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and Cantillon Effects to Help Describe  
the Increasing Inequality Created by an  
Increasingly Active Central Bank  
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“Using the Classical Equation of Exchange and Cantillon Effects to Help  
Describe the Increasing Inequality Created by an Increasingly Active Central Bank  
Monetary Policy”

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To begin we need to define categories as to what is “inequality” and as related to monetary policy. For our purposes we will define the “poor” as those with less disposable income and the “rich” as those with more disposable income. We can realize that the poor spend more of their income on the means of existence in the product markets, whereas the rich have more disposable income to invest in the asset markets. Any (monetary) policy which harms the poor and helps the rich then can be identified as regressive policy creating inequality.

Active monetary policy starts when a central bank uses monetary policy to fine-tune the economy over the business cycle in order to reduce the unemployment caused during the downward portion of the business cycle. During the downward portion of the business cycle a central bank attempts to lower the interest rate in order to encourage investment during a bad economic climate. The purpose of trying to create investment through lower interest rates is in hope that this investment will reduce cyclical unemployment. For our purposes we are interested in activist monetary policy to encourage investment through the expansion of the money supply, also known as the money stock or the quantity of money, through money printing (digital credits) and asset purchases on the part of the central bank.

*The Classical Equation of Exchange and the Quantity Theory of Money*

We start our analysis with the theory necessary to understand the distribution effects of contemporary active monetary policy. We are creating three “ideal types” of monetary effects on the economy using differing schools of economic thought. The models represented here are purposefully abstracted ideal-types, the historical debates are more subtle than presented here (e.g., Blaug 1990, White 2012). Nonetheless the useful purpose is to juxtapose ideal-types to gain concise differing views of the results of expansionary monetary policy.

The classical equation of exchange relates the “money-side” of the economy to the “real-side” of the economy.

$$1) \quad MV = PQ \quad \text{(Classical Equation of Exchange)}$$

What this equation says is that the money supply (M) times the volume at which this money supply turns-over (V) is equal to the price level in the economy (P) times the real goods and services produced over a given period of time (Q). The left-hand side of the equation is the “money side” of the economy and the right-hand side the “real side” of the economy. For the purpose of this analysis we hold the volume variable constant. There are many definitions of the money supply and how the quantity of money is calculated. Following Fisher (1911) we determine the money supply to be cash in circulation (money), demand deposits (“near money”) and other near-money such as money market funds. The aggregate value of this money and near-money is the quantity of money.

We will start with the “Keynesian” ideal-type. Keynesians envision that an increase in the money supply (holding volume constant), will increase both the price and output on the real side, increasing GDP and therefore reducing unemployment (in the short term). This is shown in Fig. 1.

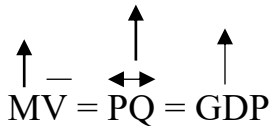


Fig. 1: Keynesian Ideal-Type Interpretation of the Classical Equation of Exchange

This can be juxtaposed with the “Monetarist” view of the economy, where an increase in the quantity of money will effect only the price level (P) and not real output (Q). This is of course Milton Friedman’s famous dictum that “inflation everywhere and at all times is a monetary phenomenon”. Therefore for the monetarists, Keynesian fine-tuning is fruitless as only brings inflation (in the long term), see Fig. 2. With the monetarist view we start to see the seeds of why active monetary policy is regressive. If increasing the money supply does not effect output (which might help with employment opportunities for the poor) and only effects prices, then the inflation caused by monetary policy reduces the purchasing

power of the poor relative to the rich. Inflation can be seen as an invisible regressive tax.

$$\begin{array}{c} \uparrow \quad \_ \quad \uparrow \quad \_ \_ \_ \quad \_ \_ \_ \_ \\ MV = PQ = GDP \end{array}$$

Fig. 2: Monetarist Ideal-Type Interpretation of the Classical Equation of Exchange

The third ideal-type used here is the “Austrian School”. For the Austrian economists an increase in the money supply does not have an effect on the real economy. The real economy as measured is expenditures during a given year for real goods and services, these are flow variables measured over a discrete period of time. Austrian economists believe on the other hand that monetary expansion effects stock variables, such as real estate and land, the stock market and the art market, rather than having a full effect on the real economy. The value of asset markets is cumulative, thus activist monetary effects in the Austrian School view are longer lasting than either the Keynesian or monetarist views of periodized flow variables.

