**Home Economy**

**Market Stabilisation Policies**

**~~1 More Literature Review**

**~~Finalise Models**

**~~Collect Data and Run Tests**

Several models are developed that suggest avenues for monetary stabilisation policy. The models presented take into account the primary economic indicators of inflation rates (money supply), interest rates, and exchange rates, in addition to other measures such as the economic stalwarts GN(D)P, poverty rates, and employment rates. By analysing all these measures the home country can implement an effective monetary policy to efficiently stabilise the domestic economy. Still, by virtue of the intrinsic nature of money, monetary stabilisation policy is and must be the complete domain of the government. It is difficult to cater to multiple parties at the same time and to solve different issues simultaneously, though perhaps insight can be gained from the models presented into implementing a more inclusive and comprehensive approach to formulating monetary stabilisation policy that acknowledges the myriad forces working against a truly economical distribution of money.

The economies of the UK, Australia, USA, Eurozone (Germany), Switzerland, Russia, and Japan are analysed with time series. Specific areas where this research contributes to the public domain are:

There are numerous tools countries can use for economic objective completion today, including:

inflation targeting, interest rate targeting, exchange rate targeting, targeting other economic indicators, or fiscal policy—tax laws. To reach these goals macroeconomic indicators such as GDP and poverty, inflation, and unemployment rates are examined. Interest rates and exchange rates can be manipulated by the government via the money supply to sometimes influence these macroeconomic indicators.

With intereconomy trade, we see how commodity prices in one part of the world can affect prices for other goods in other parts of the world, such as energy prices and oil.

This is one of the most important aspects of today’s economy, what some may call the butterfly effect and which is why monetary policy can succeed sufficiently with a relatively passive rule combined with active discretion

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**PRESENTE TENSE**

**Basic-Advanced**

**Current State**

*1.1 Global Economy Today*

*1.2 Nature of Money*

*1.3 Aggregate Demand~~Supply*

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*1.5 Policy Implications*

Societies operating in a monetary economy with fiat money must rely on a monetary authority to expand and contract their money supply as needed. This is because when a society evolves to a monetary economy the fiat money they are using for transactions and as a store of value is an intrinsically worthless mechanism decreed to be procurable by the central government for the needs of its citizens. When the commodity backing the representative commodity is redistributed into the economy to temporarily increase wealth and output, the economy now faces the issue of maintaining the level of the fiat money at a level consistent with some sort of continuous growth, as would be similarly expected from the economy if the original commodity used for exchange and value had still been circulating in its original capacity.

To ensure the stable growth of this new fiat money supply, the home government must engage the help of a professional group to oversee this process. The central government clearly has control over the physical handling of the fiat money for security and efficiency purposes, but the government then faces a dilemma for the sector specific decisions relating to the government’s role in the money industry.

The interests of the ruling elite always have and always will dominate governmental regulations, and consequently the society as a whole. However, it is still widely accpeted that even if perfect information dispersion to the ignorant masses were possible, our human nature can still intercede and render the effort null. Even if this perfect information were able to be communicated to the society at large, what guarantee do we have that fixed economic policies would in fact work to stabilise the economy by limiting growth and therefore recession?

And even if fixed economic policies do stabilise the economy, some will still benefit; to whom is it to decide who should prosper and who should fail? What happens when one of the other many macroeconomic variables or natural disasters or whatever else decides to rear its head, that fixed economic policies would still work; there are simply too many unknowns in the world of economics to be sure about any economic theory. But what we can ascertain from economic theory is that fixed economic policies always stabilise business fluctuations.

Monetary policy can be seen as a monopolistic industry much like the utilities. This is because in order for monetary policy to be effective in properly regulating an economy, there must be a consensus. It is different from traditional industries in that there is little or no overhead and investment in assets, but monetary policy is in fact an industry cast in a similar shape to the financial intermediation industry. In fact, the business of monetary policy is one trade present in most all other trades. An individual business will institute a monetary policy, and at times other financial intermediaries offer monetary policy consulting as one of their many (some disillusioned) side businesses to their primary responsibility in maximising social welfare of transferring funds between those who have excess and those who need for business ventures.

However, the racket of monetary policy is different in that its primary focus, the actual fiat money, is at the heart of all industries’ ability to conduct even the simplest of their day-to-day business operations. Therefore, given the conspicuous nature of money as we know it, the central economical monetary policy behind it, similar to the policy for drilling how much oil and where, must have greater weight attached to it. That said, monetary policy for smaller operations, just like that of smaller oil operations can then differ substantially—but, unlike oil money ostensibly only comes from 1 place[[1]](#footnote-0), and thus there is only need for 1 central policy, unlike even the utility companies of which there are many and to whom experience different geographic and political challenges.

The policy must be singular decreed from a singular authority in order for the macroeconomic fluctuations of the economy to be best managed for the welfare of the entire nation; for example, if the Fed banks in New York and California were pursuing different policies, this could favour residents of these regions and hurt citizens in other parts of the country, or vice versa.

The growth of a society begins with the interaction between 2 households. Humans, and like all animals, have a desire for procreation. This may be due to the mating season or for personal reasons. Personal reasons present themselves when the society begins to form, as many people desire to produce dominant offspring to take their place. This then in turn increases the effectiveness of the mating season, as more humans are in closer contact, and so on. Thereby we have a situation where the newfound community of humans begins to have a consistent growth, and possibly even grow into other communities of the same size, and even recruit more individual households along the way.

When procreation begins to happen on an increasing scale, the community then finds itself better able to defend itself as well (this is a very close second to the primary reason of community creation of procreation, but procreation is more innately programmed in all humans). In order to defend itself, the community must fairly supply itself, which requires donations from all community members. Those members who do not donate to the public works projects that make community life desirable are not allowed to stay; this is what we know today as taxation.

After the goods have been donated by the households, and the community is well defended and relevant community works projects are instituted, more psychological desires begin to present themselves. People see others having things they want, maybe someone is better at hunting and someone else better at growing. So, the economy now moves from autarkic to barter. There is now a functioning economy. We say autarkic economy when there is only 1 household, but in reality there is no economy since there is no need to price property for trade or to analyse financial markets performance for the best deal. The economy appears when people begn trading with each other, at barter.

It must be noted the incredible impact of psychology on community development, even more so than economics because psychology drives economic growth. Psychology is responsible for many of the harsdships that organisaed society as created, as we now can’t help but to meaqsure ourselves against all others we know, which now is everyone in the known world. The emergence of the televsion and the computers has surely better connected the world but has done so at a price, which has been the loss of our innate human nature to some degree.

Table

**Community Needs Hierarchy**

1. procreation

2. defense

3. barter~~economics

As such, when the economy presents itself we then need to find a way to monitor the economy, which is a creation of humanity. What effectively has developed is accounting to monitor property pricing and auditing to monitor financial performance. And from the economics that must define the society which passed barter to fiat money, monetary economics must be understood to ensure the community maintains the same standard of living as it did in its nascence.

There is now the need for asset pricing and financial market analysis.

The process of creating a central bank to oversee monetary policy is an integral part of any new country and subsequently an everlasting process that must be maintained by the country. When formulating the nation's monetary policy, the central bank will pursue objectives including but not limited to price stability; however, when influenced by short-term political agendas for policy actions they will likely be pushed away from the primary goal of inflation control. However, today there are powerful market forces that can crimp the efforts of central banks to mismanage their currencies. Most notably, the integration of world markets, especially financial markets, is limiting the degree to which policymakers are able to drift away from price stability, most notably for the major world economies (Hoskins, 1993).

Monetary regulation has three parts: (1) the legal framework, (2) monetary policy, and (3) the supervision of banking and financial markets. As the region's monetary system develops, these roles develope alongside the systems they regulate, with new measures being created by the monetary authorities - or even by large private banks - as specific problems presented themselves (Chick et al., 1996). In this development process, policies are tailored to the institutions as they exist at the time; thus, when banks provide only a minor proportion of monetary instruments, prudential regulation is left to the banks themselves and caveat depositor. Today, however, the financial services industry is very intertwined and developed, and thus much regulation is needed by the government.

Yellen (1996) notes that the aim of monetary policy in the long-term is price stability, though additionally there should be incentive to stabilise output and employment. He suggests as a managing strategy to adjust the federal funds rate above an equilibrium rate by an amount that depends on the deviation between actual and potential output and between actual and targeted inflation.

The monetary stabilisation policy of the central bank affects all parts of the economy, the credit channels and both small and large alike. However, the larger firms can protect themselves better from the empirical fact that internal and external funds are not perfect substitutes because of the information asymmetries that hamper the functioning of securities markets. For smaller firms, the association between internal funds and investment tightens significantly after a monetary contraction, indicating a scarcity of external finance. In contrast, for large firms, there is little change in the linkage between internal funds and investment after a tightening of monetary policy (Oliner, Rudebusch: 1996).

In setting monetary policy, the monetary authority strives to provide a stable platform for business, among other concerns. The monetary authority looks to encourage the greatest possible sustained advance in economic activity over time, and this requires that growth be noninflationary. Price stability is a key ingredient in maintaining the highest possible levels of productivity, real incomes, and living standards, thus enabling households and firms to concentrate on what they do best - produce, invest, and consume efficiently (Greenspan, 1995)

The growth rate of the economy can be slowed and thus inflation reduced by simply raising short or long interest rates (Jasinowski, 1995).

Money's role may actually be tertiary, as some have suggested that money is not essential, or perhaps is irrelevant, for the determination of the price level, and thus the essential feature of money is that it guarantees "final payment" and is essential for price determination (Thornton, 2008).

Structural changes in an economy, such as manufacturing productivity gains and technology advances from computerisation can work to keep inflation low through lowering production costs thereby lowering final price. Even with normal inflationary pressures, therefore, lowered production costs serve to offset the inflationary pressures. However, when the monetary authority does not perceive these structural changes that naturally suppress inflation, the result could be a tightening of the money supply thereby deflating the currency too much and driving down exports and lowering the price of imports.

Perhaps the hardest task for a nation's central bank is to distinguish between microcaused inflation, due to one-time supply shocks and tax changes, and macrocaused inflation, brought on by diminished slack in personpower and productive capacity (Samuelson, 1993).

Cody and Mill (1991) state that because commodity prices are an early indicator of the current state of the economy, using these prices to formulate monetary policy can improve economic performance. Commodity prices often provide signals about the future direction of the economy, especially inflation, and it has therefore been argued that the information in commodity prices could be used in formulating monetary policy. Their study used a systematic monetary policy response to contemporaneous commodity price shocks for the post WWII USA economy, and found that responding to unexpected commodity price movements would have lowered the average rate of inflation and reduced its variability, while the path of real growth would be relatively unchanged in the post WWII USA economy.

Kaufman (1993) indicates some of the challenges which confront monetary policy, including:

(1) widespread financial impairment, (2) deregulated financial markets, and (3) central bank attitudes.

Central bank credibility and confidence from their public is essential to the government's ability to maintain inflation control or price stability; still, there are no costless ways to maintain the credibility of a central bank's commitment to price stability. Theoretical monetary growth rules remove too much discretion from a central bank operating in an uncertain environment, which all central banks are faced with; the monetary policy agendas of wage indexation and conservative central banking are not without their own problems. A promising approach to monetary policy is for the central bank to formulate policy in a way that takes account of the long-term nature of its relationship with the private sector, although even this approach has drawbacks (Sibert, Weiner: 1988).

In a free market world, many assume that proper economic theoretical constructs should hold place. However, in imperfect markets consideration of political motives in needed in conjunction with analysis of national money aggregates to effectively comprehend the world supply of money.

In fact, McKinnon (1982) suggests that the USA, Japan, and Germany, or some combination of powerful nations, can by agreeing to non-intervention and domestic credit expansion rates, control enough dollar balances to sway the world money supply.

In order for the world to achieve improved stability in both national and world prices, there must be greater international monetary cooperation, particularly among the world's leading economies.

Exchange rate pass-through is...In examining the response of the economy to shocks and the assessment of the effectiveness of monetary rules are one must consider both balance-sheet related financial frictions in capital formation, and any delayed pass-through of changes in exchange rates to imported goods prices. Financial frictions cause a magnification of real and financial volatility, yet they have no effect on the comparison or ranking of alternative monetary policies. The degree of exchange rate pass-through is very important for the assessment of monetary rules. With high pass-through, there is a trade-off between between real stability (in output or employment) and inflation stability, and the best monetary policy rule in this case is to stabilise non-traded goods prices. With delayed pass-through, the same trade off between real stability and inflation stability disappears, and the best monetary policy rule is CPI price stability (Devereux, etc. 2004).

Despite the proliferation of research analysing the time-inconsistency and credibility problems, economists have not been able to develop a foolproof substitute for vigilance against inflation for maintaining central bank credibility (Sibert, Weiner: 1988).

(Foster, 1986) analyses the endogeneity or exogeneity of the determination of the quantity of money in Keynes' The General Theory of Employment, Interest and Money (1936). It is argued that Keynes' central thesis in The General Theory apparently requires the quantity of money to be endogenously determined and that Keynes himself recognized this fact in other works both before and after The General Theory.

Keynes' assertion that the quantity of money is exogenous has contributed to the resurgence of monetarism (Foster 1986).

Foster (1986) concludes that an endogenous determination of the quantity of money is a necessary result of the saving-investment relationship, which in the Keynesian system, has an investment-to-saving causal sequence. It is contended that, if Keynes' assumption that aggregate saving can be increased only by an increase in aggregate investment is valid, the determination must be endogenous.

In the mid-1970s, monetary policies in Canada, France, Germany, Switzerland, the UK, and the US targeted one or more monetary aggregates; though, as conditions changed, the central banks of these countries began relying on several information variables, including interest rates, foreign exchange rates, and monetary and credit aggregates (Bergstrand, 1985).

The goals of any monetary policy program may include: real economic growth, higher rate of employment, greater capital formation, improved growth in productivity and increased savings by households and businesses.

The velocity of money, sometimes known as the ''turnover rate,'' is defined as the ratio of income to the money stock. Velocity is important because if it is predictable, the monetary authority can meet its targeted growth rates of income by controlling monetary growth. However, inaccurate predictions can lead to high inflation rates or conversely too much restrictiveness (Higgins, Faust: 1981).

Higgins and Faust (1981) suggest that aggregates have to be continually changed because of: (1) the continuing instability of the new aggregates, (2) problems with using alternatives, such as broad credit aggregates or reserve aggregates, and (3) continuous changes in the financial system. They note that due to these issues, money targeting may altogether have to be abandoned, with reliance instead on a broad spectrum of financial information.

When discussing monetaristy polices of countries, what matters most are policy goals and trade-offs among inflation, unemployment, prosperity, and real economic growth. Different countries have different agencies that are in charge of monetary policy. In the USA for example, the Fed chairman speaks for one agency and to a specialised clientele, but in the UK the prime minister can speak for the whole government and the entire nation. Thus, there are arguably higher transitional costs to the economy in the USA than in the UK in the effort to erase inflation. Therefore, in the USA such monetary policy decisions, must have the strong support of the President and the Congress, and it must be explained clearly to the American people (Tobin, 1982).

Tobin (1982) suggests a tax-based incomes policy to help monetary disinflation.

A major issue with monetary policy models and implementation is determining how to best measure the money supply. Unfortunately, technological innovations in banking have rendered accurate measurement of the money supply utterly impossible. Morris (1982) identifies three primary developments that have affected the measurement process: (1) computerized transfers of funds among monetary vehicles, (2) the heavy tax on transaction accounts imposed by reserve requirements, and (3) the ability of consumers to engage in deposit sweeping.

Monetary policy today commonly uses monetary aggregates as targets; this technique is based on the assumption that the relationship of the aggregates to nominal gross national product (GNP) is stable and predictable, however today's financial innovations have tended to invalidate that assumption and thus rendered monetary aggregates, particularly M-1, as obsolete in monetary policy. Morris (1982) suggests a possible solution whereby one states as the goal criterion of monetary policy either (1) total debt of the nonfinancial section (2) rate of growth of total liquid assets (3) or nominal GNP itself. Morris (1982) suggests using growth of total liquid assets as the optimal choice for monetary policy target because a change to it would require the least shake-up in the present system.

The issue of monetary union integration has long been an important issue when developing a region's monetary policy. In its nascence, a monetary union will not be fully integrated with all of its functoning districts, and the experiences of USA and European Union validate this claim. In the United States, financial markets were integrated in the late 1800s and early 1900s sense that monetary shocks were routinely transmitted from one part of the United States to another. Particular, shocks to interest rates in the eastern financial centers were routinely transmitted to the Western and Central banks, and it also appears that during this period significant shocks to bank lending rates in the non-eastern banks often arose on the periphery itself. Thus, when a monetary union is still developing the monetary authority that relies on operations confined to eastern financial centres would have had a difficult time managing the US monetary union; data indicates that after World War II the problem of eruptions on the periphery declined as implementationt ools became more sophisticated and data became more accurate and was obtainable quicker due to better technology and experience (Landon-Lane, Rockoff: 2004).

Chick et al., (1996) also likens the current situation in the European Union to that the time of the United States Federal Reserve System, which came on the scene after a common currency was already in place yet when communications were slow and there were distinct differences in the regional economies of the US. Communications are much quicker in the EU than when the USA was still in its early development stages, though there are likely greater cultural differences in the countries that make up the EU opposed to the contrasting regions of the USA.

In an internationally connected financial environment, characterised by a weaker financial system due to being overstretched, the optimum monetary stabilisation policy will avoid the boom-bust business cycles and the accompanying fluctuations in interest rate (Morris, 1986).

When monetary stabilisation policy focuses on a highly controllable financial aggregate along a predetermined path, disappointing economy wide performance could continue to hinder monetary policy's evolution toward monetarism.

The evolution of monetarism by a central bank involves a move towards monetary targeting to moderate actual inflation and dampenining inflationary expectations.

Monetary policy can be seen as a monopolistic industry much like the utilities. This is because in order for monetary policy to be effective in properly regulating an economy, there must be a consensus. It is different from traditional industries in that there is little or no overhead and investment in assets, but monetary policy is in fact an industry cast in a similar shape to the financial intermediation industry. In fact, the business of monetary policy is one trade present in most all other trades. An individual business will institute a monetary policy, and at times other financial intermediaries offer monetary policy consulting as one of their many (some disillusioned) side businesses to their primary responsibility in maximising social welfare of transferring funds between those who have excess and those who need for business ventures.

However, the trade of monetary policy is different in that its primary focus, the actual fiat money, is at the heart of all industries’ ability to conduct even the simplest of their day-to-day business operations. Therefore, given the conspicuous nature of money as we know it, the central economical monetary policy behind it, similar to the policy for drilling how much oil and where, must have greater weight attached to it. That said, monetary policy for smaller operations, just like that of smaller oil operations can then differ substantially—but, unlike oil money ostensibly only comes from 1 place, and thus there is only need for 1 central policy, unlike even the utility companies of which there are many and to whom experience different geographic and political challenges.

The policy must be singular decreed from a singular authority in order for the macroeconomic fluctuations of the economy to be best managed for the welfare of the entire nation; for example, if the Fed banks in New York and California were pursuing different policies, this could favour residents of these regions and hurt citizens in other parts of the country, or vice versa.

The nature of the inefficiency of commodity money, relates somewhat to the quantity-theory has validity for predictions for commodity money systems, as one commodity emerges naturally as the commodity money. Inside money (money backed by private debt) has a role in commodity money systems and, there are circumstances under which a government can choose the commodity to serve as the commodity money (Sargent 1983).

Events such as changing methods of housing and consumer finance, the rising importance of international trade, and the changing financial structure of business firms will change the relationship between monetary indicators and economic performance (Clark, 1989).

Monetary policy involves the use of the tools of exchange rates, interest rates, and the money supply to influence the targets of GN(D)P, inflation rate, employment rate and poverty rate. However, only one tool may be utilised at a given time, and consequently, the other two tools become additional targets. For example, use of a fixed money supply will change the interest rate and exchange rate to different levels as well as influence the primary macreoeconomic indicator variables.

The primary issue one is faced with is then how to administer the exchange rate, interest rates, and money supply. Most advocate market based exchange rates and interest rates and an actively discretionary level of the money supply, though the benefits of fixing these tools to some degree remain indeterminate.

The desire for active discretion for monetary stabilisation policy is a direct result of man's innate psychology. It may the most appropriate, though it also reflects human desire to need to be into control and to be the dominant competitive force. A pssive rule is acknolwedgment that someone else knows what is best, and usually the people that run the governments do not get there by accepting other people's thoughts, or sometimes they do by kissing up. Yet the fact remains that when someone rises to the top of the chain and they are in power they will do more what they feel is right, for whatever group they want, rather than what people they have no connection with are suggesting. That is simply how those with power retain power; they do not get to keep their crown by following a rule.

As for the macroeconomic indicators, the inflation rate is commonly the primary concern to policymakers, although the other three primary indicators are also important. This is because rapid inflation can seriously destabilise a country, while sluggish GNP or misery rates still means the currency is remaining strong thus meaning that the other variables can improve quickly. Without a relevant currency, it may be strong or weak comparatively to major currencies, the home economy can not sustain itself; international trade will collapse with an irrelevant currency and the country's standing in the international financial markets will greatly diminish, thereby reducing capital available for investment at home and thus economic advancement.

There has been greater economic convergence among countries in the European Union, although Germany still retains a degree of hegemony (Laopodis, 2008).

In today's ever connected markets, the implications for monetary policy are that countries now will have to deal with more outside shocks and these shocks will be more diverse, intense and persistent. Consequently, global monetary policy, especially among the major capital markets, must be played interactively, which suggests that greater financial supervision may be needed in order to ensure continued world stability and prosperity (Laopodis, 2008).

Fiscal and monetary policies are constrained by the requirements of financing government expenditures, and the choice of ways to finance such expenditures consequently affects the real interest rate (Espinosa, 1991). A supply-side fiscal policy should be supported by monetary policy. Pro-growth supply-side fiscal policies designed to decrease the cost of labor and capital would result in lower total factor costs and a greater supply of home dollars in world markets (Roberts, 1986).

A controversial issues in macroeconomics is whether fiscal and monetary policies have real effects, and thus depends on the definitions of monetary policy and "money" and on assumptions about the nature of the interactions of fiscal and monetary policies (Espinosa, 1991).

The federal government runs a permanent budget deficit which is financed by the issuance of fiat money and bonds, and the monetary policy problem is how to choose paths of money and bonds to finance this deficit (Wallace, 1984).

When the government has a large prospective deficit and is a net debtor and where the real interest rate is high (as in the USA), a more contractionary monetary policy would raise the price level yet lower rates of inflation and real interest. This action makes the holders of nominally denominated assets worse off and borrowers better off, while lenders could be made either better or worse off (Wallace, 1984).

The relationship between the monetary authority and the fiscal authority, and the effects of deficits on the current account impact the discussion on the relationship between federal budget deficits and monetary policy. In regards to whether there is a significant relation between deficits and monetary policy in the US since World War II, it could be argued that no substantial effect of deficits or government spending on real interest rates has occurred, perhaps partly because of international capital movements. The federal budget deficit results from an excess of current federal spending as a ratio of gross national product over the normal value of this ratio (Dwyer, etc. 1985).

One can analyse the belief that deficits are conducive to inflation by measuring the responsiveness of the central bank to budget deficits and the government borrowing (Levy, 1981).

The USA Federal Reserve has been inclined to expand the monetary base in response to government deficits (Levy, 1981).

Business cycle data indicates that since World War II there has been an historical link between federal budget deficits and monetary growth, and consequently this connection may lead to market expectations of inflation increases. Dewald (1984) concludes that since World War II, a one percentage point rise in the deficit relative to gross national product (GNP) has been linked with a slightly higher increase in money growth as measured by M1, and the M1 increase in turn has been linked with an increase in inflation after about a 2-year lag.

The association between budget deficits and monetary growth can be eliminated by slowing down monetary growth. However, due to other perceived benefits and political rationales for budget deficits, monetary authorities have been reluctant to slow the money growth that accompanies budget deficits in recent years (Dewald, 1984).

Changes in the budget deficit commonly affect interest rates, among other economic variables. Substantial capital inflows are necessary with budget deficits, and consequently, domestic interest rates will likely be elevated. With a budget deficit, a continuation of sizable capital inflows is required with resultant pressure on the central bank to somehow accommodate the fiscal deficit (Dreyer, 1988).

The exchange rate is more seen as a target rather than a tool, though. The interest rate and money supply can also be targets as well, as manipulating one will change the other. So there is a greatest connection between the interest rates and the money supply.

Monetary regulation has three parts: (1) the legal framework, (2) monetary policy, and (3) the supervision of banking and financial markets. As the region's monetary system develops, these roles develope alongside the systems they regulate, with new measures being created by the monetary authorities - or even by large private banks - as specific problems presented themselves (Chick et al., 1996). In this development process, policies are tailored to the institutions as they exist at the time; thus, when banks provide only a minor proportion of monetary instruments, prudential regulation is left to the banks themselves and caveat depositor. Today, however, the financial services industry is very intertwined and developed, and thus much regulation is needed by the government.

Most of the $100 bills in the economy are in the underground economy, as this is the best store of value they have. An inflation tax is therefore only way to tax this money. The amount of currency per person is $2000 and half is $100 bills.

Yellen (1996) notes that the aim of monetary policy in the long-term is price stability, though additionally there should be incentive to stabilise output and employment. He suggests as a managing strategy to adjust the federal funds rate above an equilibrium rate by an amount that depends on the deviation between actual and potential output and between actual and targeted inflation.

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Cody and Mill (1991) state that because commodity prices are an early indicator of the current state of the economy, using these prices to formulate monetary policy can improve economic performance. Commodity prices often provide signals about the future direction of the economy, especially inflation, and it has therefore been argued that the information in commodity prices could be used in formulating monetary policy. Their study used a systematic monetary policy response to contemporaneous commodity price shocks for the post WWII USA economy, and found that responding to unexpected commodity price movements would have lowered the average rate of inflation and reduced its variability, while the path of real growth would be relatively unchanged in the post WWII USA economy.

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Despite the proliferation of research analysing the time-inconsistency and credibility problems, economists have not been able to develop a foolproof substitute for vigilance against inflation for maintaining central bank credibility (Sibert, Weiner: 1988).

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Keynes' assertion that the quantity of money is exogenous has contributed to the resurgence of monetarism (Foster 1986).

Foster (1986) concludes that an endogenous determination of the quantity of money is a necessary result of the saving-investment relationship, which in the Keynesian system, has an investment-to-saving causal sequence. It is contended that, if Keynes' assumption that aggregate saving can be increased only by an increase in aggregate investment is valid, the determination must be endogenous.

In the mid-1970s, monetary policies in Canada, France, Germany, Switzerland, the UK, and the US targeted one or more monetary aggregates; though, as conditions changed, the central banks of these countries began relying on several information variables, including interest rates, foreign exchange rates, and monetary and credit aggregates (Bergstrand, 1985).

The goals of any monetary policy program may include: real economic growth, higher rate of employment, greater capital formation, improved growth in productivity and increased savings by households and businesses.

The velocity of money, sometimes known as the ''turnover rate,'' is defined as the ratio of income to the money stock. Velocity is important because if it is predictable, the monetary authority can meet its targeted growth rates of income by controlling monetary growth. However, inaccurate predictions can lead to high inflation rates or conversely too much restrictiveness (Higgins, Faust: 1981).

Higgins and Faust (1981) suggest that aggregates have to be continually changed because of: (1) the continuing instability of the new aggregates, (2) problems with using alternatives, such as broad credit aggregates or reserve aggregates, and (3) continuous changes in the financial system. They note that due to these issues, money targeting may altogether have to be abandoned, with reliance instead on a broad spectrum of financial information.

When discussing monetaristy polices of countries, what matters most are policy goals and trade-offs among inflation, unemployment, prosperity, and real economic growth. Different countries have different agencies that are in charge of monetary policy. In the USA for example, the Fed chairman speaks for one agency and to a specialized clientele, but in the UK the prime minister can speak for the whole government and the entire nation. Thus, there are arguably higher transitional costs to the economy in the USA than in the UK in the effort to erase inflation. Therefore, in the USA such monetary policy decisions, must have the strong support of the President and the Congress, and it must be explained clearly to the American people (Tobin, 1982).

Tobin (1982) suggests a tax-based incomes policy to help monetary disinflation.

A major issue with monetary policy models and implementation is determining how to best measure the money supply. Unfortunately, technological innovations in banking have rendered accurate measurement of the money supply utterly impossible. Morris (1982) identifies three primary developments that have affected the measurement process: (1) computerized transfers of funds among monetary vehicles, (2) the heavy tax on transaction accounts imposed by reserve requirements, and (3) the ability of consumers to engage in deposit sweeping.

Monetary policy today commonly uses monetary aggregates as targets; this technique is based on the assumption that the relationship of the aggregates to nominal gross national product (GNP) is stable and predictable, however today's financial innovations have tended to invalidate that assumption and thus rendered monetary aggregates, particularly M-1, as obsolete in monetary policy. Morris (1982) suggests a possible solution whereby one states as the goal criterion of monetary policy either (1) total debt of the nonfinancial section (2) rate of growth of total liquid assets (3) or nominal GNP itself. Morris (1982) suggests using growth of total liquid assets as the optimal choice for monetary policy target because a change to it would require the least shake-up in the present system.

The issue of monetary union integration has long been an important issue when developing a region's monetary policy. In its nascence, a monetary union will not be fully integrated with all of its functoning districts, and the experiences of USA and European Union validate this claim. In the United States, financial markets were integrated in the late 1800s and early 1900s sense that monetary shocks were routinely transmitted from one part of the United States to another. Particular, shocks to interest rates in the eastern financial centers were routinely transmitted to the Western and Central banks, and it also appears that during this period significant shocks to bank lending rates in the non-eastern banks often arose on the periphery itself. Thus, when a monetary union is still developing the monetary authority that relies on operations confined to eastern financial centres would have had a difficult time managing the US monetary union; data indicates that after World War II the problem of eruptions on the periphery declined as implementationt ools became more sophisticated and data became more accurate and was obtainable quicker due to better technology and experience (Landon-Lane, Rockoff: 2004).

Chick et al., (1996) likens the current situation in the European Union to that the time of the United States Federal Reserve System, which came on the scene after a common currency was already in place but when communications were slow and there were distinct differences in the regional economies of the US. Communcations may be much quicker in the EU than when the USA was still in its early development stages, though there are likely greater differences in the countries that make up the EU opposed to the contrasting regions of the USA.

Monetary stabilisation policy is concerned more with macroeconomic issues. Therefore, several of the issues that are important to macroeconomics are also important to monetary economics. In the long-run, a country’s capacity to produce goods and services determines the standard of living of its citizens, and in the short run, AD influences the amount of goods and services that a country produces. In the long run, the rate of money growth determines the rate of inflation, but it does not affect the rate of unemployment, and in the short run, policymakers who control monetary and fiscal policy face a tradeoff between inflation and unemployment. Macroeconomics issues are also issues of monetary economics. How should policymakers try to raise the economy’s natural rate of output, and should policymakers try to stabilise the economy.

Increasing the money supply raises output temporarily, but how costly is inflation, and how costly is reducing inflation, and how big of a problem is government debt in relation to the effective implementation of the monetary stabilisation policy. Depressions are severe recessions. Deflation is periods of falling prices, however as of lately inflation has been the norm; one should note that there will always some unemployment. Monetary economics has a terminology, data, and way of thinking like all sciences. To understand the monetary economy, monetary economists use models; theories that simplify reality in order to reveal how exogenous variables influence endogenous variables. Monetary economics is concerned with both the long run and the short run. In the short run, the goal is to provide full employment, and in the long run to prevent excessive inflation.

Monetary policy is very concerned with aggregate demand and aggregate supply. In its purest form, monetary policy serves to directly manipulate the quantity of goods and services both demanded and supplied. Active policy acheives this by steering the interest rates and money supply through the monetary policy tools of discount rates, reserve requirements, and open market operations. When the money supply increases and interest rates drop, ostensibly AD and AS will increase via a lower price level or inflation rate; when the money supply decreases and/or interest rates rise, ostensibly AD and AS will decrease via a higher price level or inflation rate. Exogenous shocks to AD and AS will alter the AD and AS, and subsequently monetary stabilisation policy results from actions taken to reduce the impact of AD and AS shocks. A logical question then becomes how would a passive monetary rule influence AD and AS?

