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MONETARY POLICY

Monetary Policy, Income Inequality, and Inflation – What's the Link?

by
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- This paper studies the link in Canada between monetary policy, income inequality, and inflation. What are the effects of monetary policy on income inequality? and why and how does inflation play a role?
- Income inequality largely increased from the time the Bank of Canada began targeting inflation, through the late 1990s to the early 2000s, and flattened or decreased after the 2008 financial crisis. On the whole, income inequality today is greater than it was when the Bank of Canada became an inflation-targeting central bank.
- Against this backdrop, our analysis shows that expansionary monetary policy shocks, triggered by a lower than expected bank rate, lead to increasing income inequality, while contractionary monetary policy shocks reduce income inequality.
- We then show that these effects are asymmetric with expansionary shocks having a greater impact on income inequality than contractionary shocks.
- Expansionary monetary policy shocks result in a higher share of national income shifting to higher income households, who consume less as a percentage of their income, dampening the increase in aggregate demand, and, therefore, inflation.
- Our results lead to one particularly important conclusion for monetary policy: namely, that the Bank of Canada needs to account for the impact of income inequality when modeling how inflation will respond to a change in the overnight rate.

Inflation targeting has been a relative success in many countries around the globe since its popularity rose in the early 1990s (see Parkin 2016).

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Leading up to this period, high inflation as well as high interest rates, were widespread, including in Canada. However, with the adoption of inflation targeting, Canada, and many of its peers, saw both inflation and interest rates come down, accompanied by more stable economic activity.

In this paper, we look at an oft-overlooked area of monetary policy: its effects on income inequality, and ask what monetary policy's impact has been on this aspect of the economy during the inflation-targeting era. Of course, income inequality as a result of monetary policy may be viewed as a secondary issue if the effects of contractionary and expansionary monetary policy shocks net out over a business cycle. However, this view assumes income inequality reacts symmetrically to expansionary and contractionary monetary policy. If these reactions are, in fact, asymmetric, then understanding the link between monetary policy, different income distributions, and inflation is imperative to understanding the impact of monetary policy over the cycle.

In a world where there is no income inequality, i.e., in which the demand-side of the economy can be represented by a single representative household, we can think of monetary policy as acting through the timing of consumption decisions. For example, lowering the overnight rate (the interest rate at which major financial institutions lend and borrow overnight funds with each other) makes borrowing cheaper so households bring consumption forward, increasing aggregate demand and inflation.

However, in the real world where there is income inequality it is not as simple, as these consumption decisions also depend on the degree to which households in different income quintiles spend different percentages of their income on consumption. Therefore, the overnight rate alone is insufficient to predict monetary policy's impact on income inequality and inflation. In Canada, those in the highest income quintiles tend to spend less as a percentage of their income than those at the bottom (consistent with, for example, Fisher et al. 2019 for the US case). As a result, a monetary policy shock that has the effect of increasing income at the top of the distribution would dampen the response of inflation through a smaller than expected increase in aggregate demand.[1]

We begin our analysis by showing that income inequality in Canada has changed over the inflation targeting period from 1992 to 2015. Income inequality largely increased from the time the Bank of Canada began targeting inflation through the late 1990s to the early 2000s. Depending on how one measures income inequality, it appears to flatten or increase futher until the lead-up to the 2008 global financial crisis, and flattens or decreases during the post-financial crisis period. On the whole, income inequality today is greater than it was when the Bank of Canada became an inflation-targeting central bank.

Our results indicate that expansionary monetary policy shocks have led to increases in income inequality, while contractionary monetary policy has had the opposite effect. Importantly, we find that expansionary monetary policy has a larger impact on income inequality in absolute terms than does contractionary monetary policy; i.e., we find asymmetry.

1 See Villarreal (2016) for more on the monetary policy – inequality link. Also, Brzoza-Brzezina et al. (2013) and Guvenen (2011) provide a review of papers introducing heterogeneous (diverse) households into monetary policy models. They find that heterogeneity is affected by the conduct of monetary policy, and optimal monetary policy changes when models move from the standard representative agent framework to one with heterogeneous agents. This line of research is also consistent with recent work around secular stagnation (see, for example, Summers 2015). Lastly, see Hohberger et al. (2019) for an analysis of conventional and unconventional monetary policy on distributional effects in the euro area using an estimated open-economy Dynamic Stochastic General Equilibrium model.

With this result in hand, we look to explain how monetary policy affects income inequality, in other words – what is the transmission mechanism?

To account for household income inequality, we study the relationship between the two main streams of household disposable income: (i) employee wages; and (ii) so-called "capital rents," which include returns on capital assets like securities, properties or other investments. As more resources are distributed as capital rents, income inequality increases. As more resources are distributed as wages, income inequality decreases. Our results, consistent with Cantore et al. (2018), confirm that expansionary monetary policy shocks increase household income inequality by shifting resources away from wages and towards capital rents.