### *Cantillon Effects*

The effect of central bank monetary manipulation on the economy is not instantaneous, it does not affect equally all prices and quantities, geographic areas and people, at the same time and in the same way. The effects of monetary manipulation are particular to a time and place. This means money is not neutral as is often accepted because newly-created money takes time to wind its way through the economy. Money is neutral neither towards its Keynesian output effects in the real economy, nor its Monetarist inflationary effects in the real economy. Because money is not neutral there are (regressive) distribution effects due to active monetary policy. We need to follow the new money as it makes its way through the economy to understand further these distributional effects.

Richard Cantillon is one of the first to describe the concept of money non-neutrality (Cantillon 1755). We will start by using one of his examples. Let’s assume there is an island nation with a gold standard under autarky who then opens-up to travelers. The travelers go to the capital city-center and bring in gold money, and start to pay for lodging, food and entertainment at the prevailing local prices. Those merchants, craftspeople and entrepreneurs at the city-center who

exchange with the travelers “touch” this new money first before the new money makes its way through the rest of the economy.

Those who first touch this money find they have a greater purchasing power, and thus perceived savings, before later more general price increases infuse their way through the economy over time. Those earlier in the new money circulation pattern will see their income rise relative to the rest of the population, they become “rich” as defined earlier. As per the Austrian view these now rich will be better able to afford investment in the asset markets than the rest of the population.<sup>1</sup>

Then those who touch the money next (for example those who are employed by or supply the inn where the travelers are staying) also see an increase in relative standards-of-living because the new money has not yet caused an increase in the prices for subsistence consumption. As the new money makes its way through the economy it is decreasingly used for investment in factors of production (the Keynesian view) or asset markets (the Austrian view) and causes increasing prices (the Monetarist view) for the means of subsistence for the poor, who touch this new money last.

During periods of monetary expansion both asset market values and consumer prices rise. Active central bank monetary policy is regressive because an increase in the money stock helps the rich, who have an increase in disposable income (cash holdings) enabling investment in asset markets, and harms the poor, who now have to pay more for the means-of-subsistence. “When all consequences of the inflation are consumed, a transfer of wealth between social groups has taken place” (Mises 1990, 73).

Ludwig von Mises finds that under a gold standard the owners of the mines touch the new money first by creating it. Today it is central banks with a near-monopoly on the issuance of paper fiat money (and treasury departments when central banks buy government bonds) who touch new money first by creating it. Those with access to the central bank’s discount window (or the beneficiary of central bank-financed fiscal stimulus by treasury departments) touch the money next, and given local investment climates, this new money then makes its way to either the asset markets or to investments in factors of production along the stages of production in

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<sup>1</sup> Cantillon (1755) uses an example of those touching the new money first as investing in art, paintings in particular. Real-estate and stock markets were not of course as developed in Cantillon’s time as they are today.

the real economy. And as the new money makes its way further along the economy over time we see an increase in the prices of subsistence consumption.

The general conclusion is that those who touch new money first become more wealthy than those who touch it later after it has become price-inflationary. Given today's near-monopoly power on behalf of central banks in money issuance and central banks with a mandate for fine-tuning the economy during the business cycle, those interests with ties to the central banks and treasury departments (the rich) gain at the expense of the poor with this active monetary policy.<sup>2</sup>

### *Classical Lender of Last Resort*

In *Lombard Street* (1873) Walter Bagehot laments the fact that England has a central bank, but given the central bank, writes of what rules a central bank should follow. Bagehot finds that central banks might become the Lender of Last Resort. During times of liquidity problems, which could be from exogenous shock or endogenous business cycles, central banks should make loanable funds available to financial institutions (commercial banks) at penalty rates of interest for short periods of time and only for institutions with good collateral. These conditions are necessary to prevent the creation of moral hazard where institutions do not have the incentive to properly manage their assets because they know they can access below-market loanable funds (“easy money”) at the central bank.

