbursements or receipts have on settlement balances in the LVTS. In addition, The Bank may intervene in foreign markets using the Foreign Exchange Reserves to affect the value of the Canadian dollar, which, as discussed below, is guided by monetary policy goals. See "Core Functions: Funds Management" online: *Bank of Canada* <https://www.bankofcanada.ca/core-functions/funds-management/>.

The Bank is run by its Governing Council,[23] comprised of the Governor (Stephen Poloz), the Senior Deputy Governor (Carolyn Wilkins) and four Deputy Governors.[24] Each of the Governor and Senior Deputy Governor is appointed, for a seven-year term, by independent directors with the approval of the federal Cabinet.[25]

B. MONETARY POLICY

There are two branches of macroeconomic policy; fiscal policy and monetary policy.[26] The execution of fiscal policy falls within the government's objectives in taxation and use of public revenues.[27] Monetary policy falls within the scope of The Bank's responsibilities. Monetary policy is concerned with monetary expansion; the amount of money circulating in the economy.[28] The best way for The Bank to achieve its mandate is to provide economic agents with confidence in the value of their money in order to stimulate spending and create more certainty in investment decisions.[29] To preserve the value of money and instil confidence, inflation must be kept low, stable and predictable.[30] Therefore, monetary policy in Canada is conducted by targeting inflation. Having established that The Bank executes monetary policy by targeting inflation, the following sections will provide an overview of

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[23] The governing council is responsible for conducting monetary policy, promoting a safe and efficient financial system, and planning the strategic direction of The Bank. See *Bank About, supra* note 4.
[24] *Ibid*.
[25] *Ibid.*
[26] *Ragan, supra* note 2 at 3.
[27] *Ibid.*
[28] *Ibid.*
[29] Bank of Canada, *Joint Statement of the Government of Canada and the Bank of Canada on the Renewal of the Inflation-Control Target,* (pdf), (Bank of Canada: 24 October 2016), at 1, online: <https://www.bankofcanada.ca/wp-content/uploads/2016/10/Joint-Statement.pdf>; See also *Monetary Policy, supra* note 6.
[30] *Monetary Policy, supra* note 6.

inflation, describing how it is measured and why it is targeted to achieve The Bank's mandate. Also discussed are the mechanisms used to target inflation.

1. INFLATION: DEFINITION & MEASUREMENT

Inflation is the measure of the rate at which the average price level of a basket of goods and services increases over a period of time.[31] Inflation is important to a consumer because an increase in the average price of a basket of goods denotes a correlated decrease in consumer purchasing power.[32] To analogize this concept using a different perspective, inflation can be considered the cost of living.[33] What an individual could purchase in Canada for $10.00 in 1940 is not the same as what an individual can purchase in Canada for $10.00 in 2019. The value of money has changed. Prices have increased, meaning a dollar in 1940 was worth more than a dollar today. The change in the value of money due to price increase is inflation.[34]

Inflation is measured by the Consumer Price Index (CPI).[35] CPI examines the change in the average of prices of a basket of goods and services which are of primary consumer need.[36] CPI is measured in indices, and therefore when CPI is reported it is displayed in its

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[31] James Chen, "Inflation", (13 March 2019), online: *Investopedia* <https://www.investopedia.com/terms/i/inflation.asp> [*Chen*].
[32] *Ibid*.
[33] "Inflation Control Target", online: *Bank of Canada* <https://www.bankofcanada.ca/rates/indicators/key-variables/inflation-control-target/> [*Inflation Control Target*].
[34] *Chen, supra* note 31.
[35] *Inflation Control Target, supra* note 33.
[36] *Chen, supra* note 31; see also "How to Calculate CPI", online: *wikiHow* <https://www.wikihow.com/Calculate-CPI> [*CPI Calculate*].

index value.[37] Learning how CPI is calculated is foundational to understanding The Bank's mandate .[38]

The first step to calculate CPI is to determine the total cost of a basket of goods and services at two different times, time one preceding that of time two.[39] Second, once the total cost for each time period is determined, the most recent total price (time two) is divided by the previous total price (time one).[40] The number produced by this division is then multiplied by 100 in order to get the CPI index value.[41] The reason for multiplying it by 100 is that baseline CPI, or the initial reference point, is 100. Therefore, the current number must be converted into this value for measurable reference.[42] The fourth step is subtracting 100 from the index value. The process of subtracting 100 displays the inflation rise in a percentage, or the percentage decrease in consumer purchasing power.[43] Therefore, when CPI is reported in its index value, one subtracts 100 from the index to get the percentage measure of inflation. An example is provided below for clarity.[44]

1. Five goods and services are examined in a basket to determine the CPI and inflation rate. In 2016, the five items respectively cost $50.00, $25.00, $10.00, $75.00 and

[37] Tim McMahon, "Historical Consumer Price Index (CPI-U) Data", (12 March 2019), online: *InflationData.com* <https://inflationdata.com/Inflation/Consumer_Price_Index/HistoricalCPI.aspx?reloaded=true>.
[38] *Ibid.*
[39] Art Woolf, "How to Calculate CPI and inflation Rate" (2005), online: <http://www.uvm.edu/~awoolf/classes/spring2005/ec11/calculating_inflation.html>; see generally "Calculating consumer Price Index (CPI)", online: *Quickonomics* <https://quickonomics.com/calculating-consumer-price-index-cpi/> [*CPI Equation*].
[40] *Ibid.*
[41] *Ibid.*
[42] *Ibid.*
[43] *Ibid.*
[44] *Ibid.*

$80.00. In 2019, the same five goods respectively cost $65.00, $40.00, $15.00, $85.00, and $100.00. Therefore, in 2016, the total cost of the bundle of goods was $240.00 ($50 + $25 + $10 + $75 + $80) and the total cost of the same bundle in 2019 was $305.00 ($65 + $40 + $15 + $85 + $100).

2. Having calculated the total cost of the same bundle of goods at each time period, we now divide the current price (price in 2019) by the original price (price in 2016). Therefore, $305/$240 = 1.2708.
3. The number generated in step two is then multiplied by 100 to get the CPI. Therefore, the CPI is 127.08 (100 x 1.2708). If one were merely looking to calculate CPI and not inflation, this would be the end result.
4. To determine the rate of inflation from time one (2016) to time two (2019), 100 is subtracted from the CPI value. Therefore, 127.08 - 100 = 27.08%. This indicates an inflation rate between 2016 to 2019 of 27.08%. Another way to interpret this number is that consumer purchasing power decreased by 27.08% between 2016 to 2019.

The above example provides a basic CPI calculation, and is intended to furnish the reader with an understanding of how inflation is measured. In reality, The Bank uses three CPI calculations to measure core inflation; CPI-trim, CPI-median, and CPI-common.[45] It is important to be aware of the different measures used; however, the complexities underlying these measures are beyond the scope of this paper.

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[45] *2019 Report, supra* note 7 at Introduction. The Bank changing its strategy to examine these three CPI measures took place during the 2016 Inflation Control Target Renewal. Before 2016, The Bank used CPIX-inflation. See Bank of Canada, *Renewal of the Inflation Control Target Background Information – October 2016,* (pdf), (Bank of Canada: October 2016), at 21, online: <https://www.bankofcanada.ca/wp-content/uploads/2016/10/background_nov11.pdf> [*2016 Renewal*].

2. *WHY TARGET INFLATION?*

The Bank is attempting to control the rate at which prices increase (and thereby the rate at which purchasing power decreases) by targeting inflation. The importance of targeting inflation is clear; economic collapse could transpire if prices drastically increase while purchasing power simultaneously decreases.[46] This risk alone appears persuasive enough to justify inflation-targeting. However, this section examines three additional reasons The Bank targets inflation to effect monetary policy.[47]

The first reason to maintain low and stable inflation is that high inflation creates uncertainty and as such is inherently harmful to the functioning of the economy, and costly to market participants.[48] Two types of uncertainty are perpetuated by high inflation. The first is uncertainty regarding the future cost of assets, value of money and projected returns on investment.[49] The second uncertainty is the inability to understand information conveyed to economic agents when prices change.[50] Both uncertainties stifle economic activity. They

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[46] *Chen, supra* note 31.

[47] Other possible economic variables The Bank could choose to target include employment levels, wages and money supply levels.

[48] *Ragan, supra* note 2 at 6, 31.

[49] Without predictable inflation, consumers do not know when or by how much prices of goods and services will change. Consumers will not be able to predict the value of their money nor the return on savings in the market. Without certainty and predictability, economic agents cannot make confident, well-informed decisions. This stifles activity in the economy and creates an environment of hesitation and doubt, characteristics that are not prevalent in efficient functioning economies. See *Ragan, supra* note 2 at 10 -12; see also *2016 Renewal, supra* note 45 at 17-18.

[50] Ragan explains that in an economy like Canada's, prices communicate information regarding scarcity of resources to producers and consumers. Prices communicate where resources need to be allocated in accordance with scarcity. When product prices increase, it is due to a scarcity of the product or the product's inputs, with the inverse being true for price decreases. When prices change due to inflation, it makes resource allocation communication less clear. Consumers and producers cannot determine if an increase in price is the result of resource scarcity or inflationary pressures. By targeting slow and stable inflation, prices will increase in predictable fashion. See *Ragan, supra* note 2 at 11-13.

lead consumers to be hesitant in market transactions, or to make wrong decisions due to conflicting and unclear information.[51] By targeting inflation and keeping it low and stable, The Bank can perpetuate certainty and predictability, preventing these undesired effects, thereby ensuring an efficient functioning economy.[52]

The second reason to target inflation is that prices are the only economic variable The Bank can influence for a sustained period of time.[53] This theory, argued by Milton Friedman roughly forty years ago, has become a widely accepted economic principle through evidentiary validation.[54] Monetary policy changes will have a short-term impact on many economic variables, including wages, employment and growth output. Market adjustments take place in reaction to initial monetary policy changes with the only variable that remains measurably changed being prices.[55] Therefore, targeting inflation ensures The Bank that it can monitor the results of its actions using a variable that reflects changes over time.

The third reason to target inflation is that it is one measure that achieves a similar outcome of targeting two measures: price stability and output. This "two-for-one" concept was labelled by Wilkins as the "divine coincidence".[56] The Bank operates under a flexible inflation targeting regime that considers a labour-market and economic indicators when setting the inflation target control and overnight rate.[57] It looks to the predicted growth

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[51] *Ragan, supra* note 2 at 12.
[52] *2016 Renewal, supra* note 45 at 2.
[53] *Wilkins, supra* note 9 at 4; see also, *Ragan, supra* note 2 at 6.
[54] *Ragan, supra* note 2 at 6.
[55] *Ibid*.
[56] *Wilkins, supra* note 9 at 7.
[57] *Wilkins, supra* note 9 at 7; see generally *2016 Renewal, supra* note 45 at 23-32. Also, for a brief discussion regarding the recent setting of the overnight rate on December 4, 2019, see Bank of Canada, *Bank of Canada maintains overnight rate target at 1¾ per cent,* (pdf), (Ottawa: Bank of Canada: 4 December 2019) online:

output of the economy and whether this output growth is anticipated to be above or below potential output.[58] The Bank is thereby ensuring stability in the growth rate of output by considering estimated output gaps as a variable when setting the overnight rate.[59] Although Ragan does not confirm the direct link between stable inflation and a stable growth rate of output, he provides empirical evidence displaying the coincidence between stable inflation and resulting stable real GDP.[60] Given Wilkins terminology and the empirical evidence provided by Ragan, it can be concluded that another reason to target inflation is to achieve the indirect goal of maintaining a stable growth rate of output.

3. INFLATION CONTROL TARGET

To successfully target low and stable inflation, The Bank and the Government of Canada came to a formal agreement and adopted a system of inflation-targeting in 1991.[61] Both The Bank and the Federal Government operate their policy mechanisms, fiscal and

<https://www.bankofcanada.ca/wp-content/uploads/2019/12/fad-press-release-2019-12-04.pdf> [*December 4 Overnight Rate*].

[58] *Ragan, supra* note 2 at 14-15. The growth rate of output is also another term for growth rate of real GDP. See *2019 Report, supra* note 7 at 10 in which the report uses output growth interchangeably with real GDP growth. Potential output growth is the level of output the economy can sustain without causing inflation or deflation; it is neutral. The difference between potential output and actual output is called the output gap. A positive output gap indicates that the economy is producing at a higher rate than it can maintain (above potential output) in response to increased demand. A positive output gap results in an increased rate of inflation. A negative output gap indicates that the economy is producing at a rate lower than it is capable of due to an increased supply. A negative output gap results in the rate of inflation decreasing. See *Ragan, supra* note 2 at 14-15. Both positive and negative output gaps are unsustainable economic effects that the market will naturally correct. See *Ragan, supra* note 2 at 17-18; see also "The Output Gap", (Bank of Canada: February 2010), at 1, online: <https://www.bankofcanada.ca/wp-content/uploads/2010/11/output_gap.pdf>.

[59] *Ragan, supra* note 2 at 14.

[60] *Ibid* at 15-17, 18-20, 32.

[61] *Ibid* at 8; see also *Poloz, supra* note 4 at 2.

monetary, in a joint effort with the goal of maintaining low and stable inflation for the health of the economy.[62]

The agreement between The Bank and the government is renewable, reviewed every five years.[63] The agreement sets the Inflation-Control Target. This is the target rate at which The Bank will aim to maintain CPI inflation over the next five years.[64] As of the most recent renewal in October 2016,[65] The Bank and the government agreed to keep the inflation control target at two per cent per year, the midpoint of a permissible one to three percent range.[66] The inflation control target has been at two percent since 1995.[67] The inflation target is symmetrical, meaning The Bank is concerned if CPI inflation falls below or above the target.[68] Having established that The Bank aims to maintain inflation at a two percent rate, the discussion will turn to an examination of how The Bank ensures this goal is achieved within the five year period. Toward this aim, The Bank uses its sole policy tool of setting and adjusting the overnight rate.[69]

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[62] *Wilkins, supra* note 9 at 1-2.