Our results lead to one particularly important conclusion for monetary policy: namely that the Bank of Canada needs to account for the impact of income inequality when modeling how inflation will respond to a change in the overnight rate.

The central bank is not responsible for inequality directly, that being the job of elected officials. However, our results make clear that not accounting for the differing responses of income groups might lead to false interpretations by central bankers of the likely impact of a monetary policy shock on inflation.

Inflation and Income Distribution: Evidence of a Link

Here we present some evidence linking inflation and the income distribution in Canada. First, we show that the income distribution in Canada has changed over the inflation-targeting period and is more unequal today. Second, we show that different income quintiles/deciles are associated with different consumption baskets, and these different consumption baskets have different price sensitivities. In addition, we complement this price sensitivity story with results showing higher marginal propensities to consume at the bottom of the income distribution. These facts imply that changes to the income distribution are likely to impact inflation through differences in both the price sensitivities of the different consumption baskets, and the diverse marginal propensities to consume across different income quintiles.

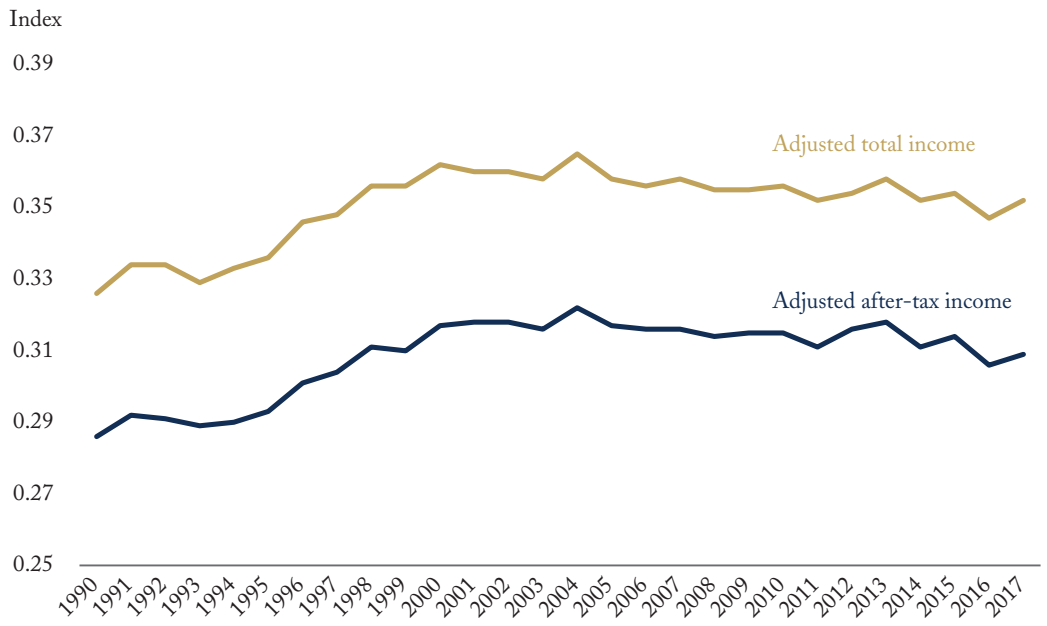
Changes to the Income Distribution

There are several publicly available measures of income inequality. Canada's statistical agency, Statistics Canada, produces different annual measures of household income inequality going back to 1976, including two we present here: adjusted total income and adjusted after-tax income.[2] As Figure 1 shows, income inequality, as measured by the Gini coefficient – a common index for income inequality – was on a steady rise throughout the 1990s and into the early 2000s, and has largely stabilized, or even dropped from its peak since. That said, these measures are above where they were when the Bank of Canada became an inflation-targeting central bank in 1991.[3]

2 Total income is income from all sources before income taxes and deductions. After-tax income is total income less income taxes. According to Statistics Canada, "in order to take into account the economies of scale present in larger households, the different types of income are adjusted by dividing the household income by the square root of the household size" (Footnote 5 of Table 11-10-0134-01). A third measure, which we do not show here, adjusted market income, is total income before tax less income from government sources. It largely tells a similar story to the other two measures.

3 Also true if we narrow the range to the post-1995 period. We raise the 1995 reference point since it was really from this year on when the Bank of Canada had a constant target of 2 percent inflation.

Figure 1: Income Inequality in Canada, Gini Coefficient* Measures – Adjusted Total, and After-tax Income



Note: * The Gini coefficient, or Gini Index, is a widely used measure of income inequality within a country, developed by Italian statistician Corrado Gini in 1912. A Gini coefficient of zero represents perfect equality, where everyone has the same income. A Gini coefficient of one represents perfect inequality. It can also be expressed in percentage points.