Absent these conditions institutions should not be able to access funds through the central bank in that this would only exacerbate a liquidity problem into a bankruptcy problem, and bankruptcy is better worked-out in the legal system as opposed left to the discretionary power of central bankers. This ‘emergency’ lending at penalty rates of interest with good collateral for the short-term would be the only role for a central bank under proscribed rules as a Lender of Last Resort. A central bank which follows these rules might be determined to not have an “active” monetary policy.

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<sup>2</sup> Bartscher et al. (2021) find that Cantillon effects are stronger than employment effects when the central bank uses active monetary policy. Because white households have more financial assets than do black households this means that active monetary policy exacerbates racial economic inequalities, and, that as discussed above Cantillon effects last longer than employment effects. “We conclude that there is little reason to think that accommodative monetary policy plays a significant role in reducing racial inequities in the way often discussed. On the contrary, it may well accentuate inequalities for extended periods” (1).

## *The Period of Active Monetary Policy*

It is only with the rise of economic science as a profession in the twentieth century, the creation of the Federal Reserve system in the United States in 1914, and the wide-spread adoption of Keynesian economics in the late 1930s and onward do we see the creation of active monetary policy. We can see this in the current mandates given the Federal Reserve and the European Central Bank. These mandates are not based on limiting principles as in Bagehot's classical theory. Today's central banks are given discretionary power to meet certain interventionist (macroeconomic fine-tuning) goals. These goals may not in fact be compatible.

The Federal Reserve has a mandate to "promote effectively the goals of maximum employment, stable prices, and moderate long term interest rates" Steelman (2011). The European Central Bank mandate is as follows.

To maintain price stability is the primary objective of the Eurosystem and of the single monetary policy for which it is responsible. This is laid down in the Treaty on the Functioning of the European Union, Article 127 (1). "Without prejudice to the objective of price stability", the Eurosystem shall also "support the general economic policies in the Union with a view to contributing to the achievement of the objectives of the Union". These include inter alia "full employment" and "balanced economic growth" (European Central Bank 2021).

The main technical difference in mandates between the two is that the Fed has a dual mandate of both price (and interest rate) stability and employment-creation, whereas the ECB prioritizes price stability, all things being equal. The reason that the later ECB charter differs from the Fed is that the dual mandate is criticized for its incompatible goals. The monetary tool for creating employment is expansionary monetary policy, which we have learned is inflationary (and regressive due to the non-neutrality of money and therefore Cantillon effects). You can either have a policy of employment creation based on easy money, or, you can have a policy of price stability. You can't have both. The Fed goals of price stability and employment-creation, the dual mandate, are incompatible.

## *Changing Views of "Sound" Macroeconomic Policy*

Central bank interventions (and therefore then the social harm due to active monetary policy) are unprecedented since the 2007-8 financial crisis, and even more so under the covid-era. In the first instance there is an unprecedented low-interest rate policy almost continuously since the interventions of the Great

Recession, with an expanding list of recipients eligible for discounted loanable funds through central banks and affiliates, which is extended and expanded during the covid-era.

We can visualize the evolution of an increasingly active (and regressive) monetary policy by looking at three distinct historical periods. During this historical progression monetary policy becomes increasingly tangled with fiscal policy as part of more active central bank policy.