General business cycle theory discusses 3 time horizons in macroeconomics in which economic fluctuations can occur in the economy: in the short run, long run, and very long run. Economic fluctuations present a recurring problem for economists and policy makers when analysing short-run fluctuations around output and employment. The crucial difference between the long run and the short run is that prices are flexible in the long run but sticky in the short run; the model of aggregate supply and aggregate demand thus provides a framework to analyse economic fluctuations and see how the impact of policies varies over different time horizons. Thus, different models are needed for different time periods.

***Quantity Theory of Money***

Shows how increases in the money supply lead to increases in inflation. Quantity equation is the link between transactions and money:

money \* velocity = price \* transactions: *M \* V = P \* T*

Identity equation states that the definitions of the 4 variables make the quantity equation true.

(P\*T) is the number of dollars exchanged in a year.

Transactions velocity of money (V) measures the rate at which money circulates through the economy, and is the number of times a dollar bill changes hands. However, transactions are hard to quantify, so (T) is replaced with (Y) (total output, real GDP). Income velocity of money (Y) is the number of times a dollar bill enters someone’s income in a given period of time.

new equation: *M \* V=P\*Y*

money \* velocity = price(GDP deflator) \* output (real GDP) (nominal GDP)

Real money balances (M/P) is the quantity of money in terms of the quantity of goods and services it can buy, and measures the purchasing power of the stock of money. Money demand function is the equation showing what determines the quantity of real money balances people wish to hold.

*(M/P)d=kY*

Where k is a constant telling us how much money people want to hold for every dollar of income. This equation states the quantity of real money balances demanded is proportional to real income.

The demand function for a particular good is the convenience of holding real money balances. Higher income leads to a greater demand for real money balances, and holding more money makes it easier to spend, and if you have more you spend more. This money demand function is another way to view the quantity equation.

-k and V are inversely related

*M/P=kY*

*M(1/k)=PY*

-where V=1/k *MV=PY*

When people want to hold a lot of money for each dollar of income (k is large), money changes hands infrequently (V is small). Conversely, when people want to hold only a little money (k is small), money changes hands frequently (V is large).

Quantity theory of money assumes that the velocity of money is stable and concludes that nominal GDP is proportional to the stock of money. Because the factors of production and the production function determine real GDP, the quantity theory implies that the price level is proportional to the quantity of money. Therefore, the rate of growth in the quantity of money determines the inflation rate. This assumes constant velocity, which is not entirely true.

3 building blocks of economic price formation are: (1) factors of production and the production function determine output (Y) (2) money supply determines nominal value of output PY~~this conclusion follows from the quantity equation and the assumption that the velocity of money is fixed (3) the price level (P) is the ratio of the nominal value of output PY to the level of output (Y).

This implies that since velocity is fixed, and the factors of production and the production function have already determined the real GDP, the change in nominal GDP is due to changes in prices, and uses the GDP deflator or inflation. This implies that the central bank can control inflation with the money supply, as this theory states that increases in the money supply coincide with inflation.

Nominal Interest Rate and Demand for Money~~The quantity theory is based on a simple money demand function, as it assumes that the demand for real money balances is proportional to income, though one must add in the nominal interest rate for the full story. The nominal interest rate is the opportunity cost of holding money. Thus one may expect the demand for money to depend on the nominal interest rate, and if it does, then the price level depends on both the current quantity of money and the quantities of money expected in the future. The quantity of money demanded depends on the price of holding money, just like any other good. Hence, the demand for real money balances depends on both the level of income and the nominal interest rate.

*(M/P)d = L(i,Y)*

States that the demand for the liquidity of real money balances (L) is a function of income and the interest rate; when income rises, the greater the demand for real money balances. When nominal interest rates rise, the lower the demand for real money balances.

*(M/P)= L(r + πe , Y)*

This states that the price level depends not only on the today’s money supply but also on the money supply expected in the future, ie expected inflation.

Classical Dichotomy~~Classical dichotomy refers to the theoretical separation of real and nominal variables. This allows us to examine real variables while ignoring nominal variables, and arises because, in classical dichotomy economic theory, changes in the money supply do not affect real variables. Monetary neutrality states that according to classical economic theory, money is neutral and thus the money supply does not affect real variables; this is usually correct. Real variables are all variables measured in physical units, such as quantities and relative prices. Nominal variables are variables expressed in terms of money, such as the price level, inflation rate, dollar wages. Therefore, classical theory allows us to study how real variables are determined without any reference to the money supply. The equilibrium in the money market then determines the price level, and as a result, all other nominal variables. Cagan model develops more explicitly how if the quantity of real money balances demanded depends on the cost of holding money, the price level depends on both the current money supply and the future money supply.

***Policy Implications***

Several policy suggestions are proposed for stabilising a country's economy. The primary focus is on the money supply or inflation rates. This is because the inflation rates are the only policy indicator the monetary authority can fully control. International forces influence interest rates and exchange rates are not relevant without international trade, so inflation targeting is the natural target. In fact, with no international trade interest rate targeting and inflation rate targeting become the essentially the same thing.

So a policy that effectively targets inflation only raises the money supply by an amount equal to wealth increases, so how much is wealth increasing is a diifuclt question, which is why discretion may work well as well.

There is also an interesting relationship between inflation and monetary policy. The interest rates and exchange rates, the two other policy targets besides the money supply, are also economic indicators. Yet, the money supply is targeting to influence the indicator of inflation. They are two different theoretical concepts yet one and the same in a monetary policy sense.

Inflation is a direct representation of the domestic price level, and so the monetary authority can work to keep this constant with a policy of inflation taregting. However, exchange rate targeting and interest rate targeting do serve purposes. They can be used discriminately from time to time to advance specific economic interests, while always returning to inflation targeting. For example, targeting these may influence poverty more or GDP more.

***Policy Rules***

3 policy rules that could use are (1) monetarist (2) nominal GDP targeting (3) inflation targeting.

Monetarists advocate the central bank keep the money suppyly growing at a constant rate. They believe that fluctuations in the money supply are responsible for most large fluctuations in the economy. Slow and steady growth in the money supply would yield stable output, employment, and prices. Steady growth in the money supply stabilises AD only if the (V) of money is stable. Yet sometimes, the economy experiences shocks, such as shifts in money demand, that cause velocity to be unstable—a policy rule must be able to adjust to various shocks to the economy. Taylor’s rule has the real federal funds rate—the nominal rate – inflation—responding to inflation and the GDP gap. Central bank independence tends to lead to lower inflation and greater operating efficiency. Good to have different sides that prefer inflation to unemployment

Nominal GDP targeting dictates that if nominal GDP rises above the target, the Fed reduces money growth to dampen AD; if it falls below the target, the central bank raises money growth to stimulate AD. Allows monetary policy to adjust to changes in (V) of money.

Inflation targeting is like nominal GDP targeting, and sets a target and adjusts the money supply when the actual inflation deviates from the target. Like nominal GDP targeting, inflation targeting insulates the economy from changes in the (V) of money. Also easy to explain to the public. Rules could also be expressed in terms of real variables instead of nominal variables, and is usually targeted within a range.

**Monetary Economics**

**Monetary Theory**

2.1 Economy Evolution

2.2 Finanacial Intermediation~~Institutions

2.3 Monies of a Modern Fiat Economy

**Monetary Stabilisation Policy~~Equilibrium Analysis**

2.4 Passive Rule

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2.6 Rule or Discretion?

2.7 General Monetary Stabilisation Policy in the Long-Run

2.8 Active Monetary Stabilisation Policy Tools

2.9 Economic Indicators~~Lags

2.10 Political Issues

2.11 Country Analysis

**Monetary Policy**

Monetary policy can be conducted according to a rule or by discretion, and can be passive or active. What we see in most countries today is active discretion.

To implement monetary stabilisation policy, the central bank must first decide on its policy goals for the macroeconomy, and this policy choice depends on objective choice and time frame. Policy goals can be either long-term to minimise unemployment and stabilise price level or short-term to minmise the short-term fluctuations around those long-term objectives. Inflation targeting or money supply targeting is preferable, although because policy goals respond with lags, the selected value for the intermediate targets must reflect those lags. The policy tries to hit that target exactly, and even though the monetary authority can’t directly control the target, the policy tools are still used to achieve that target. With the advent of electronic transactions these policy tools all operate smoothly on a single market, the market for bank reserves, the federal funds market—therefore, the monetary authority must coordinate the use of the tools to affect the equilibrium in that single market. This market is preferable because 0's can easily be added and subtracted from bank deposits at the central bank, thereby directly changing the level of the bank resevres, thus the money they can lend out in fractional reserve banking, and consequently the level of the money supply.

Several factors that directly influence monetary policy are: (1) the rapid integration of global trade and finance (2) deregulation of the banking system (3) the move to new exchange rate regimes (4) the financial consequences of disinflation v. inflation (Morris, 1986). The integration of world trade has complicated monetary policymaking and changed the central banking environment, thus making the financial system more fragile, as shocks can be transmitted more quickly to more places. The deregulation of the banking systems has allowed financial instituions to branch out into different businesses, thus changing the structure of their profits and consequently how different monetary policy decisions affect their profits. The choice between a fixed of floating exchange rate can affect monetary policy, as well as can the major goal inflation reduction.

To achieve the substantial benefit of lowered inflation, however, requires other costs such as a rise in unemployment and general economic stagnation, and whether it is possible to conduct monetary policy in a way that does not cause inflation or real economic activity is a topic of contentious debate. However, the issue of time aggregation is not as much of an issue when defining monetary policy, as for example, from a biweekly interval to a quarterly interval, because the sensitivity of conclusions about monetary policy depends on what the period length being examined is. To illustrate, movements in US central bank total reserves, nonborrowed reserves, and the federal funds rate typical of those observed in a 2-week data set have similar effects with or without time aggregation (Geweke, Runkle: 1995).

As each policy agenda has its own problems, it is best for a policy advisor to be eclectic in formulating policy advice, and further it is important that the policy decision accurately reflect the fact the monetary stabilisation policy is not based on a single, universally accepted view of monetary policy's role in the economy (Leeper, 1995). To this end, improving monetary policy requires accurate empirical estimates of the current policy and of the precise relationship between the policy and the relevant economic variables. Policy relationship identification defining the instrument the central bank controls and a description of how that instrument influences the informative information available when policy decisions are made (Geweke, Runkle: 1995).

Monetary theory dictates that the choice of short-run policy targets depends upon the types of disturbances in the economy, and that policymakers choose targets to offset what is viewed as the predominant disturbance (Sellon, Teigen: 1981).

The central bank commonly responds to its most recent money growth error with a reactive ostensibly corrective movement in its policy instrument. Recent evidence regarding the money supply annoucement puzzle suggests existence of a reactive policy anticipation effect (Hakes, Gamber: 1992). The ability of the central banks to control interest rates may be greatly exaggerated (Thornton, 2008).

Many associate interest rate surprises by the central bank with negative co-movements between inflation and output, which can be due to more frequent inflation or supply shocks in conjunction with the central bank's private information. Further, empirical studies show that the sign of long-term interest rate reactions is mostly driven by changes in expected inflation. Most central bank's actions are perceived as reactions to economic shocks rather than true policy shocks (Reynard, Ranaldo: 2008).

Large variations in money growth over the short-run suggest that perhaps the control mechanisms need improving or that the question of appropriateness of predetermined monetary objectives must be assessed (Axilrod, Lindsey: 1981).

Monetary policy affects people in different circumstances quite differently, as there are generally 3 types of agents: borrowers, lenders, and those who hold assets valued in terms of the current price level (Wallace, 1984).

An intersesting topic of debate in the arena of monetary policy is that of the theoretical reasonableness of banking profits, as bank profits and rate of return can have a substantial effect on capital of changes in interest rates and other components of monetary and regulatory policy (Hancock, 1985). The relationship between the central bank, the government, and the commercial banks that hold the economy's money supply is of utmost concern to the monetary authority. Profits for the banking sector can directly influence the immediate direction of monetary policy. A policy shift can create immense profits for commercial bankers at the expense of the public, and thus the profits of the banking sector must be carefully analysed and monitored by the monetary authority to ensure excess profits are not occurring which have the ability to distort the natural economic equilibrium and disrupt the proper functioning of the economy. When analysing bank profits, one may or may not adjust for differences in liquidity, risk, and maturity between various assets and liabilities. User costs for financial items (interest rates, services changes, reserve requirement costs, and deposit insurance premiums) are a major source of income, as is the relative price changes between financial and nonfinancial items (Hancock, 1985).

Economic financial statements and estimation of rates of returns to capital from select banks show that profits are relatively more responsive to changes in loans than deposit rates, which implies that the use of a spread is not supported. Increases in interest rates that leave the spread unchanged increase variable profit, and so thus, if the flow costs of reserve requirements were to be eliminated on demand and time deposits, variable profit would increase by about 5% in each case (Hancock, 1985). Therefore, changes in resevre requirements greatly influence banking profits, and resevre requirements happens to be one of the major tools of monetary stabilisation policy.

**Long-Run Policy Objectives**

The monetarists’ argument is that detailed stabilisation policies are not needed, as their objectives are not clearly defined, and they are simply not feasible—they require a depth of knowledge of the current state of the economy that no one could possibly possess. However, no policy is not an option (short of eliminating the central bank), and so what the monetary authority must determine what policy to adopt. Thus, monetarists suggest the constant growth rate rule (of money supply) CGR. The CGR rule is based on certain long-run growth properties of the economy, about which monetarists fo have sufficiently reliable information, though this approach is also imperfect. If short-term goals such as employment and output are not achievable, the monetary authority should focus instead on long-term objectives, and monetary stabilisation policy suggests the only reasonable long-term objective is stabilisation of the average money price level of goods.

Monetary policy and consequently the monetary authority should be transparent. The public sector should not have to continuously guess what public policy currently is and how it may change in the future. Short-run policy objectives are not easily attainable—hence, the monetary authoirty should focus just on the long run and policy goals that are clearly stated. The long-run neutrality of monetary policy should indicates that a 1 time increase in the money supply (or decrease), has no other long-run effects other than to raise prices—therefore, monetary policy should be directed solely at long-run price objectives.

3 steps to defining policy objectives are: (1) define prices (2) create a clear statement of the time horizon of policy, or what is meant by the long run (3) and describe the price behaviour that the policy seeks to achieve. The prices that are affected in the long-run by changes in the nominal money supply are are the money prices of goods and services, that is, the number of currency units (dollars) needed to purchase a car or a haircut. The relative price of a haircut to a car can also change in the long run, yet neutrality ensures that in the long run these relative price changes are independent of their respective money prices. However, relative price changes could be due to product innovations or changes in preferences.

The monetary authority wants to choose a definition of prices that is insulated from long-run changes in relative prices. It is interested in the general level of money prices of all goods and services in the economy. To get the measurement of the prices, an index such as CPI or GDP implicit price deflator is needed. 2 differences in price indexes: composition of the baskets; frequency with which the indices are constructed- GDP quarterly and CPI monthly. The 2 indices behave differently over long time periods; CPI has rised more rapidly recently. CPI is better for monitoring over time the purchasing power of the nominal wages of households, as reflected in the value of the currency. To some extent, changes in purchasing patterns are automatically reflected in the PGDP, but that index includes many other items as well, such as business investment goods, that only indirectly affect the purchasing power of a household’s nominal wages. Less important is which index to choose than to just choose 1 and incorporate it into the policy design and stick with it. An empirical fact is that money prices fluctuate over the business cycle; therefore, a policy addressing the long-run behaviour of the price level must systematically ignore the short-term fluctuations of prices associated with the business cycle.

The average length of business cycles since WWII is 7.5 years, which suggests that a minimum time horizon for a policy with long-run price objectives is 7 to 8 years. The policy objective is therefore stated in terms of the long-run average behaviour of the price level over the business cycle. In practice, the implication is that the relative success or failure of this monetary policy can be measured only in relation to the actual cycle-average behaviour of the price level, that is, it must be compared with the stated objectives of the monetary authority. A long-run average price level is desirable. Monetarist policy objective is attainment of long-run average price level stability. This amounts to picking a long-run average inflation rate of 0, such that on average the price level remains unchanged—the implication is that the purchasing power of the currency for the basket of goods used to define the price level remains constant (on average) over time.

It is more correct to say 'innovation' not 'technology' when talking about progress, as technology refers more to computers while innovation could mean any sort of productivity increase, and so technology is innovation yet all innovation is not technology. It is easier to predict labour growth rate, while innovation is very hard year to year because of computers~~resources for instant and one-time wealth increase is difficult too. Computers (innovation) have increased wealth much lately as more borrowers can find more lenders at different rates, which increases wealth by increasing the efficiniency of the financial intermediation system.

Once an economy has embraced fiat money as their currency stabilisation policy must be implemented by some agency. Even with multiple currencies in a competitive money market, a single monetary authority must administer the stabilisation policy; thus, stabilisation policy becomes easier with only 1 currency. Monetarists suggest the constant growth rate rule (of money supply) CGR; this is based on certain long-run growth properties of the economy, about which monetarists fo have sufficiently reliable information, but this approach is also imperfect. Better to use a monetary rule instead of fine tuning.

The stabilisation policy can be either active or passive. The central debate of stabilisation policy is whether the economy is inherently stable or unstable—following, is whether an active or passive stabilisation policy would work. When the government is considering changes in monetary or fiscal policy, they must consider how the change will influence inflation and unemployment and whether AD needs to be stimulated or restrained. Advocates of active policy view the economy as subject to frequent shocks that will lead to unnecessary fluctuations in output and employment unless monetary or fiscal policy responds. Many believe that economic policy has been successful in stabilising the economy. Advocates of passive policy argue that because monetary and fiscal policies work with long and variable lags, attempts to stabilise the economy are likely to end up being destabilising. In addition, they believe that our present understanding of the economy is too limited to be useful in formulating successful stabilisation policy and that inept policy is a frequent source of economic fluctuations. Policy implementation is not like driving a car, effects are not immediately known, rather it is more like a ship, where the course can go offtrack very easily.

An inside lag is the time between a shock to the economy and the policy action responding to that shock. This arises because it takes time for policymakers to first realize that a shock has occurred and then to put appropriate policies into place. An outside lag is the time between a policy action and its influence on the economy. It arises because policies do not immediately influence spending, income, and employment. A long inside lag is a central problem with using fiscal policy for economic stabilisation. It is shorter in parliamentary systems like UK where policy can be implemented more quickly. Monetary policy has a much shorter inside lag than fiscal policy, because the central bank can implement policy quick, still monetary policy has a substantial outside lag.

Issues with monetary policy lags include: how to define lags, how to find appropriate data to match selected definitions, and how to develop satisfactory and meaningful techniques for testing the data (Selby, 1982).

Inside lags are those within the control of the central bank, while outside lags are those beyond the purview of that system (Selby, 1982).

The effects of monetary policy shocks in an international environment must consider the influences on financial variables, such as the exchange rate and the foreign interest rate. However, identification of the variables can be achieved without relying on a recursive ordering (Faust, 2002).

Automatic stabilisers are policies that stimulate or depress the economy when necessary without any deliberate policy change; income tax, unemployment insurance, welfare—fiscal policy with 0 inside lag.

**Insert tables here**

The second topic of debate is whether policy should be by discretion or rule. It can be active or passive and still be by rule or discretion. Advocates of discretionary policy argue that discretion gives more flexibility to policymakers in responding to various unforeseen situations. Advocates of policy rules argue that the political process canot be trusted; they believe that politicians make frequent mistakes in conducting economic policy and sometimes use economic policy for their own political ends. In addition, advocates of policy rules argue that a commitment to a fixed policy rule is necessary to solve the problem of time inconsistency. The political business cycle is the manipulation of the economy for electoral gain; if policymakers can be trusted, there still may be time inconsistency. Time inconsistency refers to the fact that policy makers may be inconsistent over time; so to be most credible, the may want a commitment to a fixed policy rule. Rational agents will understand the incentive for the policymaker to renege, and this expectation affects their behaviour. The solution is to take away the policymaker’s discretion with a credible commitment to a fixed policy rule.

***Passive Monetary Rule***

Whether monetary policy should be guided by legislated rules or left to the discretion of the policymakers has been a topic of debate since the early days of central banking.

A constant growth rule would include 3 aspects: innovation, labour supply, and persons. Resources growth is not constant, as rather it requires immediate 1 time increase in wealth. The money supply is not permanent like people and technology~~when those 2 fall, whole society does too as they are the rock of society. A monetary rule like this keeps IR rates constant £'s~~Short term, IT, Long term. When offshore or foreign trading is introduced, must institute caps to account for BOP differences year to year; even if BOP is more or less, do not go beyond cap to prevent too much fluctuation.

Monetarists believe among other stances, that inflation is primarily a monetary phenomenon and consequently price stability should be the primary objective of monetary stabilisation policy, and that the velocity of money is fairly stable if there are no major shocks to the money supply (Rich, 1987).

A rule at aimed at controlling the growth rate of nominal GDP with an interest rate instrument could be an improvement over a purely discretionary policy, and also the rule could provide better long-term control of inflation without increasing the volatility of real GDP or interest rates (Judd, Motley: 1992).

A passive rule could make a contribution to policy, even if it were used only to modify the central bank's traditional discretionary approach (Judd, Motley: 1992).

The interplay of exchange rates, interest rates, and fiscal and monetary policies is important to the monetary policy and thus determines the willingness of foreigners to accumulate domestic assets.

***Active Discretion***

Due to the current state of the world today, monetary policy must be able to adapt to our changing world, as technological headway and surges in international trade can have tremendous infuence on domestic monetary policy. These changes, among others, can weaken a central bank's ability to affect aggregate demand, can expose interest rates and monetary policy to undue influence from abroad, and can potentially disturb the link between monetary policy and domestic inflation (Parry, 1996).

One key stipulation of active discretionary monetary stabilisation policy is to keep up with changing economic events. In 1988 a futures market developed for the federal funds rate in the United States. Similarly, the Taylor rule was advocated, which states that: (1) the federal funds rate should be increased/decreased whenever real GDP is above/below its trend level and inflation has been above/below its desired level (2) equal weight should be given to output and inflation gaps (Evans, 1998).

Market anticipation of a switch in monetary policy can systematically affect the ex post returns on long term relative to short-term interest rates; this phenomena is known as the peso problem. When the market expects a discrete change in policy that does not materialize for some time, these expectations induce forecast errors that, in small samples, are systematically mistaken ex post. During perods of nonborrowed reserves targeting, the peso problem induces sizable effects on excess returns on longer term bonds even with no variation in the market's beliefs that the central bank would change policy (Lewis, 1991).

***The Central Bank***

The central bank must work to sustain the domestic economy on a moderate growth path, and thus the effect of monetary policy depends on its impact on fundamentals, as well as its credibility and thus that of the central bank. However, few central banks make clear just why they have chosen the actions they have taken when they perform open market operations. That said, central bank purchases and sales of securities, the resulting changes in bank reserves, and fluctuations in the relevant short-term interest rate are all known data not long after the fact (Friedman, Kuttner, 1996). Given the presumption that government secrecy is inconsistent with the healthy functioning of a democracy, the argument that central bank secrecy is socially beneficial has not yet been proven. Much of this secrecy derives from the use of active discretionary policy; a policy rule would not require secrecy.

The relationship between the central bank and the government varies between countries. The central bank of the USA and its Treasury have a closer fiscal relationship than most other fiat economies. In the USA, the Federal Reserve retains a portion of its earnings, which imparts an inflationary bias to monetary policy because that relationship gives the Federal Reserve an incentive to increase its earnings by increasing the monetary base (Crihfield, Wood: 1993). However, the Federal Reserve would argue that it can follow the Treasury's lead on sterilised foreign exchange operations without compromising its independence on monetary policy. Although there is little empirical evidence that sterilised intervention alone can have a sustained effect on the exchange rate, the Federal Reserve's participation in foreign exchange policy with the Treasury creates transparent issues about whether monetary policy will support domestic or external objectives, which undermines the credibility of the Federal Reserve's longer-term objective of price stability (Goodfriend, 1996). Expectations of a central bank that is able and willing to contain inflation leads to public confidence the money will not inflate over the forseeable future.

A stated national monetary policy goal of price stability greatly reduces the risk of conflicts and credibility problems when the central bank works closely with the Treasury and other parts of the government. The problems created by the Federal Reserve's involvement in foreign exchange operations underscore the need for the USA Congress to provide the Federal Reserve with a mandate for price level stability, recognizing a concern for the stabilisation of employment and output (Goodfreind, 1996). The USA's central banking system has been described as more volatile and misguided than that of other industrialsed countries. Specifically, problems of instabilities in the behavior of velocity have been more serious in the US than in Switzerland, and while the Federal Reserve Board has embraced a number of eclectic goals, European banks such as the Swiss National Bank and the European Monetary Union have endorsed the monetarist theory that price stability forms the principal objective of monetary policy (Rich, 1987).

A procedural change in monetary policy targeting can reflect an change in the central bank's basic response to broader macroeconomic objectives. The primary justification for frequent changes of policy by the monetary authority is the central bank's intuition regarding what will lower inflation expectations and the central bank's stance that lower inflation expectations are necessary to prevent a future inflation increases (Papadimiriou, Wray: 1995). Consequently, identifying monetary policy effects is a tricky business, as different yet seemingly reasonable identifications can imply wildly different policy effects (Leeper, 1995).

The central bank's task of weighing conflicting interests as it selects a monetary policy is a difficult one. The central bank's legislative mandate is usually to set a monetary stabilisation policy consistent with high employment, stable prices, and moderate long-term interest rates (Walter, 1989). That the central bank responds to a wide range of interacting objectives and that it considers those objectives within the setting of a structural model of the economy is a primary assumption of monetary theory (Levy, 1981). While the central bank cannot directly control the quantity of money, it can control variables that influence short-term interest rates, such as the types of reserves held by depository institutions and the monetary base, thereby influencing the growth rate of the aggregates (Walter, 1989).

The estimation of the offset and sterilisation actions of the central bank must consider the reaction function of the monetary authorities and the endogeneity of the domestic credit and foreign reserve variables. The optimal intervention and sterilisation policies of the monetary authority are dependent on the different disturbances hitting the economy and the preferences of the monetary authority (Roubini, 1988).

Under a wide range of domestic and foreign disturbances, the optimal response of the central bank will lead to negatively correlated comovements of domestic credit and foreign reserves if the central bank cares more about the interest rate smoothing objective opposed to the foreign exchange reserve stabilisation goal. Conversely, positive correlations between domestic credit and foreign reserves will be observed if the foreign reserve objective is dominant (Roubini, 1988).

***United States of America Monetary History~~UK, Australia, Eurozone, Switzerland, Japan***

U.S. monetary policy is best understood as originating from a discretionary regime since 1960 (Heideken, 2008).

In the USA, Federal Reserve Banks propose any discount rate changes, and the Board of Governors decides whether to accept, reject, or take no action on their requests. The number of Reserve Bank proposals before the Board does seem to play an independent role in the Board's decisions, even more so than economic conditions such as: labour markets, financial markets, and inflation or monetary aggregates. This implies there is a certain level of influential ability in pushing through monetary policy in the USA, which is contrary to proper economioc theory and yet consistent with the closer relationship between the USA central bank and the USA government as compared to most other industrialised countries (McNees, 1993).

Influence from presidential channels on the monetary policy process could be a result of direct presidential pressure exerted on members of the Federal Open Market Committee, or it could be a result of partisan considerations in presidential appointments to the Board of Governors. The appointments process, however, is the usually the primary mechanism by which partisan differences in monetary policies arise (Chappell, et al., 1993). It seems as if whenever the legislative branch threatens the central bank's bureaucratic prerogatives, Federal Reserve officials become more responsive to executive branch signaling in order to garner administration protection. Similarly, the USA executive branch of government systematically signals its policy desires to Federal Reserve officials who, in turn, may respond. The impact of executive branch signaling of monetary policy desires varies inversely with the friendly partisan composition of the Federal Reserve Board, and as such, one should model monetary policy as a multiple uncooperative principals-multiple agents problem (Havrilesky, 1994).

There is strong annual seasonality in borrowed reserves targets in the USA, corresponding to an agricultural cycle. Consequently, the Federal Reserve no longer defends a target for borrowed reserves and instead allows them to follow the cycle. Changes in the targeted Fed funds rate can have an impact on USA treasury bill rates. When the Fed funds rate adheres more closely to a target rate, Treasury rates react similarly to an earlier direct Fed funds target regime. Further, the average monthly interest rates implied by the expectations theory is consistent with the pattern of actual treasury rate reactions, when applied to the term structure (Nilsen, 1997). In the USA fiscal policy is dictated by congressional budget resolutions while monetary policy derives from Federal Reserve Board statements. The Federal Reserve of the USA utilises much secrecy in the implementation of USA monetary policy. There are many potential benefits and costs of central bank secrecy, as well as there are even some situations in which secrecy could be socially beneficial (Goodfriend, 1986).

Monetary aggregate targets must sometimes change because financial innovations over time lower the information content of the current target for monetary policy and as well when velocity shifts render the traditional monetary aggregate more questionable. A similar situation occurred when total domestic nonfinancial debt (total credit or total debt), a broad credit aggregate, replaced bank credit as an associated policy target in the USA in the 1990s (Fackler, 1990). Data on monetary policy can be analysed to determine how regime policy decisions would have fared in other regimes. The real ex post short-term interest rate averaged just less than 1.5%, with a maximum of nearly 9.5% and a minimum of -5.5% in the USA from 1959 to 1995. According to the data, Greenspan's policy would have been mistaken 74% of the time (Papadimiriou, Wray: 1995).

Benjamin Strong introduced a bill was intended to implement a price-level stabilisation policy in gthe 1920s. The Board of Governors, represented by Adolph Miller, denied Strong's contention of the Fed's ability to influence the price level. Miller instead promoted a policy based on the ''Real Bills'' doctrine, according to which the Federal Reserve System need only be concerned with ''speculative'' extensions of bank credit. At Benjamin Strong's death, there was a shift in power from the New York Fed to the Board in Washington, which determined the character of monetary policy during the Depression (Hetzel, 1985). Volcker emitted ambiguous signals to the market, which induced heterogenous expectations., whereas Greenspan's market leadership forged more homogeneous expectations allowing treasury rate responses prior to the target change to be attributed to market anticipations (Nilsen, 1997).

After WWII the Federal Reserve conducted monetary policy by trying to manage interest rates. This method proved unsuccessful and was replaced by a policy of trying to control the growth rate of the money supply, as the Federal Reserve now sets annual targets for the growth of the monetary aggregates, which ostensibly serves as an automatic economic stabilizer (Black, 1981). Institutional flaws of the Federal Reserve have hindered its performance in controlling money supply growth by not allowed enough short-term flexibility in the Federal funds rate, inhibiting adjustment of nonborrowed reserves targets, and causing the lagged reserve accounting system to create technical difficulties under new control procedures (Black, 1981).

The demand for money (M1) in the USA has been generally stable since 1959, though the monetary base has borne a slightly closer and more predictable relationship to the long-run trend in GNP than has M1 (Cullison, 1982). From 1951-70, the Federal Reserve used interest rates as short-run targets, possibly indicating that financial disturbances were seen as more significant than spending disturbances. The 1970-79 period was one of transition; a mixture of interest rate and money targets was adopted in an uneasy compromise between the objectives of monetary control and financial market stability. In 1979 the Federal Reserve shifted from interest rate targeting to reserve targeting for the purpose of achieving better control over monetary aggregates in order to reduce inflation (Sellon, Teigen: 1981).

The monetary stabilisation policy goal of control of inflation and the growth of money and credit suggests the use of the discount rate and reserve requirements as the primary policy instruments. As such, when the Federal Reserve shifted in policy procedures from interest rate targeting to money and reserve targeting in the 1970s, the role of the discount rate and reserve requirements broadened greatly as policy tools. Thus, many have questioned the Federal Reserve Board's need for all 3 policy instruments; however, enlarging the scope for these 2 instruments requires legislative changes and regulatory actions (Sellon, 1984).