Source: Statistics Canada.

The evolution of these measures reflects changes in income inequality across households, as well as changes in key observable household characteristics, such as sex, education and age. However, we are more interested in the portion of income inequality that cannot be explained by these observable characteristics, since they are associated with a certain degree of income inequality regardless of monetary policy shocks (i.e., they are endogenous).

We generate an income inequality measure at the level of employed individuals by gathering high frequency monthly (wage) income data from Statistics Canada's Labour Force Survey (LFS) data,[4] and extract the portion

4 We acknowledge that using pre-tax LFS data ignores the redistribution effects from tax and transfers. However, as we showed, Statistics Canada's Gini coefficients change very little when we compare before versus after-tax. We also note that using micro-level LFS wage data means the unemployed are removed from the sample in a given year. This could be a concern in that by starting at a lower level of inequality (since the unemployed are removed from the sample), you underestimate the degree to which expansionary monetary policy brings people back into the labour market, and vice versa in the case of contractionary monetary policy. However, our transmission mechanism model, introduced later, uses aggregate wage data, which does not have this characteristic, and finds similar results.

Figure 2: Income Inequality for Employed Individuals, by Monthly Income, Gini Coefficient* Measures

Notes: Calculations include only the portion of monthly income that is unexplained by observable household characteristics, such as sex, education, age, marital status, urban area, and industry.

* A Gini coefficient of zero represents perfect equality, where everyone has the same income. A Gini coefficient of one represents perfect inequality. It can also be expressed in percentage points.

Sources: Statistics Canada and authors' calculations.

of monthly income that is unexplained by the above characteristics, and calculate the Gini coefficient for this residual across employed Canadians.[5]

The results indicate increasing income inequality in the years leading up to the crisis (Figure 2).[6] However, income inequality improves towards the end of the crisis, and thereafter. These results are qualitatively similar to what we saw with the Statistics Canada measures, although the unavailability of LFS monthly data pre-1997 prevents us from comparing where income inequality sits relative to its level when the Bank of Canada became an inflation-targeting central bank.

5 To generate these income-based Gini residuals we follow Villarreal (2016) and run a regression with monthly income as the dependent variable, and independent variables including the square polynomial on age (a proxy for experience), a variable on whether someone has finished a post-secondary degree (a proxy for ability), and other binary variables for marital status, sex, urban area, and industry. We extract the estimated income and subtract this estimated variable from actual income, giving us a set of residuals we use to estimate the Gini coefficients.

6 The Gini coefficient is smoothed using the LOWESS method with a bandwidth of 0.15. This means 15 percent of the data are used to smooth each point. Smaller bandwidths adhere to the data more closely.

Consumption Baskets and Marginal Propensities to Consume across the Income Distribution

Why does understanding movements in the income distribution across time matter for monetary policy transmission? One explanation comes from Cravino et al. (2018): "If the effects of monetary shocks on prices are heterogeneous across types of goods (Boivin et al. 2009), and consumption baskets differ across the income distribution (e.g., Almas 2012), then shocks will differentially affect the prices faced by households of different incomes."

Key then, is to show for Canada that: a) different income quintiles have different consumption baskets, and b) price movements for those different baskets differ across the income distribution. To show this, we follow the methodology in Cravino et al. (2018) using Canadian data. This methodology involves calculating the percentage of money spent on a particular product group by income quintile (i.e., creating a consumption basket for different income quintiles), estimating how prices of different product groups move across time, and finally, calculating the movement of prices associated with these different consumption baskets across different income quintiles over time (see Kronick and Villarreal 2019 for more detail).[7]

Like Cravino et al. (2018) in their US analysis, we find a hump-shaped result for the variations in inflation across the consumption baskets associated with different income quintiles, with high-income households in Canada experiencing lower volatility compared with middle-income households (Figure 3).[8]

We conclude that in Canada different consumption baskets characterize different income quintiles, and the overall price sensitivities of these baskets differ based on the make-up of the associated goods and services.

Moreover, over the period 2010 to 2018, according to Statistics Canada' data on distributions of household income and consumption, the marginal propensity to consume (change in consumption divided by change in disposable income) for the lowest income quintile was 3.2, meaning this group significantly dipped into savings or borrowed to finance additional consumption. For those at the highest income quintile, the marginal propensity to consume over this period was 0.9. The implication is the marginal propensity to consume is much higher for those at the bottom of the income distribution.