[63] *2016 Renewal, supra* note 45 at 2. For practical purposes, this is the target level for inflation over 5 years. Referring to the example and discussion above, regarding CPI calculation, The Bank will aim for the goods and services in a basket to increase in price by 2% per year over the next five years. See Generally "Backgrounders: Inflation-Control Target" (May 2013), online: *Bank of Canada* <https://www.bankofcanada.ca/wp-content/uploads/2010/11/inflation_control_target.pdf> [*Backgrounder Inflation-Control Target*].

[64] *Inflation Control Target, supra* note 33.

[65] *2016 Renewal, supra* note 45. In 2021, the Bank will again review the inflation control targeting method to effect monetary policy as well as the appropriate rate.

[66] *2016 Renewal, supra* note 45 at 2.

[67] *Ibid.*

[68] *2016 Renewal, supra* note 45 at 2.

[69] *2019 Report, supra* note 7 at Introduction.

4. OVERNIGHT RATE

The overnight rate[70] is the only policy tool used by The Bank to conduct monetary policy.[71] The overnight rate is the interest rate financial institutions pay to borrow one-day funds from each other (overnight loans).[72] The effect a change of the overnight rate has on the economy is discussed in detail in Part IV. For current purposes, it is sufficient to understand that changes in the overnight interest rate are transmitted to the economy through its influence on consumer interest rates, asset prices and the exchange rate.[73] To summarize, The Bank effects monetary policy by setting the inflation control target in partnership with the federal government. The inflation control target guides the actions of The Bank when utilizing the overnight rate to achieve the desired level of inflation.

Implemented in November of 2000, The Bank follows eight scheduled dates a year on which it will announce a change in the overnight rate or allow the overnight rate to remain stagnant.[74] The Bank will set the overnight rate by comparing anticipated inflation to the inflation-control target.[75] Monetary policy actions take approximately six to eight quarters

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[70] The overnight rate is also referred to as the policy rate or key policy rate. See, for example, "Policy Interest Rate" online: *Bank of Canada* <https://www.bankofcanada.ca/core-functions/monetary-policy/key-interest-rate/> [*Policy Rate*].

[71] *Ragan, supra* note 2 at 5; see also "Target for the Overnight Rate", (Bank of Canada: January 2016), online: <https://www.bankofcanada.ca/wp-content/uploads/2010/11/target_overnight_rate_jan2016.pdf.pdf> [*Backgrounder Overnight Rate*].

[72] *Policy Rate, supra* note 70.

[73] *2019 Report, supra* note 7 at Introduction.

[74] *Policy Rate, supra* note 70. During 2019, The Bank held these announcements on January 9, March 6, April 24, May 29, July 10, September 4, October 30, and December 4. See *December 4 Overnight Rate, supra* note 57.

[75] *2019 Report, supra* note 7 at 19-20; see also *Monetary Policy, supra* note 6.

to work their way through the economy. Therefore, setting the overnight rate today must be in response to predicted inflation.[76]

Setting the overnight rate is no easy task. It requires The Bank to look to a multitude of variables and use complex forecasting models to predict the impact such variables will have on the Canadian economy. The most recent announcement of the overnight rate was December 4, 2019.[77] In deciding to maintain the overnight rate at 1.75%, The Bank considered several complex factors including the performance of the global economy, its financial conditions, anticipated growth, recession concerns, trade conflicts creating uncertainty, and the value of the Canadian dollar.[78] In addition to canvassing the global environment, The Bank examined the Canadian economy and noted a decrease in in growth within the third quarter of 2019, an increase in consumer spending, an increase in housing investments, the contraction of exports, and anticipated inflation.[79] It is important to acknowledge the complexities involved in determining the overnight rate.

Part II furnished the reader with fundamental knowledge that will be critical to understanding the subsequent sections. Monetary policy encompasses the decisions made regarding the amount of money circulating in the economy. The Bank's aim is to keep inflation low, stable and predictable in order to preserve the value of money thereby instilling confidence in economic agents and ultimately achieving its mandate of promoting the economic and financial welfare of Canadians. Inflation is measured by CPI, the rate at

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[76] *Monetary Policy, supra* note 6; see also *2019 Report, supra* note 7 at Introduction page.
[77] *December 4 Overnight Rate, supra* note 57.
[78] *Ibid.*
[79] *Ibid.*

which the cost of a bundle of primary consumer goods and services change over time. The Bank sets the inflation control target every five years in agreement with the federal government. This establishes the inflation rate The Bank aims to maintain throughout the economy. To maintain inflation at the target control rate, The Bank uses its sole policy tool, the overnight rate, which dictates the cost financial institutions will incur to borrow funds over a one-day period.

III. TECHNICAL IMPLEMENTATION OF MONETARY POLICY

Generally, a change in the overnight rate affects consumers by changing consumer interest rates, asset prices and the exchange rate. This chain of cause-and-effect reactions is how monetary policy is transmitted through the economy. However, stating that a change in the overnight rate automatically translates into a change in economic conditions overlooks a very important step. There is an intermediate stage between setting the overnight rate and the effects it has in the economy. This midway point is the technical actions The Bank takes and the system The Bank uses to ensure the overnight rate is maintained and transmitted to the consumer. This section of the paper aims to provide a detailed discussion regarding the system in which the overnight rate is implemented and the actions The Bank must take to ensure the rate is maintained.

A. LARGE VALUE TRANSFER SYSTEM

The Large Value Transfer System (LVTS) is an electronic payment system that facilitates the transfer of immediate and irrevocable payments between Canadian financial

institutions.[80] The LVTS is owned by Payments Canada and is a relatively new payments system, having started operations in 1999.[81] In 2015, the system processed and settled roughly $171 billion dollars in payments daily.[82] There are a limited number of participants that directly deal within the LVTS.[83] Currently, there are sixteen financial institutions that directly participate daily in the LVTS cycle.[84] They send and receive payments to and from other direct participants; these payments are comprised of interbank and third-party funds transfers.[85] The payments exchanged between direct participants are processed in real time, with settlement of the system occurring at the end of the daily cycle.[86]

An in-depth understanding of the LVTS cycle is not required for the purposes of this paper. However, a brief overview of the cycle will provide important context regarding LVTS operations that will support the discussion that follows. Each day, from 00:00 to 00:30 direct participants will first pledge a certain amount of collateral depending on the type of transactions they plan on executing.[87] Once sufficient collateral has been pledged, the direct participants can begin interacting in the LVTS system, sending and receiving transfers of

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[80] "Large Value Transfer System", (2017), online: *Payments Canada* <https://www.payments.ca/about-us/our-systems-and-rules/large-value-transfer-system> [*LVTS*].

[81] *Ibid.* Neville Arjani & Darcey McVanel, *A Primer on Canada's Large Value Transfer System,* (Bank of Canada: 1 March 2006) at 5, online: <https://www.bankofcanada.ca/wp-content/uploads/2010/05/lvts_neville.pdf> [*Arjani & McVanel*].

[82] *LVTS, supra* note 80. In 2006, the LVTS cleared and settlement roughly 140 billion dollars daily. See *Arjani & McVanel, supra* note 81 at 5.

[83] "High-Value System (LVTS) Participants", (2017), online: *Payments Canada* <https://www.payments.ca/our-directories/high-value-system-lvts-participants> .

[84] *Ibid.*

[85] *Arjani & McVanel, supra* note 81 at 9.

[86] *Ibid* at 5.

[87] *Ibid* at 36.

Canadian-denominated funds.[88] As the day progresses, direct participants will send and receive payments on an ongoing basis. Nearing the end of the day, some direct participants may have received more funds than they sent, resulting in a long position. The opposite may also occur, where some direct participants may have sent more than received, resulting in a short position.[89] The long or short position at the end of the day is called the multilateral net position.[90] The LVTS is a closed system, and direct participants must end in a zero position, neither surplus nor shortage is permitted.[91] A pre-settlement period in which participants may attempt to bring their multilateral net positions to zero by participating in overnight lending arrangements takes place from 18:00-18:30.[92] At 18:30, if no lending arrangement has been made with another direct participant, final settlement of the LVTS multilateral position occurs with The Bank.[93] Final settlement with The Bank results in a direct participant either borrowing from or lending to The Bank, depending on their end-of-day position.[94]

The LVTS is the primary environment in which The Bank implements monetary policy as almost all payments flow through this system.[95] The Bank influences the rate at

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[88] In greater detail, from 00:30 to 06:00 the payment period is open and reserved for CLS payments only. See *Arjani & McVanel, supra* note 81 at 37. CLS is a foreign exchange and settlement system. Thereafter, from 06:00 – 18:00, the system is open for general payments from LVTS participants. See "Canada's Major Payment Systems", online: *Bank of Canada* https://www.bankofcanada.ca/core-functions/financial-system/canadas-major-payments-systems/#lvts.

[89] *Backgrounder Overnight Rate, supra* note 71; see generally, Payments Canada, "The Large Value Transfer System (LVTS) and Wire Payments" (19 September 2016), online (video): *YouTube* <https://www.youtube.com/watch?v=iwhCbla-6xY> [*LVTS video*].

[90] *Arjani & McVanel, supra* note 81 at 47.

[91] *Framework Liquidity, supra* note 22.

[92] *Arjani & McVanel, supra* note 81 at 37.

[93] *Ibid.*

[94] *LVTS video, supra* note 89 at 26:41-28:05.

[95] *Framework Liquidity, supra* note 22.

which financial institutions borrow from one another by setting and maintaining the overnight rate.[96] To summarize, the LVTS is a funds transfer system that is used by direct participants to facilitate the exchange of billions of dollars per day. The Bank implements the overnight rate within this system, ensuring that direct participants pay the overnight rate, or a rate close to it, for borrowing or lending one-day short-falls or surpluses. By dictating the cost direct participants incur to borrow, The Bank is indirectly dictating the cost those direct participants charge their own customers in order to realize a return. This is how the overnight rate translates into consumer interest rates and is discussed in further detail in Part IV.

To effect monetary policy in the LVTS, The Bank may take actions within this system to maintain the overnight rate. Generally, The Bank will perform three main functions within the LVTS. First, The Bank will maintain the operating band. Second, The Bank can adjust LVTS participants' settlement balances. Third, The Bank may perform overnight repo and overnight reverse repo transactions. The details of these functions will now be discussed in turn.

B. OPERATING BAND

The Bank maintains the operating band to encourage direct participants to engage in one-day loan transactions at the overnight rate.[97] The operating band is a 50 basis point[98]

[96] *Backgrounder Overnight Rate, supra* note 71 at 1.
[97] *Ibid.*
[98] For the purposes of this paper, "basis points" will be referred to as "bps".

interest rate scale with the overnight rate situated in the middle.[99] The overnight rate plus 25 bps is the bank rate; the rate at which direct participants borrow funds overnight from The Bank.[100] The overnight rate less 25 bps is the deposit rate; the rate The Bank will pay direct participants if they deposit overnight funds at The Bank.[101]

If a participant has a surplus at the end of the LVTS cycle, it can deposit its additional funds with The Bank overnight at the deposit rate, earning 25 bps less than the overnight rate. If the direct participant is short, it must take a loan from The Bank at the bank rate, paying 25 bps above the overnight rate. Direct participants are therefore encouraged to engage in transactions with each other within the interest band during the short pre-settlement period.[102] By trading with one another, both parties may potentially benefit by roughly 0.25% if the benefit is shared equally.[103] This is how the operating band encourages direct participants to trade at a rate close to the overnight rate.

To solidify this concept an example will be discussed.[104] Assume the overnight rate is set at 2.25%, the deposit rate is therefore 2.00% and the bank rate is 2.50%. If Bank A receives $600 million more in payments than it sends in a day, it is in a long position. If Bank B sends $300 million more than it receives, it is in a short position. Using the rates above,

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[99] 100 bps is one percent. 50 basis points is therefore 0.50%, meaning that this operating band fluctuates upwards and downwards 0.25% from the overnight rate. See *Framework Liquidity, supra* note 22; see also *Backgrounder Overnight Rate, supra* note 71 at 1.

[100] *Framework Liquidity, supra* note 22.

[101] *Ibid.*

[102] Walter Engert, Toni Gravelle & Donna Howard, *The Implementation of Monetary Policy in Canada,* (Bank of Canada: 2008-9) at 7, online: <https://www.bankofcanada.ca/wp-content/uploads/2010/01/dp08-9.pdf> [*Engert, Gravelle & Howard*]; see also *Backgrounder Overnight Rate, supra* note 71 at 1.

[103] *LVTS Video, supra* note 89 at 11:38–14:05.

[104] *Ibid.*

Bank B can borrow the $300 million it is short from The Bank at a rate of 2.50%. Bank A can lend its additional $600 million to The Bank and receive a 2.00% return. Alternatively, Bank A can lend to Bank B at arguably any rate below 2.50%. This is because Bank B was originally willing to pay a maximum interest of 2.50% on its loan. If Bank A charges Bank B any rate below the 2.50%, both Banks benefit. Bank B will not be paying the higher price of 2.50% and Bank A will be earning more than the lower 2.00%. It is clear that by maintaining an operating band around the overnight rate, The Bank encourages financial institutions to trade at or around the overnight rate. This example demonstrates how The Bank influences the cost direct participants incur to borrow funds.[105] Upon a change in the overnight rate, the operating band would correspondingly change. For a visual representation of the operating band, please reference Appendix A.