In 1979 the Federal Reserve changed its open market moved the focus for its short-run guides for open-market operations toward reserve aggregates and away from the federal funds rate (Axilrod, Lindsey: 1981). Also in 1979, the Federal Reserve shifted emphasis from the federal funds rate to the level of nonborrowed reserves as an intermediate focus of monetary policy (Falls, Hill: 1985). These 1979 actions essentially amounted to a monetarist approach to monetary policy, though reversed course a few years later (Brimmer, 1983).

Depository institution borrowing from the Federal Reserve District Banks became an important part of the Federal Reserve's attempt to control monetary growth when the Fed's operating procedure was changed from an interest rate to a reserve aggregate operating variable in October 1979 (Roth, Seibert: 1983). In 1979, the Federal Reserve Board switched from interest rate targeting to reserve targeting. This switch saw a move towards the discount rate and thus more frequent rate changes as the primary monetary policy tool as well as imposing a surcharge rate on large banks that borrow frequently (Sellon, Seibert: 1982). The money/income relationship broke down after 1980, prompting some to suggest that alternative money and income measures might improve its performance (Siegel, Strongin: 1986).

Deregulation commonly reeks havoc on the financial system as a whole, with a select few profiting at the expense of the majority. The deregulation of M1 is an example, as in the 1980s in the USA a nationwide introduction of negotiable order of withdrawal (NOW) accounts led to M1 becaming more sensitive to developments other than the course of the economy and the loss of its usefulness as a policy guide. This triggered a move towards the use of other measures of money for policy design and implementation, though a more stable relationship between the monetary aggregate and the goal targets of policy would be useful (Klines, 1987).

In the 1980s, US financial markets underwent major restructuring. This was primarily due to new approaches to monetary and fiscal policy leading to deregulation of financial institutions and increasing numbers of financial innovations, or financial engineering. Ronald Reagan instituted the most sweeping change in approach to economic policy since the 1930s, through which the administration program's main aim was stabilisation of the US economy through an attitude of restraint, which lead to a mix of easier fiscal policy and tighter monetary policy (Sinai, 1981). History seems to have concluded that Americans were not capable of proper restraint, and that the USA government's calls for deregulation of financial services and increases in dubious financial practises led to somewhat of a financial meltdown in the 2000s.

Deregulation of financial services can have severe consequences for future monetary policy in addition to the immediate changes that loosening of the restrictions wraughts. The deregulation of the deposit rate ceilings in the 1980s in the USA led to a change in the composition of the monetary aggregates, with the result that M2 became less sensitive to changes in market interest rates while M1 became more sensitive. If the central bank can attain its long run policy goals without forcing one of the monetary aggregates to grow at a constant rate each month, interest rate volatility costs dictate that short-run monetary control should not be pursued (Roth, 1985). Clearing balances began to earn market returns in 1981 in the USA, and since then clearing balances have become widespread among banks of all sizes. In fact, more than 20% of the funds that banks have on deposit with the Federal Reserve Banks are required clearing balances, not required reserve balances. This represents an inefficiency in the financial markets and yet at the same time a necessary functional need (Stevens, 1993).

In the 1980s, US monetary policy was the principal agent working to reduce the US economy's ongoing rate of price inflation from low double digits to low single digits - and, moreover, doing so at a real cost that was at most consistent with existing estimates of the cost of disinflation, if not better (Friedman, Kuttner, 1996). The trend in income velocity of the USA monetary base remained remarkably constant from 1959 to 1981 and that the trend in income velocity of M1 also remained remarkably constant except for the period from 1975-1978 (Cullison, 1982).

Since 1982 USA monetary policy has deemphasized M1 as a monetary target, and adopted operating procedures designed to stabilize short-term interest rates (Roley, 1986). Nonborrowed resevres targeting policy was abandoned in in the USA in 1982 in favor of an operating procedure that reduced the variation in interest rates, as both the level and the variance of short-term interest rates increased significantly during this targeting period (Lewis, 1991). Concurrent Resolution 133 is a mandate from USA Congress to the Federal Reserve System to formulate monetary policy by setting explicit targets for money growth. Using a money growth target to guide monetary policy provides a coherent way of taking into account unforeseen developments in the right situation (Friedman, Kuttner, 1996).

If the USA Federal Reserve had not allowed the money stock to decline and had it followed a constant money growth rule the Great Contraction would have been less severe and shorter in duration. A strong and a weak form of Friedman's constant money growth rule incorporates separate relations for output and the price level and assumes that output and price dynamics are not especially sensitive to policy changes (Bordo, etc. 1995).

***Targeting Options***

Monetary stabilisation policy can target a number of different targets to achieve the objectives of the central bank, including: inflation, interest rates, exchange rates, or macroeconomic variables.

Monetary policy hinges on the expansion of the selected monetary target and followingly its relationship to the rest of the economy. In a deregulated financial environment, no monetary or economic aggregate may be related reliably enough to policy goals to become the preeminent information variable, and as such monetary and economic aggregates will like be changed periodically (Higgins, 1992). Deregulation and globalisation of capital markets have largely eliminated nonprice rationing of credit and blurred the line between money and other liquid assets; therefore, targeting assets should be used just as a monetary policy guideline, and thus targeting money is an unreliable guide (Morris, 1986). Further, financial innovations have obscured the relationship between narrow monetary aggregates and nominal income (Cullison, 1982).

Behaviour of banks will differ under conditions of either the presence or the absence of reserve requirements, controlling for the effects of deposit and currency demands and interbank deposit flow shocks (Kopecky, etc. 1983). The relationship between money and nominal output is predictable only over fairly long periods of time, and as such inferences about the contemporaneous behavior of money demand are vague (Hetzel, 1992).

Base drift is when announcing the growth targets for a monetary aggregate, the central bank uses the actual dollar level of an aggregate in the base quarter as the base level for the target range, rather than the midpoint of the targeted range set in the preceding targeting period. It is accepted that this practise can have a large cumulative effect and can impact monetary policy outcomes. This issue was more relevant in the 1970s and 1980s in the USA, as net base drift was considerably upward over the 1975-1984 period, there was both upward and downward base drift during that time. One can conclude therefore that cumulative drift understates the staistical effect of base drift on a year-to-year basis (Broaddus, Goodfriend 1984).

***Monetary Aggregates***

The monetary aggregates are what are used to determine how the economy is growing and thus how much active discretionary stabilisation policy is needed. Monetary aggregates are measures of the home country's money stock (Walter, 1989).

The monetary base is expanded in response to increases in inflationary expectations. The monetary base is not statistically correlated to higher unemployment rates, a mechanical growth trend, or certain interest rate rises (Levy, 1981). It is found that M1 growth often appeared to be more variable in the most recent 2-year period than in the previous 2 years, due to historical corrections, although the evidence of increased monetary uncertainty disappeared after 2 years of data revision (Siegel, Stringin: 1986).

The leading arguments against monetary targeting may be grouped into 4 main categories: (1) those that see accurate monetary control as infeasible (2) those that accept its feasibility, but only at the cost of inducing extreme volatility of short-term interest rates (3) those that stress the practical difficulties created by rapid financial innovations and deregulation in the payments industry (4) those involving strategic objections (McCallum, etc. 1985).

A single nominal target for monetary targeting can avoid the mistakes of mixing nominal and real targets, with gross national product (GNP) being a good target. A primary problem of targeting nominal income derives from supply-related price shocks, though to counteract shocks, one could use a nonborrowed reserves targeting procedure that permits more stability of financial markets as compared with a total reserves procedure (McCallum, etc. 1985).

Monetary targeting procedures will be modified when the monetary authority feels they have misjudged the predominant type of disturbance over a period of time or when the relative weights assigned to goal variables are changed (Sellon, Teigen: 1981).

There is debate as to the existence of super exogeneity in the monetary target expectations, though evidence suggests that monetary expectations are not structurally invariant to central bank shifts. Additionally, empirical nonstationarities found in money announcement studies can be accounted for by the structural breaks in the expectations structure. Attitudes rejecting super exogeneity are consistent with the observed breakdown of money demand in an endogenous money environment. Central bank policy shifts alter the expectations structure and are in conflict with assumptions that monetary expectations are invariant (Fischer, 1989).

The impact of monetary target announcements on asset price volatility affects the statistical associations between money surprises and implied standard deviations of stock, government bonds, gold, and foreign currency prices. Changes in estimated gold and stock index volatility are linked with unanticipated weekly growth in the announced level of money supply, as gold volatility increases and index volatility declines with unexpectedly high monetary target growth. Variations in government bond and foreign currency volatility are linked with the absolute value of the unanticipated weekly growth in the announced level of the monetary target, as they increase with the magnitude of the money surprise (Bailey, 1988).

To produce estimates of monetary aggregates, the central bank must estimate the deposits held in financial institutions, and when quarterly figures become available, they provide benchmarks that the central bank uses to make more accurate estimates for intervening dates (Walter, 1989).

In periods when the central bank has sought tight control of the growth rate of aggregates, unusually fast or slow money growth generally occurs (Walter, 1989).

Sometimes a less aggregated analysis whereby more information is presented can shed light onto the usefulness of a particlar monetary aggregate. For example, the federal and nonfederal (private) components of total credit have significantly different impacts on the economy, and thus significant central bank bias could result from using this information (Fackler, 1990).

The central bank must give adequate attention to the uncertainty of the response of the monetary target to changes in policy instruments.

The adoption of growth targets for the domestic money stock by central banks is a move regarded by many as progress towards monetarism.

The monetary aggregate M2 offers useful information about the impact of monetary policy actions on nominal expenditure. Whether M2 conveys useful information about the nominal expenditure of the public depends on the magnitude of stochastic changes in the demand for real M2 relative to the magnitude of changes in the other determinants of nominal expenditure. The other determinants of nominal expenditure are: changes in nominal M2 and predictable changes in M2 velocity. Further, a reduction in the growth rate of nominal expenditure reflects the reduction in the growth rate of M2, rather than an unpredictable increase in M2 velocity (Hetzel, 1992).

Money supply data describes the volatility of money growth.

A quantitative general equilibrium model with multiple monetary aggregates incorporates a banking sector and distinguishes between M1, the monetary base, currency and various measures of reserves: total, excess and non borrowed (Chari, etc. 1995).

An empirical fact is that different monetary aggregates covary differently with short term nominal interest rates. Therefore, broad monetary aggregates like M1 and the monetary base covary positively with current and future values of short term interest rates. In contrast, the non borrowed reserves of banks covary negatively with current and future interest rates. Observations like this `sign switch' lie at the core of recent debates about the effects of monetary policy actions on short term interest rates. The sign switch occurs because movements in non borrowed reserves are dominated by exogenous shocks to monetary policy, while movements in the base and M1 are dominated by endogenous responses to non-policy shocks (Chari, etc. 1995).

Another empirical fact is that broad monetary aggregates covary positively with output. The Friedman and Schwartz hypothesis states that this covariation reflects the effects of exogenous shocks to monetary policy, and others further contend that they reflect the endogenous response of monetary aggregates to shocks in the private economy (Chari, etc. 1995).

One monetary policy option is the use of an intermediate target strategy with a monetary aggregate as the target. This involves specifying a financial variable to represent a proxy for real economic targets, such as employment or economic growth, afterewhich the central bank must decide on the growth rate for the intermediate target and then identify an instrument that it can control in order to achieve this target (Friedman, 1982).

A suggested monetary policy agenda is to choose a monetary aggregate and credit aggregate, set target ranges for them, and allocate reserves to reach both these targets. Because the relationship between credit growth and economic activity is more stable and reliable than between money growth and economic activity, the intermediate target base can be calculated more effectively by using aggregate credit measured by total outstanding indebtedness of all the economy's nonfinancial borrowers (Friedman, 1982).

Changes in the aggregates normally are followed by temporary changes in aggregate output and employment and permanent changes in prices (Walter, 1989).

In regards to how better to control the financial aggregates, Kopcke (1983) determined that the supply of reserves can influence the growth of debt even though there is essentially no statutory link, such as reserve requirements, tying debt to reserves.

The financial aggregates that are most easily controlled tend to be less stably related to concurrent gross national product (Kopcke, 1983).

The primary guideline for money growth can be set for any one of many financial aggregates,

Dewald's 1984 study proves that a deficit of 6% of the GNP should foreshadow a 9% increase in M1 and inflation. This theory does not always hold however, as during the Depression in the 1930s large USA deficits did not lead to inflation and pressure interest rates.

Bergstrand (1985) comments on the reliability of financial aggregates as economic indicators, as despite the fact that unobserved and unexpected economic events can occur, a close statistical correlation is observed between changes in various financial aggregates and changes in nominal gross national product (GNP), real GNP, and the price level.

***Reserve Requirements***

Reserve aggregates are the most commonly used monetary policy target because they directly control the money supply and thus inflation.

The conduct of monetary policy with reserve requirements is not a fact of life. Canada, the United Kingdom, and New Zealand are among countries that do not use reserve requirements for monetary policy. These countries all place greater emphasis on the connection between the structure of the payments system with regard to the implementation of monetary policy. Empirical data suggests that there need be little connection between the absence of reserve requirements and the degree of short-term interest rate volatility. Some volatility in interest rates is expected, though these countries' interest rate volatility appears to depend more on institutional arrangements for providing and absorbing liquidity than on the absence of reserve requirements (Sellon, Weiner: 1997).

Lower reserve requirements can effect market volatility and the central bank's ability to achieve short-run policy objectives. As such, both the required reserve ratio and the federal funds rate play an important role in banks' demand for free reserves. Although changes in the federal funds rate have important effects on the demand for transaction deposits, the full impact of these changes takes several months to occur. With respect to the supply of nonborrowed reserves, the central bank commonly employs a combination rule. Summarily, banks are likely to become more responsive to changes in the federal funds rate under a lower required reserve regime (Brunner, Lown: 1993).

Periodic adjustments of the borrowing-reserves target generally are optimal in which nonborrowed reserves are varied to achieve an intraperiod target level of borrowing that is consistent with an objective involving intraperiod variability of nominal income (VanHoose, 1990).

When a country has different reserve requirements for federal and state banks, the central bank's capacity for controlling the monetary aggregates may affected. However, studies show that the impact of a change to universal reserve requirements on stabilisation policy results in nominal instability differences between the 2 reserve requirement techniques (Sprenkle, Stanhouse: 1981).

The maximum level of reserve requirements is independent of the ideal level of the target maximum reserve ratios for a dual banking network. Reserve ratios are not useful countercyclical tools for monetary policy (Sprenkle, Stanhouse: 1981).

Reserve requirements significantly affect monetary control when nonborrowed reserves serve as the control target, although in this situation monetary control improvement depends on the central bank exerting tight control over the total reserve structure (Kopecky, etc. 1983).

***Interest Rate Target***

Interest rates are an economic indicator, yet they are directly controllable by the government and so they double as a policy tool.

Statistical issues and operational questions abound in real interest rate targeting process. Which inflation measurement to target, whether each 0.1% on the monthly inflation figure will translate to 120 basis point adjustment in the federal funds rate from one month to the next, and which interest rate is most appropriate are several difficult functional questions (Soss, 1993).

An empirical fact is that real interest rates can be judgmentally inferred, but never objectively observed. As such, the central bank can capture only an estimation of real rates through the veil of the real and money economy's performance. Thus, the central bank's use of such an intangible and unobservable concept as a practical target for its open market operations is questionable (Soss, 1993).

Long-term inflation of feedback rules for monetary policy that link changes in a short-term interest rate to an intermediate target for nominal gross domestic product (GDP) or M2 can be controlled (Judd, Motley: 1992).

Operating procedures designed to stabilise short-term interest rates include: (1) the federal funds rate (2) nonborrowed reserves (3) borrowed reserves (Roley, 1986).

The volatility of the federal funds rate and other interest rates depends on central bank intervention in the reserves market and the market's perception of the type of operating procedures being used. The reserves market can be affected by the response of interest rates to the central bank's weekly M1 announcement, inflation, or economic activity announcements (Roley, 1986).

Decreased volatility of the federal funds rate or other policy tools indicates that the central bank is likely not using that policy tool.

A move to an interest-rate targeting regime makes the relationship between interest rates and the dollar much more systematic, and also results in a more consistently positive relationship between domestic interest rates and a country's currency (Wilby, 1981).

When the basic discount rate is not a penalty rate, discount rate changes have no immediate effect on discount window borrowing, though they do have a one-for-one effect on market rates. Conversely, when the basic discount rate is a penalty rate, changes in the discount rate have no effect on interest rates or borrowing (Sellon, Seibert: 1982).

The discount rate surcharge has had a significant effect on market rates, as well as this surcharge impact has been quite variable on large bank behavior and on the demand for borrowing (Sellon, Seibert: 1982).

Monetary policy can be conducted by targeting a very short-term interest rate. In this scenario, central banks attempt to control the price level by manipulating aggregate demand by adjusting their interest rate target (Thornton, 2008).

A central bank that fails to recognize the distinction between interbank and other short rates could miss its appropriate settings by as much as 4% per annum (Goodfriend, McCallum: 2007).

Shocks to banking productivity or collateral effectiveness call for large responses in the policy rate (Goodfriend, McCallum: 2007).

Roth and Seibert (1983) note how the discount window policy of the monetary authority and subsequent depository institution borrowing has significant effects on short-term market interest rates. The automatic control mechanism governing money supply disturbances is improved from the interest-rate and consequently the money supply sensitivity resulting from the discount window borrowings, though it diminishes the central bank's discretionary control of the money stock and thus automatic control of money demand disturbances. Roth and Seibert (1983) further conclude that the degree of automatic control of money supply disturbances would be the least with a penalty rate policy, greater with a surcharge policy, and the greatest with the current policy.

***Economic Indicator Targeting***

GNP, poverty, employment, and inflation rate targeting are all possible targets for monetary stabilisation policy. Inflation has already been established as the preferred monetary stabilisation policy goal, however, the other three primary economic indicator measures can also be useful in developing monetary stabilisation policy suggestions.

***GNP***

One possible framework for monetary policy is prospective nominal gross national product (GNP) targeting, which reflects desired real growth and inflation, and would effectively focus attention on whether an easier or a tighter monetary policy is needed. As it is feasible to prepare monthly, nominal GNP estimates and include such information as weekly money stock data, this process would not be inferior to examining only intermediate target data. However, nominal GNP targeting would not necessarily imply greater instrument flexibility than use of other measures (McNees, 1987).

***Poverty***

The poverty rate measures wealth much like the GDP does. However, a major difference between the poverty rate and the GDP is that the poverty rate measures the welfare of the entire society, whereas the GDP can focus on just the richest few. Both are important, as the GDP can indicate total output and such, still the poverty rate indicates how big the gap between rich and poor is in the country.

***Employment***

***Inflation***

**Exchange Rates**

Exchange rates become a concern of monetary stabilisation policy when the international trade aspect is involved. Now a country must consider the impact of their economic policies on their currency and thus international trade and consequently their current account balance.

Two primary issues present themselves when discussing a country's exchange rate policy. One is whether the exchange rate should be fixed or allowed to float. The other is whether monetary policy should aim at maintaining a strong or a weak currency and consequently how much central bank intervention in the foreign exchange markets is appropriate.

There are advantages to both floating and fixed exchange rates. Floating exchange rates leave monetary policymakers free to pursue objectives other than exchange-rate stability, as the exchange rate is just one of macroeconomic variables monetary policy can affect. Fixed exchange rates reduce some of the uncertainty in international business transactions. Fixed exchange rates discipline a nation’s monetary system and prevent excessive growth in the money supply.

Fixing the exchange rates is simpler to implement than other policy rules, but this policy may lead to greater volatility in income and employment. During periods of fixed exchange rates, countries may change the value of their currency if maintaining the exchange rate conflicts too seriously with other goals. During periods of floating exchange rates, countries often use formal or informal targets for the exchange rate when deciding whether to expand or contract the money supply. No system is fully fixed or floating. The monetary union is the most extreme case of a fixed exchange rate. When countries with a common currnecy experience a recession, there is little they can do to combat with monetary policy, as the central bank controls the monetary policy.

EU disadvantages are: (1) low labour mobility (2) no fiscal policy. EU advantages are: (1) traveling and international trade (2) political advantage of connection between countries; wars and trade.

With fixed exchange rates pegged to another unit, the bank must hald sufficient reserves of that unit. Speculative attack is when fixed exchange rate is used, and a change in people’s perceptions makes the fixed exchange rate untenable; self-fulfilling rumours. A currency board, where the bank holds enough units of that currency to be exchanged for the domestic currency outstanding. A further step is dollarisation, whereby the country replaces its currecy with the dollar; this happens by default in high inflation countries, but countries that do so lose the small seigniorage revenue. There is also a small lose of pride with using another government’s currency; this could reduces by using animals.

Fixed exchange rates systems were common in 1950s to 1970s. In a fixed exchange rate system, the central bank stands ready to buy or sell the domestic currency for foreign currencies at a predetermined price. A fixed exchange rate dedicates a country’s monetary policy to the single goal of keeping the exchange rate at the announced level. The essence of a fixed-exchange rate system is the commitment of the central bank to allow the money supply to adjust to whatever level will ensure that the equilibrium exchange rate equals the announced exchange rate. As long as the central bank stands ready to buy or sell foreign currency at the fixed exchange rate, the money supply adjusts automatically to the necessary level. The gold standard automatically fixes exchange rates, as eaqch country agrees to exchange 1 unit of currency for a specified amount of gold. The actual transportation of gold makes arbitrage profits more costly however.

Monetary and fiscal policy influence income and the exchange rate, and the behaviour of the economy depends on whether the exchange rate is fixed or floating. Large open economy’s combine the behaviour of a closed and open economy. In a closed economy, a monetary contraction raises the interest rate, lower investment, and thus lowers aggregate income. In a small open economy with a floating exchange rate, a monetary contraction raises the exchange rate, lowers net exports, and thus lowers aggregate income. The interest rate is unaffected, as it is determined by world financial markets. The large open economy is an average of the closed economy and the small open economy. To find out how any policy will affect any variable, find the answer in the 2 extreme cases and take an average.

**F**loating exchange rates are the most common in the world today. 3 policies go into a small open economy with floating exchange rates: (1) Fiscal Policy (2) Monetary Policy (3) Trade Policy.

An increase in (G) or a decrease in (T) shifts the IS curve to the right. This raises the exchange rate but has no effect on income. An increase in the money supply shifts the LM curve to the right, lowering the exchange rate and raising income. A tariff or import quota shifts the net-exports schedule to the right. As a result, the IS curve shifts to the right, raising the exchange rate and leaving income unchanged. The Mundell-Fleming model shows that fiscal policy does not influence aggregate income under floating exchange rates. A fiscal expansion causes the currency to appreciate, reducing net exports and offsetting the usual expansionary impact on aggregate income. Fiscal policy does influence aggregate income under fixed exchange rates.

A fiscal expansion shifts the IS curve to the right. To maintain the fixed exchange rate, the central bank must increase the money supply, thereby shifting the LM curve to the right. Hence, in contrast to the case of floating exchange rates, under fixed exchange rates a fiscal expansion raises income. If the central bank tries to increase the money supply, it will put downward pressure on the exchange rate. To maintain the fixed exchange rate, the money supply and the LM curve must return to their initial positions; hence, under fixed exchange rates, normal monetary policy is ineffectual.

Revaluations and devaluations are types of monetary policy however. Revaluations increase in the value of the currency, this shifts the LM curve to the left, reducing net exports and lowering aggregate income. Devaluations are a reduction in the value of the currency, this shifts the LM curve to the right, acting like an increase in the money supply under a floating exchange rate—thus expanding net exports and raising aggregate income. A tariff or an import quota shifts the IS curve to the right, this induces an increase in the money supply to maintain the fixed exchange rate, hence, aggregate income increases as does savings and net exports. The Mundell-Fleming model shows that monetary policy does not influence aggregate income under fixed exchange rates. Any attempt to expand the money supply is futile, because the money supply must adjust to ensure that the exchange rate stays at its announced level. Monetary policy does not influence aggregate income under floating exchange rates. The Mundell-Fleming model shows how the power of monetary and fiscal policy depends on the exchange-rate regime.

When equilibrium rate initially exceeds the fixed level, arbitrageurs will buy foreign currency in foreign-exchange markets and sell it to the central bank for a profit. This process automatically increases the money supply, shifting the LM curve to the right and lowering the exchange rate. When equilibrium rate is initially below the fixed level, arbitrageurs will buy dollars in foreign-exchange markets and use them to buy foreign currency from the central bank. This process automatically reduces the money supply, shifting the LM curve to the left and raising the exchange rate.

Exchange Rates~~The exchange rate is the price at which countries trade with other to incur deficits or surpluses. Nominal exchange rate is the rate at which people trade the currency of 1 country for the currency of another. Real exchange rate or terms of trade is the rate at which people trade the goods produced by the 2 countries. The real exchange rate equals the nominal exchange rate \* (PD/PF). If the real exchange rate is high, foreign goods are relatively cheap, and domestic goods are relatively expensive. If the real exchange rate is low, foreign goods are relatively expensive, and domestic goods are relatively cheap.

Because the real exchange rate is the price of domestic goods relative to foreign goods, an appreciation of the real exchange rate tends to reduce net exports. The equilibrium exchange rate is the rate at which the quantity of net exports demanded equals the net capital outflow. The nominal exchange rate is determined by the real exchange rate and the price levels in the 2 countries. Other things equal, a high inflation rate leads to a depreciating currency.

2 assumptions are: (1) real exchange rate related to net exports (2) (NX), trade balance, must equal net capital outflow, which = (S)-(I). (S) is fixed by the consumption function and fiscal policy, and (I) is fixed by the investment function and world interest rates. At the equilibrium real exchange rate, the supply of dollars available from the net capital outflow balances the demand for dollars by foreigners buying our net exports. When government reduces national (S) by increasing (G) or decreasing (T), the dollar appreciates and the NX decreases (more imports, less exports); this causes the real exchange rate to rise. When foreign governments increase (G) or decrease (T), the dollar depreciates and the (NX) increases (less imports, more exports); this causes the real exchange rate to fall. When (I) rises in the US, the real exchange rises, as the dollar appreciates because more people want to invest in the US.

Protectionist trade policies do not alter the trade deficit, as the dollar appreciates as domestic products become more attractive, thus reducing exports as well as imports. They benefit certain groups, but not international trade as a whole. The % change in nominal exchange rate = % change in real exchange rate + difference in inflation rates (price levels). High domestic inflation lowers the nominal exchange rate for the home country. Purchasing power parity suggest that if international arbitrage is possible, then every dollar must have the same purchasing power in every country. Essentially, purchasing power should reduce differences in the real exchange rate.

2 implications are: (1) because (NX) schedule is flat, changes in (S) or (I) do not influence real or nominal exchange rates (2) because the real exchange rate is fixed, all changes in the nominal exchange rate result from changes in price levels. 2 issues are: (1) some goods are not easily traded- haircuts (2) preferences- real exchange rates do vary because of this.

Exchange rates have experienced much change over the last century, primarily from a fixed gold standard to free market float. The move to floating rates began in the 1970s, when many industrial nations converted to floating exchange rates in an effort to insulate their domestic monetary policy and inflation rates from international currencies. However, the credibility of such a policy switch is questionable considering that the national currencies of a few industrial nations are highly substitutable in demand according to expected movements in exchange rates (McKinnon, 1982).

Interest rates and exchange rates are similar tools of the central bank, and as a result, many actions involving one inevitably influence the other as well. However, interest rates are usually regarded as a more powerful tool due to their influence on output, as exchange rates and their influence on the balance of trade is typically not as major of an agenda. This is in part because there is consensus that lower interest rates stimulate investment; there is no consensus that weaker (lower) exchange rates encouraging exports thereby reducing the balance of payments is preferable to stronger (higher exchange rates encouraging more imports thereby increasing the balance of payments. This is because, due to the whimsical nature of federal fiscal policy, it sometimes advantageous to have budget deficits and sometimes advantageous to have budget surpluses. It is simply difficult for the federal government to consistently maintain a balanced budget when they are the lender of last resort for the country and they must respond somehow to crises when no one else is able to.

Wilby (1981) suggest 5 primary influences on the exchange rate: domestic rates of inflation, rates of monetary growth, international monetary flows, risk, and real return. These all affect interest rates as well as the domestic exchange rate, as well as expectations about the future course of economic policy affects those factors, thereby playing a critical role in determining interest and exchange rates. Consequently, the central bank plays a key role in the formation of these expectations through its ability to influence interest rates and exchange rates.

The traditional question 'fixed vs. flexible exchange rates' is hard to define, in part because 'flexible exchange rates' does not explicitly specify any particular monetary policy. In traditional analyses, 'flexible exchange rates' was interpreted as implying a fixed money supply, though fixing the money supply (or fixing its growth rate at k%) is rarely advocated nowadays. The reflect debate today sould be 'fixed exchange rates vs. inflation targeting v. fixed price level? (Dehejia, Rowe: 2000).

An outside lag can be inserted to control for the effect of monetary policy on aggregate demand, so that inflation targeting and price level targeting are always imperfect. In regard to the stabilisation properties of three different monetary rules: a fixed exchange rate, a fixed inflation target, and a fixed price level target, price level targeting is best for stabilising output, the real exchange rate and the real interest rate, relative to their natural rates (Dehejia, Rowe: 2000).

The effects of a currency devaluation. The direct effect on output, taking as given net worth and interest rate, is negative for domestic firms due to the input cost effect and positive for exporting firms due to a positive foreign debt effect. The indirect wealth effect, on output through net worth, taking as given the interest rate is uncertain, depending on the relative size of the domestic and exporting firms. There is also an indirect effect on output through the response of the domestic interest rate to a devaluation due to the risk premium effect. Due to the uncertainty on the sign of most of these effects, it is difficult to assess the overall impact of a devaluation (Gatti, etc. 2002).

There may be an economy-wide contractionary effect of a devaluation. If the devaluation affects negatively the net worth of domestic firms, the domestic interest rate may rise (due to the risk premium effect), exerting an additional contractionary impact on output. Further, if the monetary authorities force a further increase of the interest rate in an effort to curb the exchange rate, the contractionary effect will be emphasised (Gatti, etc. 2002).

***Monetary Policy and exchange rates***

Information from foreign exchange date can help the central bank to determine the direction of exchange rate movements to help reveal what growth/inflation combination is more likely to follow and thereby suggest a more suitable monetary policy reaction. A caveat warning that changes may have several causes, thereby making the system fallible is also issued (Bergstrand, 1985).

Using the federal funds rate target as a measure of monetary policy actions, Neal et al. (1998) found that USA exchange rates generally respond immediately to USA monetary policy actions and that these responses are usually consistent with the overshooting hypothesis. He further identified evidence of signaling and leaning-against-the-wind USA intervention policies.

It has been avowed that domestic monetary objectives deteriorate as a country's money market is increasingly disturbed by international shocks, as Bergstrand's (1985) study suggests that foreign interest rates and expected exchange rate changes have significant impacts on domestic money demand in the USA.

Shifts in domestic monetary policy regimes affect the stochastic process that generates foreign exchange rates, as well as the variance of the nominal exchange rates (Lastrapes, 1989).

An understanding of the properties of the exchange rate process is important for developing asset and contingency claims pricing models, characterizing exchange rate volatility, constructing optimal portfolios, and understanding how exchange markets function (Lastrapes, 1989).

A nation's exchange-rate policy is argued to be dominated by the monetary policy trilemma, in which exchange stability, monetary independence, and capital market openness all are conflicting regimes (Obstfeld, etc. 2004).

Makin (1984) advises that two regimes specifically have significant impact on the exchange rate condition of a nation: different rates of taxation on interest income and exchange gains, as well as the degree of central bank intervention in the foreign exchange market, can have significant impact on the domestic monetary base. To clarify further, the sterilisation of foreign exchange market intervention by central banks is acknowleged to affect the monetary base, as is the tax rates on interest income and foreign exchange gains and losses at home and abroad and the degree of foreign exchange market intervention. Makin further warns that omission of the tax considerations may bias tests of the uncovered interest parity condition toward acceptance of a "risk premium" hypothesis, albeit conditional on exchange market efficiency.