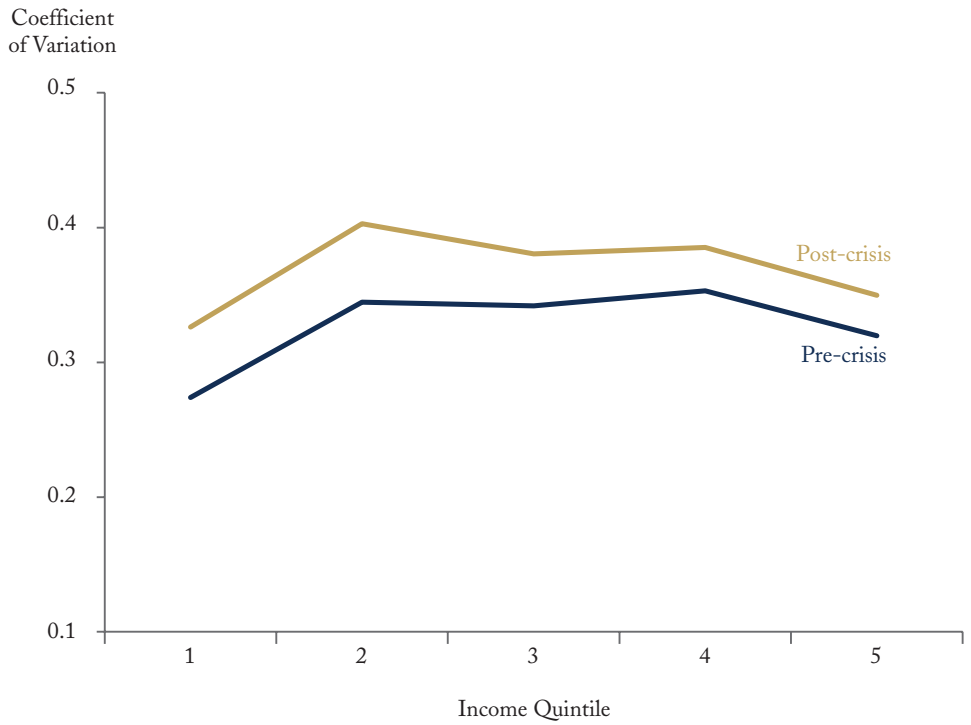
Overall, the evidence shows:

- an income distribution that has varied over the last quarter century, with greater income inequality today than at the beginning of our sample;
- consumption baskets that differ across different income quintiles with different overall price sensitivities across the goods and services that make up these baskets; and
- different marginal propensities to consume at different income levels.

7 We use Canadian data from the Survey of Household Spending (SHS) which details money spent, by income quintile, on different goods and services. While the categories for the SHS and CPI data do not match exactly, the differences are minor and in almost all instances easy to match.

8 However, the lowest volatility occurs at the lowest income quintiles, unlike the study by Cravino et al. where high-income households experience the lowest volatility. This also reflects itself in average inflation over the post-crisis period, which was lowest for low-income households. One explanation for this difference with the US work of Cravino et al. comes from Friedrich and Gosselin (2015) who discuss evidence of increased competition in Canada's retail sector, as a result of new and bigger retailers. The Bank itself estimated that more intense competition in these sectors subtracted around 0.3 percentage points from inflation in 2012 and 2013.

Figure 3: Variation in Inflation (CPI) by Income Quintile, Expressed as the Coefficient of Variation*



Notes: Pre-crisis is defined as Jan. 1997–Sept. 2008. Post-crisis is Nov. 2009–April 2018.

* Coefficient of Variation is the ratio of the standard deviation to the mean, or the level of dispersion around the mean.

Sources: Bank of Canada, Statistics Canada, and authors' calculations.

This begs the question of whether monetary policy has contributed to changes in the income distribution and if it has, whether these changes are symmetric and what this means for inflation's response to a contractionary/expansionary shock.