C. SETTLEMENT BALANCES

To ensure that the LVTS operates close to the target for the overnight rate, another action The Bank may take is to adjust the level of settlement balances of direct participants in the LVTS system.[106] This section will describe in detail this function, what settlement balances are, how they are adjusted and the overall effect the adjustments have on the overnight rate.

[105] *Backgrounder Overnight Rate, supra* note 71 at 1.
[106] *Framework Liquidity, supra* note 22.

Settlement balances are separate and distinct from the settlement accounts direct participants hold with The Bank.[107] Settlement balances are base amounts participants have in their LVTS accounts at the start of the LVTS cycle.[108] The above description of the operating band uses an example in which the participants in the LVTS start and end at zero, but this baseline of zero does not necessarily reflect reality.[109] The clearest way to analogize this concept is to think of settlement balances as a participant's starting liquidity at the beginning of the LVTS cycle.

By adjusting settlement balances, The Bank can address frictions in payments caused by depleting funds while also supporting lending at the overnight rate.[110] The general principle of how settlement balances affect the overnight rate is as follows: to support trading at an increased overnight rate, The Bank will decrease the amount of settlement balances. To support trading at a decreased overnight rate, The Bank will increase the amount of settlement balances. The effect is inverse.[111]

The theory of the connection between the amount in the settlement balances and an increase or decrease to the overnight rate will be described. First, when money supply is

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[107] Nellie Zhang, "Estimating the Demand for Settlement Balances in the Canadian Large Value Transfer System" (2012) Bank of Canada Working Paper No 2012-15 at 10, online: <https://www.bankofcanada.ca/wp-content/uploads/2012/05/wp2012-15.pdf> [*Zhang*].

[108] *Ibid.*

[109] *Ibid.*

[110] *Framework Liquidity, supra* note 22; see also *Engert, Gravelle & Howard, supra* note 102 at 8.

[111] Kevin Clinton, "Bank of Canada Cash Management: The main techniques for implementing monetary policy" in *The Transmission of Monetary Policy,* (Bank of Canada: 1996) 35 at 36, online: <https://www.bankofcanada.ca/wp-content/uploads/2011/02/hermes.pdf> [*Clinton*]; see also Bruce Montador, "The implementation of Monetary Policy in Canada" in *The Transmission of Monetary Policy,* (Bank of Canada: 1996) 19 at 23, online: <https://www.bankofcanada.ca/wp-content/uploads/2011/02/hermes.pdf> [*Montador*]; see generally *Engert, Gravelle & Howard, supra* note 102 at 8.

tight, or there is an economic downturn, financial institutions have a higher demand for liquidity and are less willing to lend.[112] The unwillingness to lend and corresponding increase in demand for liquidity increases the overnight rate and consumer rates.[113] By providing money to the system through an increase in settlement balances, The Bank can alleviate this lack of supply and corresponding increased demand, thereby preventing an increase in cost of overnight lending.[114] Secondly, by having more money within the system, financial institutions will not only be more willing to transact amongst one another, but will also have more money to lend within the chain of connections down to the consumer.[115] In order to entice borrowers, rates will be lowered for customers and theoretically a corresponding decrease in the overnight rate will occur as financial institutions will need to decrease the cost amongst one another to ensure the same return.[116] In addition, if most LVTS participants are left in surplus positions at end of day, there will be a lack of corresponding borrowers resulting in institutions having to deposit their funds with The

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[112] *Zhang, supra* note 107 at 11.

[113] *Ibid.* When external factors, such as a direct participant's prediction of a future economic downturn, affect demand, this causes the demand curve to shift rightward as demand increases. See "3.2 Shifts in Demand and Supply for Goods and Services" online: *BCcampus* < https://opentextbc.ca/principlesofeconomics/chapter/3-2-shifts-in-demand-and-supply-for-goods-and-services/> [*3.2 Shift Effects*]. The right directional shift in the demand curve will, in correspondence with the supply curve, establish a new higher equilibrium price, which in this instance, translates into a higher overnight rate. See "3.3 Changes in Equilibrium Price and Quantity: The Four-Step Process" online: *BCcampus* < https://opentextbc.ca/principlesofeconomics/chapter/3-3-changes-in-equilibrium-price-and-quantity-the-four-step-process/> [*3.3 Equilibrium Effects*].

[114] *Zhang, supra* note 107 at 11. See *3.3 Equilibrium Effects, supra* note 113 (salmon fishing example).

[115] *Montador, supra* note 111 at 24; see also *Clinton, supra* note 111 at 36.

[116] *Clinton, supra* note 111 at 36. In addition, this reaction can be explained by way of economic theory. When the supply of money increases, the supply curve will shift rightwards, establishing a new and lower equilibrium price. See *3.3 Equilibrium Effects, supra* note 113.

Bank at the deposit rate, the lower rate of the operating band, thereby effectively pushing the overnight rate down.[117]

There are two different elements The Bank considers to calculate and adjust settlement balances.[118] These two elements are adjusted simultaneously using one tool.[119] The two different concepts are first, the neutralization of government public sector receipts or disbursements; and second, the desired amount of increase or decrease The Bank wishes to make in settlement balances for monetary policy purposes.[120] The one tool used to make a net change in settlement balances affecting both concepts is the transfer of government deposits.[121] Both concepts and the tool to make such adjustments will be discussed in more detail below.

1. TRANSFER OF GOVERNMENT DEPOSITS AT THE RECEIVER GENERAL AUCTION

The mechanism by which The Bank adjusts settlement balances is by transferring government deposits to direct participants at the Receiver General Auction that take place twice a day, once at 09:15 and again at 16:15.[122] The Bank will use the two considerations

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[117] *Framework Liquidity, supra* note 22.
[118] *Montador, supra* note 111 at 23–24; *Clinton, supra* note 111 at 37-38; *Zhang, supra* note 107 at 23.
[119] *Clinton, supra* note 111 at 39; *Montador, supra* note 111 at 23-24; *Zhang, supra* note 107 at 23.
[120] *Montador, supra* note 111 at 23–24; *Clinton, supra* note 111 at 37-38; *Zhang, supra* note 107 at 23.
[121] *Engert, Gravelle & Howard, supra* note 102 at 8.
[122] "A Primer Paper on the Implementation of Monetary Policy in the LVTS Environment" (Bank of Canada: June 2010), online: <https://www.bankofcanada.ca/wp-content/uploads/2010/03/lvts_primer_2007.pdf> [*Monetary Policy and LVTS Primer*]; *Engert, Gravelle & Howard, supra* note 102 at 8. It appears that the transfers within these auctions are effected by way of tender-bidding. The Bank will communicate the amount of cash balances offered to the participants before each auction. Participants will have an allocation limit based on their credit rating. There is a minimum eligible bid of $5 million. Once all tenders have been submitted, The Bank will communicate to the participants the average, high and low rates paid. It will also communicate the amount due to or from each participant. See "Terms and Conditions Governing the Morning Auction of Receiver General

below, neutralization and the monetary policy function, to determine the net change to effect within the system.[123] Therefore, although two calculations will form the basis of this value transfer, only one net transfer will take place.[124] If, within the neutralization calculation, The Bank determines $200 million is required to be withdrawn, and within the monetary policy calculation, The Bank determines $300 million is required to be added, one transaction will take place adding $100 million to the system through government deposits.[125] Therefore, by participating in a net transaction, The Bank disguises, to some degree, the change it desires to bring about.[126] It is important to understand the function of each component, neutralization and monetary policy, in order to better comprehend The Bank's intentions when executing this net transaction.[127]

2. NEUTRALIZATION

A change in settlement balances or cash availability will be affected by government public sector receipts or disbursements.[128] This is because The Bank operates as the government's banker.[129] Direct participants also hold government demand balances which they acquire at auctions each week.[130] Therefore, when there are net receipts from the public

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Cash Balances", (Bank of Canada: 28 January 2016), at 2, 10-11, online: <https://www.bankofcanada.ca/wp-content/uploads/2014/03/terms_conditions_280116.pdf>.

[123] *Clinton, supra* note 111 at 39-40.

[124] *Ibid.*

[125] *Ibid.*

[126] *Ibid* at 37.

[127] *Ibid*.

[128] "Government public sector receipts and disbursements" is a reference to public sector flows, which include the government receipts or disbursements and The Bank's own transactions that occur with other institutions in the financial system. See *Monetary Policy and LVTS Primer, supra* note 122.

[129] *Montador, supra* note 111 at 23.

[130] *Ibid.*

to be paid to the government, a transfer of funds will occur from direct participants to The Bank's account for the federal government.[131] The cash available in the system will decrease.[132] The inverse effect occurs for government disbursements.[133] Therefore, in order to retain settlement balances unaffected by net public sector payments, The Bank must take steps to neutralize these transactions.[134] In essence, neutralization takes place by The Bank shifting balances between the government's account at The Bank and its accounts with direct participants using drawdowns or redeposits.[135] The neutralization function is easier explained by way of example.[136]

Throughout the day, the government incurs a net receipt of $300 million.[137] Therefore, $300 million is transferred from direct participants to the government's account at The Bank. Without any neutralization action, settlement balances would decrease putting an upward pressure on the overnight rate. To neutralize this effect, The Bank will offset the dollar amount transferred by redepositing the value of $300 million back into the LVTS system, specifically those settlement balances that were affected.[138] This is an example of a redeposit mechanism for neutralization. In the inverse scenario, where the government

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[131] *Ibid.*

[132] *Clinton, supra* note 111 at 37; *Montador, supra* note 111 at 23.

[133] *Ibid.*

[134] See *Montador, supra* note 111 at 23.

[135] *Ibid* at 22-23. The term drawdown refers to The Bank "drawing down" the amount of settlement balances. A drawdown is used to counter the effects of a government disbursement. When the government must pay the public the government's account at The Bank is diminished with a corresponding increase taking place in the accounts of direct participants in the LVTS. Therefore, to neutralize the increase, The Bank draws down the added value. The inverse is true for a redeposit, whereby The Bank is countering the effect of a government receipt.

[136] For additional examples, see *Engert, Gravelle & Howard, supra* note 102 at 9; *Clinton, supra* note 111 at 39-41.

[137] Net receipt means the receipts from the public are greater than payments to the public.

[138] *Montador, supra* note 111 at 23; *Engert, Gravelle & Howard, supra* note 102 at 9.

incurs a net disbursement, thereby transferring funds from its account at The Bank to direct participants, The Bank would use a drawdown mechanism to neutralize the effect of additional funds received by direct participants.[139]

Overall, the neutralization function assists in informing the amount in drawdowns or redeposits The Bank will effect at the Receiver General Auction. This is only one aspect The Bank considers to make this determination. The other aspect is the amount The Bank wishes to increase or decrease settlement balances for monetary policy purposes.

3. ADJUSTING FOR MONETARY POLICY PURPOSES

The amount The Bank wishes to adjust for monetary policy purposes must also be determined in order to transfer the appropriate value at the Receiver General Auction.[140] The determination of value at this point will depend on whether The Bank desires to effect upward or downward pressure on the overnight rate.[141] Reiterating the general principle above for reference, if The Bank wishes to put downward pressure on the overnight rate, settlement balances will be increased, whereas if The Bank desires to put upward pressure on the overnight rate, settlement balances will be decreased.

The calculation to determine how much The Bank will change settlement balances in order to achieve a desired effect on the overnight rate is beyond the scope of this paper.[142]

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[139] *Montador, supra* note 111 at 23-24; *Clinton, supra* note 111 at 39-41.
[140] *Clinton supra* note 111 at 37; *Montador, supra* note 111 at 24.
[141] *Framework Liquidity, supra* note 22.
[142] For precise calculation information, see *Zhang, supra* note 107 at 7. In this paper, Zhang uses the Economic Whitesell Static Model to determine the desired amount of settlement balances during the 2008 financial crisis.

For general reference, when the daily settlement level of LVTS balances is targeted at $25 million, an increase in settlement balances of $1 million will decrease the overnight rate by 0.0004 bps, or 0.000004%.[143] LVTS settlement balances have usually been targeted at $25 million dollars.[144] During the 2008 financial crisis, it was assessed that in order to achieve monetary policy goals and stimulate the economy, settlement balances were to be set around $3 billion.[145]

To conclude, The Bank will determine the amount of adjustment to effect in settlement balances to have a desired effect on the overnight rate in an effort to achieve monetary policy. The intricacies of how this value is determined are beyond the required knowledge-base for this paper. It is merely important to know that adjusting settlement balances serves a monetary policy function by affecting the overnight rate.