## I. Classical Liberal Period (1870 – 1914)

We can mark the beginning of the importance of monetary and fiscal policy administration with the emergence of the nation-state itself prior to the Great War (World War One). The ideal-type institutions of the classical liberal period, which we can date with the end of the slavery in the United States until the beginning of the war, is that of free-trade, the gold standard, classical rules for central banking and a minimal role for the state in the economy. Because of the gold standard the nation-state cannot spend much more than it taxes because the state is unable print money to help monetize debt due to the need to exchange state paper money for species (gold and silver). State monetary expansion is limited by currency convertibility. During this period the view of “sound” macroeconomic policy is balanced budgets by necessity. The classical liberal period ends when England leaves the gold standard for the war finance (fiat-money standard) of World War One.

## II. Post-World War through 2008/9

The Post-World War period begins after the end of World War Two and the monetary (and fiscal) system is defined by the institutions of Keynesian economics and Bretton Woods. The International Monetary Fund is established to help institutionalize interventionist Keynesian macroeconomic fine-tuning of the economy. Under Keynesian economics it is seen that during the downward portion of the business cycle nation-states should use deficit financing (where taxes are less than government expenditures) and monetary expansion to create an ‘aggregate-demand stimulus’ which is to ‘stabilize’ the economy and reduce ‘cyclical-unemployment’. The state debt created during the downward portion of the business cycle is to be paid-back during the upward portion of the business cycle, through the reduction of government spending and an increase in taxes. The



IMF makes below-market funds available to nation-states for liquidity to cover their debt interest payments and debt restructuring, usually with policy requirements such as tax increases and social and economic ‘development’ objectives.

It can be argued that the IMF creates moral hazard in that nation-states no longer face market-based requirements for sound macroeconomics, based on perceived risks associated with state capacities for interest payments and debt repayment, because the IMF acts as a source of easy money to incentivize stimulus deficit financing for employment-creation. The IMF ‘bails-out’ fiscally imprudent nation-state borrowers. The state now has less rules-based limits on monetary and fiscal expansion and more discretionary power for state-perceived socio-economic ends however fiscally unsound in the long-term.

We should note a difference between the classical period gold standard and the gold standard created with the institutions of Bretton Woods. After the fall of Rome prior to the development of the modern nation-state, decentralized medieval trade was based on an emerged gold standard between *individuals*. The growing and centralizing state had to accept this gold convertibility practice, where individuals could exchange privately-issued (and then state-issued) paper for gold.

The gold standard created under Bretton Woods is almost the opposite of this, only *states* are able to exchange gold with each other. And then only the United States acts as the state-clearing house and exchanges paper dollars held by other nation-states for gold. This monetary constraint ends when President Nixon orders the closing of the US Treasury gold window in 1971. This was necessary because of the war finance money-printing during the Vietnam War. It becomes increasingly difficult for the United States to maintain gold convertibility due to the rapid increase in the quantity of money used to finance the Vietnam conflict.<sup>3</sup>

Over time as we have seen from the Fed and ECB charters this Keynesian view of macroeconomic intervention expands from reducing unemployment during economic downturns to meaning employment ‘maximization’ and ‘full employment’. The US Employment Act of 1946 mandates the federal government to also use fiscal policy to reduce unemployment and this was expanded with the Full Employment and Balanced Growth Act of 1978. There have not been any

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<sup>3</sup> Abandoning state money convertibility to fight war is known as “war finance”.

federal government budget surpluses since 2001 when the easy money policies after the dotcom boom-and-bust began. State debt is not being paid-down during the upward portion of the business cycle as in the Keynesian theory of macroeconomic fine-tuning. Politicians prefer to spend for current programs and bailouts (and votes) now, rather than increase unpopular taxes. Deficit financing is passed along through increasing debt and expected higher taxes to future generations.<sup>4</sup>

Sound macroeconomic policy during this period is seen as managing national debt over the business cycle. It is perceived that as long as national income (GDP) is increasing at a faster rate than national debt is increasing that there is macroprudential policy. The stylized-facts for this period is national income growth of 3% and national debt growth of 2%. National income growth is greater than debt growth and therefore this is seen as macroprudential.