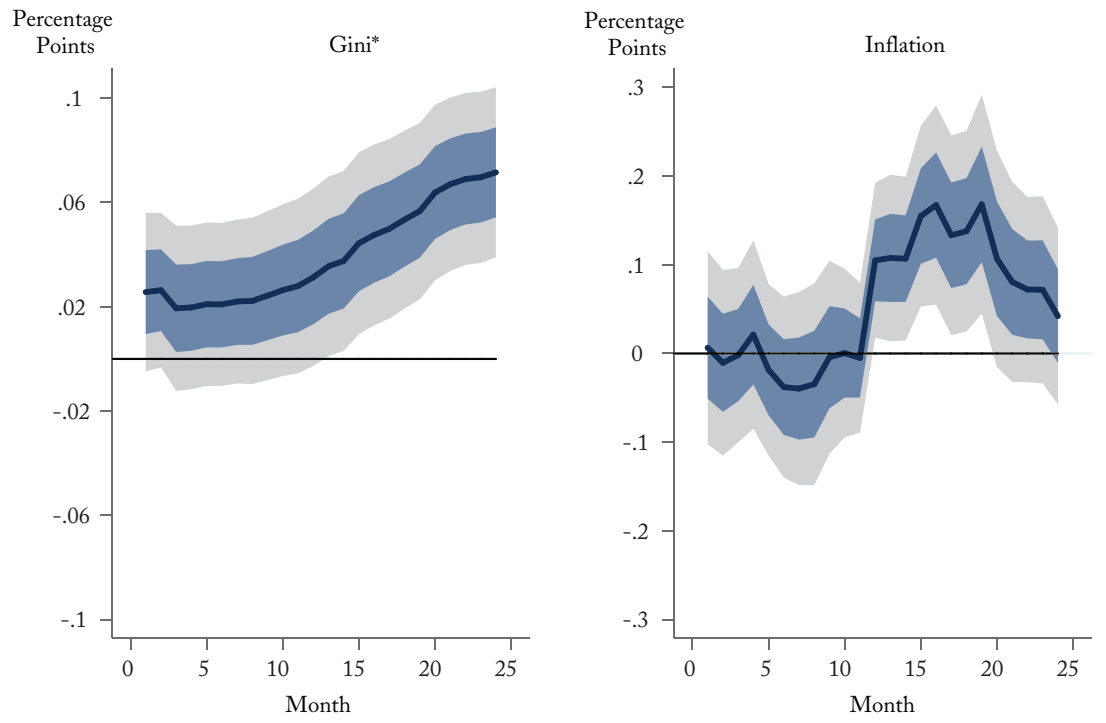
Monetary Policy, Income Inequality, and Inflation: The Results

The first order of business is to establish whether monetary policy has played a role in the changing income distribution over the inflation-targeting period. To do this, we first need a method to identify exogenous monetary policy shocks, in other words, the unexplained or surprise portion of a change in the overnight rate. We follow Champagne and Sekkel's (2018) version of this surprise change, which involves estimating the part of an intended Bank of Canada overnight rate change that cannot be predicted from the Bank of Canada's estimated reaction function, which takes into consideration how the Bank systematically reacts to a series of indicators.

Establishing the Impact of Monetary Policy on Income Inequality

As documented by Ampudia et al. (2018), the theoretical link between how monetary policy is likely to impact inequality is ambiguous, and, therefore, requires robust empirical testing. We start with a simple local-

Figure 4: Response to an Expansionary Monetary Policy Shock; Income Inequality and Inflation



Notes: Dark grey bars are 90 percent confidence bands, while light grey bars are 95 percent confidence bands.

* A Gini coefficient of zero represents perfect equality, where everyone has the same income. A Gini coefficient of one represents perfect inequality. It can also be expressed in percentage points.

Source: Authors' calculations.

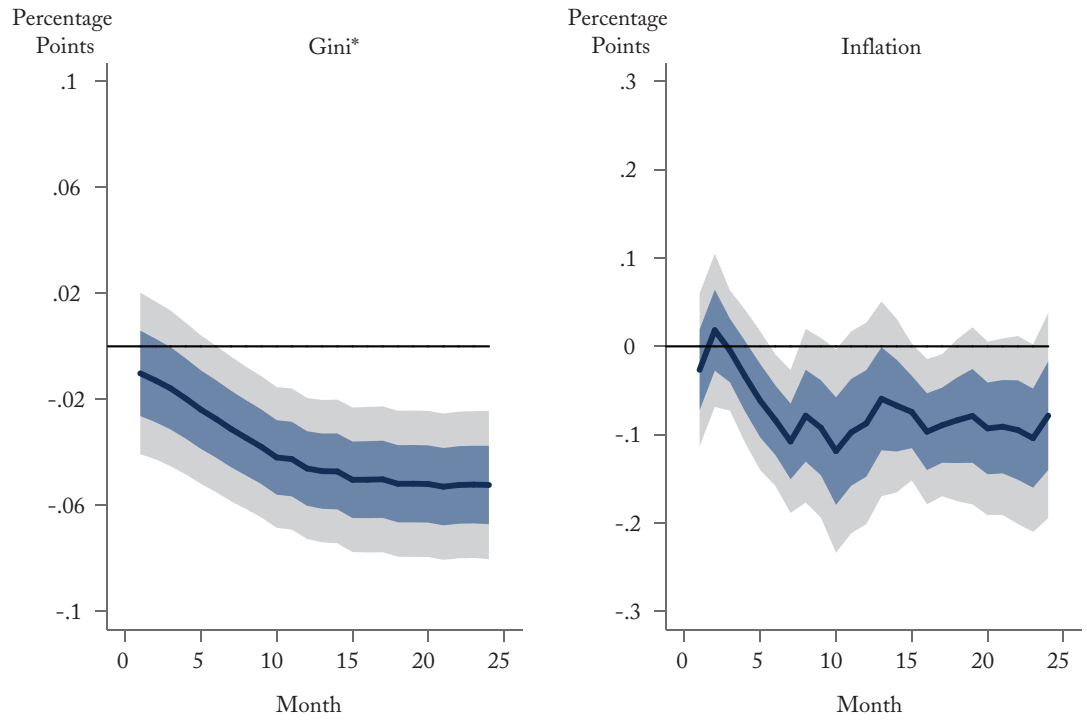
projections setup (see Jordà 2005 for more) where we estimate the impact of both a contractionary and expansionary shock on income inequality (see Box 1 for more detail on the econometric setup). The local projections method estimates the response at each period of interest rather than extrapolating over the longer term. It is a particularly useful empirical technique when the sample period, like ours, is characterized by both expansionary and contractionary monetary policy, since it allows for asymmetry between the effects of both types of shocks.