D. OVERNIGHT REPO AND OVERNIGHT REVERSE-REPO TRANSACTIONS

Overnight repo or overnight reverse-repo transactions can be analogized to short term liquidity injections or withdrawals, to or from the LVTS system, throughout the day.[146] These transactions increase or decrease the money supply in the LVTS at the rate The Bank wishes the system to be trading at.[147] This function is a supplement to adjusting the amount of settlement balances, in order to provide in-time reactions if the settlement balance

[143] *Zhang, supra* note 107 at 27.
[144] *Engert, Gravelle & Howard, supra* note 102 at 8; *Monetary Policy and LVTS Primer, supra* note 122 at 3.
[145] *Zhang, supra* note 107 at 3.
[146] "Overnight Repo and Overnight Reverse Repo Operations" online: *Bank of Canada* <https://www.bankofcanada.ca/2015/10/overnight-repo-overnight-reverse-repo-operations/>.
[147] *Engert, Gravelle & Howard, supra* note 102 at 7; *Framework Liquidity, supra* note 22.

estimate was not completely accurate.[148] It is, in this sense, targeting both the money supply and overnight rate.[149] Repo or reverse repo transactions will usually take place at 11:45 to encourage market participants to trade in the morning and to affect the overnight rate trading within the system throughout the remainder of the day.[150] To fully understand the concept of this function and how these transactions affect the overnight rate, this paper will discuss scenarios where these transactions are used and describe their overall effect on the LVTS system and operating band. It is important to note that although this is a function The Bank may perform to reinforce the overnight rate, it is not commonly used. From 2001 to 2005, The Bank performed repo and reverse repo transactions fewer than 30 days per year on average.[151]

Overnight Repo transactions are also referred to as SPRAs.[152] If the LVTS is operating above the target for the overnight rate, The Bank will intervene and use SPRAs to counter this situation, putting downward pressure on the overnight rate.[153] The Bank offers to purchase Government of Canada securities from participants for money, on an agreement to sell them back at a predetermined price the next day.[154] The predetermined price of repurchase is the interest rate charged on the transaction.[155] In the context of an SPRA, the

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[148] *Clinton, supra* note 111 at 35.
[149] *Garriot & Gray, supra* note 12 at 10; see also *Framework Liquidity, supra* note 22.
[150] *Engert, Gravelle & Howard, supra* note 102 at 7; see also *Framework Liquidity, supra* note 22.
[151] *Engert, Gravelle & Howard, supra* note 102 at 11.
[152] *Garriot & Gray, supra* note 12 at 10; see also *Monetary Policy and LVTS Primer, supra* note 122 at 7. SPRA stands for "special purchase and resale agreement".
[153] Tim Noel, "Bank of Canada Operations in Financial Markets" in *The Transmission of Monetary Policy,* (Bank of Canada: 1996) 109 at 123, online: <https://www.bankofcanada.ca/wp-content/uploads/2011/02/hermes.pdf> [*Noel*].
[154] *Monetary Policy and LVTS Primer, supra* note 122 at 7.
[155] By way of example, if The Bank desired to counter an above-target overnight rate, it would purchase government securities for the amount of money it wishes to inject into the LVTS. The agreement that The Bank

rate at which the government security will be subsequently purchased at will be below current conditions in the LVTS.[156] This increases the money supply at the desired lower rate in the system and has two main effects. The first is that the interest rates within the system will lower, creating downward pressure on the overnight rate. The downward pressure is created because direct participants will aim to entice individuals to borrow money due to an increase in the money supply and also because the new money injected cost the holders less due to the lower rate.[157] Therefore, direct participants can charge customers less to realize the same return.[158] The second effect is that this will encourage direct participants to lend their funds to prevent a majority of LVTS participants from ending with a surplus balance at end of day and earning a lower return of the deposit rate on their funds.[159]

An overnight reverse-repo transaction has the opposite effect. Overnight reverse repo transactions are also referred to as SRAs.[160] When the overnight rate is trading below the target, The Bank will engage in the reverse transaction. It will offer to sell Government of Canada securities to designated counterparties, and then repurchase at an increased purchase price the next day, to decrease the money supply and increase the rate within the

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sell back the government securities the next day at a set price is actually the rate of interest the recipient of the funds is paying to acquire the additional money; in essence, it is the "overnight rate" for this transaction. If The Bank bought government securities for $100 with an agreement to sell them back tomorrow for $101.50, this would indicate an interest rate of 1.5% on the transaction. Therefore, when taking this action, The Bank is not only affecting the money supply, it is also affecting the rate directly within the LVTS.

[156] *Engert, Gravelle & Howard, supra* note 102 at 8.

[157] For the increase in money supply, see *Framework Liquidity, supra* note 22.

[158] *3.2 Shift Effects, supra* note 113. Here one can reference the same demand-supply principles discussed above. The supply of money increased thereby shifting the supply curve right, setting a new price.

[159] *Framework Liquidity, supra* note 22.

[160] *Garriot & Gray, supra* note 12 at 10; see also *Monetary Policy and LVTS Primer, supra* note 122 at 7. "SRA" stands for "sale and repurchase agreement".

system.[161] This transaction will have the opposite effect as above; it will decrease the money supply, making lenders less willing to lend and increase the cost to borrow, ultimately putting upward pressure on the overnight rate.[162]

This Part III examines details that are often overlooked including the intermediate stages in which The Bank maintains the operating band, adjusts settlement balances and participates in overnight repo and reverse repo transactions to ensure that the LVTS operates at the target for the overnight rate. The paper will now examine the effect the overnight rate has on the economy. It will discuss how the overnight rate translates into changes in other economic variables thereby transmitting monetary policy to the macroeconomic environment.

IV. MACROECONOMIC EFFECTS: THE TRANSMISSION MECHANISM

In this part, I will provide the reader with an understanding of how monetary policy is transmitted through the economy, how the overnight rate affects a multitude of economic variables and why The Bank changes the overnight rate. Overall, this section aims to furnish the reader with the necessary information to make a well-informed decision.

As a general principle, if The Bank anticipates inflation to be below the 2% target – meaning it anticipates the economy to be slower than desired – The Bank will act to prevent

[161] *Monetary Policy and LVTS Primer, supra* note 122 at 7; *Engert, Gravelle & Howard, supra* note 102 at 8.
[162] *Engert, Gravelle & Howard, supra* note 102 at 7; *Framework Liquidity, supra* note 22; *Noel, supra* note 153 at 123.

such a situation from transpiring.[163] In essence, in order to increase inflation, The Bank will decrease the target for the overnight rate.[164] It is an inverse relationship. A desire to increase the inflation rate requires a decrease in the overnight rate, whereas a desire to decrease the inflation rate requires an increase in the overnight rate.[165] This can be portrayed in a direct relationship analogy: forecasted inflation decreasing below the target rate requires a decrease in the overnight rate whereas forecasted inflation increasing above the target rate requires an increase in the overnight rate. The reasoning supporting these claims is explained below in the transmission mechanism discussion.

For clarity, this paper will provide a detailed description of the macroeconomic transmission mechanism in both scenarios: where the anticipated inflation rate is below-target, meaning the economy requires stimulation; and where the anticipated inflation rate is above-target, meaning the economy requires contraction. The internal market effects, as well as the effects on the exchange rate, will be discussed. Finally, the paper will address the rarely implemented, but existent, power of The Bank to use the Foreign Exchange Reserve to realize monetary policy objectives through changes in the exchange rate.[166]

A. ECONOMIC STIMULATION: A DECREASE IN THE OVERNIGHT RATE

[163] This action is in accordance with The Bank's mandate to use the overnight rate to achieve the inflation-control target. See Part II. See also "How Monetary Policy Works: The Transmission of Monetary Policy", (Bank of Canada: April 2012), at 1, online: < https://www.bankofcanada.ca/wp-content/uploads/2010/11/how_monetary_policy_works.pdf> [*Backgrounder Transmission Mechanism*].

[164] *Ragan, supra* note 2 at 14, 21-23.

[165] *Ibid.*

[166] "Fiscal Agent for the Government of Canada" online: *Bank of Canada* <https://www.bankofcanada.ca/core-functions/funds-management/fiscal-agent/>.

The first scenario examined is where the anticipated rate of inflation is below target and the economy requires stimulation. To stimulate the economy, bringing the rate of inflation back up to the desired level, The Bank will decrease the target for the overnight rate.[167]

1. INTERNAL CANADIAN EFFECTS

A decrease in the overnight rate means that the cost incurred by direct participants to borrow funds will decrease.[168] If their cost to borrow decreases, financial institutions no longer have to charge consumers as much to earn the same return.[169] Therefore, long term interest rates in Canada will decrease. [170] The drop in interest rates creates two results: first, the amount savers earn in return on investment decreases, and second, the cost to borrow money decreases.[171] The simultaneous decrease of returns on savings and the cost to borrow money creates easier access to credit and encourages borrowing at the lower rate.[172] An increase in demand for borrowed money means an increase in the demand by consumers and financial institutions.[173] Therefore, when financial institutions require money, The Bank

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[167] *Ragan, supra* note 2 at 14, 21-23; see also *Backgrounder Transmission Mechanism, supra* note 163 at 2.
[168] In the LVTS, if the overnight rate decreases, this means that the corresponding bank rate and deposit rate will also fall. This lowers the operating band in which direct participants charge one another for overnight loans, and thus directly impacts their borrowing costs. See also *Ragan, supra* note 2 at 21.
[169] Jiagnan Ji, *Monetary Policy Transmission in Canada: a FAVAR Analysis,* (Ottawa: August 2017), at 16, online <https://ruor.uottawa.ca/bitstream/10393/36695/1/Ji_Jiangnan_2017_researchpaper.pdf> [*Ji*].
[170] *Ibid*; see also *Backgrounder Transmission Mechanism, supra* note 163 at 1-2.
[171] *Backgrounder Transmission Mechanism, supra* note 163 at 1; *Ragan, supra* note 2 at 22; see also Gary Rabbior, *Money and Monetary Policy in Canada, Module 9,* (Toronto: Canadian Foundation of Economic Education: 2018), at 7, online: <https://static1.squarespace.com/static/5a2f0006f9a61e8b0732c355/t/5bad7077c83025a735ab2fe8/1538093176539/MoneyMon.Pol.Cda-Module_9.pdf> [*Rabbior*].
[172] *Rabboir, supra* note 171; *Backgrounder Transmission Mechanism, supra* note 163 at 1.
[173] *Ragan, supra* note 2 at 4.

will provide such funds by engaging in a transaction in which The Bank purchases government securities from the financial institution in exchange for the money it needs.[174] This results in an increase in the money supply in the economy.[175]

An increase in the supply of money, due to cheaper borrowing, encourages consumers to spend and engage in transactions.[176] Therefore, the situation that transpires is one in which transactions increase and savings decrease. An increase in transaction volume creates an increased demand for goods and services among consumers.[177] At this point in time, the market is experiencing the effects of the decrease in the overnight rate and has not had the ability to react to it, or, as Ragan poses, self-adjust.[178] Therefore, it is at this point in time that consumer demand exceeds market supply. This increased demand over supply will eventually create a positive output gap because there has been an increase in the growth rate of aggregate demand.[179]

At this point in the analysis, the circumstances are such that a positive output gap is created. However, Canada's internal economy does not operate in isolation. While internal factors are shifting consumer demand within Canada, we must also consider what is occurring in the external factors, specifically the currency exchange rate. An adjustment in the overnight rate triggers a chain reaction both internally and externally. Therefore, both the internal effects and external effects must be examined in order to fully appreciate the

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[174] *Ibid.*
[175] *Ibid.*
[176] *Ji, supra* note 169 at 16; *Ragan, supra* note 2 at 22; *Rabbior, supra* note 171 at 7.
[177] *Ragan, supra* note 2 at 22-23.
[178] *Ibid* at 6, 23.
[179] *Ibid* at 23. See *supra,* note 58 for a description of the output gap.

overall effect on the Canadian economy due to a change in the overnight rate. Since we have examined the internal reaction that creates a positive output gap, we will now examine the external reaction in order to bring both analyses together at the end, demonstrating the overall effect on the economy.

2. CURRENCY EXCHANGE RATE EFFECTS

A decrease in the overnight rate results in a decrease or a slowing of the rate of the appreciation of the Canadian dollar relative to other currencies.[180] This is because a decrease in Canadian interest rates reduces return on foreign investments in the Canadian market. This, in turn, causes Canada to experience a lack of inflow of financial capital from around the world, because economic agents may be able to receive a better return on investment elsewhere.[181]

A decrease in the value of the Canadian dollar or a slowing of its appreciation relative to other currencies results in prices of Canadian goods decreasing relative to the prices of foreign goods.[182] This increases demand by foreign consumers for Canadian products and decreases demand by Canadians for foreign products.[183] Hence, as the Canadian dollar value decreases, demand for Canadian exports increases and demand for foreign imports drops.[184] This is also the point at which the circumstances exist to create a positive output gap. The

[180] *Ibid* at 21; *Ji, supra* note 169 at 19.
[181] *Ragan, supra* note 2 at 21; *Ji, supra* note 169 at 19.
[182] *Ragan, supra* note 2 at 22; *Ji, supra* note 169 at 19.
[183] *Ibid.* See also *Backgrounder Transmission Mechanism, supra* note 163 at 2.
[184] *Ibid.*

demand for Canadian goods is greater than the current supply.[185] Having established that both the internal effects and exchange rate effects perpetuate an environment in which a positive output gap may exist, we will now examine the response of the economy to such a situation.

3. THE MARKET SELF-ADJUSTS LEAVING INFLATION BEHIND

The Canadian market is now at a stage where the growth rate of aggregate demand is increasing in both the context of domestic and global demand. Output growth, or GDP, is dictated by aggregate demand.[186] With aggregate demand growing quicker, the market will respond by increasing the growth rate of actual output.[187] Therefore, the market will reach a point at which actual output is greater than potential output, resulting in the positive output gap.[188]

A positive output gap is an unsustainable economic condition and therefore the market will self-adjust.[189] This is where the inflationary effects are realized. During the positive output gap, firms are attempting to produce more goods and services to capitalize on the increased demand.[190] An increase in production requirements results in a corresponding increase in the inputs of production.[191] Therefore, employment will increase, the growth rate of wages will increase and the cost of inputs will increase.[192] The increase in

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[185] *Ragan, supra* note 2 at 23.
[186] *Ibid*.
[187] *Ibid*.
[188] *Ibid* at 14; see also *Backgrounder Transmission Mechanism, supra* note 163 at 2.
[189] *Ragan, supra* note 2 at 17-18.
[190] *Ibid* at 17.
[191] *Ibid.*
[192] *Ibid* at 17-18, 23.

costs will require firms to increase the price of their goods and services to ensure a relatively similar return.[193] This is how the positive output gap causes an increase in inflation. Firms will be more aggressive in increasing their prices to cover their rising costs.[194]

Overall, it is clear how a decrease in the overnight rate causes changes in several economic variables. Employment, wages, the exchange rate, prices, and interest rates are all impacted once the market self-corrects, with the sustained and measurable outcome being that of the increased rate of inflation. For a visual representation of this transmission mechanism, see Appendix B and C.