### III. Today: Post 2007

This period begins with the monetary and fiscal interventions after the housing market crisis starting in 2007 and is continued through the covid-era. This period is exemplified by unprecedented central bank interventions. We see this by first looking at quantity of money growth historically.<sup>5</sup> From January 1960 until the August 2007 housing-bust interventions, the quantity of money increased from around \$100 billion to \$2 trillion, adding around \$2 trillion in reserves over these 47 years, with a slightly higher growth rate after the close of the gold window in 1971. The growth of reserves was slow and steady until the Fed reactions to the crash of the housing market (the ‘subprime mortgage crisis’) in August 2007.

From August 2007 until February 2020, prior to the covid-era interventions, we see an increase of reserves to around \$4 trillion, doubling in 14 years the reserves of the previous 47 years. Then from the initial covid-era interventions in March 2020 until July 2021, we find that the quantity of money increases to around \$20 trillion, adding \$16 trillion to the money supply in just 18 months. This means that

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<sup>4</sup> See GAO (2021) for a historical perspective on the unsustainability of the United States welfare state.

<sup>5</sup> Monetary aggregate measure “M1”. Data is from the St. Louis Federal Reserve Bank’s FRED dataserries.

more than twice the money supply created in the previous 50 years is created in just 18 months.

At the end of the Post World War period there is an historically cumulative \$2 trillion money supply, just 14 years later there is a \$20 trillion cumulative money supply. Both the post-housing market crisis interventions and even more so the covid-era interventions are unprecedented in rates of quantity of money growth when compared with what we are marking as the Post World War period. We can plainly see the Cantillon effects in that the major US stock market indexes all double in the first 18 months of the covid-era and we see another rapid increase in housing prices in certain places.

This period also sees the Fed using banking policy reserves-management to keep interest rates lower than they would be absent central bank intervention. This is a policy of central bank announced low-interest rate or near-zero interest rate policy for an unprecedented length of time beginning in 2007. These continually low interest rates have meant the US government is able to borrow funds at historically low rates for a prolonged period. During the post-world war period the market yield on US Treasury 10-year bonds is above 3%. During the current easy money period the US government borrowing rate averages less than 2%.<sup>6</sup>

The low interest rate policy has enabled rapid expanded debt issuance on behalf of the US Treasury. The debt level increases in this period are again unprecedented. At the beginning of 2007 the historically cumulative publicly-held US Treasury debt to GDP level is around 60%.<sup>7</sup> US government fiscal ‘stimulus’ in reaction to the housing-bust increases debt rapidly to around 100% of GDP by 2013. This rapid expansion of debt is intensified with the covid-era fiscal interventions when the debt to GDP ratio increases from around 110% to more than 120% in the first 18 months of the covid-era. This is the highest debt to GDP ratio since World War Two.

We also see more active central bank monetary policy in relation to monetizing the federal debt of the United States. Monetary policy and fiscal policy are becoming more entangled. This is shown by an increasing quantity of US Treasury

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<sup>6</sup> Data from FRED “Market Yield of U.S. Treasury Securities at 10-Year Contract Maturity”

<sup>7</sup> For reference a maximum 60% debt to GDP ratio was one of the requirements to join the nascent Euro monetary zone in the late 1990s and early 2000s.

debt purchased and held by the central bank.<sup>8</sup> At the beginning of 2007 the historically cumulative treasury debt held by the Fed is around \$750 billion after a slow and steady increase from almost \$0 in 1970. After the housing-crash interventions beginning in 2007, the Fed is holding around \$2.6 trillion in US Treasury debt securities in early 2020. After the first 18 months of covid-era interventions the central bank is holding around \$5.6 trillion in US government debt. This more than doubles net Fed purchases from an already unprecedentedly high level after the earlier housing-bust policy reactions increasing discretionary power on behalf of the central bank. By the end of the first 18 months of the covid-era in 2021 the Fed is holding 21% of US government debt, up from 14% the year before.<sup>9</sup>

This period also sees an expansion in discretionary power on behalf of the Fed in terms of which assets they purchase (or discount with easy money) from financial intermediaries in order to increase the quantity of money in order to provide ‘stimulus’ and ‘recovery’ due to the financial crises caused by the housing-bust in 2007 and the covid-era lockdowns of 2020. Central bank monetary policy becomes more active and credit allocation decisions become less market-oriented and more directed by the Fed.