Our first set of results tells us how income inequality and inflation respond to a typical temporary 25 basis point expansionary or contractionary monetary policy shock (Figures 4 and 5, respectively).

As indicated in Figure 4, expansionary monetary policy appears to increase income inequality, while having the expected positive impact on inflation. Figure 5 tells the opposite story: a contractionary monetary policy shock appears to reduce income inequality while lowering inflation.

Interestingly, it also appears as if an expansionary monetary policy shock has a greater impact on income inequality, in absolute terms, than does a contractionary shock. This is true of the peak effect on inflation as well,

Figure 5: Response to a Contractionary Monetary Policy Shock; Income Inequality and Inflation



Notes: Dark grey bars are 90 percent confidence bands, while light grey bars are 95 percent confidence bands.

* A Gini coefficient of zero represents perfect equality, where everyone has the same income. A Gini coefficient of one represents perfect inequality. It can also be expressed in percentage points.

Source: Authors' calculations.

though a contractionary shock seems to take effect much quicker than an expansionary shock. This asymmetry is critical as it implies that the effects of the shock will not net out over the course of the business cycle.[9]

The question of interest then becomes what is the transmission mechanism whereby monetary policy affects income inequality.[10] To answer these questions, we turn to a more detailed local-projections setup.

9 We acknowledge that the point estimates for an expansionary monetary policy shock do lie within the confidence intervals of a contractionary monetary policy shock. While the point estimates do differ, and are suggestive of asymmetry, this model on its own is insufficient and requires further analysis. We perform this additional analysis in the following section.

10 The findings in this section are robust to numerous specifications and timing including different starting points, different end points, including a pre-crisis end point, as well as a different time series of Gini residuals where we add additional observables to our baseline. Results available from authors upon request.

Box 1: Estimating the Impact of Monetary Policy Shocks

More formally, we assume a series of Canadian macroeconomic variables can be modeled and forecasted using the following local-projections setup allowing for asymmetry (see Ramey and Zubairy 2018 for more detail on this methodology for asymmetry):

$$Y_{t+h} = I_{t-1}[c_{A,h} + \delta_{A,h}X_{t-1} + \gamma_{A,h}shock_t] + (1- I_{t-1})[c_{B,h} + \delta_{B,h}X_{t-1} + \gamma_{B,h}\, shock_t] + \varepsilon_{t+h},$$

where Y is the variable of interest, X is a vector of control variables, and I is a dummy variable that tells us whether we are facing a contractionary monetary policy shock ($I = 1$) or an expansionary monetary policy shock ($I = 0$). Our forecast period, using monthly data, goes from $h = 0,1,2,\ldots.24$, and spans the 1997m1–2015m10 time period. For our purposes, Y_{t+h} is either g_{t+h}, the Gini coefficient, estimated using the residual method for monthly income described in the text, or π_{t+h}, headline inflation. The shock variable, $shock_t$, is Champagne and Sekkel's exogenous monetary policy shock series. The vector of control variables, X_{t-1}, includes one lag of the Gini coefficient, inflation, the monetary policy shock, and the output gap. We note that, given Canada's status as a small open economy, often influenced by the US economy, the Champagne and Sekkel shock series controls for both lagged changes in the Federal Funds Rate and the USD/CAD dollar exchange rate.*

* We note that all variables except the Champagne and Sekkel shock series are integrated of order 1; i.e., are unit root, or non-stationary. In order to run the local projections in levels we need to first turn Champagne and Sekkel's stationary shock series into an I(1) variable, which we do by cumulating it (these authors do the same thing). Then we need to test for cointegration amongst the variables, which we do using Johansen's trace statistic method, which gives us one cointegrating relationship. Also note that since our primary interest from this empirical analysis is the impact of the monetary policy shock variable on the Gini residual (i.e. the Gini is the dependent variable) any concern about using a generated variable, which the Gini residual is, is mitigated (see Lewis and Linzer 2005 who show that using generated variables as dependent variables raises no significant econometric issues). This argument, hinges on our belief that the Champagne and Sekkel monetary policy shock dataset is accurate.