The effects of monetary policy shocks on domestic exchange rates can be analysed in terms of either nominal and real exchange rates (Eichenbaum, Evans: 1993).

Three measures of monetary policy shocks are: orthogonalised shocks to the Federal Funds rate, the ratio of Non Borrowed to Total Reserves and the Romer and Romer (1989) index (Eichenbaum, Evans: 1993).

USA monetary policy was less volatile under fixed exchange rates than under floating exchange rates. Following, monetary policy shocks did not have a significant impact on U.S. real exchange rates under the Bretton Woods agreement, which was fixed exchange rates, impling that fixed exchange rates stabilise the economy better (Eichenbaum, Evans: 1993).

Monetary injections or monetary shocks can lead to nominal exchange rates that are more volatile than inflation, money growth or interest rate differentials. Further, movements in real exchange rates following monetary injections can be persistent and nearly as large as movements in nominal exchange rates nominal exchange rates (Alvarez, Atkeson: 1996).

Exchange rate regime and alternative monetary policy rules will be more simplistic for an emerging market economy that is subject to a volatile external environment in the form of shocks to world interest rates and the terms of trade. In particular, financial frictions and the degree of exchange rate pass through will impact significantly in determining the relative performance of alternative regimes in stabilising the economy in the face of external shocks (Devereux, Lane: 2001).

In the emerging market economy, when exchange rate pass-through is high, a policy of non-traded goods inflation targeting does best in stabilising the economy, and is better in welfare terms. Though when exchange rate pass-through is low, a policy of strict CPI inflation targeting is better. In all cases, a fixed exchange rate is undesirable, and financial frictions may have no implications for the ranking of alternative policy rules (Devereux, Lane: 2001).

Research on the effects of monetary policy shocks on exchange rate fluctuations will likely encounter the exchange rate puzzle and the forward discount bias puzzle. The exchange rate puzzle is the tendency of the domestic currency (of non-U.S. G-7 countries) to depreciate against the U.S. dollar following domestic monetary tightening. The forward discount bias puzzle is the failure of empirical research to find results consistent with the requirement that if uncovered interest parity holds then domestic monetary tightening (given that foreign monetary policy remains put) should be associated with an initial impact appreciation of the domestic currency followed by a gradual depreciation (Kumah, 1997).

Performance of monetary policy identification schemes in helping solve (or generate) the puzzles involve using statistical models to delve into these issues, with consideration that international monetary interdependence is a fact of life in a world of international finance albeit that these puzzles usually disappear (Kumah, 1997).

When examining the impact of USA monetary policy shocks on exchange rates, instantaneous, rather than delayed, USA dollar overshooting after a monetary shock when relative output and relative prices are considered occurs, while the forward premium puzzle persists due to the interest rate differential response (Michaelides, Kalyvitis: 2000).

***Flexible exchange rates***

There is much debate as to which system of exchange rates is most proper. Some argue that under the modern float there could be limited monetary autonomy, while others that even under the classical gold standard domestic monetary autonomy was considerable (Obstfeld, etc. 2004).

One exchange rate agenda that gives the monetary authority substantial independence from external constraints is the adoption of dual exchange rates. In this scenario, the monetary authority is able to influence the level of aggregate demand in the short run and to sterilise the effects of temporary foreign distrubances (Cumby, 1984). Cumby further notes that dual rates insulate the domestic economy fully from foreign interest rate changes, though they do not provide insulation from speculative disturbances.

The sensitivity of domestic interest rates to international rates as influenced by exchange rate regime is one of the most important issues regarding choice of exchange rate policy. To this effect, interest rates of countries with more flexible regimes have been shown to adjust more slowly to changes in international rates. However, the study does not reject full transmission of international interest rates in the long run, even for countries with floating regimes, although short-run effects differ across regimes. It is noted though that only large industrial countries can benefit, or choose to benefit, from independent monetary policy (Frankel, etc. 2002).

One implication of using floating exchange rates is that with flexible exchange rates, monetary policy has to rely more on indicators than under fixed rates. Svensson (1995) analyses one indicator, the forward interest rate curve, to examine market expectations of the time-paths of future short interest rates, monetary policy, inflation rates and currency depreciation rates of European countries. It is deterined that the forward rate curve separates market expectations for the short, medium and long term more easily than the standard yield curve.

With flexible exchange rates, expansionary shocks to domestic monetary policy lead to sharp, persistent depreciations in domestic nominal and real exchange rates as well as to sharp, persistent increases in the spread between various foreign and domestic interest rates. Further, there is a temporal pattern of the depreciation in domestic nominal exchange rates following a positive monetary policy shock (Eichenbaum, Evans: 1993).

***Fixed exchange rates***

It can be argued that countries sacrifice monetary independence when they peg their exchange rates, while some central bankers would counter that pegging an exchange rate does not eliminate the independence of monetary policy.

Stockman and Ohanian (1993) delve into the effects of money-supply changes on exchange rates, interest rates, and production, and determine that money-supply shocks have liquidity effects both within and across countries and induce a cross-country real-interest differential. They additionally contend that countries have a degree of short-run independence of monetary policy even with pegged exchange rates.

Active discretionary monetary stabilisation policy has long- and short-run neutrality of in a world of fixed exchange rates and imperfect substitutability between bonds denominated in different currencies (Obstfeld, 1982).

Assuming fixed exchange rates, when the public discounts the future tax liabilities associated with the national debt and the central bank supports the exchange rate by trading non-interest-bearing foreign assets, open-market policy has a short-run effect, but no long-run effect, on the domestic price level and interest rate. However, when the foreign-exchange intervention assets earn interest that is rebated to and capitalised by the public, open-market policy loses even its short-run efficacy and the capital account offset to monetary policy is complete (Obstfeld, 1982).

***Interest rates and exchange rates***

In some scenarios, interest rates can be adjusted to smooth real exchange rate movements at the possible price of increased volatility in other variables, although the exact relationship between interest rates and exchange rates is not clear. West (2004 ) provides empirical evidence of this relationship, as in New Zealand decreasing real exchange rate volatility by around 25% would require increasing output volatility by around 10-15%, inflation volatility by around 0-15% and interest rate volatility by around 15-40%.

The link between exchange rates and interest rates is important in analysing the role of exchange rate pass-through into domestic prices and distinguishing between cases of expansionary and contractionary depreciations. The correlation between exchange rates and interest rates, conditional on an adverse risk premium shock, is negative for expansionary depreciations and positive for contractionary ones. For an advserse risk premium shock, interest rates are found to be raised to prevent the contractionary effect of a depreciation regardless of whether the latter effect is strong or mild. Interest rates also seem to rise in response to an adverse net export shock in contractionary depreciation cases, and to lower in the case of expansionary ones (Sanchez, 2005).

What is the relationship between interest rates and the exchange rate? Higher domestic interest rates raise the demand for deposits, and, hence, the money base. Firms need bank loans to finance the wage bill, which reduces output when domestic interest rates increase. Higher interest rates raise the government's fiscal burden, and, therefore, can lead to higher expected inflation. While the first effect tends to appreciate the currency, the remaining two effects tend to depreciate it (Hnatkovska, 2008).

The relationship between interest rates and the exchange rate is non-monotonic, and in particular, the exchange rate response depends on the size of the interest rate increase and on the initial level of the interest rate. (Hnatkovska, 2008).

**Interest Rates**

Interest rates have been regulated before in monetary policy. They dictate the stage of the business cycle; high rates mean business is growing, and low rates mean growth is stagnant. Therefore, regulating them at stable levels should help to regulate the expansions and contractions of output to moderate levels.

Many central banks have used fixed interest rates before, but their uses has declined as macroeconomic fluctuations suggested other measures may be appropriate. It is hard to pinpoint exactly which macroeconomic variables influence others, and as such if fixed interest rates were currently used, if they would have any different impact than other monetary policy tools. Fixed interest rates have been used before, and are known to have been used as moderators of business activity. …US example

Term Structure of Interest Rates: Pure Expectations Hypothesis~~Investors will choose between short-term and long-term assets. When rates rise on one because of market conditions, invstors will switch their money until an equilibrium is reached. 3 main influences on term return differences are: (1) liquidity (2) risk (3) maturity. Term structure of interest rates is the relationship between rates of return on assets within the same risk class; ie, both bonds or stocks. When short-rates are below long-rates, short-rates are expected to rise in the future, and when short-rates are above long-term rates, short-term rates are expected to decline in the future. Future path of short-rates is incorporated into long-term rates. Expectations hypothesis is the theory explains the term structure of interest rates.

Yield Curve~~The yield curve is the graph of the plots of the different yields to maturities of bonds, and includes 3 month to 30 year government bonds. For each yield curve, all assets must be within the same risk class (all government bonds are default free, so they are plotted together). Maturity and liquidity is what separates the bonds on the yield curve. 3 slopes according to expectations hypothesis are: (1) upward- short-term rates expetced to rise (typical)~~(2) downward- short-term rates expected to decline (inverted)~~(3) no slope- short-term rates expected to remain the same.

Yield curve usually has no slope when differences in liquidity are ignored.

Liquidity Premium~~Liquidty premium has an effect on the normal shape of the yield curve that derives from the pure expectations hypothesis. In order to tie up your money for a longer time, you will demand extra compensation. Borrowers also want to borrow long, as they do not want to have to roll over short term debt and risk financing increases due to short-term rate increases. Long-term rates consequently have a built-in upward bias.

4 alternative yield curve slopes with liquidity premium are: (1) steep positive slope- short-term rates increase in addition to liquidity premium (2) normal slope- short-term rates stay the same; just liquidity premium reflected in slope (3) no slope- short-term rates expected to decline by the liquidity premium (4) steep negative slope- short-term rates decrease by an even greater amount (inverted yield curve). The yield curve is usually fairly flat over the 10 to 30 year horizon. Forecasts of short-term rates beyond 10 years are imprecise and differences in the liquidity premium between assets both wirth distant maturities is 0.

Interpreting the Slope of the Yield Curve~~Positive steepening of the slope usually is caused by: higher liquidity premium, upward revision of forecasts, or increases in real rates or inflation (Fisher Effect). Inverted yield curve indicates a fairly sharp decline in short-term interest nominal rates. Such steep declines are often accompanied by recessions, as short rates are higher than long rates. Long-term interest rates usually decline in a recession, so inversion of the yield curve usually accompanies a rise in bond prices.

**2 IR Determinants**

1. foreign demand for assets

2. money supply

Interest rates are the most viable option for regulating a monetary economy because they fuel business cycles. Moderating interest rates at fixed levels restrains growth but also reduces retraction. Unrestrained growth always benefits the few elite, but simply is not in the best interest of the ignorant voters.

(Eijffinger, 2008) This paper empirically examines the effect of monetary policy on exchange rates during currency crises. We find strong evidence that raising the interest rate: (i) has larger adverse balance sheet effects and is therefore less effective in countries with high domestic corporate short-term debt; (ii) is more credible and therefore more effective in countries with high-quality institutions; (iii) is more credible and therefore more effective in countries with high external debt; and (iv) is less effective in countries with high capital account openness.

So what we are left with is the current state, regardless of what basic theory dictates. History has proven over time that its mistakes are in fact its true nature,

What we have begun to see is that the political interests have superseded societal welfare maximization, which is the goal of a government; profit maximisation in business

Interest rates directly influence welfare and economic health. In the US, investment accounts for 15% of GDP; interest rates in turn are what determine quantity of investment.

Interest Rates can be considered in terms of their effect on supply and demand for goods or services; or how the interest rate affects the supply and demand for loanable funds

**2.1 History of Interest Rates**

**2.2 Nature of Interest Rates**

Many different aspects of the world directly affect our ways of life, some more than others. The financial markets are perhaps one of the biggest influences on lifestyle, along with government type and religion, among many others. As such, even though a thorough quantitative analysis of the world economy would prove a daunting task, aspects of the financial markets can be quantified, as the inherent figure-based nature of economics lends itself to concrete numbers, rather than ideological stance.

Interest income represents the primary source of revenue for financial institutions. The financial institutions, such as banks, form the backbone of the economic market which impacts out daily lives. As such, detailed analyses of interest rates will provide the most productive

This suggests that interest rates should be somewhat monitored by the home government, and financial performance should be reduced in importance for effective operation of financial institutions. This does not mean the financial services industry cannot be concerned with profits, as distinctive competencies can exist, but that the primary of goal

Interest rates influence the availability of credit, along with borrowing criteria,

**2.3 Rates**

Interest rates should be fixed.

Interest rates should be fixed at 0%. This would be most appropriate for equal balance in the economy, and the primary goal of business of maximizing social welfare. This is true because people don’t save anyways, they just spend more when they get more. They may save for a time but ultimately just spend more. 0% interest rates then discourages unscrupulous persons from engaging in dangerous financial activities.

Rates should be fixed at 3% and 7%.

Interest rates should be allowed to fluctuate

Interest rates should have

**2.4 Types of**

-categorization of interest rates. Many different types of interest rate

Current levels of real interest rates on long-term bonds in advanced economies are not low by historical standards and that it is the real long bond rates of the early 1980s through much of the 1990s that look anomalous. Also, current global long-term interest rates are roughly in line with what one would predict given current price-earnings (P/E) ratios and under reasonable assumptions about the equity risk premia and the expected rate of growth of earnings in advanced countries (Catao, Mackenzie: 2006).

Global long-term interest rates are significantly affected by commodity prices, expected productivity growth, and fiscal consolidation in advanced countries (Catao, Mackenzie: 2006).

Policies aimed at 'cure' are arguably more uncertain tools than those aimed at 'prevention', and thus prevention is a less risky strategy for policymakers (Yates, 2004).

To ''lean against the wind'' is to allow short-term interest rates to rise or fall in response to an increase or decrease in: (1) real economic activity (2) the rate of inflation (3) the past growth rate of the money supply (Fair, 1981).

Fair's 1981 study on the lean against the wind phenomenon estimated the indicator variables and deduced that the change in monetary policy reduces real growth without having much effect on the rate of inflation. Fair further deterined that real growth was reduced because interest rates exert a negative effect on demand and output, and inflation was not affected because the tradeoff between inflation and output is poor in periods of low-to-moderate economic activity; a positive interest rate effect is also noted.

There has been a dramatic decline in global real interest rates in recent years from a historical perspective (Catao, Mackenzie: 2006).

***Monetary policy and Interest Rates***

The term structure of interest rates can play an important role in the making of monetary policy (Goodfriend, 1998).

Possible exogenous shocks that could alter the behaviour of short-term interest rates could be either discrete, as occurring from possible changes in the underlying regime, or continuous in the form of 'market-news' events (Kalimipalli, Susmel: 2001).

Active targeting of overnight fed funds rates is a monetary stabilisation policy technique. During periods of tight targeting, term fed funds spreads from the target display pronounced volatility and persistence, which increases with the maturity of the loan. Consequently, an increase in persistence is consistent with a model of infrequent, but predictable revisions of the target. Further, the variance of the spreads of term federal funds rates from the target increases with maturity because longer-term rates reflect persistent expectations of the next target change (Balduzzi, etc. 1998).

There are immediate, near-term, and long-run effects of monetary policy on the bond rate. The long-run effect of monetary policy on the bond rate occurs primarily through the inflation channel, though in the short run, monetary policy also affects the bond rate by altering its expected real rate component (Mehra, 1996).

The federal funds rate is commonly used as a measure of monetary stabilisation policy, and the long run is usually viewed as the period during which trend relationships emerge. The short run stance of monetary policy is measured by the spread between the funds rate and the ongoing trend rate of inflation (Mehra, 1996).

A monetary stabilisation policy shock will result in significant macroeconomic shocks. Contractionary monetary policy actions do not produce an immediate fall in interest rates, and instead, interest rates rise for about a year after a typical monetary contraction. Similarly, output, employment, prices, retail sales, and profits fall, while inventories and unemployment rise (Christiano, 1996).

Exogenous shocks to monetary policy strongly affect short-term interest rates yet have little or no effect on longer-term interest rates (Edelberg, Marshall: 1996).

Gradual increases in the interbank interest rate paid by banks have always taken a long time to slow the economic growth rate. As such, history suggests that the fear of a possible recession might change behavior in a manner that will help to prolong an expansion or at least shorten and ameliorate a recession (Renshaw, 1995).

Short-term interest rates gain in usefuleness as an instrument of monetary policy by the central bank when the relationships bewteen the monetary aggregates and the economy breaks down (Clark, 1989).

Changes in the economy's interest sensitivity affect the usefulness of monetary policy. As such, declining interest sensitivity in key sectors in the economy will lead to a reduction in the interest sensitivity of the real gross national product. In addition to a decline in the overall sensitivity of the economy to a change in interest rates, the time between a change in the federal funds rate and its effect on output will become longer with declining interest rate sensitivity, thereby creating a lag in the transmission of monetary stabilisation policy to the economy (Clark, 1989).

Interest rates change from monetary policy actions create a distributed lag affecting income and the demand for money occurs over at least several quarters. Therefore, exercising suitable short-run monetary control depends in large part on the nature of the lags in analysing the public's response to changes in interest rates (Higgins, 1982).

When the lag structure is favourable for monetary control, fine tuning the money supply does not substantially alter the behaviour of interest rates and the economy, though when the lag structure is not favourable for monetary control, fine tuning of the money supply can lead to extreme interest rate volatility and somewhat greater fluctuations in real output (Higgins, 1982).

Central bank money supply announcements can affect the term structure of interest rates. Announced money supply adjustments result in corresponding changes in interest rates, especially following the changes in central bank operating procedures. However, announced adjustments in the monetary base are not correlated with interest rate changes, indicating that changes in the money supply may be more predictive of changes in the monetary base than actual base adjustments (Cornell, 1983).

Unanticipated increases in the money supply may increase short-term interest rates, without significantly affecting long-term rates (Cornell, 1983).

Little evidence has been found for significant variations in the real interest rate, regardless of money supply conditions, which is in contrast to traditional economic theory, that suggests that changes in the money supply should affect the real interest rate (Cornell, 1983).

Central bank policy has a role in stabilising real interest rates, and thus, ff this policy is successful, very little month-to-month interest rate variation should exist. However, there are variations in the real interest rate that are of short duration and significantly associated with mid-week bank reserve settlements (Cornell, 1983).

The monetary policy implications from the greater integration of major economies' long-term interest rates are far reaching. Globalisation has affected the behavior of interest rates and made them more synchronized across countries. Thus, disturbances in one market can transmit to other markets easier, thereby affecting the conduct of monetary policy in all major countries (Laopodis, 2008).

The term structure of interest rates can be understood by analysing the monetary policy decision-making process at modern central banks. Evaluations of explicit expressions for the spot and forward rate curve render several conclusions. Spot and forward rates are explicit functions of the number of policy meetings during the time to maturity rather than the time to maturity itself, and thus, the forward rate curve is step-shaped. There are also calendar time effects, which means the position within the policy cycle is also of importance, especially for short term interest rates. Further, the forward rate curve exhibits hump-shaped responses to economic shocks (Dillen, 2008).

Yield curve data may facilitate the empirical distinction between rules and discretion in monetary policy (Heideken, 2008).

When interest rates are low, the interest spread contains little information that can be used for predicting future economic activity, though when interest rates are high the term structure can be useful (Nagayasu, 2003).

The term-structure relationship is weakened by the central bank's use of interest rate smoothing (Nagayasu, 2003).

Most central banks implement their monetary policy by setting interest rates (Friedman, 2000).

The electronic revolution in banking affects the efficacy of an interest rate-based monetary policy (Friedman, 2000).

Interest rates have different roles in monetary policymaking with regard to the rules-versus-discretion debate (Friedman, 2000).

The monetary policy rate influences short-term interest rates, while increased transparency or monetary transmission mechanism lowers instrument volatility, thereby increasing the efficacy of monetary stabilisation policy (Liu, et al., 2007).

Monetary and fiscal policy shocks can affect the term structure of interest rates. Several possible shocks include: temporary and permanent, unanticipated and anticipated, policy disturbances, and responses between long and short, real and nominal interest rates (Turnovsky, 1989).

Long-term interest rates typically rise in response to shifts to tighter monetary policy (Romer, Romer: 1996).

Central bank credibility and foreign official purchases of government bonds have a large economical and significant impact on long-term interest rates. Central bank credibility in the USA, as evidenced by dramatic reductions in both long-term inflation expectations and the volatility of long rates, contributed much to the decline of long rates in the 1990s. In the early 2000s, foreign capital flows became more important. Studies confirm that had there been no foreign official flows into USA government bonds, the 10-year Treasury yield may be 90 basis points higher in 2006 (Warnock, Warnock: 2006).

Monetary policy can affect long-term interest rates, although long-term interest rates are virtually unaffected by monetary policy (Giannikos, Guiguis: 2007).

One of the main benefits of central bank transparency is that it enhances the credibility, reputation, and flexibility of monetary policy, and thus that increased transparency should result in lower nominal interest rates. For all central banks, the level of interest rates is affected by the degree of central bank transparency, and thus the majority of the improvements in transparency are associated with significant effects on interest rates (Geraats, etc. 2006).

With adequate central bank transparency, interest rates are lower, often by around 50 basis points, although in some instances transparency appears to have had a detrimental effect on interest rates (Geraats, etc. 2006).

Low long-term government bond yield interest rates can be affected by adverse fiscal factors, and as such it is necessary to determine which factors could offset the impact of adverse fiscal policy on long-term interest rates, and how sustainable they are likely to be. An analysis of capital flows and public savings can be used for interest rate determination, and it has been suggested that weak budgetary positions of major world economies can negatively affect global interest rates when the offsetting capital flows slow down (Hauner, Kumar: 2006).

There has been argued to be a link between interest rates, money supply announcements and monetary base announcements. Unexpected increases in the announced monetary base and money supply have been noted to have a significantly positive effect on interest rates. However, although unexpected money supply and monetary base announcements have the same impact on interest rates, they have different implications for the future behaviour of the money supply and monetary base. That is, the term-structure premia are not altered by these announcements, as the response of long-term interest rates to unexpected monetary announcements reflects a response of current and expected future short-term rates (Huizenga, Leiderman: 1985).

The impact of a money stock increase on nominal short-term interest rates is a key influence on monetary policy (Mishkin, 1982).

Structural macro models assume that an increase in the money stock leads, at least in the short-run, to a decline in short interest rates, while monetarists dispute this view because it ignores the dynamic effects of a money stock increase (Mishkin, 1982).

Mishkin's (1982) application of efficient markets-rational expectations theory to analyse empirically the relationship of money supply growth and short-term interest rates concludes that increases in the money supply are not correlated with declines in short rates.

The target funds rate can be separated into anticipated and unanticipated components using data from the USA futures market for federal funds, and from this the predicted impact of monetary policy actions on bill, note, and bond yields can be obtained. Bond rates' response to anticipated changes is observed to be essentially zero, while their response to unanticipated movements is large and highly significant. Further, the little effect of surprise policy actions on near-term expectations of future actions suggests that the expectations hypothesis does not hold on the short end of the yield curve (Kuttner, 2000).

Increases in the money supply have been shown to not be correlated with declines in long rates, by using a theoretical application of efficient markets theory to analyse the relationship of money supply growth and long-term interest rates (Mishkin, 1981).

The response of long-term interest rates to monetary policy is of central interest to policymakers. There is a strong and time-varying yield curve response to monetary policy innovations, and key ingredients in explaining the yield curve response is central bank private information about the state of the economy and about its own target for inflation (Ellingsen, Soderstrom: 2004).

***Interest Rates and Fiscal Policy and GDP***

Unanticipated permanent fiscal expansion leads to changes in long-term rates, thus explaining observed excessive volatility, though the effects of structural, or monetary regime, changes on rate variances is commonly manifested in the form of speculative behaviour (Turnovsky, 1989).

The international capital market is the marginal provider of capital to the home economy, and the current account balance is the measure of demand pressure from home borrowing in that market. If the foreign supply of capital to the home country is less than perfectly elastic, home interest rates will have to rise as home borrowing increases (Spiro, 2008).

As the link between fiscal policy and the current account balance is indirect and influenced by other factors such as monetary policy, it is difficult to test empirically for the effect of home fiscal policy on interest rates. Though, in equilibrium, there is likely to be a strong correlation between fiscal balances and the current account balance (Spiro, 2008).

Lower foreign borrowing in the future by the home country should result in considerably lower real interest rates (Spiro, 2008).

Economies can be affected by conditions in foreign countries, as there is a connection between interest rates in major industrial countries and annual real output growth in other countries. High foreign interest rates have a contractionary effect on annual real GDP growth in the domestic economy, though this effect is centred on countries with fixed exchange rates (Giovanni, Shambaugh: 2007).

Monetary policy is an important determinant of the term structure spread, though likely not the only determinant, subsequently to subsequent real activity and inflation. Thus, there is significant predictive power for both real activity and inflation from analysing the relationship between the term structure of interest rates and monetary policy instruments. Thus, the yield curve is thus a simple and accurate measure that should be viewed as one piece of useful information which can be used to forecast real economic activity and inflation (Estrella, Mishkin: 1995).

When average real returns on government debt are far below the rate of economic growth, the government can roll over its debt at a somewhat low cost. When at the same time the rate of return on capital is consistently above the growth rate, the economy considered rather dynamically efficient. This has happened in the USA and most industrial countries over the 20th century (Bohn, 1999).

The government can roll over its debt at a low cost when real returns on government debt are below the economic growht rate. In this situation the welfare implications of budget deficits depend critically on why interest rates have been so low, and thus if the government can offer low returns on its debt because of some unique ability to create default-free claims, persistent primary budget deficits may be unproblematic. However, when low interest rates are due to high risk aversion, policies that exploit the low cost of government debt to run frequent budget deficits will impose significant risks on future taxpayers. Thus, low-risk government debt is safe for the debt holders, yet it is very risky for the taxpayers who are implicitly taking a short position in the safe security (Bohn, 1999).

The fundamental relation between the numerous macroeconomic releases and the term structure of interest rates can be analysed by extracting the systematic information from a wide array of noisy and sparsely observed macroeconomic releases, and then linking the two factors to the daily term structure of interest rates using no-arbitrage arguments. In a study, the two dynamic factors predict over 76 percent of the daily variation in LIBOR and swap rates across all maturities from one month to ten years. Thus, the estimated factor dynamics and market prices of factor risks provide further insight on the fundamental reasons behind the different term structure impacts from different macroeconomic releases. (Lu, Wu: 2005).

***Interest Rates and Inflation***

The need for policy to stem a rise in inflation and inflation expectations puts a premium on the long bond rate as an indicator of credibility for low inflation. That said, policy leverage on long rates is regime dependent and will vary with a central bank's commitment to price stability and its credibility for low inflation. Consequently, policy often follows long rates because long rates embody expectations of future short rate policy actions, and long rate movements often signal changing inflation expectations that may precipitate a policy reaction. However, bond market traders do not make central banks irrelevant, and as such the yield curve can be useful to distinguish policy actions from policy impulses in order to tell how much policy response is needed (Goodfriend, 1998).

Variations in nominal interest rates are caused by inflationary expectations rather than by changes in the ex-ante real interest rate (Cornell, 1983).

Inflation targeting may solve the nominal anchor problem (Friedman, 2000).

New Zealand was the first OECD country to adopt a full-fledged inflation targeting regime with specific accountability and transparency provisions. In New Zealand, policy transparency was further enhanced by a shift from quantity (settlement cash) to price (interest rate) operating targets in 1999. The introduction of the Official Cash Rate (OCR) increased the pass-through of floating and deposit rates but not fixed mortgage rates. Complete long-term pass-through is observed for some but not all retail rates, while the immediate pass-through of market interest rates to bank retail rates is incomplete. There is no evidence for asymmetric response of retail rates to changes in market rates other than for business lending rates in the pre OCR period. (Liu, et al., 2007).

The policy anticipations and expected inflation effects hypotheses have different implications about the central bank`s short-run monetary policy, and thus the response of the term structure of interest rates to weekly money announcements. The expected inflation hypothesis implies that weekly money surprises should have persistent effects on the level of the money stock, reflecting shifts in the central bank`s long-run target. Conversely, the policy anticipations hypothesis implies that the effect of money surprises should diminish over time, reflecting the central bank`s desire to offset deviations from target (Roley, Walsh: 1986).

Inflation-related releases have large and positive impacts on interest rates of all maturities, and shocks on these releases lead to parallel shifts on the yield curve. In contrast, shocks on many employment and output related releases generate a slope effect on the term structure, and upward shocks on these variables tend to flatten an otherwise upward sloping yield curve (Lu, Wu: 2005).

The Blue Chip Financial Forecasts is a unique collection of cross-sectional time series survey data on interest rates and inflation (Chun, 2009).

Fed funds futures prices best predict the fed funds rate at very short horizons, and that survey forecasters are competitive at short horizon forecasts of short to medium maturity interest rates. Individual survey forecasters, including the mean forecaster, do particularly well at forecasting inflation, though unlike the case of inflation, the presence of superior individual forecasters provides evidence against a combination strategy of averaging survey data for forecasting interest rates (Chun, 2009).

***Interest Rates on Interest Rates***

The near-term effect of the funds rate spread on the bond rate has increased considerably since 1979 (Mehra, 1996).

Gerlach's (1996) study analysing the expectations hypothesis in several industrial countries determines that in all countries actual and theoretical long interest rates do move closely over time. This suggests that long-term interest rates are determined largely by expectations held by financial market participants concerning the future path of short term interest rates.

Forecasting interest rates is of great concern for financial researchers, economists and players in the fixed income markets, as interest rates time series have a volatility clustering effect (Radha, Thenmozhi: 2004).

The effect of changes in monetary policy stance signaled by the federal funds rate, are not uniformly predicted by the bond market, and thus there is no concrete sonnection between the bond market and monetary policy rate signals. At times, innovations to the target rate have little effect on long-term interest rates, and thus the policy instrument seems to be responding to information that is already impounded in the bond market. Conversely, changes in the target federal funds rate are sometimes mostly unanticipated by the bond market, and innovations to the policy target have a large and significant effect on long-term interest rate (Jenkins, 2008).

As the central bank strongly influences market interest rates by controlling the funds rate and thus future expectations, changes in the interest rate target by the central bank create moderate movements in intermediate-term rates and small movements in long-term rates. Other money market rates are also strongly influenced by expectations of the future level of the funds rate, such as T-bill rates (Cook, Hahn: 1989).

One aim of monetary stabilisation policy analysis is to identify how expected and unexpected changes in monetary policy, as measured by the federal funds rate, affect of long-term interest rates. To this end, expected changes in the funds rate cause strong and significant movements in the long-term rates (Giannikos, Guiguis: 2007).

There are several potential channels through which major-country interest rates affect other international economies, though the effect of foreign interest rates on domestic interest rates has been cited as a more likely channel as opposed to others, such as a trade effect. (Giovanni, Shambaugh: 2007).

There is an insensitivity of the slope of the yield curve from 3 to 12 months to new information that influences the funds' rate expectations, which can lead to conflicting results with short and long term rates in some studies (Cook, Hahn: 1989).

Interest rates other than the federal funds rate may be useful in monetary policy, as are equity prices (Friedman, 2000).

Policy transparency and financial structure of the monetary transmission mechanism effect the degree of pass-through and adjustment speed of retail interest rates in response to changes in benchmark market rates (Liu, et al., 2007).

The relationship among interest rates on the long-term governments bonds is inconclusive on the existence of cointegration among the five long-term interest rate series. Thus, when modeling or forecasting these central government long-term bond yields, one may assume separate sets of fundamentals and difference the data to achieve stationarity (DeGennaro, etc. 2008).

***Interest Rates and Employment***

The policy responses of a central bank that is uncertain about the natural rate of unemployment can explain the high volatility of long-term interest rates observed in historical data (Heideken, 2008).

***Zero Bound***

When nominal interest rates are constrained by a zero bound, they should be lowered faster in response to adverse shocks than in the case without bound. A preemptive easing amplifies the effects of adverse shocks because expectations of a possibly binding bound in the future (Adam, Billi: 2004).