B. ECONOMIC CONTRACTION: AN INCREASE IN THE OVERNIGHT RATE

The second scenario examined is the inverse of the first, where the anticipated inflation rate is above target and the economy requires contraction. To slow the economy and push inflation back to an acceptable rate, The Bank will increase the target for the overnight rate.[195]

1. INTERNAL CANADIAN EFFECTS

An increase in the overnight rate results in an increase in borrowing costs for direct participants.[196] If the cost to borrow increases, financial institutions must raise the interest rates they charge consumers to realize the same return.[197] Therefore, long-term interest

[193] *Ibid* at 23.
[194] *Ibid.*
[195] *Ragan, supra* note 2 at 14, 21-23; see also *Backgrounder Transmission Mechanism, supra* note 163 at 2.
[196] *Ragan, supra* note 2 at 21.
[197] *Ji, supra* note 169 at 16

rates in Canada will increase.[198] An increase in interest rates has two effects: the first is an increase in returns on savings and the second is an increase on the cost to borrow money.[199] The simultaneous increase of return on savings and the cost to borrow makes accessing credit less attractive to the consumer.[200] Instead of spending, consumers are encouraged to save at the higher rate of return. A decrease in demand for borrowed money means a decrease in the demand by consumers and financial institutions.[201] Therefore, when financial institutions have too much liquidity, The Bank will engage in the reverse transaction it does above; it will sell to financial institutions government securities in exchange for money.[202] This results in a decreased money supply in the economy.[203]

A decrease in the money supply and an increase in the cost to borrow discourages consumers from spending and engaging in transactions.[204] Therefore, transactions decrease and savings increase. A decrease in transaction volume results in decreased demand for goods and services among consumers.[205] At this stage, the market is experiencing the immediate effects of an increase in the overnight rate and has not had the opportunity to react.[206] The current imbalance of supply over demand perpetuates a situation in which a

[198] *Ibid*; see also *Backgrounder Transmission Mechanism, supra* note 163 at 1-2.
[199] *Backgrounder Transmission Mechanism, supra* note 163 at 1; *Ragan, supra* note 2 at 22; see also *Rabbior, supra* note 171 at 7.
[200] *Rabboir, supra* note 171; *Backgrounder Transmission Mechanism, supra* note 163 at 1.
[201] *Ragan, supra* note 2 at 4-5.
[202] *Ibid.*
[203] *Ibid.*
[204] *Ji, supra* note 169 at 16; *Ragan, supra* note 2 at 22; *Rabbior, supra* note 171 at 7.
[205] *Ragan, supra* note 2 at 22-23.
[206] *Ibid* at 6 and 23.

negative output gap may materialize.[207] As above, a pause will be put on the analysis at this point. We will now turn to examine the effect on Canada's exchange rate.

2. CURRENCY EXCHANGE RATE EFFECTS

An increase in the overnight rate results in an increase in the appreciation of the Canadian dollar relative to other currencies.[208] An increase of Canadian interest rates results in an increase in returns on foreign investments in the Canadian market. This results in an increased inflow of financial capital to Canada from around the world because economic agents will receive a greater return on Canadian investments than they could elsewhere.[209]

An increase of the appreciation of the Canadian dollar relative to other currencies results in an increase of prices of Canadian goods relative to the prices of foreign goods.[210] Canadian goods become more expensive to purchase. An increase in price of Canadian goods decreases the demand for such goods by foreign consumers and increases demand by Canadians for foreign products.[211] As the value of the Canadian dollar increases, the demand for Canadian exports decreases and the demand for foreign imports increases.[212] This is also the point at which the circumstances exist to create a negative output gap. The demand for Canadian goods is less than the current supply provided, meaning there is a decrease in the growth rate of aggregate demand.[213] Having established that both the internal effects and

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[207] *Ibid* at 23.
[208] *Ragan, supra* note 2 at 21; *Ji, supra* note 169 at 19.
[209] *Ibid.*
[210] *Ragan, supra* note 2 at 22; *Ji, supra* note 169 at 19.
[211] *Ibid*; see also *Backgrounder Transmission Mechanism*, *supra* note 163 at 2.
[212] *Ibid.*
[213] *Ragan, supra* note 2 at 23.

exchange rate effects perpetuate an environment that will result in a negative output gap, we will now examine how the economy responds to such a situation.

3. THE MARKET SELF-ADJUSTS LEAVING INFLATION BEHIND

The Canadian market is now at a point where the growth rate of aggregate demand is decreasing, domestically and globally. Output, or GDP, is dictated by aggregate demand.[214] With aggregate demand growing at a slower rate, the market will respond by slowing the growth rate of actual output.[215] Therefore, the market will reach a point at which actual output is lower than potential output, resulting in the negative output gap.[216]

A negative output gap is an unsustainable economic condition and therefore the market will self-adjust.[217] This is where inflationary effects are realized. During the negative output gap, firms are attempting to produce less goods and services to respond to the decreased growth rate of demand (or excess supply).[218] By producing fewer products to generate revenues, firms must reduce their costs.[219] Employment may decrease, as will the growth rate of wages and the additional cost of inputs.[220] The decrease in firm costs and revenues stimulates consumer demand, keeps prices low, and thereby slows the rate of inflation.[221]

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[214] *Ibid*.
[215] *Ibid.*
[216] *Ibid* at 14; see also *Backgrounder Transmission Mechanism, supra* note 163 at 2.
[217] *Ragan, supra* note 2 at 17-18.
[218] *Ibid* at 17.
[219] *Ibid.*
[220] *Ibid* at 17-18 and 23.
[221] *Ibid* at 23.

It is clear how an increase in the overnight rate results in changes to several economic variables in an interconnected chain of cause-and-effect relations. Employment, wages, the exchange rate and interest rates are all impacted by market self-correction, and the sustained and measurable outcome is that of a decreased rate of inflation.

C. ADDITIONAL FOREIGN EXCHANGE RESERVE POWER

Beyond changing the overnight rate to realize changes in the value of the Canadian dollar, The Bank may use Foreign Exchange Intervention to affect the exchange rate in accordance with monetary policy objectives.[222] The ability of The Bank to use this tool will be briefly touched on for informative purposes. However, it is not an important nor essential tool because it is rarely used by The Bank.[223]

The Bank holds foreign currencies in the federal government's Exchange Funds Account.[224] If absolutely necessary, Foreign Exchange Intervention is conducted by The Bank acting as an agent for the federal government using this account.[225] If The Bank desired to prevent a decline in the value of the Canadian dollar relative to other currencies, The Bank would buy Canadian dollars in the foreign exchange markets using other currencies.[226] Purchasing Canadian dollars boosts demand and supports the currency's value.[227] The Bank

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[222] "Intervention in the Foreign Exchange Market" (Bank of Canada: March 2011), at 1, online: < https://www.bankofcanada.ca/wp-content/uploads/2010/11/intervention_foreign_exchange.pdf> [*Backgrounder Foreign Exchange Intervention*].

[223] This mechanism is only used in exceptional circumstances, such as those of a near-term market breakdown. See "The Exchange Rate", (Bank of Canada: May 2012), at 2, online: < https://www.bankofcanada.ca/wp-content/uploads/2010/11/exchange_rate.pdf> [*Backgrounder Exchange Rate*].

[224] *Backgrounder Foreign Exchange Intervention, supra* note 222 at 1.

[225] *Ibid.*

[226] *Ibid* at 2.

[227] *Ibid.*

then has to neutralize this transaction.[228] A risk of buying Canadian dollars is reducing the amount of money supplied in the economy. A reduction in the amount of money makes the resource scarcer and this puts upward pressure on interest rates. Therefore, to ensure this purchase action only affects the value of the Canadian exchange rate, The Bank will then redeposit the amount it purchased in the foreign exchange market into the Canadian financial system.[229] The Bank will only intervene by using this mechanism in exceptional circumstances, such as when signs of a near-term market breakdown are present. The last time The Bank intervened in foreign exchange markets for this purpose was September of 1998.[230]

V. THE BEST-KNOWN METHOD TO EFFECT MONETARY POLICY: 2% INFLATION TARGETING

Recently, concerns regarding the effectiveness of inflation targeting have come to light. Despite these concerns, I argue, in this Part V, that targeting inflation at 2% is the best method currently known to effect monetary policy. In a recent speech delivered by Carolyn Wilkins – as reiterated by Steve Ambler, Jeremy Kronick in the Financial Post, and Stephen Poloz – a low inflation and low interest rate economy has sparked concern regarding the effectiveness of the inflation targeting method.[231] Since the financial crisis in 2008 there has been consistent low inflation below target. This low inflation combined with current low

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[228] *Ibid.*

[229] *Backgrounder Foreign Exchange Intervention, supra* note 222 at 2.

[230] *Ibid*.

[231] *Wilkins, supra* note 9 at 3; Steve Ambler & Jeremy Kronick, "The Bank of Canada needn't overhaul its 2% inflation target. It's a proven success", *The Financial Post* (18 December 2018), online < https://business.financialpost.com/opinion/the-bank-of-canada-neednt-overhaul-its-2-inflation-target-its-a-proven-success> [*Ambler & Kronick*].; *Poloz, supra* note 4 at 3, 7.

interest rates restricts the functionality of The Bank's monetary policy tool.[232] As demonstrated above, to counter below-target inflation The Bank will lower interest rates. If current low interest rates are not stimulating the economy to produce an increase in inflation, the system is exhibiting strain. In addition, The Bank can only lower the overnight rate to a certain limit, that limit theoretically being zero.[233] Once the overnight rate reaches zero, there is theoretically no additional action The Bank can take to lower the overnight rate and stimulate the economy. This problem is articulated as the constraint on monetary policy at "the zero-lower bound."[234] Given that interest rates are currently low,[235] if the economy were to face a downturn The Bank is limited in its ability to respond. It does not have room to lower rates so as to materially impact inflation.[236]

Wilkins states that upon the renewal of the inflation control target in 2021, The Bank will consider alternative strategies, beyond inflation-targeting, to effect monetary policy.[237] This section of the paper will evaluate the three alternatives posed by Wilkins and demonstrate why, due to historical experience and the availability of unconventional

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[232] *Wilkins, supra* note 9 at 3. It is important to note that there is also a secondary concern for The Bank beyond the effectiveness of the conventional firepower of its monetary policy tools when inflation and interest rates remain low. As discussed by *Poloz, supra* note 4 at 3-4, when interest rates remain low and inflation is not sustained, households take on debts at levels that can become concerning to The Bank. This concern is being addressed by way of macro-prudential policies such as more stringent mortgage guidelines. See *Poloz, supra* note 4 at 4.

[233] The word "theoretically" is used due to the fact that The Bank can actually use negative interest rates so long as the interest rate does not breach the effective lower-bound. See Jonathan Witmer & Jing Yang, *Estimating Canada's Effective Lower Bound,* (Bank of Canada: Spring 2016), at 3, online: < https://www.bankofcanada.ca/wp-content/uploads/2016/05/boc-review-spring16-witmer.pdf> [*Witmer & Yang*].

[234] *Witmer & Yang, supra* note 233 at 3.

[235] As of December 4, 2019 the Overnight Rate was set at 1.75%. See *December 4 Overnight Rate, supra* note 57.

[236] *Wilkins, supra* note 9 at 3. See also *Ambler & Kronick, supra* note 231.

[237] *Wilkins, supra* note 9 at 2-3; see also *Poloz, supra* note 4 at 6-7.

monetary policy tools, inflation targeting remains the best method currently known to effect monetary policy.[238]

A. THE ALTERNATIVES ARE NOT PREFERABLE

1. INCREASING THE TARGET-CONTROL RATE CREATES VOLATILITY

One alternative method raised by Wilkins is increasing the current inflation control target from 2% (with a permissible range of 1% to 3%) to 3% or 4% (with appropriate permissible ranges).[239] This proposed solution has its benefits[240] but they are outweighed by the costs, suggesting that this is not a sound solution to the problem, nor a viable substitute for the current 2% inflation control target.

Several costs are associated with raising the inflation control target. Upon the initial transition to a higher rate, the economy would experience a redistribution of wealth from households to the government.[241] This redistribution would be experienced by all, but particularly those living on fixed or lower incomes.[242] In addition to the initial redistribution of wealth, transitioning to a higher target rate may deteriorate the credibility currently

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[238] This conclusion is also supported by *Ambler & Kronick, supra* note 231. In their article, the authors argue that although small changes may be necessary, the 2% inflation target is the optimal method due to its previous success.

[239] *Wilkins, supra* note 9 at 5-6.

[240] The benefits of a higher inflation control target include the following: It would restore conventional monetary policy room for maneuvering (*Wilkins, supra* note 9 at 6; *2016 Report, supra* note 45 at 9); It is a simpler change as it is merely a maneuver within the current system (*Wilkins, supra* note 9 at 6); It would decrease the potential encounters with the zero lower bound (*2016 Report, supra* note 45 at 9-10); It may eliminate the need for unconventional monetary policy tools (*2016 Report, supra* note 45 at 10-13).

[241] *2016 Report, supra* note 45 at 15–16.