Determining the Transmission Mechanism

According to the results emerging from work on heterogeneous, or diverse, agent models (Kaplan and Violante, 2018), one of the key differences between mainstream economic models featuring a representative agent, and richer specifications that allow agents to differ in noteworthy ways, is the relative magnitude of the direct and indirect macroeconomic effects following a surprise change to the central bank's primary monetary policy tool. Salient among them: how monetary policy impacts the disposable income households use to finance their current and future consumption.

In view of this, we extend the analysis to explore the impact of monetary policy shocks on the distribution of households´ main income streams. We focus on the evolution of the gap between compensation of employees and capital owners' gross operating surplus, which includes before-tax profits after labour costs have been

Box 2: Estimating the Gap between Wages and Capital Owners' Gross Operating Surplus

In principle, an employee´s compensation should reflect observable characteristics such as the number of hours worked, schooling and education. In addition, it often reflects other characteristics including the employee´s sex, industry of employment, geographical location, etc. Since at least in the short term, these characteristics are not likely to be affected by monetary policy, we compute a residual measure of the gap by regressing its level, expressed in 2007 prices, on a set of binary observables including sex, marital status, education, whether someone is a resident of metropolitan areas, the distribution of workers across industries (industries are identified using NAICS' 2-digit codes), their age composition, and the average number of hours worked. The residual gap measure corresponds to the residuals from the regression.

Reflecting the quarterly availability of data on the gross operating surplus, the resulting residual measure is estimated from the first quarter of 1997 onwards.

paid, investment income, and more.[11] A higher value of the gap implies that more of the value added in the economy is distributed as labor compensation, whereas lower values of the gap imply a relatively higher share of value-added accruing to capital owners. Under the assumption that higher income households derive a larger proportion of their income from capital than do lower income households,[12] in addition to capturing the evolution of the main determinants of disposable income, the gap provides a more detailed measure of income inequality, where a lower value for the gap implies more income inequality. This alternative measure provides insight on one possible transmission of a monetary policy shock to inequality.

Figure 6 contrasts the evolution of the wage–gross operating surplus gap and Statistics Canada´s measure of the after-tax income Gini coefficient[13] over the period 1976-2017.[14] It is clear that, despite the higher volatility of the wage–gross operating surplus gap, both measures follow similar trends.

Since the evolution of the compensation of employees, the gross operating surplus, and the difference between them responds to factors beyond monetary policy, we use a residual measure of the gap similar to what we did for the Gini coefficient (Box 2).

11 See OECD at https: //stats.oecd.org/glossary/detail.asp?ID=1178 or Statistics Canada at: https://www150.statcan.gc.ca/n1/pub/13-017-x/2008001/themes/ch04/5213347-eng.htm.

12 For example, Statistics Canada data showed that in 2017, while the top 1 percent in total income had 30.9 percent of all dividend income, the bottom 50 percent only had 4.9 percent. This dividend income, for the average filer in the top 1 percent was 13.5 percent of their total income. For the average filer in the bottom 50 percent, it was 1.1 percent.

13 Both measures are averaged to yield yearly estimates.

14 We use the after-tax Gini coefficient as it has a larger sample size than our residual-based Gini. Over the shorter period available with the residual-based measure, the similarities remain.

Figure 6: After-tax Income Inequality (Gini Coefficient) and the Wage to Gross Operating Surplus Gap

Note: The scale for the wage to gross operating surplus gap is reversed so that now an increase in the gap measure equates to an increase in inequality, as is the case for the Gini coefficient.

Source: Authors' calculations.

As before, in addition to the residual measure of inequality (wages minus gross operating surplus), the model specification includes the monetary policy shock series estimated by Champagne and Sekkel, the output gap and consumer price inflation.