During the Post World War period it is mainly US Treasury securities which are kept on reserve, discounted and purchased by Federal Reserve. This changes during the present period. In addition to increasing its direct purchases of US Treasury debt, adding to the quantity of money and increasing inequality through the non-neutrality of money creation and Cantillon effects, we also find the Fed purchasing and discounting an ever-increasing array of non-US government securities beginning with the reactions to the housing-bust in 2007.

A major change in this period is that the Fed starts to purchase corporate debt (‘commercial paper’), which means a large increase in the Fed’s power over the distribution of capital towards some private firms (‘winners’), and therefore against other private firms (‘losers’) whose debt is not chosen to be ‘bailed-out’. In that the housing boom-and-bust is a world-wide phenomenon due to the ‘international coordination’ of central banking policy and regulation as instituted under Bretton Woods, we find the Fed now to start discounting and purchasing the assets of other

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<sup>8</sup> From “Federal Debt Held by Federal Reserve Banks (FDHBFBN)” St. Louis Federal Reserve Bank’s FRED dataserie.

<sup>9</sup> US GAO (2021).

central banks. In a period of increasingly active monetary policy, the Fed is now acting as a Lender of Last Resort for other central banks themselves, without adhering to the classical Lender of Last Resort rules. During the covid-era this discretionary power is also increased with the Fed purchasing and discounting the debt of state and municipal governments in the United States, again by definition choosing ‘winners’ and ‘losers’.

In this period we find a different structure as to what is seen as sound macroeconomic policy, one which encompasses a now larger *de facto* active monetary policy. As long as national income (GDP) growth is greater than the state borrowing interest rate then macroeconomic policy is sound. The stylized facts for this period are around 2% economic growth (pre-covid era) and less than a 2% borrowing rate for the central state. We note the change from the Post World War period where sound macroeconomics is that national income growth is greater than the growth of national debt (when economic growth is 3% annually and the debt is increasing 2% annually). This condition for sound macroeconomic policy no longer holds in the most recent period with unprecedented levels of national debt growth. We also see during the covid-period that the central bank is more accepting of higher, regressive, levels of inflation in order to maintain a low interest rate policy to accommodate state borrowing.

### *Conclusion*

Central bank monetary policy has become increasingly active, and therefore due to the non-neutrality of money and Cantillon effects, increasingly regressive. When a central bank increases the quantity of money through active monetary policy this brings increasing inequality between the rich and the poor. An increase in the quantity of money has two channels. The first is investment into the real economy, which, according to Keynesian theory, can increase employment by increasing national income growth through investment. The second channel, that as described by the Austrian School, is that an increase in the money stock directly effects the asset markets, such as land and real estate, the stock and art markets, and has less of an effect on investment into increasing the productivity of the factors of production and therefore the living standards of the poor who cannot afford to invest in asset markets.<sup>10</sup> Despite whichever channel is predominant at a given time

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<sup>10</sup> That Cantillon effects are greater than employment effect is a finding in one of the first Federal Reserve research papers to acknowledge that active monetary policy is regressive (Barscher *etal.* 2021), who find that, “Over multi-year time horizons, the employment effects

and place, an increase in the quantity of money in the long-run is inflationary, which means the poor have to pay more for the means of existence. Inflation is an invisible regressive tax.

There are many proposals for reducing the discretionary power of central banks and relatedly for limiting active monetary policy which creates inequality. These include central banks returning to rule-based policy such as increasing the money supply at the same rate as real national income growth and limiting central banks to the classical Lender of Last Resort rules. Recommendations also include allowing competition against central bank near-monopoly on creation of the money supply such as accepting alternative currencies as legal tender for tax payments and as a means-of-exchange or even free-banking.

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