[242] *Wilkins, supra* note 9 at 6.

placed in The Bank's 2% inflation targeting system.[243] Credibility may be lost for several reasons, the first being that consumers may perceive the increase as the first of many.[244] Predicted future increases in inflation could result in consumer expectations above target, requiring The Bank to take corrective steps.[245] Secondly, such a change in the target could impair credibility and create uncertainty regarding long-term price stability.[246]

In addition to reducing credibility in the system, a higher inflation target could accentuate distortions caused by inflation,[247] leading to irrational price differences, less efficient resource allocation,[248] and negative impacts on wage and price setting practices.[249] The benefits realized by increasing the inflation control target can also be realized through the implementation of unconventional monetary policy tools (without incurring the same costs).[250] To conclude, the benefits of increasing the inflation control target do not outweigh the costs. In addition, any benefits that an increase in the inflation control target creates can be achieved using other tools that do not incur such costs. In my view, this method is not superior to the current 2% inflation control target.

2. PRICE LEVEL TARGETING PREDICATED ON CONSUMER UNDERSTANDING POSES TOO GREAT A RISK

[243] Ibid; *2016 Report, supra* note 45 at 3 and 17.
[244] *2016 Report, supra* note 45 at 17; see also *Wilkins, supra* note 9 at 6.
[245] *2016 Report, supra* note 45 at 17.
[246] *Ibid.*
[247] *Ibid* at 3.
[248] *Ibid* at 17; see also *Ragan, supra* note 2 at 11-13, where the author describes the communication function between prices and consumers dictating the allocation of resources.
[249] *2016 Report, supra* note 45 at 18.
[250] *Ibid* at 13-14.

The second possible alternative is to change monetary policy from inflation-targeting to price-level targeting (PLT).[251] PLT is a method that appears to offer advantages over inflation targeting. However, PLT is very challenging to implement and poses a great risk if it is not fully understood or if executed improperly. This section will briefly describe PLT, distinguishing it from inflation targeting, and identifying some of its benefits and associated risks. From this discussion, it will be clear to the reader why this method, although beneficial, is not superior to the 2% inflation targeting method.

Under inflation targeting, "bygones are treated as bygones"; it is a forward-looking policy.[252] Inflation targeting's goal is to maintain inflation at 2%. Past deviations from the target are ignored; if inflation is operating above target, The Bank will take steps to bring it down.[253] Alternatively, if inflation is operating below target The Bank takes steps to bring it up. This is not how PLT operates. Instead of ignoring past deviations from the target, PLT is retrospective. PLT corrects past deviations with future actions ensuring that overall, the growth of aggregate prices is 2%.[254]

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[251] *Wilkins, supra* note 9 at 6.

[252] *Wilkins, supra* note 9 at 6; Bank of Canada, *Renewal of the Inflation Control Target Background Information – November 2011,* (pdf), (Bank of Canada: November 2011), at 14, online:<https://www.bankofcanada.ca/wp-content/uploads/2011/11/background_nov11.pdf> [*2011 Renewal*].; Michael Hatcher & Patrick Mindford, "Inflation Targeting vs price-level targeting: a New survey of theory and empirics" (11 May 2014), online: *VOX CEPR Policy Portal* <https://voxeu.org/article/inflation-targeting-vs-price-level-targeting> [*Hatcher & Mindford*].

[253] Ben Bernanke, "Temporary price-level targeting: An alternative framework for monetary policy" (12 October 2017), online: *Brookings* <https://www.brookings.edu/blog/ben-bernanke/2017/10/12/temporary-price-level-targeting-an-alternative-framework-for-monetary-policy/> [*Bernanke*].

[254] *2011 Renewal, supra* note 252 at 15-16; see also *Hatcher & Mindford, supra* note 252.

The first key difference of PLT is that it would not target inflation, but instead would target the growth path of prices measured against a suitable index.[255] Instead of committing to keep inflation low and stable at 2%, The Bank would commit to keep aggregate prices on a low and steady growth path.[256] The second key difference is that PLT would make up for past deviations to ensure price levels return to the predetermined path.[257] If there was a period of above-target inflation, PLT would respond by seeking a period of below-target inflation to ensure the average inflation reaches the targeted level.[258]

To fully explain how PLT would operate as a policy tool compared to inflation targeting, an example will be provided. First, I will briefly explain how inflation targeting works, and follow that with a comparison to PLT.[259] Imagine a period of time in which inflation has been above target, around 4%. The high inflation would result in prices increasing at a greater rate than desired. Under an inflation targeting method, The Bank would aim to decrease the growth rate of inflation back to 2%. Therefore, the price level, realized from the inflation at 4%, would thereafter increase at a rate of 2%. One can see how inflation targeting is forward-looking and does not correct past deviations in target levels.

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[255] *Wilkins, supra* note 9 at 6. This may appear to be an arbitrary distinction at first, since inflation is determined by the measured change in prices (see CPI discussion above). However, upon further examination of the system, it becomes clear that targeting prices does alter the operational of the system and how monetary policy is effected. See, *Hatcher & Mindford, supra* note 252.

[256] *Wilkins, supra* note 9 at 6.

[257] *2011 Renewal, supra* note 252 at 15-16; see also *Bernanke, supra* note 253.

[258] *2011 Renewal, supra* note 252 at 14; see also *Hatcher & Mindford, supra* note 253.

[259] The following example stemmed from the material in Technical Box 4 in *2011 Renewal, supra* note 252. For additional examples, see *Hatcher and Mindford, supra* note 256.

The price would remain permanently changed with increases thereafter aimed at the 2% rate.[260]

Under PLT, this would not be the outcome. An inflation period of 4% would be later corrected by a period of under-target inflation, around 1%. The PLT method is not committed to returning inflation to a 2% growth rate but instead returning prices to a 2% growth rate path. The above-target inflation period increased prices above the projected target path. Therefore, the PLT method will aim to have below-target inflation for a period of time to ensure that prices grow at a slower rate in order to get back to the target growth path. Once the target path is re-established, The Bank would then return to a projected 2% growth rate.[261] For a visual aid, see Appendix D.

The PLT framework comes with many benefits, however as will be discussed, the benefits do not outweigh the costs. The PLT method has the potential to create greater long-run certainty in price levels, promote short-term macroeconomic stability and decrease the likelihood of encounters with the zero-lower bound.[262] Greater long-run certainty is realized as displayed in the example above. The Bank will take actions under a PLT regime to ensure that prices themselves remain on a predetermined growth path, meaning the consumer will be able to better anticipate future prices.[263] The ability to anticipate future prices with greater certainty increases the welfare of savers and investors because so long as consumers understand that the deviations from target will be reversed in the future, wealth will not be

[260] *2011 Renewal, supra* note 252 at 15 (Technical Box 4).
[261] *Ibid.*
[262] *Ibid* at 17.
[263] *Ibid* at 16-17.

redistributed.[264] In addition, risk premiums and costs of capital will diminish due to PLT creating a more certain and predictable market.[265]

The Bank's commitment to counteract deviations in price levels creates consumer expectations that mitigate the impact of economic shocks.[266] When consumers know and expect economic policy to react to below-target inflation by creating a corresponding above-target inflation, this decreases the incentive to initially lower prices in response to the initial below-target shock. The anticipated above-target inflation would encourage current spending to take advantage of the lower prices, acting as a shock buffer.[267] The ability to self-correct decreases volatility in several economic variables including employment, inflation, interest rates, and output.[268] Finally, the stabilizing feature of PLT could make monetary policy more efficient by reducing the frequency of potential encounters with the zero lower bound.[269] The previously listed three benefits appear to present the PLT method in a very attractive light. However, these benefits are based on consumer understanding, confidence and systemic credibility.

The largest drawback of this system is its novel use. Wilkins describes this system as "buying a new house in the same neighbourhood", meaning it employs concepts similar to those used in the current system, but is an entirely different system itself.[270] All of the benefits discussed are entirely contingent on whether the regime is comprehensible and

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[264] *Ibid* at 17.
[265] *Ibid*.
[266] *Ibid*; see also *Hatcher & Mindford, supra* note 252.
[267] *2011 Renewal, supra* note 252 at 17.
[268] *Ibid.*
[269] *Ibid*; see also *Wilkins, supra* note 9 at 6.
[270] *Wilkins, supra* note 9 at 6.

credible.[271] The benefit of long-run certainty requires an understanding of The Bank's commitment to the predetermined price path.[272] Realizing short-term macroeconomic stability and decreasing encounters with the zero-lower bound depend on economic agents understanding the system and expecting PLT to have a correcting effect.[273] An additional challenge is gaining consumer confidence and credibility in PLT. For consumers to behave as expected, The Bank must be committed to making up for past deviations and act without fail. Any doubt regarding The Bank following through with counter-effects risks destabilizing the economy and renders PLT inferior to inflation targeting.[274]

In conclusion, PLT focuses on similar economic variables to that of inflation targeting, producing similar economic effects. However, it is historical looking, with a view to the future of correcting the past. The benefits found within PLT appear to present it as a method superior to that of inflation targeting. However, all of the benefits depend upon consumer understanding, confidence and systemic credibility. Given this contingency, The Bank decided to not look to a PLT regime during the 2016 inflation control target renewal, and it appears unlikely to do so in 2021.

3. FULL EMPLOYMENT IS AN OBJECTIVE ALREADY IMPLICITLY ADDRESSED IN THE INFLATION TARGETING FRAMEWORK

[271] *Ibid* at 7; see also *Hatcher & Mindford, supra* note 252.
[272] *2011 Renewal, supra* note 252 at 18-19.
[273] *Ibid.*
[274] *Ibid* at 19.

The third and final alternative posed is adding "full employment" to The Bank's objectives.[275] A full-employment target system may offer the benefit of transparency,[276] but it is argued that dual mandate concern (including employment considerations) is implicit in an inflation targeting system. The benefit of transparency in directly addressing employment as a monetary policy consideration does not appear to outweigh the additional cost and time incurred by The Bank in implementing such a system, particularly when the current inflation-targeting method implicitly addresses employment. Given Canada's historical success with inflation targeting, I assert that the benefits of greater transparency do not outweigh the costs of changing the current system, which enjoys a high level of credibility.

As seen in Part IV, there are numerous economic variables that determine the inflation rate and assist The Bank in assessing its future change in the overnight rate. A factor included in this assessment is output growth, which is directly related to employment. It is clear that when a central bank targets inflation it has both desires in mind: explicitly creating slow and stable inflation and implicitly establishing a stable and steady growth rate of output.[277] A dual mandate system impacts inflation explicitly and employment implicitly.[278] As Dodge states, the symmetry of Canada's inflation targeting method demonstrates The Bank's dual concern for economic growth and inflation.[279] If inflation were to deviate from

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[275] *Wilkins, supra* note 9 at 7.

[276] Benjamin Friedman, *Why a Dual Mandate is Right for Monetary Policy,* (Malden: Blackwell Publishing Ltd., 2008), 153, at 158-159, online: <https://pdfs.semanticscholar.org/86bf/26d0c8b46313f8db8acf1701238c4eec783e.pdf> [*Friedman*]; Mishkin, Frederic, *The Inflation Targeting Debate,* (2010), 195, at 199-200, online: < https://www.banqueducanada.ca/wp-content/uploads/2010/08/mishkin1.pdf> [*Mishkin*].

[277] *Mishkin, supra* note 276 at 199.

[278] *Ibid.*

[279] Dodge, David "Inflation Targeting – a Canadian perspective", Remark, (21 March 2005), at 4, online: < https://www.bis.org/review/r050323i.pdf> [*Dodge*].

target, above or below, The Bank would respond, eliminating the output gap,[280] keeping the economy operating at functional capacity while maintaining slow and stable inflation.[281] In addition, empirical literature has failed to find a measurable difference between the macroeconomic performance of countries that do and do not explicitly target full employment.[282] Accordingly, it is difficult to understand how explicitly targeting full employment would address current concerns about the inflation targeting method. Inflation targeting has a long history of success, and persuasive reasons must be given for the imposition of additional complexities.

B. THE HISTORICAL SUCCESS OF 2% INFLATION TARGETING

For roughly two decades, The Bank has implemented monetary policy using a 2% inflation control targeting method.[283] Inflation targeting was first established in 1991 and has been set at the 2% control target since 1995.[284] Implementing this policy, The Bank has achieved results relatively close to the 2% target for the past twenty-five years.[285] Not only has this target been achieved over such a long period of time, but this system carried the economy through several economic crises while still maintaining close-to-target inflation.[286] The historical success of inflation targeting strengthens the argument that this system

[280] *Ragan, supra* note 2 at 17-18.
[281] *Dodge, supra* note 279 at 4.
[282] *Friedman, supra* note 276 at 158.
[283] *Wilkins, supra* note 9 at 2.
[284] *2016 Renewal, supra* note 45 at 5.
[285] *Wilkins, supra* note 9 at 2.
[286] *Ibid.*

should not be so quickly replaced, but instead maintained and improved upon. I submit that it is the best method currently known.