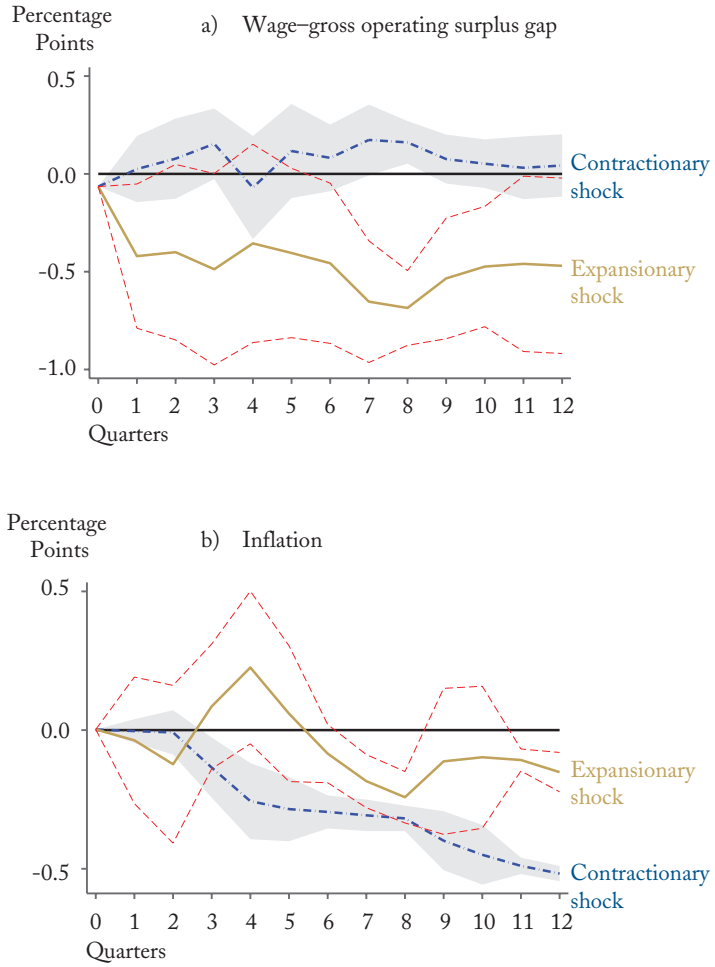
Results

Figure 7 shows the cumulative responses of inflation and the residual wage to gross operating surplus gap to a contractionary and expansionary monetary policy shock,[15] as well as the corresponding 95 percent confidence intervals, over a 12-quarter period.

The first feature to note is that an expansionary monetary policy shock has a significant negative effect on the wage –gross operating surplus, indicating an increase in the inequality of households´ income, and a contractionary monetary policy shock of the same magnitude has a small positive, but mostly statistically insignificant effect on households´ income inequality. These results are similar to what we saw with the Gini

15 The size of the shock in both cases is a 25-basis-points change in the nominal interest rate. The figures show the cumulative effect of the shocks to highlight the asymmetric nature of the responses.

Figure 7: Responses to a Monetary Policy Shock



Note: Red dashed lines are 95 percent confidence intervals for the expansionary shock, while shaded areas are 95 percent confidence intervals for the contractionary shock.

Source: Authors' calculations.

coefficient. They are also consistent with those of Cantore et al. (2018) who document that the labor share for several advanced countries, including Canada, increases in response to contractionary monetary policy shocks, leading to lower income inequality.

As it relates to inflation, while the effect of a contractionary monetary policy shock unambiguously reduces inflation, an expansionary shock has a mostly insignificant effect on inflation.[16]

16 Differences between these inflation results and our earlier inflation results have to do with both the effects of now looking at quarterly data, and replacing the Gini coefficient with our wage–gross operating surplus variable.

One way to explain these inflation results is, indeed, by considering the effects of monetary policy on changes in the distribution of income. In the case of an expansionary shock, the increase in households´ income inequality (through the wage–gross operating surplus gap) implies a reallocation of disposable income from lower income households, which have a higher marginal propensity to consume, towards higher income households, which have a lower marginal propensity to consume (as we saw is true for Canada). The aggregate effect would be to dampen the effect of the monetary policy shock on inflation, as is observed in the short term, and if the increase in inequality is large enough, to potentially reduce inflation, as is observed after six quarters. These results might help explain part of the tepid response to expansionary monetary policy in the post-crisis period.

In contrast, although the point estimates indicate that a contractionary policy shock increases the gap between wages and the gross operating surplus, the magnitude of the effect is relatively small and not statistically significant. This could be due to the adverse effect of the impact of the monetary policy shock on economic activity, which could negatively affect the labor market and thus the availability of disposable income to lower income households. We would therefore get the typical reduction in inflation.

Conclusion

We have shown in this paper that income inequality matters for the transmission of monetary policy in Canada within the real economy. Our focus has been the Bank of Canada's (continuing) inflation-targeting period, a time characterized by increasing income inequality up until the lead-up to the financial crisis, and a flattening (or even decrease) thereafter. Our results show that expansionary monetary policy shocks led to the redistribution of a greater share of resources towards higher income households, while contractionary shocks do the same for lower income households, through the impact on sources of income. Because higher (lower) income individuals are characterized as having lower (higher) marginal propensities to consume, a shift of resources towards the group results in a lower (higher) response of aggregate demand to a monetary policy shock, depressing (lifting) inflation.

These results matter for both central bankers and fiscal policymakers. Our focus, however, is on the former, and for the Bank of Canada, the mandate is to target inflation, not inequality per se. However, it is useful for the Bank's purposes to have a complete picture of the transmission mechanism, especially when there are asymmetric effects from expansionary versus contractionary monetary policy shocks, and these could have direct links to inflation through different marginal propensities to consume. These results present an argument for factoring heterogeneity into the Bank of Canada's forecasting models.

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