With regard to lowering nominal interest rates to avoid the zero bound when facing an adverse shock, studies show that the easing effect is important and there are significant welfare losses, and the losses increase further when inflation is partly determined by lagged inflation in the Phillips curve. However, targeting positive inflation rates reduces the frequency of a binding lower bound, though tends to reduce welfare as compared to a target rate of zero. The welfare gains from policy commitment, however, appear significant and are much larger than in the case without lower bound (Adam, Billi: 2004).

In situations where countries experience a period of general price deflation, nominal interest rates may reach their lower bound of zero. There are alternatives however, to cutting interest rates in the improbable event that nominal interest rates do reach zero (Yates, 2003).

A zero bound to nominal interest rates can create isues for the conduct of monetary policy. The monetary authority must therefore evaluate the risks of hitting the zero bound and design policies to reduce that risk, as well as propose policies to help the economy escape if it falls into a zero bound cycle. However, as the risks of hitting the zero bound are small, and the risks of encountering a deflationary spiral smaller still, it is possible an inflation targeting monetary regime already has enough insurance built into it to deal with the zero bound problem. (Yates, 2004).

***Interest rate and Exchange Rates***

The behaviour of real interest rates is core to the analysis of exchange-rate-based stabilisation programs. Using an optimizing model of a small open economy facing imperfect world capital markets, a reduction in the devaluation rate is shown to have a positive impact on real interest rates. Conversely, a program characterized by an initial reduction in the devaluation rate and a perceived future increase in government spending has an ambiguous effect and depends in particular on the degree of credibility of the fiscal policy stance (Agenor, 1998).

In the measurement of anticipated interest rate policy and the effects of these expectations on the term structure of nominal interest rates, under the expectations hypothesis, the level of long-term interest rates depends on three factors: the level of the monetary policy interest rate, ie the steering rate; the spread between the market interest rate and the steering rate; and market expectations of the next steering rate change (Jaaskela, Vilmunen: 1999).

There is an assumption that market participants have only imperfect knowledge of the mechanism whereby changes in the steering rate are determined, and as a consequence, expectations formation, although realistic, need not be entirely rational. Steering rate changes take the form of discrete jumps and occur infrequently on a daily scale. Given these assumptions, discussion of the determination of the term structure is related to the uncertainty about monetary policy regimes and small samples, ie peso problems (Jaaskela, Vilmunen: 1999).

Differences between estimated market expectations and actual tender rate changes are quite large, particularly for the longer maturities, though there is a need for better empirical performance of the expectations hypothesis, and estimates of market expectations concerning future discrete changes in monetary policy interest rates (Jaaskela, Vilmunen: 1999).

Determining what instruments of monetary policy must be used in order to implement a unique equilibrium results in a multiplicity of equilibria when policy is conducted with interest rate rules (Adao, etc. 2004).

The appropriate interest rate instruments under uncertainty are state-contingent interest rates, i.e. the nominal returns on state-contingent nominal assets, and a policy that pegs state-contingent nominal interest rates, and sets the initial money supply, implements a unique equilibrium. This holds whether prices are flexible or sticky (Adao, etc. 2004).

The expectations theory of the term structure of interest rates has been interpreted in different ways. The term spread in the U.S. had substantial predictive power in line with the expectations theory before the founding of the Federal Reserve in 1914, though afterwards, the Fed's commitment to stabilising interest rates caused changes in short rates to become unpredictable on the basis of the spread. Consequently, one can assume that monetary policy regime, and the extent to which it involves smoothing interest rates, determines the performance of the expectations theory (Serna, Arribas: 2008).

The dependence of bond prices on crude oil prices changes sign over time and thus the overall economy performance is correlated with the slope of the yield curve (Boyarchenko, 2008).

Issues with analysing Treasury yields include counter cyclical variations of bond risk premia without challenging both short-run and long-run monetary facts (Kim, Moon: 2008).

Identifying the specific roles of segmented asset market, habit formation, and inflation targeting in monetary policy (Kim, Moon: 2008).

Rational expectations can give insight into the consequences of the zero bound on nominal interest rates (Coenen, etc. 2003).

If an economy is subject to stochastic shocks similar in magnitude to those experienced in the USA over the 1980s and 1990s, the consequences of the zero bound are negligible for target inflation rates as low as 2 percent (Coenen, etc. 2003).

The effects of the zero-bound constraint are non-linear with respect to the inflation target and produce a an economic deterioration with targets between 0 and 1 percent, with the variability of output increasing significantly and that of inflation also rising somewhat (Coenen, etc. 2003).

The asymmetry of the policy ineffectiveness induced by the zero bound generates a non-vertical long-run Phillips curve, as well as output falls increasingly short of potential with lower inflation targets (Coenen, etc. 2003).

The effects of exogenous monetary impulses in the presence of a zero lower bound constraint on nominal interest rates and the impact of such a constraint on the effectiveness of counter-cyclical monetary policies. A binding zero bound on nominal interest rates can eliminate more than 50% of the effect of an exogenous monetary impulse. The effect of monetary shocks operating through the interest rate channel when other possible channels of monetary transmission are present suggests that a zero bound on nominal interest rates could severely limit the ability of central banks to pursue a counter-cyclical monetary policy when facing adverse macroeconomic shocks (Iwata, Wu: 2001).

Optimal monetary policy and its implication for the term structure of interest rates when the nominal short rate is bounded at zero. The monetary authority's optimisation problem in continuous time can be analysed according to two specifications, interest rate stabilisation and interest rate smoothing (Skallsjo, 2004).

In deriving implications for the term structure of interest rates under risk-neutrality, data for a low-interest rate country like Japan for 1996-2003 exhibits s-shaped yield curves and yield volatility curves, which shape is consistent with a smoothing objective for the short rate (Skallsjo, 2004).

A prominent empirical failure of the expectations theory of the term structure of interest rates under the assumption of rational expectations concerns the magnitude of slope coefficients in regressions of short rate (or long- rate) changes on long-short spreads. The expectations theory can rationalised with statistics via recognition of an exogenous random (but possibly autoregressive) term premium plus the assumption that monetary policy involves smoothing of an interest rate instrument, the short rate, together with the responses to the prevailing level of the spread (McCallum, 1994).

Ignoring the existence of the zero bound on nominal interest rates one considerably understates the value of monetary commitment in New Keynesian models. Low values for the natural rate of interest lead to sizeable output losses and deflation under discretionary monetary policy, and the fall in output and deflation are much larger than in the case with policy commitment and do not show up at all if the model abstracts from the existence of the lower bound. The welfare losses of discretionary policy increase even further when inflation is partly determined by lagged inflation in the Phillips curve. Private sector expectations and the discretionary policy response to these expectations reinforce each other and cause the lower bound to be reached much earlier than under commitment (Adam, Billi: 2005).

Macroeconomists look for effects of fiscal policy on interest rates, while financial economists look for the factors that drive the dynamics of the yield curve. Identify fiscal policy shocks, and trace the effects of these shocks on the prices of bonds of different maturities to capture risk preferences and expectations (Dai, Philippon: 2005).

Government deficits affect long term interest rates, as a one percentage point increase in the deficit to GDP ratio, lasting for 3 years, will eventually increase the 10-year rate by 40-50 basis points. This increase is partly due to higher expected spot rates, and partly due to higher risk premia on long term bonds, and the fiscal policy shocks account for up to 12% of the variance of forecast errors in bond yields (Dai, Philippon: 2005).

The importance of the zero lower bound on nominal interest rates for the interest-rate channel of monetary policy as interest-rate setting policy rules can use either high or low inflation targets (Fuhrer, Madigan: 1997).

There is an extent to which the zero bound prevents real rates from falling, thus cushioning aggregate output in response to negative spending shocks. For small temporary and large permanent shocks, the output path with zero inflation lies modestly below that for higher inflation, while for large shocks persisting a few quarters, differences in output paths across high- and low- inflation scenarios can be larger (Fuhrer, Madigan: 1997).

The response of the term structure of discount rates to the changes in the Federal Funds Target Rate with a method of hedging fixed income portfolio's risk to the unexpected changes in monetary policy (Goukasian, Cialenco: 2006).

Only the slope of the term structure of zero-rates (also known as the spread between medium and short term rates) reacts significantly to the monetary policy, which can be used to hedge the risk of the changes in the shape of the term structure of rates, due to monetary policy actions (Goukasian, Cialenco: 2006).

Effects of monetary policy on the term structure of interest rates a change in the policy rule simultaneously affects inflation, interest rates, volatilities, co-movements between long and short rates (Wu, 2001).

Financial-non financial interactions a richer approach to modeling the determination of long-term interest rates. Any factor affecting long-term bond yields does so by (and only by) influencing some borrower's supply of bonds and/or some lender's demand for bonds (Friedman, 1980).

The USA market for corporate bonds; this market is the primary source of long-term external lands to finance business fixed investment, and the corporate bond yield is also the long-term interest rate most frequently used in single-equation models of term-structure relationships. Since these long-term yields and prices are such an important part of the overall bearing of financial market developments on nonfinancial behavior, however, there are interesting implications for fiscal and monetary policies (Friedman, 1980).

Hypotheses of the controllability of rationally expected real interest rates are assert in different senses that the stochastic properties of expected real interest rates are independent of the central bank policy rule (Stiller, 1979).

A feature of monetary policy is heavy reliance on the so-called policy duration effect, which employs a commitment to compensate for the central bank's inability to lower the interest rate below zero by altering the anticipated course of monetary policy actions (Okina, Shiratsuka: 2004).

The effectiveness and limitations of monetary policy commitment under zero interest rates with four indicators for policy duration effect the policy duration effect was found to be highly effective in stabilising market expectations for the path of short-term interest rates, thereby reducing longer-term interest rates and flattening the yield curve. The policy duration effect, however, failed to reverse deflationary expectations in financial markets (Okina, Shiratsuka: 2004).

Whether asset prices and exchange rates may be admitted into a standard interest rate rule, using data for the UK, USA and Japan since 1979. Asset prices and exchange rates can be employed as information variables. Based on measures of the output gap proxied by marginal costs calculations, monetary policy-makers may use asset prices and exchange rates not only as part of their information set for setting interest rates, but also to set interest rates to offset deviations of asset prices or exchange rates from their equilibrium levels (Chadha, 2003).

We apply a model to the targeting process of the Federal Reserve, interpreting the jumps as changes to the federal funds target, and the short rate as the market federal funds rate calibrated with money market and interbank spot curves. The smoothed inference of the regime fits well with the historical evidence on the monetary policy stance with time-varying term premia at business cycle frequencies. The slow variation of the jump risk premia causes the expectations hypothesis of the term structure to break down at yearly horizons, with a predictability smile in Campbell-Shiller yield spread regressions (Konstantinov, 2002).

Greater uncertainty about monetary policy can lead to a decline in nominal interest rates, and monetary policy uncertainty is modeled as a mean-preserving spread in the distribution for the money growth process (Jorda, Salyer: 2001).

Increases in monetary policy uncertainty lowers the yield on short-term maturity bonds because the household sector responds by increasing liquidity in the banking sector. Long-term maturity bonds also have lower yields though this decrease is a result of the effect that greater uncertainty has on the nominal intertemporal rate of substitution - which is a convex function of money growth. The conditional variance of monetary policy shocks negatively affects the yields of federal funds, and the three and six-month treasury bills (Jorda, Salyer: 2001).

The volatility patterns of overnight interest rates differ across industrial countries can be explained by a model of the overnight interbank market that matches these different patterns by incorporating differences in policy execution by the world's main central banks, including differences in central banks' management of marginal lending and deposit facilities in response to shocks (Bartolini, Prati: 2003).

Central banks' observed practice of rationing access to marginal facilities when the objective of stabilising short-term interest rates conflicts with another high-frequency objective, such as the targeting of exchange rates (Bartolini, Prati: 2003).

There is an impact of monetary policy shocks on the term structure of interest rates and the term structure of spot rates and of the instantaneous forward rate. The instantaneous forward rate is the expectations for the overnight rate prevailing at each point in the future (Favero, etc. 1996).

Intervention on policy rates take place in occasion of regular meetings of the FOMC in the US and of the Bundesbank Council in Germany, and the term structure of spot rates and of instantaneous forward rates the day before and the day after regular meetings can be estimated from this (Favero, etc. 1996).

From the estimation of the term structures before meetings a measure of expectations for Central Banks interventions is developed using the predictability of monetary policy under the null of the validity of the pure expectational model and a measure of policy shocks by using information on the effective intervention. The impact of monetary policy on the term structure of interest rates is determined by regressing the change in the yield curve between the day before and the day after meetings on expected and unexpected modification in policy rates to evaluate the sign and the magnitude of the response of the term structures in the two countries to expected and unexpected modifications in monetary policy (Favero, etc. 1996).

Interbank money market rates represent the shortest end of the yield curve, and in equilibrium they are determined by monetary policy and banks' liquidity and reserve management operations (Nascimento, 2005).

The central bank pursues interest rate stabilisation while targeting long-term economic goals, and its success depends on the perceived commitment and credibility of the monetary policy (Nascimento, 2005).

Banks are subject to liquidity shocks and minimum reserve requirements constraints, and they use interbank money market loans to obtain insurance against liquidity shocks (Nascimento, 2005).

The determinants of interbank rates for all maturities in the money market spectrum include the interbank money market institutional features, the reserve requirements regime and the monetary policy operating operational procedures. Interbank money market rates form two blocks moving together: a short-term and a long-term block, and the one-week rate, which is anchored to the main refinancing operations, links the two blocks, as interest rates respond to several long run factors. Although each rate is more responsive to its own spread with the target other spreads are also important, and neglecting the effect of other maturities' spreads on the interest rate adjustment misses a richer framework. Additional insight into interest rates dynamics by looking at broader decomposition of the yield curve (Nascimento, 2005).

Fisher (2002) suggests that one way to keep the equilibrium rate of return unchanged is to capitalise the rents that can be earned from special repo rates are into the price of the underlying bond size.

Stabilising interest rates can be a sensible monetary policy. Evans' 1984 study on the Federal Reserve determined that money growth volatility does not affect output, unanticipated interest rate volatility lowers output, and output does not depend on anticipated interest rate volatility.

**Inflation Rates**

Stagflation can be induced via rising tax rates and regulation, thus resulting in accelerating disincentives. Disinflation will contract government revenues and will build into government spending projections greater levels of real spending than intended, thus leading to larger budget deficits. A strict monetary policy and little increased spending to address the deficits will not fix the situation, as well as higher taxes to decrease the budget deficit add to the cost of production and erode home country international competitiveness (Roberts, 1986).

There is a direct link between money and inflation, and the quantity theory shows this.

-need quantity theory information maybe

The Phillips curve states that the inflation rate depends on 3 things: expected inflation, cyclical unemployment (deviation from natural rate), and supply shocks. The Phillips curve and the short-run AS equation both show similar macroeconomic ideas: they show a link between real and nominal variables that causes the classical dichotomy (theoretical separation of real and nominal variables) to break down in the short run; short-run AS supply curve shows output is related to unexpected changes in the price level, and the Phillips curve that employment is related to unexpected changes in the inflation rate.

*p= pe - b(u-un) + v*

Adaptive expectations people form inflation expectations based on recently observed inflation. For Phillips curve purposes—this means the inflation rate equals the last year’s inflation rate (nonaccelerating inflation rate of unemployment NAIRU). This implies inflation has inertia, like an object moving through space, inflation keeps going unless there is something there to stop it. If inflation is at the NAIRU and if there are no supply shocks, the continued rise in price level neither speeds up nor slows down. This inertia arises because past inflation influences expectations of future inflation and because these expectations influence the wages and prices that people set. Inflation inertia pushes the AS and AD curves upward until recessions or contractions stop them.

The 2 causes of rising and falling inflation are: (1) demand-pull inflation- *b(u-un)* (2) cost-push inflation- *(v)*. Demand-pull inflation shows that cyclical unemployment exerts upward or downward pressure on inflation. Low unemployment pulls the inflation rate up, because high AD is responsible for, and high unemployment pulls the inflation rate down. (b) measures how responsive inflation is to cyclical unemployment. Cost-push inflation hows that inflation also rises and falls because of supply shocks, and adverse supply shocks are generally events that push up the costs of production. Beneficial supply shocks cause (v) to be negative and inflation to fall.

The short-run tradeoff between inflation and unemployment depends on the expected inflation. The curve is higher when expected inflation is higher. In the short-run, inflation and unemployment are negatively related. At any point in time, a policymaker who controls AD can choose a combination of inflation and unemployment on this short-run Phillips curve. Because people adjust their expectations of inflation over time, the tradeoff between inflation and unemployment only holds in the short run. The sacrifice ratio is the % of a year’s GDP that must be foregone to reduce inflation by 1%, and this can also be expressed in terms of unemployment (Okun’s Law). Can be used to estimate by how much and for how long unemployment must rise to reduce inflation.

The Phillips curve shows that in the absence of a beneficial supply shock, lowering inflation requires a period of high unemployment and reduced output. Policymakers must know how much output they will lose before implementing a disinflation policy. Rational expectations theory implies that people use all relevant information, including current government policies and past history, to form inflation expectations. Theory of rational expectations says that people change expectations according to changes in fiscal and monetary policy. Advocates of rational expectations argue that the short-run Phillips curve does not accurately represent the options that policymakers have available. If policymakers are credibly committed to reducing inflation, rational people will understand and will lower their expectations—inflation can then come down without a drop in output—sacrifice ratio not important.

The 2 requirements of painless disinflation are: (1) the plan to reduce inflation must be announced before the workers and firms who set their prices can form expectations (2) the workers and firms must believe the announcement. If both requirements are met, the announcement will immediately shift the short-run tradeoff between inflation and unemployment downward, permitting a lower rate of inflation without higher unemployment. A cold turkey approach to disinflation with rapid results yields a smaller sacrifice ratio than gradual disinflation (less output lost).

If expected inflation depends on recently observed inflation, then inflation has inertia, which means that reducing inflation requires either a beneficial supply shock or a period of high unemployment and reduced output. If people have rational expectations, however, then a credible announcement of a change in policy might be able to influence expectations directly, and therefore, reduce inflation without causing a recession. The natural rate hypothesis states that fluctuations in AD affect output and employment only in the short run, and in the long run, the economy returns to the levels of output, employment, and unemployment described by the classical model.

The natural rate hypothesis allows economists to study separately short and long run developments in the economy, and it is 1 expression of the classical dichotomy. Hysteresis explains the long-lasting influence of history on the natural rate of unemployment, and suggests AD may affect output and employment even in the long run. Most economists accept the natural-rate hypothesis, according to which fluctuations in AD have only short-run effects on output and unemployment. Yet some economists have suggested ways in which recessions can leave permanent scars on the economy by raising the natural rate of unemployment. Recessions can permanently affect the economy if it changes the value of the people who become unemployed. It can change attitudes as well, and may change wage setting process ( different amounts of influence). If hysteresis is true, it raises the sacrifice ratio, because output is lost even after the period of disinflation is over, as this greatly increases the costs of recessions.

3 ways to make money are: taxes, borrowing, or printing. Seigniorage is revenue government raises by printing money, and is a tax on money holding. It is quantitatively small in most economies, though it is often a major source of government revenue in economies experiencing hyperinflation. An inflation tax results from printing money. Seignur is French for fuedal lord, as the lord had the exclusive right to coin money. In the US it is around 3%, and in other countries can be much higher.

Inflation and Interest Rates~~Nominal interest rate is the sum of the real interest rate and inflation rate.

*r = i - π*

Fisher effect states that the nominal interest rate moves 1 for 1 with expected inflation. This shows 2 things: the nominal interest rate can change either because of the real interest rate or the inflation rate. It equates the quantity theory or money and Fisher equation, as a 1% increase in money growth causes a 1% increase in inflation (quantity theory) which causes a 1% increase in nominal interest rate (Fisher equation).

*i = r + π*

Inflation rates and nominal interest rates thus follow each other. Ex ante interest rate is the interest rate borrower and lender expect when loan is made. Ex post interest rate is the interest rate actually realized. Ex ante reflects expected inflation, which is what comprises the nominal interest rate; it is impossible to know the actual inflation rate in advance.

*i = r + πe*

The Fisher Effect did not hold in the 19th century, because inflation caught merchants napping. The

expected inflation rate is what is important, and so if no inflation is expected then the nominal interest rate will not be accompanied by high inflation.

Social Costs of Inflation~~Increases in prices is what allows wages to increase as well. Costs of expected inflation include: (1) shoeleather costs (2) menu costs (3) cost of relative price variability RPV- firms change menu prices less often (4) tax distortions- tax laws do not account for inflation (5) inconvenience of making inflation corrections. Unexpected inflation causes arbitrary redistributions of wealth between debtors and creditors. This can be seen clearly with long-term bond prices, and this hurts people on fixed pensions. This induces people to write contracts in real terms and not nominal, yet in countries with moderate inflation like the US this is not a problem. High inflation is variable inflation. 1 possible benefit of inflation is that it improves the functioning of labour markets by allowing real wages to reach equilibrium levels without cuts in nominal wages.

Hyperinflation~~Inflation exceeding 50% a month, or 1% a day. During hyperinflations, most of the costs of inflation become severe. Hyperinflation typically begins when governments finance large budget deficits by printing money, and they end when fiscal reforms eliminate the need for seigniorage.

***Inflationary Process***

Inflation Taxes in the Island Economy~~Opinions on the optimal long-run cycle-average rate of inflation differ markedly among economists. Some say -3 to 6% and some say there is no right answer, and many agree to some desired level of inflation to support a smoothly functioning economy. The Walrasian auctioneer, acting as the central bank, can produce any positive or negative growth rate for the money supply, assuming that households would continue to hold money willingly—money has to continue to serve as an accepted medium of exchange and store of value, that is, households have to continue to accept it in exchange for goods. The auctioneer constructs a price index that reflects the money price of a representative market basket of all perishable goods traded on the island. The index is used to gauge how fast he should allow the money supply to expand. Question becomes that is a 0 rate of inflation optimal?

Elimination of trading friction leads to most optimal efficient allocation of the economy’s resources—such allocation produces the highest level of per capital welfare or utility. Anything that inhibits the optimal allocation of resources causes welfare losses. When commodity money is used v. fiat money, one of the costs of trading is the requirement that the commodity must be held between periods. Because the commodity has consumption value, the 1 period holding holding time raises the costs of trading and the £ of trades is reduced—the commodity is assumed not to increase in value over the period to compensate the household for postponing consumption. An analagous cost is incurred by the household in a fiat money economy in a 0 inflation environment (although without the direct resource costs).

Households will produce goods today to acquire goods tomorrow, as they hold their wealth in the intervening period in the form of money that does not increase in value, leaving them uncompensated for having postponed consumption for 1 period. Households therefore have the incentive to reduce their idle money balances. However, because money is the sole medium of exchange in the economy, it is needed for the purchase of market goods—this coincided with the cash-in-advance view of money demand that emphasises the medium-of-exchange property as a singular feature of money. A reduction in the stock of intertemporal money holdings is accompanied by a reduction in the volume of monetary transactions—hence, the volume of trade in the economy declines. Households reduce their respective consumption of market goods to suboptimal levels and the welfare, or per capita utility level, of the economy declines.

These decisions are accompanied by a reallocation of capital and labour resources. Exactly how much the welfare level declines and how the resources are reallocated as a result of the economic distortion is determined by the options available to the households that could mitigate these costs—that is, they depend on the margins along which households are able to adjust when making their decisions. For example, households could reduce consumption and increase leisure in a manner consistent with an intratemporal preference shock. The greater the households perceives these costs to be the greater the magnitude of their response will be. If a household can get 1 unit for 1 dollar this period and next period, they will always take this period over next, as it always prefers consumption today over consumption tomorrow.

If they will take 1.01 units in exchange for 1 dollar next period instead, the personal household discounts the future at a rate of 1% per period. The higher this persoanl discount rate, the greater the costs of monetary transactions to the household, because it must postpone consumption without compensation by holding money that is just maintaining a constant purchasing power over time. This cost of holding money arises when more goods can be purchased this period rather than next. For this cost to be eliminated, the value of the money must increase next period relative to the goods—“there is a cost to holding on to the money, because you get less the longer you hold it.” A good example uses a marked bill which will be redeemed for more next period—How much more do you need next period to hold off to buy until next period and hold onto your money. In order to reduce or eliminate this cost to the households, the auctioneer must reduce the money supply each period in order to maintain a 1% increase in the value of the money. Relative scarcity is what produces economic value, so for money to increase in value over time it must be becoming more scarce in relation to the supply of goods.

To completely eliminate this cost of holding money intertemporally, the rate of reduction of the money supply must be sufficient to reduce the money price of goods by 1% per period—households are no longer penalised for holding money intertemporally, because the money is gaining in value at exactly the rate at which they are discounting the future. If the money supply were contracted at a more rapid rate than the rate of discount, money becomes too scarce, households would want to hoard money rather than trade it for goods, and the fiat money equilibrium would collapse—the economy would return to barter.

Therefore, there is a limit on the minimum rate of growth the Walrasian auctioneer is permitted. There is an inflation tax: in this context, the optimal rate if inflation is therefore determined by preferences. It corresponds to Friedman’s optimal deflation rule: in the absence of other distortions in the monetary economy, the rate of deflation that restores Pareto optimal allocations of resources, thus rendering the highest per capital utility or welfare level possible, is equal to the rate at which hosueholds discount the future. This also corresponds to a 0 nominal interest rate, which makes households indifferent between holding money and holding other forms of wealth. Inflation taxes refer to any growth rate (positive, 0, negative) that is above the minimum imposes costs on households because they are no longer fully compensated for holding money intertemporally. This can be positive even in a deflationary environment.

Price Level Stability~~Some view that the optimal rate of inflation is 0, as they place a premium on price-level stability. This argument is based on the empirical fact that prices become more volatile as the inflation rate increases. Changes in relative prices therefore reflect changes in the market valuations of goods, such that the supply and demand factors in 1 goods market have been affected differently from the supply and demand factors in another market. Inflation refers to the rate of change of the money price of a market basket of goods such as the CPI. By regulating the supply of money, the monetary authority is able to determine the average rate of inflation over a time interval corresponding to, say, the average length of the business cycle. What the preceding empirical fact suggests is that the closer this rate of inflation can be brought to 0, the more stable relative prices will be. ?is greater stability in relative prices desirable?

When the general price level is stable, and the long-run average rate of inflation is 0, the economy experiences real shocks in the form of supply and demand disturbances that are either specific to individual markets or aggregate shocks that differentially affect various markets. Iin response to these shocks, relative prices change a firm realises productivity gains (perhaps larger than expected) because of technology improvements or better worker training. The gains lower the firm’s market price of goods relative to other firms, and households then shift consumption to that firm’s goods, possible because of successful marketing campaigns or changes in consumer preferences—the relative market price of firm’s good hasd risen. Changes in relative prices will affect the firm’s investment and production decisions. The firm must determine why the price change occurred, which could be because of many different reasons, and the firm’s response to various shocks may be different if it were certain of the cause. The firm now has a signal extraction problem—the firm has only 1 price signal that has many potential causes, and can only imperfectly resolve the price changes into an ultimate source. As a result, the firm will inevitably make mistakes in production and investment decisions.

The mistakes are ultimately reflected in the firm’s value and hence in the return to shareholder’s investment, as the larger the mistakes, the lower the return. Consequently, household’s require higher real interest rates (risk premium) to compensate them for undertaking risk, which raises the cost of borrowing to the firm, which in turn reduces its long-run average level of investment in new plant and equipment. In sum, there are costs associated with a high degree of variability in relative prices. The complete elimination of relative price changes in neither desirable nor possible. The production and investmernt decisions firms make in response to relative price changes represent the way the economy’s resources are reallocated toward their best use. The empirical fact that the price signals on which those decisions depend are imperfect predictors of future supply and demand conditions is unavoidable and represents an essential degree of risk a healthy economy must incur.

This empirical fact suggests that as inflation rises, the signal extraction problem becomes more difficult for firms to resolve, Mistakes are amplified and the level of risk incurred by households when making investments in the firms rises. The mistakes lead to a misallocation of the economy’s resources. From an economywide perspective, correcting the mistakes is costly as capital and labour must be redeployed in the economy. Moreover, firms invest less in new plant and equipment, which reduces the rate of expansion of productive capacity in the economy, thus retarding growth. Price-level stability, or 0 inflation, thereby reduces the unnecessary noise in relative price changes and minimises the attendant adverse consequences for investment, growth, and welfare.

Labour Market Rigities and Moderate Inflation~~Households offer labour services to firms in exchange for labour income. In general, labour supply and demand decisions are based on the level of the real wage. However, many economists (Keynesian) believe that prices are sticky in the short run. The presence of long-term nominal wage contracts is 1 reason frequently given for nominal wage rigidity. When the price level is flexible and nominal wages are not, shocks to the economy that alter the price level may induce changes in real wages that require employment levels to adjust if the labour market is to clear at full employment. However, contractual arrangements may preclude such adjustment frm taking place over the duration of the contract

As nominal wage rigidity is an important factor influencing macroeconomic fluctuations, what impact does a moderate rate of inflation have on the economy when nominal wages adjust slowly. Empirical fact that the general price level, measured for example by the CPI, becomes more volatile as the inflation rate rises. As such, at higher rates of inflation, real wages become more volatile but also more flexible. On the negative side, the purchasing power of nominal wages becomes less predictable—households therefore are incurring a greater degree of risk associated with the return they receive for labour services. To incur that risk, households would require a higher nominal wage, which would raise labour costs to firms and would lead to a suboptimal level of employment through both a substitution of capital for labour and a reduction in output.

Moreover, to the extent that the volatility in the general price level does not reflect the industry-specific changes in productivity, the greater flexibility in real wages achieved by a moderate inflation is actually detrimental to the efficient allocation of labour resources. Inflexibility in nominal wages could be asymmetric, as when contracts are renegotiated, nominal wages can rise, but there is resistence to an outright decline nominal wages. Reasons given for the asymmetry include ignorance of the general level of prices on the part of the worker, often referred to as money illusion, and a perception of fairness—that is, the employer has no control over the general price level and can therefore do nothing about the inflation rate, though does have direct control over the nominal wage paid to employees; a cut in nominal wages may therefore be seen as less fair than an increase in the inflation rate, even though the effect is the same: real wages decline.

If asymmetry in the degree of flexibility of nominal wages were present and significant, a moderate amount of inflation, say 2 to 5 percent, could enable firms to lower their real wages more easily in the event that productivity declined. Thus labour could be allocated more efficiently across the economy and welfare would be improved.

Seigniorage occurs when governments must raise revenues ot fund government expenditures. To raise revenues, they must either impose taxes or issue debt, and if it issues debt, it incurs a stream of liabilities associated with repayment. 2 ways to meet liabilities are: (1) dedicate future tax revenues to repayment (2) debt can be monetised- revenues are especially funded with inflation taxes. Inflation taxes arise from the government’s monopoly control over the money supply, and the revenues they generate are termed seigniorage. Printing money is raising revenues through seigniorage or inflation taxes. For example, the government needs 1 billion but does not want to raise taxes—the Treasury issues 30 year bonds instead—the owners could be the Federal Reserve or private citizens (both get payment streams).

***Process***

1. the Federal Reserve pays back monies received to the Treasury after paying expenses, so the cost appears to be 0 and no taxes had to be raised

2. this cost is actually borne by households, as the money paid to the Federal Reserve in open market operations increases bank reserves and the money supply rises

3. the cash goes to the company, now more money is in the economy; the only way for inflation not to occur is for the Federal Reserve to take the money paid by the Treasury (profits) out of circulation instead of paying back to the Treasury

4. if the excess reserves to toal bank reserves ratio and the currency deposit ratio were relatively stable, the open market operation would correspond with an increase in the demand for currency in the economy

5. with the Federal Reserve’s monopoly over the supply of currency (legal tender), the Federal Reserve would meet this increase in demand simply by printing money

The costs are borne by everyone who engages in monetary transactions—that is, money becomes less scarce and is valued less in relation to goods, whose prices rise. Consequently, the inflation taxes were imposed on monetary transactions and the collection of those inflation taxes or seigniorage from households financed the purchase. Viewed from the perspective of the public finance of federal government expenditures, the question of determining an optimal rate of inflation is couched within the context of where the incidence of inflation v. alternative forms of taxation falls. The questions of whether distortions in private decisions that inflation creates have a greater or lesser effect on welfare, than capital or labour income taxes for example are ambiguous. The full general equilibrium effects of any tax are difficult to identify, much less to quantify. Moreover, inflation taxes are even more elusive than others.