Upon the implementation of inflation targeting, inflation fell and averaged close to 2% for the years 1991 to 2006.[287] Throughout Canada's history, the inflation control target of 2% has been renewed five times,[288] demonstrating the confidence held in its previous performance and predicted future successes. With inflation falling and remaining steady at 2% since implementation in 1991, expectations of economic agents eventually moved to a 2% rate, lower and stable interest rates emerged and real economic growth became more stable and sustainable.[289]

Arguably the most important benefit of retaining the 2% inflation targeting system is credibility maintenance.[290] It has been noted that credibility, consumer confidence and understanding are fundamental factors underpinning the success of any method of effecting monetary policy.[291] The operation of the 2% inflation control target over this period of time, and the relative ease with which it could be understood, fostered credibility in the system, creating an environment in which consumers could read economic signals more accurately, respond to shocks swiftly and appropriately, and allocate resources more efficiently.[292]

Beyond the noted historical success of sustaining inflation around 2% and fostering credibility, the inflation targeting method proved to stand the test of time through the

[287] *2011 Renewal, supra* note 252 at 4.
[288] *Ibid.*
[289] *Ibid*.
[290] *Ibid* at 34; see also *2016 Renewal, supra* note 45 at 3.
[291] *2016 Renewal, supra* note 45 at 18.
[292] *Ibid* at 2-3.

financial crisis of 2008.[293] Although Canada's successful operation throughout the 2008 financial crisis can be attributed to many factors, one such factor is the inflation targeting method.[294] The recession during this time period was the mildest in the past 30 years and inflation returned relatively quickly to the 2% target.[295] The flexibility of the inflation targeting system, combined with The Bank's use of unconventional monetary policy tools, allowed The Bank to provide the economy with the aggressive stimulus it required.[296]

To conclude, a 2% inflation control targeting method has proved itself time and time again. It has produced inflation rates close to the 2% target for almost 30 years, carried the country through an economic crisis in an efficient manner, and has become relatively easy for the consumer to understand. Although the system has recently been under strain, there does not appear to be a need to overhaul the system entirely. The system has worked efficiently in the past, and there is no indication that this will cease in the future. Its proven success and established credibility cannot be ignored, and should weigh heavily in concluding that inflation targeting is the best method currently known to effect monetary policy.

C. SUPPLEMENTAL UNCONVENTIONAL MONETARY POLICY TOOLS

Although The Bank is considered to have run out of "conventional firepower" upon policy rates reaching the zero lower bound, this does not exhaust the actions The Bank may

[293] *2011 Renewal, supra* note 252 at 4-5.
[294] *Ibid* at 5.
[295] *Ibid*.
[296] *Ibid*; see also *2016 Renewal, supra* note 45 at 5.

take.[297] As described, the Bank has unconventional monetary policy tools that it may use during periods when the economy is operating in a low interest rate and low inflation environment.[298] Some of these tools were used during the 2008 financial crisis.[299] The Bank's ability to resort to these mechanisms supports the proposition that inflation targeting is currently the preferable method, in that it has alternative back-up actions that can be taken beyond its conventional operation. This section will briefly introduce the reader to such tools and discuss their use during the 2008 crisis.

The Bank may use one or more of five unconventional monetary policy tools: providing forward guidance, negative policy rates, large scale asset purchases, funding for credit, and the sequence in which these policy measures are taken.[300] This discussion will briefly describe each tool since an in-depth review is beyond the scope of this paper. The Bank may turn to these tools in the event of an economic crisis or a low interest rate environment.

Using forward guidance, The Bank will provide conditional statements regarding the policy path it will follow.[301] This creates monetary stimulus by influencing expectations of low interest rates and future expectations.[302] As another tool, The Bank may resort to

[297] "Conventional firepower" meaning the ability of The Bank to stimulate the economy by lowering the overnight rate; see *Wilkins, supra* note 9 at 3.
[298] Bank of Canada, *Framework for Conducting Monetary Policy at Low Interest Rates,* (pdf), (Bank of Canada: December 2015) at 1, online: < https://www.bankofcanada.ca/wp-content/uploads/2015/12/framework-conducting-monetary-policy.pdf> [*Low IR Framework*].
[299] *Zhang, supra* note 107 at 3; *2016 Renewal, supra* note 45 at 6-7.
[300] *Low IR Framework, supra* note 298 at 1-2.
[301] *Ibid* at 1.
[302] *Ibid.*

negative interest rates.[303] Above, when describing the zero-lower bound, I used language to the effect that the policy rate cannot "theoretically" go below zero. Here I qualify that language. The overnight rate can venture into negative numbers so long as it does not exceed the effective lower bound.[304] The effective lower bound is determined by the cost one incurs to store and insure funds.[305] Therefore, so long as the amount one is paying financial institutions to hold its money does not exceed the personal cost to hold the funds, negative interest rates can be sensibly utilized.[306] In addition, The Bank can participate in large scale asset purchase agreements which inject cash into the system, increasing the money supply and encouraging spending for the acquisition of additional assets and rebalancing of portfolios.[307] Finally, a system providing collateralized term-funding to banks with the aim of ensuring the supply of credit to the economy may be implemented.[308] The four mentioned methods can be combined and implemented in a strategically timed fashion to result in a net benefit to the economy.[309] This is a brief description of the many steps The Bank may take, beyond a change in the overnight rate, to effect monetary policy. These actions are rare and have only been used during difficult economic circumstances.[310]

Some of the unconventional tools describe above were used during the 2008 financial crisis. During that time, The Bank not only lowered the overnight rate to its lowest possible

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[303] *Ibid*.
[304] *Ibid*.
[305] *Witmer & Yang, supra* note 233 at 3-4.
[306] *Ibid* at 4; *Low IR Framework, supra* note 298 at 1.
[307] *Low IR Framework, supra* note 298 at 2.
[308] *Ibid*.
[309] *Ibid.*
[310] *Ibid* at 1.

level,[311] but it also provided extensive forward guidance of its policy stance and varied the time horizon over which it sought to bring inflation back to 2%.[312] The Bank provided support and liquidity to the financial system by expanding its short-term liquidity lending terms.[313] Therefore, although there has been very limited experience with the unconventional monetary policy tools, this limited experience has proven successful.

Wilkins notes concerns related to these tools, namely, lack of use, inherent uncertainties regarding achievement of inflation objectives, and potential long-term negative effects.[314] These are valid concerns. However, they do not justify changing from the inflation targeting method. As noted above, The Bank's limited experience with the current tools has proven successful, and resort to these tools has only been necessary in rare economic conditions.

Concerns have been raised about the efficient functioning of the 2% inflation-targeting method. In this Part V, I have argued that the 2% inflation control target is the best method currently known to effect monetary policy. None of the three alternatives posed, which include increasing the target to 3% or 4%, resorting to PLT, or adding full employment to The Bank's explicit objectives, outweigh the current success and benefits found in the inflation-targeting system. Given its successful history and well-earned credibility, and in light of The Bank's ability to resort to unconventional monetary policy tools if necessary, the 2% inflation-targeting method remains the best-known method to effect monetary policy. If,

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311 The Bank lowered the overnight rate to 25 bps, which was also the effective lower bound. See *2016 Renewal, supra* note 45 at 6; *Witmer & Yang, supra* note 233 at 3.
312 *2016 Renewal, supra* note 46 at 6; *2011 Renewal, supra* note 252 at 5.
313 *2011 Renewal, supra* note 252 at 6.
314 *Wilkins, supra* note 9 at 9.

in the alternative, it is determined that changes are absolutely necessary, changes within the current working system are preferable to a complete system overhaul.

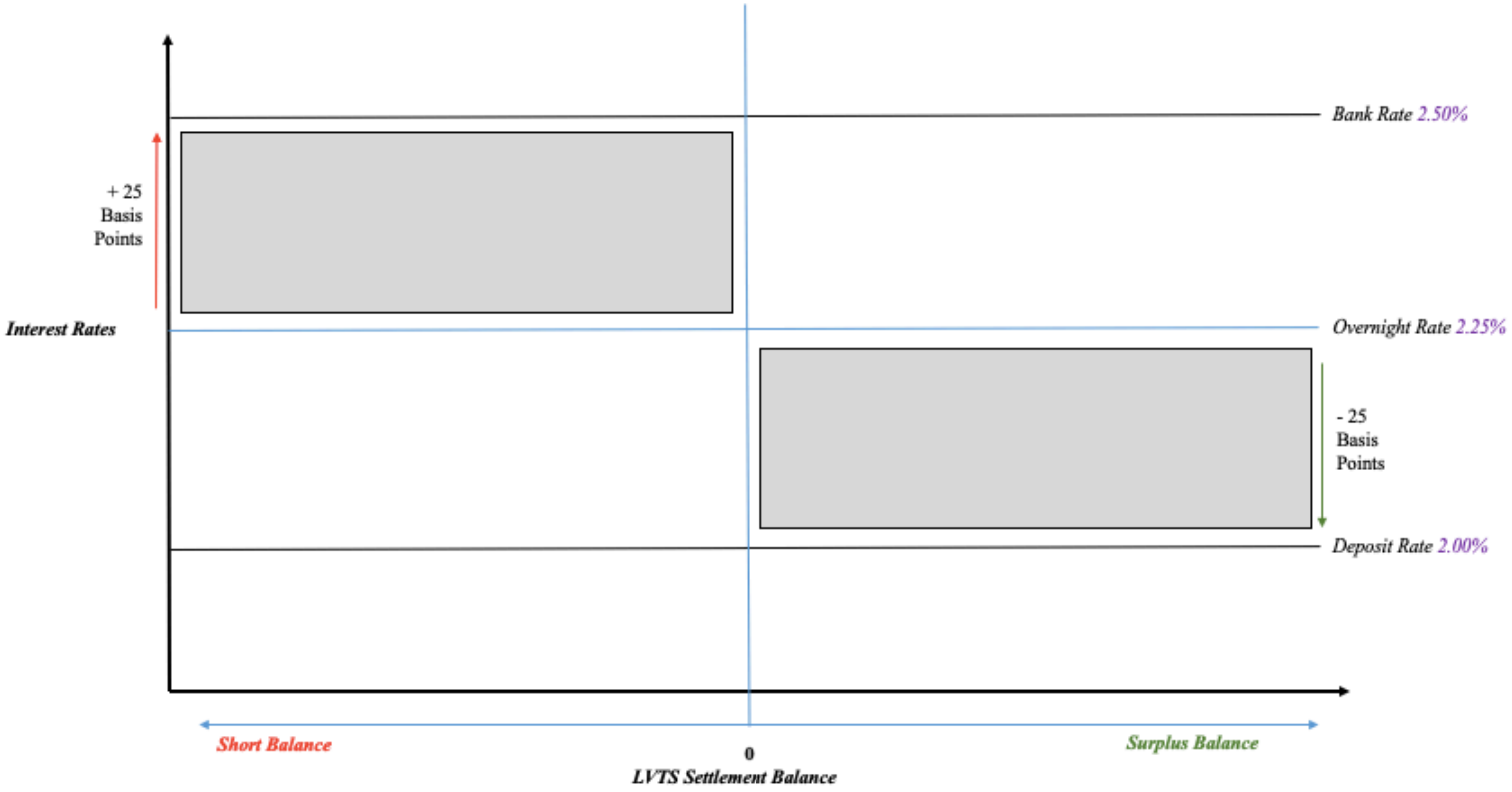
VI. CONCLUSION

It is important for economic agents to understand how the actions of The Bank of Canada guide consumer behaviour and affect the overall economy. The Bank, being Canada's central bank, has the mandate to keep inflation low and stable in order to promote the economic and financial wellbeing of Canadians. It achieves this mandate by implementing monetary policy. The Bank sets a 2% inflation control target in a combined agreement with the federal government, renewable every five years. To ensure inflation remains on the 2% targeted path, The Bank utilizes the overnight rate, its key policy tool. The Bank may change the overnight rate up to eight times a year in response to economic conditions. The Bank conducts many complex functions, including maintaining the operating band, adjusting settlement balances and participating in overnight repo and reverse repo transactions within the LVTS in order to promote and sustain the overnight rate. Changes in the overnight rate are transmitted to the economy through a multitude of economic variables that are connected in a cause-and-effect chain of relations. A change in the overnight rate will affect interest rates, asset prices, wages, employment, the value of money and the currency exchange rate. A rational consumer, equipped with this knowledge, can make informed decisions and respond appropriately to the actions taken by The Bank.

The 2% inflation control targeting method remains the best method currently known to effect monetary policy. The alternative mechanisms proposed are not preferable in that

their proposed benefits appear to be outweighed by their costs. In addition, the credibility underpinning the inflation targeting method is arguably the most difficult hurdle any alternative will have to overcome. Any attempt to modify or replace the inflation targeting system jeopardizes a foundational pillar of monetary policy success. Unconventional monetary policy tools may be resorted to during times of uncertainty, and proved successful during the 2008 financial crisis. The economy is a delicate web of interconnected relations sustained by consumer confidence. I submit that the 2% inflation targeting method has proven itself time and time again and is the best-known method to sustain Canada's economy moving forward.

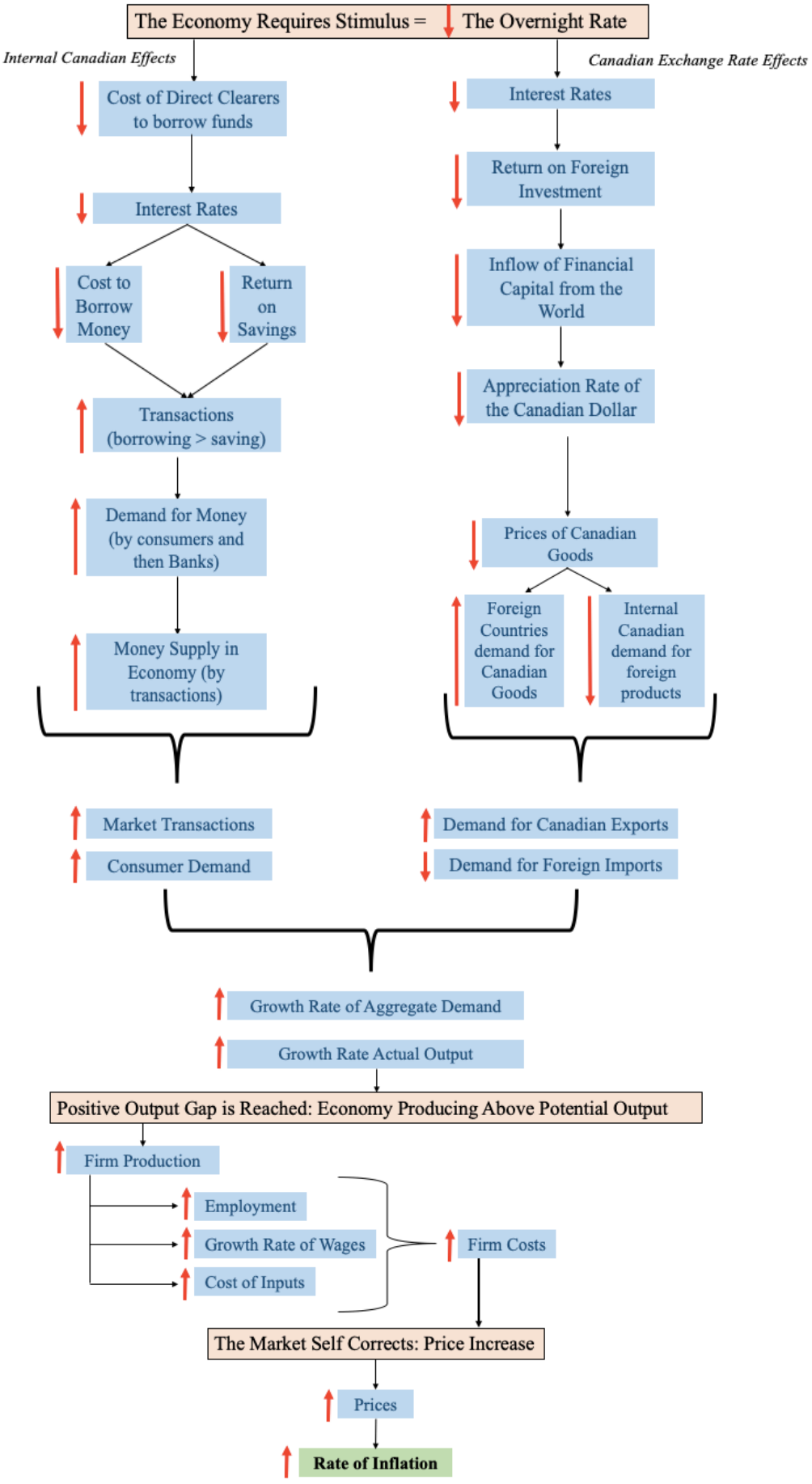
APPENDIX A



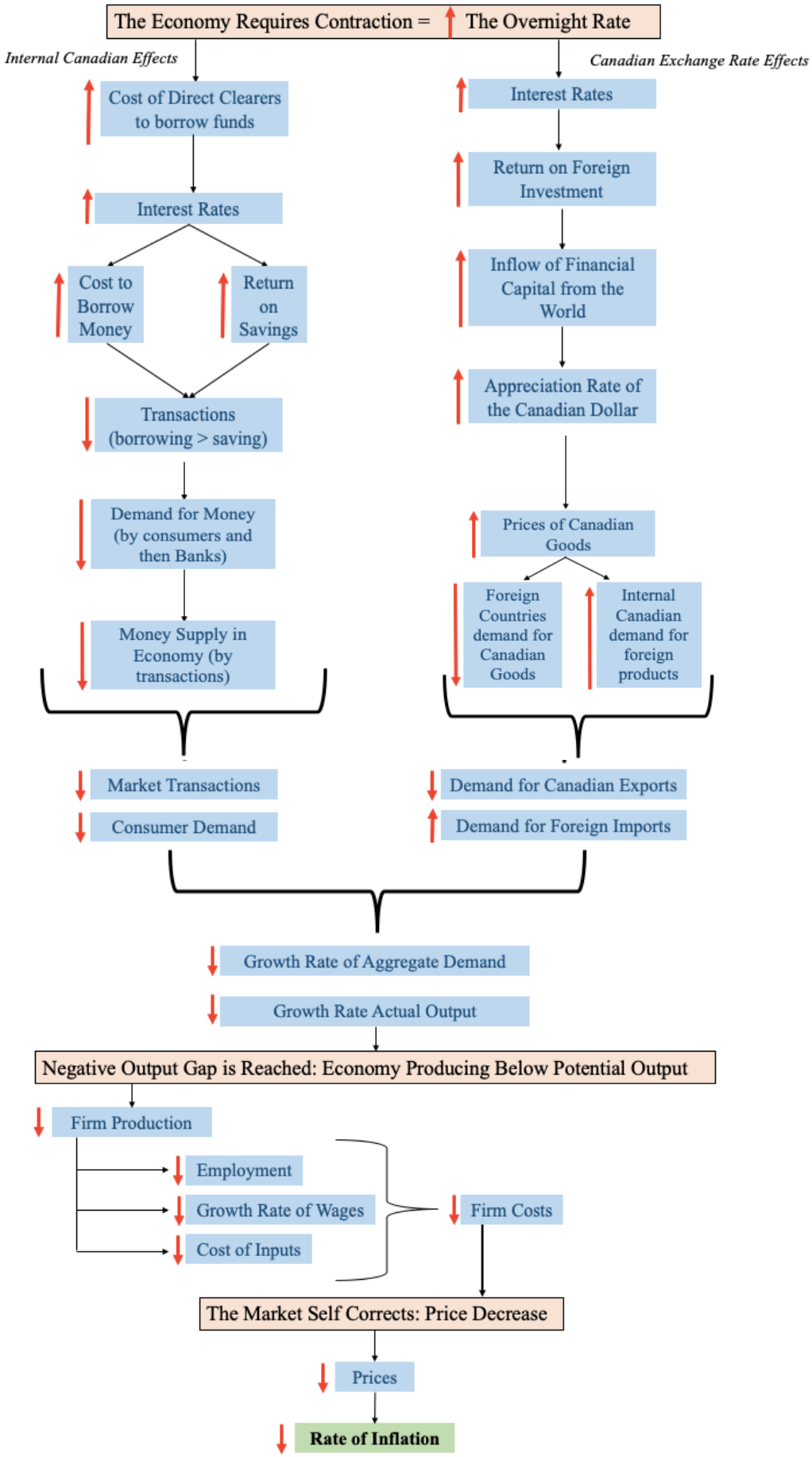
Per the diagram above, one can visualize the operating band created and maintained by The Bank. The overnight rate remains in the middle, with the bank rate being the upper limit, and deposit rate being the lower limit. In the diagram above, one can see that if a direct participant ends in a short position, with no arrangement with another direct participant, it will pay the increased bank rate to borrow the money necessary to have an ending zero balance. The inverse can be said for a direct participant in a long position. The "band" between the deposit rate and the bank rate is that in which direct participants will trade with each other, ensuring their cost of overnight borrowing is roughly equivalent to the overnight rate.[315]

[315] For the diagram above, one may also reference *Framework Liquidity, supra* note 22.

APPENDIX B


The Economy Requires Stimulus = ↓ The Overnight Rate
Internal Canadian Effects
Canadian Exchange Rate Effects
↓ Cost of Direct Clearers to borrow funds
↓ Interest Rates
↓ Cost to Borrow Money
↓ Return on Savings
↑ Transactions (borrowing > saving)
↑ Demand for Money (by consumers and then Banks)
↑ Money Supply in Economy (by transactions)
↓ Interest Rates
↓ Return on Foreign Investment
↓ Inflow of Financial Capital from the World
↓ Appreciation Rate of the Canadian Dollar
↓ Prices of Canadian Goods
↑ Foreign Countries demand for Canadian Goods
↓ Internal Canadian demand for foreign products
↑ Market Transactions
↑ Consumer Demand
↑ Demand for Canadian Exports
↓ Demand for Foreign Imports
↑ Growth Rate of Aggregate Demand
↑ Growth Rate Actual Output
Positive Output Gap is Reached: Economy Producing Above Potential Output
↑ Firm Production
↑ Employment
↑ Growth Rate of Wages
↑ Cost of Inputs
↑ Firm Costs
The Market Self Corrects: Price Increase
↑ Prices
↑ Rate of Inflation

APPENDIX C


The Economy Requires Contraction = ↑ The Overnight Rate
Internal Canadian Effects
Canadian Exchange Rate Effects
↑ Cost of Direct Clearers to borrow funds
↑ Interest Rates
↑ Cost to Borrow Money
↑ Return on Savings
↓ Transactions (borrowing > saving)
↓ Demand for Money (by consumers and then Banks)
↓ Money Supply in Economy (by transactions)
↑ Interest Rates
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↑ Inflow of Financial Capital from the World
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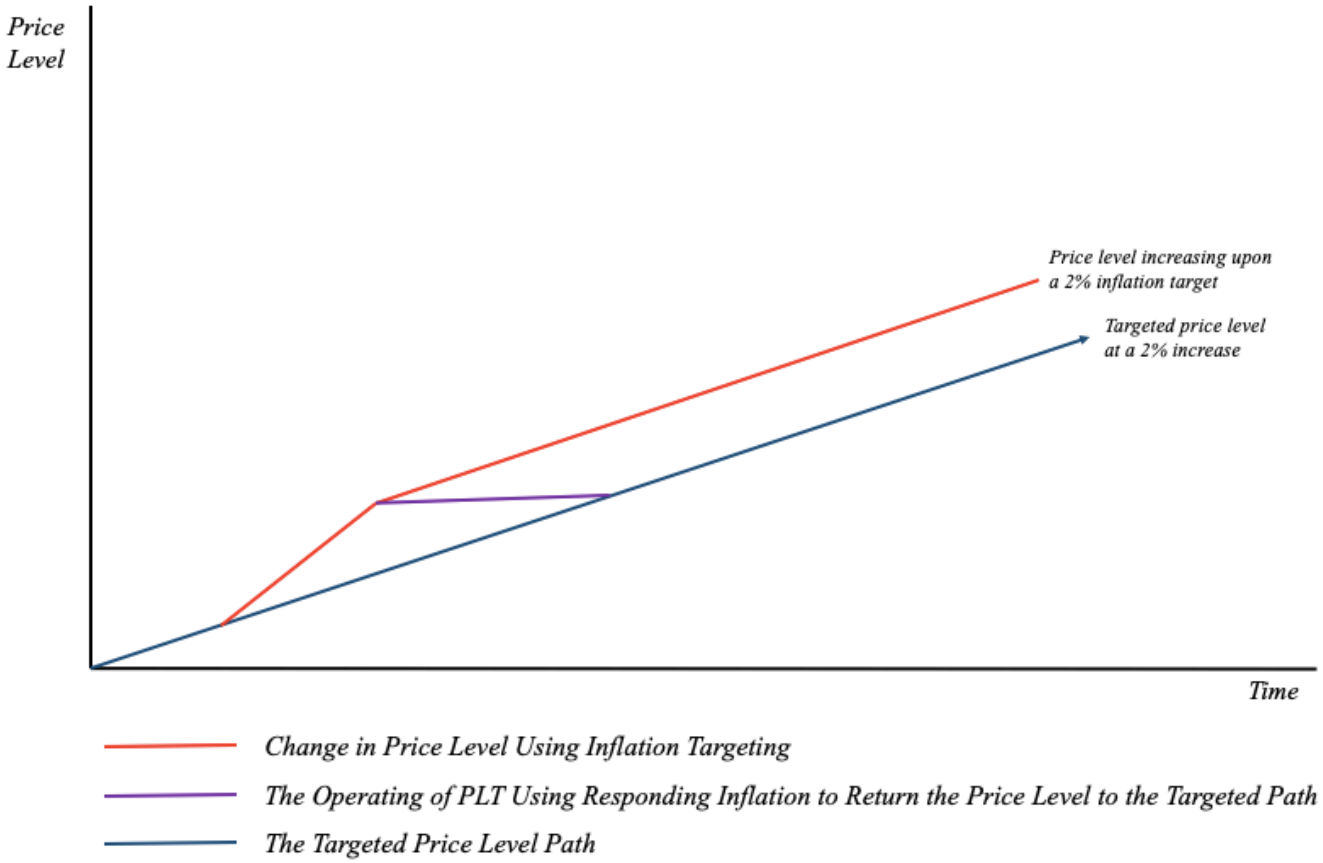
↑ Prices of Canadian Goods
↓ Foreign Countries demand for Canadian Goods
↑ Internal Canadian demand for foreign products
↓ Market Transactions
↓ Consumer Demand
↓ Demand for Canadian Exports
↑ Demand for Foreign Imports
↓ Growth Rate of Aggregate Demand
↓ Growth Rate Actual Output
Negative Output Gap is Reached: Economy Producing Below Potential Output
↓ Firm Production
↓ Employment
↓ Growth Rate of Wages
↓ Cost of Inputs
↓ Firm Costs
The Market Self Corrects: Price Decrease
↓ Prices
↓ Rate of Inflation

APPENDIX D

AN EXAMPLE OF PLT



In the above diagram, the blue line represents the targeted price level path. It is assumed that the path of prices is increasing at a 2% rate over time. One can visualize the difference between PLT and inflation targeting. When inflation is above the targeted 2%, which occurs as the red line rises quickly from the lower blue line, the price level increases. With inflation targeting, the past is not a factor for the future and therefore The Bank would aim to decrease the above average inflation back to that of 2%, not correcting the previous deviation. The above-average price established from the increase in inflation would be the

new price basis moving forward, as demonstrated by the red line on the 2% incline thereafter.

In contrast, the past would not be ignored under PLT. Under this system, a period of above average inflation requires that The Bank take action to bring about below-target inflation for a period. The below-target inflation slows the growth rate of price increases and returns price levels to target. This is represented by the purple line. Once returned to target, The Bank would resume its pursuit of a 2% increase in prices.[316]

[316] *2011 Renewal, supra* note 252 at 16.