When inflation taxes impinge only on the monetary transactions associated with the purchase of consumption goods, as in the island economy, the welfare losses of moderate inflation may not be as large as those associated with capital or labour income taxes that are sufficiently high to raise the same amount of government revenue—the efficiency losses are significant, but less than those associated with income taxes. However, as the inflation tax rises and becomes ever more persistent, households respond by allocating resources toward devising alternative nonmonetary means of payment; an increasing share of the economy’s resources may be diverted into unproductive activities in the financial services industry and away from production of goods, from which households derive direct utility, and away from research and development activities, which produce improved technology, or away from training, which is a source of enhanced worker productivity, and the long-run growth potential of the economy declines—inflation losses have the potential to drain produce large welfare losses by draining resources from production and R&D. As a result, output falls, the economy is placed on a slower growth path, and welfare may be substantially reduced.

Households may also want to hold money for precautionary reasons, to smooth their levels of consumption over time if their income stream is volatile—to the extent that the precautionary motive for holding money is significant, high and volatile inflation rates induce larger precautionary taxes to the point where they could exceed the costs of a tax on labour income that is significant to raise the same amount of government revenue. The determination of long-run inflation rate is a matter of government policy—many differen countries all over the world have had widely divergent inflation policies and widely divergent rates of inflation. Some economists have attributed the choice of high inflation regimes to inefficient tax collection systems that foster tax evasion and high collection costs, as the high costs tilt governments increasingly towards seigniorage as a principal source of revenue. Inflation in the US where voluntary tax compliance is high has been below Italy, where tax evasion is widespread. Political instability could also frustrate the governmental decision-making process when legislative action is required to raise tax revenues. The government then turns to inflation taxes by default, and political instability could also foster or simply reflect an environment in which tax evasion is pervasive and the cost of collecting taxes is high.

From a general equilibrium perspective, to eliminate inflation taxes completely the monetary authority would have to follow Friedman’s rule, which produces a deflation equal to the personal rate of discount (or equal to the real, risk-adjusted interest rate on capital). Any faster monetary growth would penalise persons who hold money intertemporally and who, in their effort to avoid the tax, would alter their decisions in ways that lead to a misallocation of the economy’s resources and to a reduction in welfare; an alternative perspective on inflation emphasises the value of price stability in reducing the risk investors face when trying to assess the value of alternative investments. Empirical evidence suggests that higher inflation rates coincide with more variability in relative prices and therefore more uncertainty for firms in making their production and investment decisions, and consequently result in larger mistakes being made in those decisions—hence, a 0 inflation environment becomes the desired goal, it removes a deterrent to investment and stimulates long-term growth and raises economic welfare.

Another view centres on a preceived advantage associated with moderate inflation in allowing real wages to become more flexible downward in the event that nominal wages are relatively inflexible downward—such flexibility may allow labour resources to be reallocated more efficiently in the economy in response to real shocks that differentially affect sectors. Again, the efficiency gains would lead to welfare improvements. Finally, some view inflation from the perspective of public finance, seigniorage collection by the federal government associated with inflation taxes is perceived to be a substitute for revenues collected from other forms of taxation—the relative costs and benefits of relying on this source of revenues must therefore be evaluated and may in fact vary across countries.

Viewed in isolation, each of these arguments has merit-when they are taken together however, the extent to which economies are penalised by some moderate levels of infaltion is unclear. Ireland (199$) attempted to evaluate the relative merits of the Friedman Rule, price-level stability, and moderate inflation in a single general equilibrium model with sticky prices. He concludes that on balance a negative inflation rate is optimal in the long run and PV of the costs of quick adjustment from a higher level to the optimal level is lower than that of a slow adjustment. Opinions differ among government leaders as to what the optimal rate of inflation is. Even when the current inflation rate exceeds the optimal inflation rate, the question remains as to whether the PV of the costs of reducing inflation to a predetermined level that is seen to be optimal exceeds the PV of the benefits.

Inflation rates are important because issuing more money decreases the value of the money. With fiat money, it is very easy to issue more money.

***Inflation and Economy Performance***

The functional relationship between relative price variability (RPV) and inflation can be deduced using personal consumer expenditure data. Inflation has been accused of having a sand and grease effect on the economy, whereby distortions occur to prices and wage fluctuations (sand) though at the same time facilitating adjustments to shocks when wages are rigid downwards (grease). An optimal inflation rate in the range of 5 percentage points creates the 'sand' and 'grease' effects, although these effects are commonly acknowleged as offsetting each other however

(Fielding, Mizen: 2008).

Different factors of production prefer contrastive rates of inflation. The labour market prefers the point of minimum unemployment as optimal rate of inflation, while industrial capital prefers a somewhat higher rate of unemployment and a lower rate of inflation, and financial capital prefers zero inflation (Palley, 1998).

A major difficulty in understanding inflation and its causes is in distinguishing policy-induced changes in absolute wages from changes in relative wages associated with real changes in the economy. Additionally, there are definite empirical weaknesses of the Phillips curve relationship in providing the basis for the NAIRU (Vega, Russell: 1997).

As the average long-run rate of inflation in a country is negatively associated with the country's long-run rate of growth, inflation rates per se have negligible effects on growth rates. Consequently, financial regulations and the interaction of inflation with such regulations have substantial effects on growth (Chari, etc. 1995).

An intertemporal budget constraint implies term structure implications for the fiscal theory of price level determination. In this case, fiscal policy is set according to a simple rule whereby taxes react proportionally to real debt, and one can solve for the prices of real and nominal zero coupon bonds (Marzo, etc. 2008).

***Inflation and Monetary Policy***

An inflation scare may occur when the central bank lacks full credibility, and further the potential for an inflation scare will continue to exist so long as the public believes that the domestic economy may someday return to an environment of high and variable inflation. One way of addressing this problem is through legislation designed to enhance credibility by requiring the central bank to pursue some notion of price stability as its primary or sole objective (Huh, Lansing: 1998).

The primary justification for frequent changes of policy by the monetary authority is the central bank's intuition regarding what will lower inflation expectations and the central bank's stance that lower inflation expectations are necessary to prevent a future inflation increases (Papadimiriou, Wray: 1995).

In inflation targeting regimes, there is an observed central bank response with regard to inflation via interest rate policy following publically announced inflation targeting policies, whereas central banks respond much less to inflation in non-inflation targeting regimes (Aizenman, et al., 2008).

Most general monetary policy models assume that the efficacy of monetary policy depends on how inflation expectations, the inflation target of monetary policy is constant, and the inflation target is known by all economic agents (Kozicki, Tinsley: 2003).

Imperfect policy credibility can affect economic responses to structural shocks, including transition to a new inflation target (Kozicki, Tinsley: 2003).

Long-term inflation of feedback rules for monetary policy that link changes in a short-term interest rate to an intermediate target for nominal gross domestic product (GDP) or M2 can be controlled (Judd, Motley: 1992).

In a transition between high- and low-inflation regimes, the degree of restraint transmitted by monetary policy can be difficult to manage (Goodfriend, 1998).

Asymmetric information between the central bank and the public is important to the conduct and the effects of monetary policy, and can be analysed by examining central bank and commercial inflation forecasts (Romer, Romer: 1996).

The central bank has considerable information about inflation beyond what is known to commercial forecasters, and thus monetary policy actions provide signals of the central bank's private information that leads commercial forecasters modify their forecasts (Romer, Romer: 1996).

2 policy shocks useful for analysis are: permanent changes to the inflation target and transitory perturbations of the short-term real rate. However, in the real world, the public sector cannot correctly distinguish between these two shocks and, under incomplete learning, private perceptions of the inflation target will not equal the true target. Thus, when all monetary policy actions are not transient, sizable movements in historical bond yields and inflation are attributable to perceptions of permanent shocks in target inflation (Kozicki, Tinsley: 2003).

As the growth rate of bank deposits is an important factor affecting inflation, regulatory control of this activity is critical to monetary stabilisation policy. The reserve requirement on transactions deposits, which plays a crucial role in determining the banking system's demand for reserves, is a critical stage of deposit control. However, reserve requirements impose costs on the banking system since reserves held at the central bank earn no interest. (Boschen, 1988).

There is still much debate as to whether deposit regulation is necessary for inflation control, as regulation of deposit growth may not be the only way to control inflation (Boschen, 1988).

Predictability of inflation at long horizons varies considerably across countries, although a crucial factor to effective forecasting is the extent to which systematic monetary policy succeeds in preventing a unit root in inflation. To that end, it appears that nominal as well as real interest rates have real effects, which implies that monetary policy need not be so vigorous in reactions to inflation (Wright, 2002).

Inflation rates in the US and (especially) Germany have been relatively predictable, despite monetary policy rules which appear to have been barely stabilising (Wright, 2002).

***Inflation and Interest Rates***

In 1987 US inflation scare episode that produced a sharp increase in the 10-year Treasury bond yield, which was preceeded by the Volcker disinflation of the early 1980s (Huh, Lansing: 1998).

As inflation is the main cause of the variable component of short-term nominal interest rates, the central bank can permanently lower short rates only by reducing inflation. In the short run, 3 forces have been acknolwedged as being the primary determinants behavior of nominal rates: the outlook for inflation, central bank policy, and the state of the economy. It has further been noted that many customary fiscal policy measures do not affect the short-term rate in the short run (Mehra, 1995).

If the average real rate of 1.5% is the regime's equilibrium real rate, then a real rate above this should indicate an economy facing disinflationary pressures, and a rate below this should presage dangers of accelerating inflation (Papadimiriou, Wray: 1995).

A link between London interbank interest rates and future inflation in the UK is noted after analysis of several periods of changes in monetary policy regime. The informational content of the term structure is sensitive to changes in monetary policy, as the relationship between interest rates and future inflation is found to break down after 1985 in the UK (Bardsen, Hurn: 2001).

The power of nominal interest rate effects is inversely related to long-horizon inflation uncertainty, and hence ultimately uncertainty about monetary policy (Wright, 2002).

***Inflation and Employment***

The level of unemployment and the rate of change in wages are leading indicators of inflation and thus can guide central bank monetary stabilisation policy, primarily due to conjectures of the Phillips curve and the NAIRU (nonaccelerating inflation rate of unemployment) (Vega, Russell: 1997).

The Federal Reserve publicly adheres to the non-accelerating inflation rate of unemployment (NAIRU) theory even though this theory provides no justification for a zero-inflation goal, as it states that all rates of inflation are equally optimal. However, in somewhat of a contradiction the Federal Reserve of the USA states a zero inflation policy, which is has been asserted by some to be the optimal rate of inflation (Palley, 1998).

***Inflation and Exchange Rates***

Countries that employ an inflation rate targeting monetary stabilisation policy experience a stronger response to real exchange rates than in non-inflation rate targeting countries, suggesting that policymakers are more constrained in the inflation targeting regime, as they are attempting to simultaneously target both inflation and real exchange rates which can be inconsistent objectives (Aizenman, et al., 2008).

One inflation rate targeting strategy incorporates both inflation and real exchange rates into determinantion of interest rate policy. In this scenario, discrepencies have been observed in regard to the real exchange rate and the distinction between commodity and non-commodity exporting nations in inflation targeting regimes, as the response to real exchange rates is strongest in those countries following inflation targeting policies that are relatively intensive in exporting basic commodities (Aizenman, et al., 2008).

**Regulations**

**Criminal Statutes**

Other laws in this area include the following:

**Financial Services**

Racketeer Influenced and Corrupt Organizations Act

Foreign Corrupt Practices Act

Sarbanes-Oxley Act

Federal Computer Intrusions Laws that includes Homeland Security

Computer Fraud and Abuse Act

Electronic Communications Privacy Act

United States Communications Assistance for Law Enforcement Act

Economic and Protection of Proprietary Information Act

Health Insurance Portability and Accountability Act

National Information Infrastructure Protection Act

Cyber Security Enhancement Act

**Financial Regulation Statutes**

Banking and Financial Services Act of 1999

Hetzel, 1998) A study is presented that examines the causes of inflation during the tenure Arthur Burns, chairman of the Federal Open Market Committee of the Federal Reserve System. Over Burns' 8-year reign, prices increased at an annualized rate of 6.5%. Fiercely opposed to inflation, Burns did not consider monetary policy to be the driving force behind inflation. He believed that inflation emanated primarily from an inflationary psychology produced by a lack of discipline in government fiscal policy and from private monopoly power, especially of labor unions. Burns conducted monetary policy on the assumption that the price level is a nonmonetary phenomenon.

Most of the US agreed with his consensus, which led to widespread inflation in the US and thus the present monetary policy of the US to target inflation.

1987-2006~~Greenspan

(Crihfield, Wood: 1993) The Federal Reserve and the Treasury have a fiscal relationship, by which the Fed retains a portion of its earnings; this actually imparts an inflationary bias to monetary policy because that relationship gives the Fed an incentive to increase its earnings by increasing the monetary base.

(Parry, 1996) Changes in technology and the surge in international trade have impacted domestic monetary policy. However, these changes have not weakened the Federal Reserve's ability to affect aggregate demand, have not exposed US interest rates and monetary policy to undue influence from abroad nor have they broken the link between monetary policy and domestic inflation. The monetary policy of the US is independent and effective. The US has a policy committed to promoting domestic price stability.

the effect of monetary policy depends on its impact on fundamentals, as well as its credibility, as suggested in the recent theoretical literature.

(Fisher, 2002) The analysis demonstrates that the rents that can be earned from special repo rates are capitalized into the price of the underlying bond size to keep the equilibrium rate of return unchanged.

(Evans, 1998) the response of monetary policy to changing economic events. The first development is the introduction in 1988 of a futures market for the federal funds rate. The 2nd development is the Taylor rule, which states that: 1. the federal funds rate should be increased/decreased whenever real GDP is above/below its trend level and inflation has been above/below its desired level, and 2. equal weight should be given to output and inflation gaps.

(Sellon, Weiner: 1997) The conduct of monetary policy without reserve requirements in Canada, the United Kingdom, and New Zealand is discussed. The experience of these countries underscores the connection between the structure of the payments system and monetary policy in a world without reserve requirements. In all 3 countries, recent changes in the payments system have had implications for monetary policy operating procedures. At the same time, the experience of these countries suggests that there need be little connection between the absence of reserve requirements and the degree of short-term interest rate volatility. Rather, the volatility observed in these countries appears to depend more on institutional arrangements for providing and absorbing liquidity than on the absence of reserve requirements.

(Goodfreind, 1996) While the Federal Reserve can follow the Treasury's lead on sterilized foreign exchange operations without compromising its independence on monetary policy, there is little evidence that sterilized intervention alone can have a sustained effect on the exchange rate. Thus, the Fed's participation in foreign exchange policy with the Treasury creates doubt about whether monetary policy will support domestic or external objectives, and this doubt undermines the credibility of the Fed's longer-term objective of reducing and ultimately eliminating inflation. The problems created by the Fed's involvement in foreign exchange operations underscore the need for Congress to provide the Fed with a mandate for price level stability, recognizing a concern for the stabilization of employment and output. By providing a national goal for monetary policy once again, a price stability mandate would greatly reduce the risk of conflicts and credibility problems when the Fed works closely with the Treasury and other parts of the government.

(Friedman, Kuttner, 1996) During the first half of the 1980s, US monetary policy was the central actor at work in reducing the US economy's ongoing rate of price inflation from low double digits to low single digits - and, moreover, doing so at a real cost that was at most consistent with existing estimates of the cost of disinflation, if not a little better. The tendency to impose policy rules that amount to fighting the war on the last battle's terrain is examinined by studying the most recent effort by the Congress to impose a form of working rule on US monetary policy: the injunction to the Federal Reserve System, under Concurrent Resolution 133, to formulate monetary policy by setting explicit targets for money growth. Central bank purchases and sales of securities, the resulting changes in bank reserves, and fluctuations in the relevant short-term interest rate are all known data not long after the fact, but few central banks make clear just why they have chosen the actions they have taken. The standard rationale for using a money growth target to guide monetary policy is that, under the right conditions, doing so provides a coherent way of taking into account unforeseen developments.

(Havrilesky, 1994) The executive branch of government systematically signals its policy desires to Federal Reserve officials who, in turn, may respond. An index of signaling from the Administration to the Federal Reserve (SAFER) measures Executive branch pressures. The SAFER index is based on Wall Street Journal articles reporting that a member of the administration desires easier or tighter monetary policy. Whenever the legislative branch threatens the central bank's bureaucratic prerogatives, Federal Reserve officials become more responsive to executive branch signaling in order to garner administration protection. SAFER responds to the state of the economy as well as to the partisan composition of the Federal REserve Board of Governors. The intensity of executive branch signaling of monetary policy desires varies inversely with the friendly partisan composition of the Federal Reserve Board. Findings suggest that one should model monetary policy as a multiple uncooperative principals-multiple agents problem. Researchers should rethink institutionally naive game theoretic and politically cleansed optimal control monetary policy models.

(Nilsen, 1997) When examined for the period 1985-1992 as a whole, the impact of changes in the targeted Fed funds rate on U.S. treasury bill rates has been weaker than during previous periods. The period, however, should be viewed as three separate regimes. First, I show significant differences between the Greenspan and Volcker eras arising from management style. Volcker emitted ambiguous signals to the market, which induced heterogenous expectations. Greenspan's market leadership forged more homogeneous expectations allowing treasury rate responses prior to the target change to be attributed to market anticipations. Further, I find strong annual seasonality in borrowed reserves targets, corresponding to an agricultural cycle.

It suggests the Fed no longer defends a target for borrowed reserves and instead allows them to follow the cycle. Subsequently, the Fed funds rate adheres more closely to a target rate and Treasury rates react similarly to an earlier direct Fed funds target regime. Thus, I conclude that as of late 1989, the Fed again directly targets the Fed funds rate. Target rate changes induce starkly different reactions by treasury rates of various maturities over the three regimes. Applied to the term structure, I find that the average monthly interest rates implied by the expectations theory is consistent with the pattern of actual treasury rate reactions. I compare implied monthly rate reactions after a policy shock between direct Fed funds rate regimes of the latter Greenspan period and the 1975-1979 Fed. I find that after a policy easing, the market expects the monthly rate to remain at a lower level throughout a horzion of at least 20 years. This is consistent with expectations of a Fed that is able and willing to contain inflation: although easing, the public has confidence it will not inflate over the forseeable future.

(Stevens, 1993) More than 20% of the funds that banks have on deposit with the Federal Reserve Banks are required clearing balances, not required reserve balances. Since 1981, when they first earned a market return, clearing balances have become widespread among banks of all sizes.

(Soss, 1993) Operational questions compound analytical ambiguities when targeting for real interest rates. There are questions over which inflation measurement to target, whether each 0.1% on the monthly inflation figure will translate to 120 basis point adjustment in the federal funds rate from one month to the next, and which interest rate is most appropriate. Real interest rates can be judgmentally inferred, but never objectively observed. At best, the Federal Reserve can capture only a glimmer of real rates through the veil of the real and money economy's performance. It is difficult to understand how the Federal Reserve Board can expect to use such an intangible and unobservable concept as a practical target for its open market operations.

(McNees, 1993) Although open market operations are clearly the primary monetary policy tool, the discount rate is not without influence. Federal Reserve Banks propose any discount rate changes, and the Board of Governors decides whether to accept, reject, or take no action on their requests. The involvement and influence of the various Reserve Banks in this process is examined, exploring their participation over a 20-year period. The historical analysis shows that Reserve Banks differ in the frequency, persistence, and direction of their proposals for change. Statistical models are developed for the decision procedures of the Reserve Banks in proposing a change and for the Board's rulings on those proposals. Both pay particular attention to labor markets, financial markets, and inflation or monetary aggregates. Results also show that the number of Reserve Bank proposals before the Board does play an independent role in the Board's decisions, above and beyond economic conditions.

(Brunner, Lown: 1993) The effects of reserve requirements on market volatility and on the central bank's ability to achieve short-run policy objectives are examined. The ability to achieve short-run objectives is focused on, and empirical estimates of the likely effects of lower reserve requirements are provided. It is concluded that, although changes in the federal funds rate have important effects on the demand for transaction deposits, the full impact of these changes takes several months to occur. The results suggest that both the required reserve ratio and the federal funds rate play a statistically important role in banks' demand for free reserves. Also, with respect to the supply of nonborrowed reserves, the estimates suggest that the central bank has employed a combination rule over the sample period. Overall, results indicate that banks are likely to become somewhat more responsive to changes in the federal funds rate under a lower required reserve regime.

(Chappell, etc. 1993) The channels through which partisan influence from a presidential administration could affect monetary policy-making are investigated. Influence could be a result of direct presidential pressure exerted on members of the Federal Open Market Committee (FOMC), or it could be a result of partisan considerations in presidential appointments to the Board of Governors. The results suggest that the appointments process is the primary mechanism by which partisan differences in monetary policies arise.

(Hetzel, 1992) A study examined whether the monetary aggregate M2 offers useful information about the impact of monetary policy actions on nominal expenditure. The results indicate that whether M2 conveys useful information about the nominal expenditure of the public depends on the magnitude of unpredictable changes in the demand for real M2 relative to the magnitude of changes in the other determinants of nominal expenditure - changes in nominal M2 and predictable changes in M2 velocity. Regression analysis indicated that recent unpredictable changes in the public's demand for real M2 have been small relative to these other determinants. In particular, the reduction in the growth rate of nominal expenditure reflects the reduction in the growth rate of M2, rather than an unpredictable increase in M2 velocity. The relationship between money and nominal output is predictable only over fairly long periods of time. Consequently, inferences about the contemporaneous behavior of money demand are problematic.

(Higgins, 1992) The erratic behavior of M2 in recent years is symptomatic of fundamental changes likely to continue impairing the usefulness of M2 as a policy guide. Since the FOMC discontinued target ranges for M1 in 1987, M2 has become the preeminent information variable for the Federal Reserve's monetary policy. Now, persistently weak M2 growth has led the FOMC to deemphasize its importance in the conduct of monetary policy. Most analysts attribute the slowdown of M2 growth to either reduced demand for M2 by households and businesses, or reduced supply of M2 by depository institutions. However, in a deregulated financial environment, no monetary aggregate may be related reliably enough to policy goals to become the preeminent information variable.

(Lewis, 1991) In October 1979, the US Federal Reserve Board announced a new operating procedure for conducting monetary policy. Following the announcement, the behavior of interest rates changed dramatically. In particular, both the level and the variance of short-term interest rates increased significantly. The policy was abandoned in 1982 in favor of an operating procedure that reduced the variation in interest rates. The issue of whether market anticipation of the switch in monetary policy systematically affected the ex post returns on longer term relative to short-term US interest rates is examined. When the market expects a discrete change in policy that does not materialize for some time, these expectations induce forecast errors that, in small samples, are systematically mistaken ex post. This effect is called the "peso problem." The results suggest that the presence of peso problem effects during the nonborrowed reserves targeting period induce sizable effects on excess returns on longer term bonds even if there had been no variation in the market's beliefs that the Federal Reserve would change policy.

(Fackler, 1990) In 1983, the Federal Reserve decided to use a broad credit aggregate, total domestic nonfinancial debt, in the conduct of monetary policy. This aggregate, referred to as "total credit" or "total debt," replaced bank credit as an associated policy target. The Federal Open Market Committee (FOMC) adopted total credit because financial innovations over the prior decade had lowered the information content of bank credit for monetary policy and because the usefulness of traditional monetary aggregates was questioned due to velocity shifts in the early 1980s. It is shown that the federal and nonfederal (private) components of total credit have significantly different impacts on the economy. Thus, if the FOMC takes seriously the monitoring of total credit in relation to the gross national product, biases may be introduced into the policy process. If the FOMC has de facto abandoned total credit as a policy guide, it may be ignoring important information contained in a less aggregated analysis.

(VanHoose, 1990) A theoretical analysis of the Federal Reserve's borrowed-reserves-targeting procedure is presented. A model is constructed that is a simple, linear IS-LM framework with an expanded financial sector. In the context of this model, in which nonborrowed reserves are varied to achieve an intraperiod target level of borrowing that is consistent with an objective involving intraperiod variability of nominal income, it is shown that periodic adjustments of the borrowing target generally are optimal.

(Fischer, 1989) An analysis of the weekly US monetary expectations structure finds no evidence to support the existence of super exogeneity in that structure. The evidence suggests that monetary expectations are not structurally invariant to Federal Reserve shifts. The analysis also shows that the empirical nonstationarities found in money announcement studies can be accounted for by the structural breaks in the expectations structure. The results rejecting super exogeneity are consistent with the observed breakdown of money demand functions in an environment where money is endogenous. The results also lend support to the discretionary policy models that advocate that Federal Reserve policy shifts alter the expectations structure and are in conflict with empirical studies that assume that monetary expectations are invariant. The analysis uses Money Market Services data and is applied to the October 1979, October 1982, and February 1984 Federal Reserve regime shifts.

(Bailey, 1988) To measure the impact of M1 releases on asset price volatility, the statistical associations between money surprises and implied standard deviations of stock, Treasury bond, gold, and foreign currency prices are documented. Implied standard deviations are figured from market option prices from the 2 trading days spanning the time of the weekly M1 announcement and are linked to the sign and size of the surprise component of the release. Changes in estimated gold and stock index volatility are linked with unanticipated weekly growth in the announced level of money supply -- gold volatility increases and index volatility declines with unexpectedly high M1 growth. Variations in estimated Treasury bond and foreign currency volatility are linked with the absolute value of the unanticipated weekly growth in the announced level of M1 -- they increase with the magnitude of the money surprise.

(Dreyer, 1988) The interplay of exchange rates, interest rates, and fiscal and monetary policies is important to the economic forecasting done by the Congressional Budget Office (CBO). The CBO accepts fiscal policy as dictated by congressional budget resolutions while basing monetary policy on Federal Reserve Board statements. Short-range monetary policy is assumed to center on halting the dollar's decline. Unless the revised Gramm-Rudman-Hollings Act is adhered to, budget deficits of significant magnitude may continue through 1992. Thus, substantial capital inflows are necessary, and consequently, domestic interest rates remain elevated. A model is presented that shows the effects of changes in the budget deficit on interest rates. However, the results are inconclusive. Therefore, it is believed that monetary policy determines the willingness of foreigners to accumulate dollar assets. The US' structural deficit needs to be reduced. Otherwise, the continuation of sizable capital inflows will be required with resultant pressure on the Fed to accommodate the fiscal deficit.

(McNees, 1987) However, an alternative framework for monetary policy is prospective nominal gross national product (GNP) targeting. A nominal GNP objective, which reflects desired real growth and inflation, would focus attention on whether an easier or a tighter monetary policy is needed. Since it technically is feasible to prepare monthly, nominal GNP estimates and include such information as weekly money stock data, this process would not be inferior to examining only intermediate target data. Nominal GNP targeting would not necessarily imply greater instrument flexibility than current procedures. Whether or not this would happen would depend entirely on the details of how the system is implemented -- specifically, whether the central bank paid adequate attention to the uncertainty of the response of nominal GNP to changes in policy instruments.

(Klines, 1987) The apparent breakdown in the relationship between M1 and the economy that started in late 1981 triggered an intense debate. Most economists agreed that the breakdown had been brought on by the nationwide introduction of negotiable order of withdrawal (NOW) accounts, but they were divided on the implications. Some suggested that the deregulated M1 would remain so sensitive to developments other than the course of the economy that it would no longer be useful as a policy guide. The behavior of M1 since 1981 has supported this viewpoint. Although the deregulation of M1 has been completed, a reliable relationship between M1 and the economy has not redeveloped. If Super NOW rates are indicative, sluggish adjustment of other checkable deposit (OCD) rates is likely to continue. M1's usefulness as a policy guide clearly has been damaged. However, developments that might speed M1's recovery as a guide include: 1. continued progress toward price stability, and 2. a more stable relationship between M1 and the goal variables of policy.

(Rich, 1987) In the last half of the 1970s, central banks of several industrialized countries adopted growth targets for the domestic money stock, a move regarded by many as a victory for monetarism. Five propositions form the nucleus for monetarism: 1. Inflation is primarily a monetary phenomenon. 2. The velocity of money is fairly stable if there are no major shocks to the money supply. 3. Price stability should be the primary objective of monetary policy. 4. Central banks should adopt operating procedures that will control the monetary base. 5. Monetary policy must be based on rules, not central bank discretion. An assessment of recent Swiss and US monetary policy reveals that: 1. both the Swiss and US experiences are consistent with monetarist theories of the close relationship between trend changes in money and prices, 2. problems of instabilities in the behavior of velocity have been more serious in the US than in Switzerland, and 3. the Swiss National Bank endorses the monetarist theory that price stability forms the principal objective of monetary policy, while the Federal Reserve Board has embraced a number of other goals.

(Hamilton, 1987) An examination is made of the role of monetary policy in the early stages of the Great Depression. The actual decisions of the monetary authorities in 1928-1929 are explored, and the economic effects of these policy actions, as reflected in the behavior of key macroeconomic aggregates, are summarized. The mechanism whereby monetary policy may have affected the course of the depression is explored, focusing on the extent to which the tremendous deflation of 1927-1933 was anticipated. It is found that the depression was preceded by a dramatic shift toward a highly contractionary monetary policy. The economic impact of this policy seems unlikely to have come through the conventional Keynesian channels of a shortage of liquidity and high ex ante real interest rates, but instead, it may have operated through unanticipated deflation and, after 1930, through the disruption of financial intermediation as a result of the banking panics.

(Siegel, Strongin: 1986) The money/income relationship broke down after 1980, prompting some economists to suggest that alternative money and income measures might improve its performance. The Federal Reserve Bank of Chicago-Gittings money/income model is used to test some of the proposed money and income measures. The model divides the relationship into 2 equations that explain inflation and real income growth separately.

(Roberts, 1986) A case is presented for a supply-side fiscal policy, which should be supported by monetary policy. The stagflation of the 1970s was brought about by rising tax rates and regulation, resulting in accelerating disincentives. Disinflation contracted government revenues and built into government spending projections greater levels of real spending than intended; larger budget deficits ensued. Congress was unwilling to address the deficits on the spending side, and the Federal Reserve held to a strict monetary policy. Higher taxes to decrease the budget deficit will add to the cost of production and erode US international competitiveness further. The resolution should be pro-growth supply-side fiscal policies designed to decrease the cost of labor and capital. This would result in lower total factor costs and a greater supply of dollars in world markets.

(Roley, 1986) Since 1982, US monetary policy has: 1. deemphasized M1 as a monetary target, and 2. adopted operating procedures designed to stabilize short-term interest rates. These operating procedures are classified as: 1. the federal funds rate, 2. nonborrowed reserves, and 3. borrowed reserves. The volatility of the federal funds rate and other interest rates depends on Federal Reserve intervention in the reserves market and the market's perception of the type of operating procedures being used. The reserves market can be affected by the response of interest rates to: 1. the Federal Reserve's weekly M1 announcement, 2. inflation, or 3. economic activity announcements. Empirical evidence suggests that the volatility of the federal funds rate lessened after October 1982 but remained significantly greater than before October 1979, indicating that the Federal Reserve has not used the federal funds rate operating procedure. Instead, the borrowed reserves procedure has been adopted and the market has placed no weight on M1 announcements.

(Siegel, Stringin: 1986) Monetary policy hinges on the expansion of M1 and its relationship to the rest of the economy. Historical data are not as likely as newly released money supply data to exaggerate the volatility of money growth because, over time, the early data errors are decreased through frequent and often substantial revision. M1 data available to policymakers are examined for each year since 1965 to see if initial perceptions of monetary behavior could have been seriously obscured by preliminary errors. It is found that M1 growth often appeared to be more variable in the most recent 2-year period than in the previous 2 years. However, in 50%-60% of the cases, the evidence of increased monetary uncertainty disappeared after 2 years of data revision. The overstated variance of initial M1 data has discouraging implications for the employment of structural models to evaluate changes in economic relationships.

(Morris, 1986) Over the past 2 decades, US monetary policy has been influenced by 4 factors: 1. the rapid integration of global trade and finance, 2. deregulation of the banking system, 3. the move to floating exchange rates, and 4. the financial consequences of disinflation. These factors have changed the central banking environment and made the financial system more fragile. The integration of world trade has also complicated monetary policymaking. As a result, the Federal Reserve must work to sustain the US economy on a moderate growth path. Deregulation has largely eliminated nonprice rationing of credit and blurred the line between money and other liquid assets. Therefore, targeting assets should be used as a monetary policy guideline; targeting money is unlikely to remain a reliable guide. In such an environment, characterized by a weaker financial system, the optimum US monetary policy will avoid the boom-bust cycles of the past and the accompanying fluctuations in interest rates.

(Goodfriend, 1986) Increasing awareness of the importance of monetary policy has focused much attention on the Federal Reserve in recent years. The role of secrecy in the implementation of monetary policy is discussed in reference to the Federal Reserve's defense of secrecy as argued in a recent Freedom of Information Act suit, Merrill et al. versus Federal Open Market Committee. This case forced the Fed, for the first time, to provide a detailed written defense of secrecy. The Federal Reserve's arguments are evaluated on the grounds of economic theory, and the theoretical papers related to the secrecy issue are reviewed. Many potential benefits and costs of central bank secrecy are revealed, and some conditions under which secrecy could be socially beneficial are identified. At best, given the inconclusiveness of the theoretical arguments and the presumption that government secrecy is inconsistent with the healthy functioning of a democracy, further study is required to demonstrate that central bank secrecy is socially beneficial.

(Falls, Hill: 1985) In October 1979, the Federal Reserve shifted emphasis from the federal funds rate to the level of nonborrowed reserves as an intermediate focus of monetary policy. The extent to which the procedural change reflects an alteration in the Fed's basic response to broader macroeconomic objectives is examined. The results of bivariate causality tests are employed to form a reduced-form reaction function. Tests for the presence of bidirectional causality are then conducted. The results of the empirical research bolster the case for a simultaneous equation system when modeling Fed behavior. They also provide preliminary evidence on the contrast in monetary policy between the 1970s and the policy under Chairman Volcker. The bivariate causality tests involving the nominal money supply over the 2 periods reveal important differences in policy implementation. The question of whether it is possible to conduct monetary policy in a way that does not cause inflation or real economic activity is raised.

(Hetzel, 1985) The issue of whether monetary policy should be guided by legislated rules or left to the discretion of the policymakers has been a topic of debate since the early days of central banking. A review is presented of the debate that took place in the congressional hearings on the Strong bill in the 1920s. The bill was intended to implement a price-level stabilization policy that Benjamin Strong used as head of the New York Federal Reserve Bank. The hearings indicated that the Board of Governors, represented by Adolph Miller, denied Strong's contention of the Fed's ability to influence the price level. Miller instead promoted a policy based on the ''Real Bills'' doctrine, according to which the Federal Reserve System need only be concerned with ''speculative'' extensions of bank credit. At Benjamin Strong's death, there was a shift in power from the New York Fed to the Board in Washington, which determined the character of monetary policy during the Depression.

(Dwyer, etc. 1985) Large US budget deficits have been blamed for much of the economic turmoil of the early 1980s. A review is presented of the literature specifying the consequences of the deficits, with attention focused on 2 aspects: 1. the relationship between the monetary authority and the fiscal authority, and 2. the effects of deficits on the current account. There is considerable dispute over whether in fact there has been any significant relation between deficits and monetary policy in the US since World War II. It is argued that no substantial effect of deficits or government spending on real interest rates has been identified, perhaps partly because of international capital movements. Barro notes that the federal budget deficit results from an excess of current federal spending as a ratio of gross national product over the normal value of this ratio. Blinder sees capital inflows from abroad as having been of great importance in recent years.

(McCallum, etc. 1985) A review and assessment is provided of the arguments for and against monetary targeting in light of recent experience. The leading arguments advanced by critics may be grouped into 4 main categories: 1. those that see accurate monetary control as infeasible, 2. those that accept its feasibility, but only at the cost of inducing extreme volatility of short-term interest rates, 3. those that stress the practical difficulties created by rapid financial innovations and deregulation in the payments industry, and 4. those involving strategic objections. A single nominal target is recommended to avoid the mistakes of mixing nominal and real targets, gross national product (GNP) being the best target. Tobin argues that the main problem of targeting nominal income derives from supply-related price shocks. To counteract shocks, Axilrod recommends a nonborrowed reserves targeting procedure as permitting more stability of financial markets as compared with a total reserves procedure.

(Sinai, 1981) ''Rational expectations'' (RE) constitute a controversial challenge to traditional formulation of economic policy and use of large-scale macro-econometric models in policy analysis. Elements of RE affecting monetary policy are: 1. natural rate hypothesis, 2. efficient markets, 3. ineffectiveness of stabilization policy, 4. irrelevance of large-scale macro-econometric models for monetary policy analysis, and 5. knowledge of feedback rules.

(Axilrod, Lindsey: 1981) In October 1979, the Federal Reserve (Fed) changed its open market operating procedures and moved the focus of short-run guides for open-market operations toward reserve aggregates and away from the federal funds rate. Experience with the new procedures is satisfactory thus far. However, large variations in money growth over the short-run suggest that perhaps the control mechanism needs improving or that the question of appropriateness of predetermined monetary objectives must be assessed. In general, reserve targeting linked to money supply objectives is the best system of carrying out monetary policy.

(Fair, 1981) One of the equations explains the behavior of the Fed wherein the Fed is estimated to ''lean against the wind'' by allowing short-term interest rates to rise or fall in response to an increase or decrease in: 1. real economic activity, 2. the rate of inflation, and 3. the past growth rate of the money supply. Estimated coefficients of these variables are viewed as estimating the effects of the Fed's policy change on short-term interest rates. Two simulations were run, and it is concluded that the change in monetary policy reduced real growth without having much effect on the rate of inflation. Real growth was reduced because interest rates exert a negative effect on demand and output, and inflation was not affected because the tradeoff between inflation and output is poor in periods of low-to-moderate economic activity. A positive interest rate effect was also noticeable.

(Sellon, Teigen: 1981) The development of Federal Reserve operating procedures from 1951 to the present is analyzed. It is assumed that the choice of short-run policy targets depends upon the types of disturbances in the economy, that policymakers choose targets to offset what is viewed as the predominant disturbance, and that policymakers will modify targeting procedures when they feel they have misjudged the predominant type of disturbance over a period of time or when the relative weights assigned to goal variables are changed. From 1951-70, the Federal Reserve used interest rates as short-run targets, possibly indicating that financial disturbances were seen as more significant than spending disturbances. The 1970-79 period was one of transition; a mixture of interest rate and money targets was adopted in an uneasy compromise between the objectives of monetary control and financial market stability. In October, 1979, the Federal Reserve shifted from an interest rate operating target to a reserve operating target for the purpose of achieving better control over monetary aggregates so as to reduce inflation. Future changes will likely depend upon the success in reaching that goal.

(Sprenkle, Stanhouse: 1981) Most economists agree the Federal Reserve's (Fed's) capacity for controlling monetary aggregates is not adversely affected by federal and state banks' differential reserve requirements. Because the enforcement of universal reserve ratios as proposed by the Depository Institutions Deregulation and Monetary Control Act of 1980 (DIDMC) does not intensify stabilization, economists maintain policy is not imperative. This study's purpose was to provide an appropriate framework to evaluate the impact of the new universal reserve requirements on stabilization policy. In calculating the maximum reserve ratios for a dual banking network having the goal of controlling output level and monetary aggregates, it was found the maximum level of reserve requirements was independent of the ideal level of the target. From a standpoint of monetary policy, it was concluded that reserve ratios are not useful countercyclical tools. It was also determined that instability differences of targets between the Fed's universal reserve plan and the old dual reserve ratios are nominal. The results clearly suggested, although the new DIDMC Act of 1980 may solve the Fed's membership problem, it will not greatly enhance the effectiveness of the Fed in controlling monetary or real sector aggregates. Appendices.

(Black, 1981) After World War II, the majority of economists agreed that the Federal Reserve (FR) should conduct monetary policy by trying to manage interest rates. This approach has proved unsuccessful and has been replaced by the current policy of trying to control the growth rate of the money supply. The FR now sets annual targets for the growth of the monetary aggregates, which should serve as an automatic economic stabilizer. However, institutional flaws have hindered the FR's performance in controlling money supply growth. These flaws have: 1. not allowed enough short-term flexibility in the Federal funds rate, 2. inhibited adjustment of nonborrowed reserves targets, 3. prevented aggressive use of the discount rate weapon, 4. encouraged the assumption that short-run movements in the money supply would be self-reversing, and 5. caused the lagged reserve accounting system to create technical difficulties under new control procedures. The FR is presently taking steps to correct its engineering problems. If they are successful, the policies will result in a faster decline in inflation than most people think possible.

(Wilby, 1981) The Federal Reserve's (Fed) adoption of its new monetary policy operating procedure, in late 1979, has made the relationship between interest rates and the dollar much more systematic. The new procedure also can partially explain the more consistently positive relationship between domestic interest rates and the US currency. In the 5 major theories of exchange rate determination, a number of prominent factors (domestic rates of inflation, rates of monetary growth, international monetary flows, risk, and real return) affect interest rates as well as the domestic exchange rate. Expectations about the future course of economic policy, which affect those factors, play a critical role in determining interest and exchange rates, and the Fed, through its ability to influence interest rates, plays a key role in the formation of these expectations.

(Selby, 1982) Monetary policy lag studies have had to cope with various problems, including how to define lags, how to find appropriate data to match selected definitions, and how to develop satisfactory and meaningful techniques for testing the data. Inside lags are those largely within the Federal Reserve System, while outside lags are those beyond the purview of that system.

(Friedman, 1982) The Federal Reserve Board presently uses an intermediate target strategy with a monetary aggregate as the target to design and implement US monetary policy. This involves specifying a financial variable to represent a proxy for real economic targets, such as employment or economic growth. The Fed must decide on the growth rate for the intermediate target and then set an instrument that it can control so as to reach this target. A better framework would be to broaden the intermediate target base using aggregate credit measured by total outstanding indebtedness of all the economy's nonfinancial borrowers. The relationship between credit growth and economic activity is more stable and reliable than between money growth and economic activity. The Fed should choose a monetary aggregate and credit aggregate, set target ranges for them, and allocate reserves to reach both these targets.

(Sellon, Seibert: 1982) In October 1979, the Federal Reserve Board switched from interest rate targeting to reserve targeting. Since then, the discount rate charged to depository institutions when they borrow from a Federal Reserve bank has had a more visible role in the implementation of monetary policy. In addition to rate changes, the Fed has occasionally imposed a surcharge rate on large banks that borrow frequently. Analysis shows that, when the basic discount rate is not a penalty rate, changes have no immediate effect on discount window borrowing, but they do have a one-for-one effect on market rates. When the rate is a penalty rate, changes in the discount rate have no effect on interest rates or borrowing. The discount rate surcharge has, on the average, had a significant effect on market rates. This surcharge impact has been quite variable on large bank behavior and on the demand for borrowing.

(Brimmer, 1983) Late in 1979, the Federal Open Market Committee adopted an essentially monetarist approach to monetary policy, but 3 years later, this approach was laid aside, at least temporarily. During that period, the Federal Reserve's policy achieved the substantial benefit of lowered inflation, but there were also significant costs evident, i.e., a rise in unemployment and general economic stagnation. This analysis traces the evolution of monetarism in the Fed, showing that the resort to closer monetary targeting reflected a pragmatic move by the Fed to moderate actual inflation and erase embedded inflationary expectations. Also reviewed are: 1. the impact of monetarism on the economy as a whole and several of its major sectors, 2. the benefits of moderating inflation and the dampening of inflationary expectations, and 3. the economic consequences of the Fed's projected return to a monetarist approach in the coming year. It is evident that the greatly improved inflationary prospects and the uncertain outlook for the real economy give the Fed a considerable safety margin within which it can conduct an accommodative monetary policy well into next year.

(Roth, Seibert: 1983) Depository institution borrowing from the Federal Reserve District Banks became an important part of the Federal Reserve's attempt to control monetary growth when the Fed's operating procedure was changed from an interest rate to a reserve aggregate operating variable in October 1979. Depository institution borrowing or discount window policy also has had significant effects on short-term market interest rates. Interest sensitivity in the borrowings function, and thereby, the money supply function, improves the automatic control of money supply disturbances, but it diminishes the Fed's discretionary control of the money stock and automatic control of money demand disturbances. Thus, it would seem that the degree of automatic control of money supply disturbances would be the least with a penalty rate policy, greater with a surcharge policy, and the greatest with the current policy.

(Kopcke, 1983) The debate about the proper course for monetary policy continues on, with the issues as numerous and controversial as ever. This analysis contributes several observations to the debate by presenting: 1. a comparison of the velocities of 5 financial aggregates - M1, M2, M3, liquid assets (L), and the debt of nonfinancial businesses, households, and government (D), and 2. a discussion of how the financial aggregates can be controlled, with the important finding that the supply of reserves can influence the growth of debt even though there is essentially no statutory link, such as reserve requirements, tying debt to reserves. Although the primary guideline for ''money'' growth can be set for any one of many financial aggregates, those that are most easily controlled tend to be less stably related to concurrent gross national product (GNP). If policy is committed to steering a highly controllable financial aggregate along a predetermined path, disappointing economic performance could continue to hinder monetary policy's evolution toward monetarism.

(Evans, 1984) In October 1979, the Federal Reserve embarked on a determined policy of disinflation and also stopped stabilising interest rates. A modification of Barro's (1978, 1981) model of output is used to investigate whether money growth and interest rate volatility affect the level of output. The modified model is estimated using annual US data over the Barro's sample period 1941-1978 and then is extended to 1981. Analysis indicates: 1. Money growth volatility does not affect output. 2. Unanticipated interest rate volatility lowers output. 3. Output does not depend on anticipated interest rate volatility. 4. The operating procedures adopted by the Federal Reserve in October 1979 led to an unanticipated increase in interest rate volatility, thereby reducing output by about 1% in 1980 and by about 2.5% in 1981 and 1982. The evidence clearly suggests that stabilizing interest rates is a sensible monetary policy.

(Dewald, 1984) Business cycle data suggest that since World War II there has been an historical link between federal budget deficits and monetary growth. The connection may lead to market expectations of inflation increases. After World War II, a one percentage point rise in the deficit relative to gross national product (GNP) was linked with a slightly higher increase in money growth as measured by M1. The M1 increase was in turn linked with an increase in inflation after about a 2-year lag. If the Reagan Administration's projected deficits of about 6% of the GNP in 1983 and 1984 follow this trend, the US can expect about a 9% increase in M1 and inflation. These expectations appear to be an important part of the high long-term yields in 1983. However, the Depression in the 1930s illustrates that large deficits do not have to cause inflation and pressure interest rates. The Federal Reserve Board can eliminate the association between budget deficits and monetary growth by slowing down monetary growth. However, monetary authorities seem to have been reluctant to slow the money growth that accompanied budget deficits after World War II and since 1970.

Deregulation has led to the phasing out of deposit ceiling rates on nearly all accounts; thus, the worst of the policy problems resulting from the initial transition to deregulated deposit rates are over. However, more permanent effects of deposit rate deregulation may arise that will affect the future conduct of monetary policy. Deregulation has changed the composition of the monetary aggregates, with the result that M2 is less sensitive to changes in market interest rates while M1 is more sensitive. These effects on M1 and M2 are verified empirically. The reversal in the relative interest sensitivities of M1 and M2 necessitates a reevaluation of these aggregates' roles in monetary policy implementation. To the extent that the Federal Reserve can attain its longer run policy goals without forcing one of the monetary aggregates to grow at a constant rate each month, the costs of interest rate volatility suggest that short-run monetary control is neither desirable nor necessary. (Roth, 1985)

When announcing target ranges for the growth of M1 and other monetary aggregates, the Federal Reserve has been using the actual dollar level of an aggregate in the base quarter as the base level for the target range, rather than the midpoint of the targeted range set in the preceding targeting period. This practice, called base drift, is described, its cumulative effect on the effective growth of M1 since 1975 is estimated, and ways in which it has undermined the Fed's current monetary targeting strategy are discussed. Although net base drift was considerably upward over the 1975-1984 period, there was both upward and downward base drift during that time. As a result, the cumulative drift tends to understate the quantitative significance of base drift on a year-to-year basis. Modifications of the Fed's present strategy are suggested that would: 1. eliminate base drift, 2. give the Fed an incentive to control the growth of the money supply more closely, and 3. increase the public's confidence in the Fed. (Broaddus, Goodfriend 1984)

Traditionally, the implementation of monetary policy by the Federal Reserve System has involved the use of 3 main policy instruments: 1. open market operations, 2. the discount rate, and 3. reserve requirements. Many have questioned the Federal Reserve Board's need for all 3 policy instruments. It is argued here that the recent increased emphasis of the Fed on the control of inflation and the growth of money and credit has prompted important changes in policy procedures and institutional arrangements that have enhanced the use of the discount rate and reserve requirements as policy instruments. The shift in policy procedures from interest rate targeting to money and reserve targeting is a key development that directly broadens the role of the discount rate and reserve requirements. Further enlarging the scope for these 2 instruments are legislative changes and regulatory actions. The 3 policy instruments are described, followed by discussion of the Monetary Control Act of 1980, regulatory developments, and the importance of the 3 instruments. (Sellon, 1984).

(Reynard, Ranaldo: 2008) This paper explains the effects of monetary policy surprises on long-term interest rates and stock prices in terms of changes in expected inflation, real interest rate and dividend growth, and relates these effects to markets' perceptions of economic shocks and Fed's information set. We analyze stock and bond futures price co-movements and relate them to Treasury Inflation-Protected Securities (TIPS) data. The sign of long-term interest rate reactions is mostly driven by changes in expected inflation. The sign of stock price reactions is mostly driven by changes in expected dividend growth, but it is also sometimes determined by changes in expected real rates. The co-movements of long-term interest rates and stock prices are determined by the co-movements of expected inflation and dividend growth. The majority of Fed's interest rate surprises are expected to be followed by negative co-movements between inflation and output. This can be due to relatively more frequent "inflation" or "supply" shocks together with Fed's private information. Most Fed's actions are perceived as reactions to economic shocks rather than true policy shocks.

(Sinai, 1981) US financial markets are currently undergoing major restructuring. This is due primarily to: 1. new approaches to monetary and fiscal policy, 2. deregulation of financial institutions, and 3. increasing numbers of financial innovations. The Reagan administration proposals represent the most sweeping change in approach to economic policy since the 1930s. The administration program's main aim is stabilization of the US economy through an attitude of restraint. The program actually amounts to a mix of easier fiscal policy and tighter monetary policy.

**Influential Events**

***Default Crises***

1. American states default on European loans in 19th century for canals

2. Latin America 1890, Argentina especially—Baring Crises

3. 1917 Soviets closed off Russia

4. 1930s Great Depression everyone defaulted

5. Argentina 2005—private creditors settled for 1/3 of owed monies

Events involving central bank intervention. Central Bank reaction to financial crisis can demonstrate monetary policy tools in action. Although it is hard to quantify economic effects, we can still examine intervention techniques to gain understanding into prevailing economic consensus and likely beneficial and detrimentral market performance effects.

-US bailed out Mexico Peso Crisis

**Asian Crisis**

-ineffective government policies: low-interest loans were provided to inept corporations; cronyism- NO-Fail Policy for personal relationships and big established businesses

-overvalued currency-

central bank spent foreign reserves to keep the currencies at a peg; when the reserves ran out, the currency devalued over night, forcing many loans into default;

-investors then fled over fears over overly leveraged businesses, and a moderate depreciation turned into a severe depreciation

Solution: fixed exchange rates and IMF funded bank bailouts

-perverse incentives created 1 way bets for investors and rewards for the being the first one out; banks lent on this assumption, but when one jumped all jumped; however, investors behaved rationally and all was well

IMF intervention

**Civil War Continentals**

This event highlights the danger of paper money. The difference between the issuance of paper currency today and in the past, is that today when the money supply is increased 0's are just added in the computer system. No paper currency is issued, rather banks reserves are increased and the banks in turn just lend out more of the paper currency they already have. The danger becomes when more paper currency must be issued, this when inflationary pressures really start to become apparent, just like during the Civil War.

**The Great Depression**

The Great Depression gave rise to short-run macroeconomic theory, for it led Keynes and others to determine that AD was the key to understanding fluctuations in NI. Thus with hindsight, the IS-LM model can explain the various explanations of this traumatic downturn. The 2 hypotheses are: (1) Spending Hypothesis- Shocks to IS curve (2) Money Hypothesis- Shocks to LM curve.

Spending hypothesis resulted in contractionary shift in the IS curve; fiscal policy, C, and I all contributed and places blame for Depression from exogenous fall in spending on goods and services; decline in income coincided with falling interest rates in the 1930s.

Money hypothesis resulted in a contractionary shift in the LM curve and places blame on the Fed letting the money supply drop by so much. 2 issues with money hypothesis are: (1) real money balances didn’t drop; prices dropped with money supply and (2) interest rates should have risen, but interest rates fell as well. If the falling money supply was responsible for the falling price level, it still could have been responsible. Deflation can be either stabilising or de-stabilising; 2 de-stabilising effects. The Pigou effect is falling prices expand income; falling prices should have stabilised the economy through deflation. Debt-deflation theory is that unexpected deflation hurts debtors and helps creditors; now debtors owe more purchasing power to creditors; if debtors and creditors have equal propensities to spend, they would be equal off, but debtors spend more, so a free-distribution of wealth occurs. Changes in expected inflation shift the IS curve; investment falls because firms worry about having to pay back more in the future; fall in I leads to fall in planned expenditure, which depresses income, which reduces demand for money, which reduces the nominal interest rate, which means the interest rate falls by more than expected deflation, so the real interest rate rises—IS curve shifts downward. Investment depends on the real interest rate and money demand depends on the nominal interest rate. To find the AD curve, we must find the level of income Y that satisfies the IS and LM curves. Those who value fiscal policy over monetary policy argue that the responsiveness of investment to the interest rate is small (vertical IS curve); those who value monetary policy over fiscal policy argue that the responsiveness of money demand to the interest rate is small (vertical LM curve).

(Balder, 1997) Since the end of 1994, financial asset prices have generated more than $4 trillion in market value, increasing more than 75% in 2 years. This inflation has added a new dimension to policy-making around the world. The examination of 4 recent market disturbances illustrates the following consequences of financial market liberalization for monetary policy and financial stability: 1. Securization and trading have risen. 2. Boom-bust cycles have increased. 3. Markets police government policies. 4. Market behavior can become independent of monetary policy. The disturbances examined are: 1. the highly leveraged takeovers and real estate boom-bust cycle and their implications for depository institutions, 2. the 1992 crisis in the Exchange Rate Mechanism (ERM), 3. the bond market crisis in 1994, and 4. the Mexican crisis in 1995. It is concluded that transaction-driven finance has fundamentally reshaped the relationship between the central bank and market participants.

The power of integrated markets to focus the world's financial resources on flawed government economic policy was aptly demonstrated in the European monetary crisis of the summer of 1992.

**Exchange Rates**

strong v. weak currency; 1 has to be better

(Neal, etc. 1998) relationships among Federal Reserve monetary policy actions, US interventions in currency markets, and exchange rates are examined using an alternative measure of monetary policy actions, the Federal Reserve's federal funds rate target. It is found that exchange rates generally respond immediately to US monetary policy actions and that these responses are usually consistent with the overshooting hypothesis. Evidence is also found of signaling and leaning-against-the-wind US intervention policies over the sample.

(McKinnon, 1982) In the early 1970s, many industrial nations converted to floating exchange rates in an effort to insulate national monetary policy and inflation rates from the influences of international currencies. The effectiveness of such policies, however, is undermined in view of evidence that the national currencies of certain industrial nations are highly substitutable in demand according to expected movements in exchange rates. Analysis of the world supply of money goes much farther than national money aggregates in explaining the 2 major outbursts of inflation during the 1970s. Currently the Federal Reserve intervenes to neutralize exchange rate impacts on the US domestic economy. Yet, improved stability in both national and world prices calls for international monetary cooperation, particularly among the US, Japan, and Germany. By agreeing to non-intervention and domestic credit expansion rates, these 3 countries have enough dollar balances to control the world money supply.

Two ways in which exchange rates might systematically influence US monetary policy are examined. First, how domestic monetary objectives deteriorate as a country's money market is increasingly disturbed by international shocks is discussed. Empirical evidence suggests that foreign interest rates and expected exchange rate changes have significant impacts on domestic money demand in the US. Second, the broader issue of how information from foreign exchange markets might help a central bank to achieve its ultimate economic goals is examined. The direction of exchange rate movements can often help reveal what growth/inflation combination is more likely to follow and thereby suggest a more suitable monetary policy reaction. However, changes may have several causes, making the system fallible. Despite the fact that unobserved and unexpected economic events can occur, a close statistical correlation has been observed between changes in various financial aggregates and changes in nominal gross national product (GNP), real GNP, and the price level. (Bergstrand, 1985)

(Svensson, 1995) In the new situation with flexible exchange rates, monetary policy in Europe will have to rely more on indicators than previously under fixed rates. One of the potential indicators, the forward interest rate curve, can be used to indicate market expectations of the time-paths of future short interest rates, monetary policy, inflation rates and currency depreciation rates. The forward rate curve separates market expectations for the short, medium and long term more easily than the standard yield curve. Monetary policy in France, Germany, Great Britain, Sweden and the United States is interpreted with the help of forward rates.

(Stockman, Ohanian: 1993) Economists generally assert that countries sacrifice monetary independence when they peg their exchange rates. At the same time, central bankers frequently assert that pegging an exchange rate does not eliminate the independence of monetary policy. This paper examines the effects of money-supply changes on exchange rates, interest rates, and production in an optimizing two-country model in which some sectors of the economy have predetermined nominal prices in the short run and other sectors have flexible prices. Money-supply shocks have liquidity effects both within and across countries and induce a cross-country real-interest differential. The model predicts that liquidity effects are highly non-linear and are not likely to be captured well empirically by linear models, particularly those involving only a single country. The most striking implication of the model is that countries have a degree of short-run independence of monetary policy even under pegged exchange rates.

(Frankel, etc. 2002) Using a large sample of developing and industrialized economies during 1970-1999, this paper explores whether the choice of exchange rate regime affects the sensitivity of local interest rates to international interest rates. In most cases, we cannot reject full transmission of international interest rates in the long run, even for countries with floating regimes. Only large industrial countries can benefit, or choose to benefit, from independent monetary policy. However, short-run effects differ across regimes. Dynamic estimates show that interest rates of countries with more flexible regimes adjust more slowly to changes in international rates.

(West, 2004) The relationship between interest rates and exchange rates is puzzling and poorly understood. But under some standard assumptions, interest rates can be adjusted to smooth real exchange rate movements at the possible price of increased volatility in other variables. In New Zealand, estimates made under some generous suppositions about what monetary policy is able to accomplish suggest that decreasing real exchange rate volatility by about 25% would require increasing output volatility by about 10-15%, inflation volatility by about 0-15% and interest rate volatility by about 15-40%.

(Obstfeld, etc. 2004) The exchange-rate regime is often seen as constrained by the monetary policy trilemma, which imposes a stark tradeoff among exchange stability, monetary independence, and capital market openness. Yet the trilemma has not gone without challenge. Some (e.g., Calvo and Reinhart 2001, 2002) argue that under the modern float there could be limited monetary autonomy. Others (e.g., Bordo and Flandreau 2003), that even under the classical gold standard domestic monetary autonomy was considerable. This paper studies the coherence of international interest rates over more than 130 years. The constraints implied by the trilemma are largely borne out by history.

(Cumby, 1984) This paper finds that the introduction of dual exchange rates gives the monetary authority greater independence from external constraints than it would otherwise enjoy. The monetary authority is able to influence the level of aggregate demand in the short run and to sterilize the effects of temporary foreign distrubances. In addition, the paper finds that dual rates insulate the domestic economy fully from foreign interest rate changes but do not provide insulation from speculative disturbances.

(Makin, 1984) This paper demonstrates that different rates of taxation on interest income and exchange gains may bias results of hypothesis testing regarding critical aspects of exchange rate behavior. Two problems are discussed specifically. First, it is shown that omission of tax considerations may bias tests of the uncovered interest parity condition toward acceptance of a "risk premium" hypothesis, conditional on exchange market efficiency. Second it is shown that a rational solution for the exchange rate conditions the relationship between an exchange rate and its determinants on two regimes: (1) tax rates on interest income and foreign exchange gains and losses at home and abroad and (2) the degree of foreign exchange market intervention and sterilization of its effects on the monetary base practiced by central banks.

Should exchange rates be floating or fixed~~there are advantages to both floating and fixed exchange rates; floating exchange rates leave monetary policymakers free to pursue objectives other than exchange-rate stability, as the exchange rate is just one of macroeconomic variables monetary policy can affect; fixed exchange rates reduce some of the uncertainty in international business transactions. Fixed exchange rates discipline a nation’s monetary system and prevent excessive growth in the money supply; fixing the exchange rates is simpler to implement than other policy rules, but this policy may lead to greater volatility in income and employment. During periods of fixed exchange rates, countries may change the value of their currency if maintaining the exchange rate conflicts too seriously with other goals; during periods of floating exchange rates, countries often use formal or informal targets for the exchange rate when deciding whether to expand or contract the money supply. No system is fully fixed or floating. The monetary union is the most extreme case of a fixed exchange rate. When countries with a common currnecy experience a recession, there is little they can do to combat with monetary policy, as the central bank controls the monetary policy.

EU disadvantages are: (1) low labour mobility (2) no fiscal policy. EU advantages are: (1) traveling and international trade (2) political advantage of connection between countries; wars and trade.

With fixed exchange rates pegged to another unit, the bank must hald sufficient reserves of that unit. Speculative attack is when fixed exchange rate is used, and a change in people’s perceptions makes the fixed exchange rate untenable; self-fulfilling rumours. A currency board, where the bank holds enough units of that currency to be exchanged for the domestic currency outstanding. A further step is dollarisation, whereby the country replaces its currecy with the dollar; this happens by default in high inflation countries, but countries that do so lose the small seigniorage revenue. There is also a small lose of pride with using another government’s currency; this could reduces by using animals.

Fixed exchange rates system common in 1950s to 1970s; the central bank stands ready to buy or sell the domestic currency for foreign currencies at a predetermined price. A fixed exchange rate dedicates a country’s monetary policy to the single goal of keeping the exchange rate at the announced level; the essence of a fixed-exchange rate system is the commitment of the central bank to allow the money supply to adjust to whatever level will ensure that the equilibrium exchange rate equals the announced exchange rate. As long as the central bank stands ready to buy or sell foreign currency at the fixed exchange rate, the money supply adjusts automatically to the necessary level

-the gold standard automatically fixes exchange rates, as eaqch country agrees to exchange 1 unit of currency for a specified amount of gold; the actual transportation of gold makes arbitrage profits more costly however

**Interest Rates**

Interest rates have been regulated before in monetary policy. They dictate the stage of the business cycle; high rates mean business is growing, and low rates mean growth is stagnant. Therefore, regulating them at stable levels should help to regulate the expansions and contractions of output to moderate levels.

Many central banks have used fixed interest rates before, but their uses has declined as macroeconomic fluctuations suggested other measures may be appropriate. It is hard to pinpoint exactly which macroeconomic variables influence others, and as such if fixed interest rates were currently used, if they would have any different impact than other monetary policy tools. Fixed interest rates have been used before, and are known to have been used as moderators of business activity. …US example

2 IR Determinants

1. foreign demand for assets

2. money supply

Interest rates are the most viable option for regulating a monetary economy because they fuel business cycles. Moderating interest rates at fixed levels restrains growth but also reduces retraction. Unrestrained growth always benefits the few elite, but simply is not in the best interest of the ignorant voters.

(Eijffinger, 2008) This paper empirically examines the effect of monetary policy on exchange rates during currency crises. We find strong evidence that raising the interest rate: (i) has larger adverse balance sheet effects and is therefore less effective in countries with high domestic corporate short-term debt; (ii) is more credible and therefore more effective in countries with high-quality institutions; (iii) is more credible and therefore more effective in countries with high external debt; and (iv) is less effective in countries with high capital account openness.

So what we are left with is the current state, regardless of what basic theory dictates. History has proven over time that its mistakes are in fact its true nature,

What we have begun to see is that the political interests have superseded societal welfare maximization, which is the goal of a government; profit maximisation in business

Interest rates directly influence welfare and economic health. In the US, investment accounts for 15% of GDP; interest rates in turn are what determine quantity of investment.

Interest Rates can be considered in terms of their effect on supply and demand for goods or services; or how the interest rate affects the supply and demand for loanable funds

As we see, interest rates have a far wider reaching influence than other monetary policy options. By focusing on interest rates, opposed to exchange rates or inflation rates, the Central Bank can best ensure economic success for its enhabitants.

**2.1 History of Interest Rates**

**2.2 Nature of Interest Rates**

Many different aspects of the world directly affect our ways of life, some more than others. The financial markets are perhaps one of the biggest influences on lifestyle, along with government type and religion, among many others. As such, even though a thorough quantitative analysis of the world economy would prove a daunting task, aspects of the financial markets can be quantified, as the inherent figure-based nature of economics lends itself to concrete numbers, rather than ideological stance.

Interest income represents the primary source of revenue for financial institutions. The financial institutions, such as banks, form the backbone of the economic market which impacts out daily lives. As such, detailed analyses of interest rates will provide the most productive

This suggests that interest rates should be somewhat monitored by the home government, and financial performance should be reduced in importance for effective operation of financial institutions. This does not mean the financial services industry cannot be concerned with profits, as distinctive competencies can exist, but that the primary of goal

Interest rates influence the availability of credit, along with borrowing criteria,

**2.3 Rates**

Interest rates should be fixed.

Interest rates should be fixed at 0%. This would be most appropriate for equal balance in the economy, and the primary goal of business of maximizing social welfare. This is true because people don’t save anyways, they just spend more when they get more. They may save for a time but ultimately just spend more. 0% interest rates then discourages unscrupulous persons from engaging in dangerous financial activities.

Rates should be fixed at 3% and 7%.

Interest rates should be allowed to fluctuate

Interest rates should have

**2.4 Types of**

-categorization of interest ratresMany different types of interest rate

(Goodfriend, 1998) The term structure of interest rates can play an important role in the making of monetary policy. The degree of restraint transmitted by policy is difficult to manage in a transition between high- and low-inflation regimes. Some points about the use of the term structure for making tactical policy decisions are worth reiterating: 1. the need for policy to preempt a rise in inflation and inflation expectations puts a premium on the long bond rate as an indicator of credibility for low inflation, 2. policy leverage on long rates is regime dependent and will vary with a central bank's commitment to price stability and its credibility for low inflation, 3. policy often follows long rates because long rates embody expectations of future short rate policy actions and because long rate movements often signal changing inflation expectations that may precipitate a policy reaction, 4. bond market vigilantes do not make central banks irrelevant, and 5. the yield curve can be employed usefully to distinguish policy actions from policy impulses in order to tell how much policy is in the pipeline.

(Balduzzi, etc. 1998) A feature of US monetary policy has been active targeting of overnight fed funds rates. A study shows that during a period of tight targeting (1989-1996) term fed funds spreads from the target displayed pronounced volatility and persistence, which increase with the maturity of the loan. It shows that the increase in persistence is consistent with a model of infrequent, but predictable revisions of the target. In the model, the (autoco-)variance of the spreads of term fed funds rates from the target increases with maturity because longer-term rates reflect persistent expectations of the next target change.

(Mehra, 1996) A study empirically investigates the immediate, near-term, and long-run effects of monetary policy on the bond rate. The federal funds rate is used as a measure of monetary policy, and the long run is viewed as the period during which trend relationships emerge. Results indicate that the long-run effect of monetary policy on the bond rate occurs primarily through the inflation channel. However, in the short run, monetary policy also affects the bond rate by altering its expected real rate component. The short-run stance of monetary policy is measured by the spread between the funds rate and the ongoing trend rate of inflation. Results show that the near-term effect of the funds rate spread on the bond rate has increased considerably since 1979. This increase in the short-run sensitivity of the bond rate to monetary policy actions is consistent with the way the Fed has conducted its monetary policy since 1979.

(Christiano, 1996) An analysis of the macroeconomic effects of a monetary policy shock is presented. The study was used to illustrate the role of identifying assumptions and how, in practice, one can test those identifying assumptions. The results indicate that contractionary monetary policy actions do not produce an immediate fall in interest rates, as the initial monetized real business cycle models predict. The point estimates suggest that, instead, interest rates rise for about a year after a typical monetary contraction. They also indicate that output, employment, prices, retail sales, and profits fall, while inventories and unemployment rise.

(Edelberg, Marshall: 1996) Edleberg and Marshall show that exogenous shocks to monetary policy strongly affect short-term interest rates but have little or no effect on longer-term interest rates.

Term Structure of Interest Rates: Pure Expectations Hypothesis~~Investors will choose between short-term and long-term assets; when rates rise on one because of market conditions, invstors will switch their money until an equilibrium is reached. 3 main influences on term return differences are: (1) liquidity (2) risk (3) maturity. Term structure of interest rates- relationship between rates of return on assets within the same risk class; ie, both bonds or stocks. When short-rates are below long-rates, short-rates are expected to rise in the future; when short-rates are above long-term rates, short-term rates are expected to decline in the future. Future path of short-rates is incorporated into long-term rates. Expectations hypothesis- theory explains the term structure of interest rates.

Yield Curve~~The yield curve is the graph of the plots of the different yields to maturities of bonds. Includes 3 month to 30 year government bonds. For each yield curve, all assets must be within the same risk class (all government bonds are default free, so they are plotted together); maturity and liquidity is what separates the bonds on the yield curve. 3 slopes according to expectations hypothesis are: (1) upward- short-term rates expetced to rise (typical)~~(2) downward- short-term rates expected to decline (inverted)~~(3) no slope- short-term rates expected to remain the same.

Yield curve usually has no slope when differences in liquidity are ignored.

Liquidity Premium~~Liquidty premium has an effect on the normal shape of the yield curve that derives from the pure expectattions hypothesis. In order to tie up your money for a longer time, you will demand extra compensation. Borrowers also want to borrow long; they do not want to have to roll over short term debt and risk financing increases due to short-term rate increases. Long-term rates consequently have a built-in upward bias.

4 alternative yield curve slopes with liquidity premium are: (1) steep positive slope- short-term rates increase in addition to liquidity premium (2) normal slope- short-term rates stay the same; just liquidity premium reflected in slope (3) no slope- short-term rates expected to decline by the liquidity premium (4) steep negative slope- short-term rates decrease by an even greater amount (inverted yield curve). The yield curve is usually failry flat over the 10 to 30 year horizon; forecasts of short-term rates beyond 10 years are imprecise and differences in the liquidity premium between assets both wirth distant maturities is 0.

Interpreting the Slope of the Yield Curve~~Positive steepening of the slope usually is caused by: higher liquidity premium, upward revision of forecasts, or increases in real rates or inflation (Fisher Effect). Inverted yield curve- indicates a fairly sharp decline in short-term interest nominal rates; such steep declines are often accompanied by recessions; short rates are higher than long rates. Long-term interest rates usually decline in a recession, so inversion of the yield curve usually accompanies a rise in bond prices.

(Renshaw, 1995) Gradual increases in the interest rate paid by banks (when they borrow from each other) have always taken a long time to slow the economic growth rate. history suggests that the fear of a possible recession might change behavior in a manner that will help to prolong the expansion or at least shorten and ameliorate the recession.

(Clark, 1989) Following the breakdown of relationships between the monetary aggregates and the economy, in recent years, the Federal Reserve has had to rely more heavily on short-term interest rates as an instrument of monetary policy. Such events as changing methods of housing and consumer finance, the rising importance of international trade, and the changing financial structure of business firms may have changed the historical relationship between interest rates and economic performance. Overall changes in the economy's interest sensitivity affect the potency of monetary policy. Declining interest sensitivity in many key sectors of the economy has led to an overall reduction in the interest sensitivity of real gross national product in the 1980s. However, no conclusions can be drawn from the evidence on business fixed investment. In addition to a decline in the overall sensitivity of the economy to a change in interest rates, the time between a change in the federal funds rate and its effect on output has become longer. This lag in the transmission of monetary policy to the economy and its associated uncertainty could pose new and challenging problems for monetary policy.

(Cook, Hahn: 1989) Data indicate that large movements in short-term interest rates resulted from changes made in the federal funds rate target during the 1970s. Those changes in the rate target also created moderate movements in intermediate-term rates and small movements in long-term rates. These results support the commonly held view that the Federal Reserve strongly influences market interest rates by controlling the funds rate. The evidence also indicates that other money market rates will be strongly influenced by expectations of the future level of the funds rate, which is consistent with other evidence on the effect of monetary policy announcements and money announcements on Treasury bill rates. It is not consistent with the results of studies that have used short-term interest rates. The inconsistency may be the result of the insensitivity of the slope of the yield curve from 3 to 12 months to new information that influences funds-rate expectations.

(Higgins, 1982) Changes in interest rates resulting from monetary policy actions affect income and the demand for money with a lag that is distributed over several quarters or more. The possibility of exercising accurate short-run monetary control depends in large part on the nature of the lag structures in characterizing the public's response to changes in interest rates. A money demand equation with a lag structure favorable for monetary control implies that fine-tuning of monetary growth would not have substantially altered the behavior of interest rates and the economy since October 1979, when the Federal Reserve adopted a reserve aggregate approach to monetary policy implementation. However, an equally plausible money demand equation with a lag structure unfavorable for monetary control implies that efforts to achieve precise short-run monetary control would have resulted in extreme interest rate volatility and somewhat greater fluctuations in real output.

(Cornell, 1983) The effect of US Federal Reserve Board money-supply announcements on the term structure of interest rates was investigated using data on weekly announcements of changes in the money supply and monetary base, survey data from money market traders, and interest rate data from the Federal Reserve Bank of San Francisco, California. Data were analyzed using autoregressive, time-series models. Empirical results showed that announced money-supply innovations resulted in corresponding changes in interest rates, especially significant following the changes in Federal Reserve operating procedures in October 1979. However, announced innovations in the monetary base were not correlated with interest rate changes, indicating that changes in the money supply may be seen to be more predictive of changes in the monetary base than actual base innovations. Unanticipated increases in the money supply may increase short-term interest rates, without significantly affecting long-term rates.

(Cornell, 1983) Previous research on interest rate variations has indicated that variations in nominal interest rates are caused by inflationary expectations rather than by changes in the ex-ante real interest rate. Little evidence has been found for significant variations in the real interest rate, regardless of money supply conditions. These findings are in contradiction to traditional economic theory, which proposes that changes in the money supply should affect the real interest rate. However, previous studies may have overlooked the role of the US Federal Reserve Board policy in stabilizing real interest rates. If this policy is successful, very little month-to-month variation should exist. Most of these studies have relied upon monthly or quarterly data in analyzing real rate variations. In the present study, daily data on interest rates are analyzed to detect ex-ante real interest rate fluctuations. Analysis reveals the existence of variations in the real interest rate that are of short duration and significantly associated with mid-week bank reserve settlements.

(Laopodis, 2008) This paper examines the monetary policy implications from the greater integration of major capital markets using long-term interest rates. Proof that globalization has affected the behavior of interest rates and made them more synchronized across countries is provided from the way disturbances in a market transmit to other markets thereby affecting the conduct of monetary policy in all involved parties. The results also confirm greater convergence among countries in the European Union as Germany still retains its hegemonic status. The implications for monetary policy are that countries now will have to deal with more outside shocks and these shocks will be more diverse, intense and persistent. Thus, global monetary policy, at least among the major capital markets, henceforth will have to be played interactively, which may necessitate a greater financial supervision in order to ensure continued world stability and prosperity.

(Dillen, 2008) This paper presents a theoretical model of the term structure of interest rates based on the monetary policy decision-making process at modern central banks. Evaluations of explicit expressions for the spot and forward rate curve render several important results: (i) Spot and forward rates are explicit functions of the number of policy meetings during the time to maturity rather than the time to maturity itself. Consequently, the forward rate curve is step-shaped. (ii) In addition, there are calendar time effects, i.e. the position within the policy cycle is also of importance, especially for short term interest rates. (iii) The forward rate curve exhibits hump-shaped responses to economic shocks and a modified version of the Nelson-Siegel model can be obtained as a special case.

(Heideken, 2008) This paper addresses two important questions that have, so far, been studied separately in the literature. First, the paper aims at explaining the high volatility of long-term interest rates observed in the data, which is hard to replicate using standard macro models. Building a small-scale macroeconomic model and estimating it on U.S. and U.K. data, I show that the policy responses of a central bank that is uncertain about the natural rate of unemployment can explain this volatility puzzle. Second, the paper aims at shedding new light on the distinction between rules and discretion in monetary policy. My empirical results show that using yield curve data may facilitate the empirical discrimination between different monetary policy regimes and that U.S. monetary policy is best understood as originating from a discretionary regime since 1960.

(Nagayasu, 2003) This paper empirically evaluates the validity of the term structure of interest rates in a low-interest-rate environment. Applying a time-series method to high-frequency Japanese data, the term-structure model is found to be useful for economic analysis only when interest rates are high. When interest rates are low, the usefulness of the model declines, since the interest spread contains little information that can be used for predicting future economic activity. The term-structure relationship is also weakened by the Bank of Japan's use of interest rate smoothing.

(Friedman, 2000) Most central banks, including the U.S. Federal Reserve System, implement their monetary policy by setting interest rates. This paper reviews the major changes that have taken place along the way from the Federal Reserve's interest rate-based policy structure of the 1960s to the interest rate-based structure in place today, and then goes on to consider three open questions that this way of conducting monetary policy presents: (1) whether there is a nominal anchor' problem, and if so whether explicit inflation targeting would solve it, (2) whether there is a role in this policymaking process for interest rates other than whatever particular rate the Federal Reserve chooses to set, or equivalently for equity prices, and (3) to what extent the electronic revolution now under way in banking threatens the efficacy of an interest rate-based monetary policy. The paper concludes by considering the implications of the rules-versus-discretion debate for the role of interest rates in monetary policymaking.

(Adam, Billi: 2004) We determine optimal discretionary monetary policy in a New-Keynesian model when nominal interest rates are bounded below by zero. Nominal interest rates should be lowered faster in response to adverse shocks than in the case without bound. Such "preemptive easing" is optimal because expectations of a possibly binding bound in the future amplify the effects of adverse shocks. Calibrating the model to the U.S. economy we find the easing effect to be quantitatively important. Moreover, significant welfare losses. Losses increase further when inflation is partly determined by lagged inflation in the Phillips curve. Targeting positive inflation rates reduces the frequency of a binding lower bound, but tends to reduce welfare compared to a target rate of zero. The welfare gains from policy commitment, however, appear significant and are much larger than in the case without lower bound.

(Liu, etc. 2007) This paper examines the degree of pass-through and adjustment speed of retail interest rates in response to changes in benchmark market rates in New Zealand during the period 1994 to 2004. We consider the effects of policy transparency and financial structure of the monetary transmission mechanism. New Zealand is the first OECD country to adopt a full-fledged inflation targeting regime with specific accountability and transparency provisions. Policy transparency was further enhanced by a shift from quantity (settlement cash) to price (interest rate) operating targets in 1999. We find complete long-term pass-through for some but not all retail rates. Our results also show that the introduction of the Official Cash Rate (OCR) increased the pass-through of floating and deposit rates but not fixed mortgage rates. In line with previous studies we find the immediate pass-through of market interest rates to bank retail rates to be incomplete. We find no evidence for asymmetric response of retail rates to changes in market rates other than for business lending rates in the pre OCR period. Overall, our results confirm that monetary policy rate has more influence on short-term interest rates and that increased transparency has lowered instrument volatility and enhanced the efficacy of policy.

(Yates, 2003) Some commentators have recently discussed the possibility that certain countries may experience a period of general price deflation. In such a situation, nominal interest rates may reach their lower bound of zero. This article concludes that the evidence available suggests that such a situation is highly unlikely to occur in the United Kingdom. It reviews what the academic literature has to say about the scope for alternatives to cutting interest rates in the improbable event that nominal interest rates do reach zero.

(Estrella, Mishkin: 1995) This paper examines the relationship of the term structure of interest rates to monetary policy instruments and to subsequent real activity and inflation in both Europe and the United States. The results show that monetary policy is an important determinant of the term structure spread, but it unlikely to be the only determinant. In addition, there is significant predictive power for both real activity and inflation. The yield curve is thus a simple and accurate measure that should be viewed as one piece of useful information which, along with other information, can be used to help guide European monetary policy.

(Romer, Romer: 1996) Many authors argue that asymmetric information between the Federal Reserve and the public is important to the conduct and the effects of monetary policy. This paper tests for the existence of such asymmetric information by examining Federal Reserve and commercial inflation forecasts. We demonstrate that the Federal Reserve has considerable information about inflation beyond what is known to commercial forecasters. We also provide evidence that monetary policy actions provide signals of the Federal Reserve's private information and that commercial forecasters modify their forecasts in response to those signals. These findings may explain why long-term interest rates typically rise in response to shifts to tighter monetary policy.

(Roley, Walsh: 1986) This paper examines the response of the term structure of interest rates to weekly money announcements. Estimated responses for both the pre- and post-October 1979 periods are first presented. Then, two competing hypotheses involving the policy anticipations and expected inflation effects are formally specified and compared to the estimated responses.Both hypotheses are found to be consistent with the responses, but they have sharply different implications about the Federal Reserve`s short-run monetary policy. The expected inflation hypothesis implies that weekly money surprises should have persistent effects on the level of the money stock, reflecting shifts in the Federal Reserve`s long-run target. In contrast, the policy anticipations hypothesis implies that the effectof money surprises should diminish over time, reflecting the Federal Reserve`s desire to offset deviations from target.

(Warnock, Warnock: 2006) Foreign official purchases of U.S. government bonds have an economically large and statistically significant impact on long-term interest rates. Federal Reserve credibility, as evidenced by dramatic reductions in both long-term inflation expectations and the volatility of long rates, contributed much to the decline of long rates in the 1990s. More recently, however, foreign flows have become important. Controlling for various factors given by a standard macroeconomic model, we estimate that had there been no foreign official flows into U.S. government bonds over the past year, the 10-year Treasury yield would currently be 90 basis points higher. Our results are robust to a number of alternative specifications.

(Agenor, 1998) This paper examines the behavior of real interest rates at the inception of exchange-rate-based stabilization programs. The analysis is based on an optimizing model of a small open economy facing imperfect world capital markets. A reduction in the devaluation rate is shown to have a positive impact on real interest rates. By contrast, a program characterized by an initial reduction in the devaluation rate and a perceived future increase in government spending has an ambiguous effect - which depends in particular on the degree of credibility of the fiscal policy stance.

(Turnovsky, 1989) This paper analyzes the effects of monetary and fiscal policy shocks on the term structure of interest rates. The effects of temporary versus permanent, unanticipated versus anticipated, policy disturbances and the responses of long versus short, and real versus nominal, rates are contrasted. The main results are summarized in a series of propositions. Among them, the finding that an unanticipated permanent fiscal expansion impacts more on long-term rates, may help explain their observed excessive volatility. The effects of structural changes on the relative variances are also discussed, with the effect which operates through the impact on private speculative behavior being emphasized.

(Giovanni, Shambaugh: 2007) It is often argued that many economies are affected by conditions in foreign countries. This paper explores the connection between interest rates in major industrial countries and annual real output growth in other countries. The results show that high foreign interest rates have a contractionary effect on annual real GDP growth in the domestic economy, but that this effect is centered on countries with fixed exchange rates. The paper then examines the potential channels through which major-country interest rates affect other economies. The effect of foreign interest rates on domestic interest rates is the most likely channel when compared with other possibilities, such as a trade effect.

(Giannikos, Guiguis: 2007) The ability of monetary policy to affect long-term interest rates is of central importance for economics and finance. Several recent studies have shown that long-term interest rates are virtually unaffected by monetary policy. This paper develops a statistical methodology to identify the expected and unexpected changes in monetary policy as measured by the federal funds rate. The empirical evidence shows that expected changes in the funds rate cause stronger and more significant movements in the long-term rates. Further, ignoring such asymmetry can erroneously generate the insignificant responses of long-term interest rates to the changes in the monetary policy.

(Bohn, 1999) Historically, average real returns on U.S. government debt have been far below the rate of economic growth, allowing the U.S. government to roll over its debt at a rather low cost. At the same time, the rate of return on capital has generally been above the growth rate, suggesting that the U.S. economy is dynamically efficient. The paper shows that the welfare implications of budget deficits in this scenario depend critically on why interest rates have been so low. If the government can offer low returns on its debt because of some unique ability to create default-free claims, persistent primary budget deficits may be unproblematic. But if low interest rates are due to high risk aversion, policies that exploit the low cost of government debt to run frequent budget deficits will impose significant risks on future taxpayers. In essence, safe government debt is safe for the debt holders, but it is very risky for the taxpayers who are implicitly taking a short position in the safe security.

(Jenkins, 2008) Movements in long-term interest rates Granger-cause movements in the target federal funds rate, but not vice versa, during 19902001. This implies that changes in the monetary policy stance, as measured by the target rate, are predicted by the bond market. Moreover, even innovations to the target rate have little effect on long-term interest rates. The policy instrument seems to be responding to information that is already impounded in the bond market. In sharp contrast, during an earlier period, changes in the target federal funds rate are mostly unanticipated by the bond market, and innovations to the policy target have a large and significant effect on long-term interest rate.

(Geraats, etc. 2006) Central banks have become increasingly transparent during the last decade. One of the main benefits of transparency predicted by theoretical models is that it enhances the credibility, reputation, and flexibility of monetary policy, which suggests that increased transparency should result in lower nominal interest rates. This paper exploits a detailed transparency data set to investigate this relationship for eight major central banks. It appears that for all central banks, the level of interest rates is affected by the degree of central bank transparency. In particular, the majority of the improvements in transparency are associated with significant effects on interest rates, controlling for economic conditions. In most of these cases, interest rates are lower, often by around 50 basis points, although in some instances transparency appears to have had a detrimental effect on interest rates.

(Hauner, Kumar: 2006) This paper explores the determinants of long-term government bond yields in the Group of Seven (G-7) economies and analyzes the factors that could explain the conundrum of very low rates in the face of a variety of adverse factors in recent years. In particular, the paper focuses on the deteriorating fiscal position in the G-7 economies and enquires which factors could have offset their impact on long-term interest rates, and how sustainable they are likely to be. A model of interest rate determination is elaborated and estimated for the G-7, with explicit emphasis on capital flows and public savings. The results suggest a high likelihood of a substantial impact of the weaker budgetary positions in the G-7 on global interest rates when the offsetting unprecedented capital flows slow down.

(Gerlach, 1996) This paper employs data on short and long interest rates for the G-10 countries, Australia, Austria and Spain to assess the expectations hypothesis (EH) of the term structure, using the Campbell-Shiller (1987, 1991) methodology. Although the EH is rejected in several countries, in all countries actual and theoretical long interest rates do move closely over time. This finding suggests that, at least from a monetary policy perspective, it is appropriate to view long interest rates as determined largely by expectations held by financial market participants concerning the future path of short term interest rates.

(Huizenga, Leiderman: 1985) This paper presents a new set of empirical regularities on the link between interest rates, money supply announcements and monetary base announcements. Among the main findings reported are: (i) unexpected increases in the announced monetary base have a significantly positive effect on interest rates during the period from October 1979 to October 1982; (ii) although unexpected money supply and monetary base announcements have the same impact on interest rates, they have different implications for the future behavior of the money supply and monetary base; (iii) the significant response of longer-term interest rates to unexpected monetary announcements is reflecting a response of current and expected future short-term rates -- i.e.term-structure premia are not altered by these announcements.

(Mishkin, 1982) The impact of a money stock increase on nominal short-term interest rates has been a hotly debated issue in the monetary economics literature. The most commonly held view -- also a feature of most structural macro models--has an increase in the money stock leading, at least in the short-run, to a decline in short interest rates. Monetarists dispute this view because they believe that it ignores the dynamic effects of a money stock increase. This paper is an application of efficient markets-rational expectations theory to analyze empirically the relationship of money supply growth and short- term interest rates. This approach has the advantage over earlier research on this subject in that it imposes a theoretical structure that allows easier interpretation of the empirical results as well as more powerful statistical tests. In the interest of ascertaining the robustness of the results, many different empirical tests are carried out in this paper, and they uniformly do not support the proposition that increases in the money supply are correlated with declines in short rates.

(Yates, 2004) This paper reviews the literature on what the zero bound to nominal interest rates implies for the conduct of monetary policy. The aim is to evaluate the risks of hitting the zero bound; and to evaluate policies that are said to be able to reduce that risk, or policies that are proposed as means of helping the economy escape if it is in a zero bound 'trap'. I conclude that policies aimed at 'cure' are arguably more uncertain tools than those aimed at 'prevention', so prevention is a less risky strategy for policymakers. But since the risks of hitting the zero bound seem quite small anyway, and the risks of encountering a deflationary spiral smaller still, it is conceivable that inflation objectives that typify modern monetary regimes already have more than enough insurance built into them to deal with the zero bound problem.

(Kuttner, 2000) This paper estimates the impact of monetary policy actions on bill, note, and bond yields, using data from the futures market for Federal funds to separate changes in the target funds rate into anticipated and unanticipated components. Bond rates' response to anticipated changes is essentially zero, while their response to unanticipated movements is large and highly significant. Surprise policy actions have little effect on near-term expectations of future actions, which helps explain the failure of the expectations hypothesis on the short end of the yield curve.

(Mishkin, 1981) This paper is an application of efficient markets theory to analyze empirically the relationship of money supply growth and long-term interest rates. This approach has the advantage over earlier research on this subject in that it imposes a theoretical structure on this relationship that allows easier interpretation of the empirical results as well as more powerful statistical tests. In the interest of ascertaining the robustness of the results, many different empirical tests are carried out in this paper, and they uniformly do not support the proposition that increases in the money supply are correlated with declines in long rates.

(Ellingsen, Soderstrom: 2004) We use a quantitative model of the U.S. economy to analyze the response of long-term interest rates to monetary policy, and compare the model results with empirical evidence. We find that the strong and time-varying yield curve response to monetary policy innovations found in the data can be explained by the model. A key ingredient in explaining the yield curve response is central bank private information about the state of the economy or about its own target for inflation.

Inflation rates are important because issuing more money decreases the value of the money. With fiat money, it is very easy to issue more money.

(Fielding, Mizen: 2008) Functional relationship between relative price variability (RPV) and inflation using personal consumer expenditure data in the US over 1967-2003 indicates an optimal inflation rate in the region of five percentage points, which lies within the range of values cited by recent evaluations of 'sand' and 'grease' effects. Inflation has been accused of causing distortionary prices and wage fluctuations (sand) as well as lauded for facilitating adjustments to shocks when wages are rigid downwards (grease). These effects are commonly acknowleged as offsetting each other however.

(Palley, 1998) The Federal Reserve states a zero inflation policy, which is frequently asserted to be the optimal rate of inflation. However, the Federal Reserve also publicly adheres to the non-accelerating inflation rate of unemployment (NAIRU) theory even though this theory provides no justification for a zero-inflation goal, since it states that all rates of inflation are equally optimal. For labour, the point of minimum unemployment constitutes the optimal rate of inflation; industrial capital prefers a somewhat higher rate of unemployment and a lower rate of inflation, while financial capital prefers zero inflation. Interest rates should rise with inflation rates???

(Huh, Lansing: 1998) A study is presented that develops a simple, quantitative model of the US economy to show how an inflation scare may occur when the Federal Reserve lacks full credibility. The simulation exercise was reasonably successful in capturing the magnitude and timing of the 1987 US inflation scare episode that produced a sharp increase in the 10-year Treasury bond yield. The model also captures many of the qualitative features of the Volcker disinflation of the early 1980s. The potential for an inflation scare will continue to exist so long as the public believes that the US economy may someday return to an environment of high and variable inflation. One way of addressing this problem is through legislation designed to enhance credibility by requiring the Fed to pursue some notion of price stability as its primary or sole objective.

(Vega, Russell: 1997) Economic commentators regularly urge the Fed to use the level of unemployment or the rate of change in wages as leading indicators of inflation and as guides to whether they should ease or tighten monetary policy. The logic behind this approach is based on modern Keynesian macroeconomics and, more specifically, on the Phillips and the NAIRU (nonaccelerating inflation rate of unemployment). Basic information about this NAIRU theory of the causes of inflation and the role of monetary policy is provided. After describing the historical development of the NAIRU theory, the discussion raises some practical questions about the validity of the theory and its usefulness as the basis for policy advice. The most important question involved the difficulty of distinguishing policy-induced changes in absolute wages from changes in relative wages associated with real changes in the economy. A 2nd question focused on the fact that there is very little empirical evidence supporting the notion of sticky prices on which Keynesian theory is based, and a 3rd involved the empirical weakness of the Phillips curve relationship that provides the basis for the NAIRU.

(Mehra, 1995) Inflation is the main determinant of the stochastic component of short-term nominal interest rates. The Federal Reserve can, therefore, permanently lower short rates only by reducing inflation. In the short run, the behavior of nominal rates is determined primarily by the outlook for inflation, by Fed policy, and by the state of the economy. Several customary fiscal policy measures do not affect the short rate in the short run.

(Chari, etc. 1995) the average long-run rate of inflation in a country is negatively associated with the country's long-run rate of growth. Moreover, the statistical relationship uncovered by these researchers is large. An analysis of the data suggests that inflation rates per se have negligible effects on growth rates. Financial regulations and the interaction of inflation with such regulations have substantial effects on growth.

(Boschen, 1988) While the growth rate of bank deposits is an important factor affecting inflation, regulatory control of this activity is critical to monetary policymaking. One important stage of deposit control is the reserve requirement on transactions deposits, which plays a crucial role in determining the banking system's demand for reserves. Reserve requirements impose costs on the banking system since reserves held at the Federal Reserve earn no interest. Thus, it is important to determine whether deposit regulation is necessary for inflation control. According to the recent work of several economists dubbed the New Monetary Economics, regulation of deposit growth may not be the only way to control inflation.

(Wright, 2002) Empirical evidence presented in this paper shows that the predictability of inflation at long horizons varies considerably across countries. Both simple theory and empirical evidence suggest that the crucial factor is the extent to which systematic monetary policy succeeds in preventing a unit root in inflation. The mechanism by which it does this appears however to be complicated by strong empirical evidence that nominal as well as real interest rates have real effects, which implies that monetary policy need not be so vigorous in reactions to inflation. This helps to explain why inflation rates in the US and (especially) Germany have been relatively predictable, despite monetary policy rules which appear to have been barely stabilising. The paper also presents tentative evidence that the power of nominal interest rate effects is inversely related to long-horizon inflation uncertainty, and hence ultimately uncertainty about monetary policy.

(Aizenman, etc.: 2008) We examine the inflation targeting (IT) experiences of emerging market economies, focusing especially on the roles of the real exchange rate and the distinction between commodity and non-commodity exporting nations. In the context of a simple empirical model, estimated with panel data for 17 emerging markets using both IT and non-IT observations, we find a significant and stable response running from inflation to policy interest rates in emerging markets that are following publically announced IT policies. By contrast, central banks respond much less to inflation in non-IT regimes. IT emerging markets follow a mixed IT strategy whereby both inflation and real exchange rates are important determinants of policy interest rates. The response to real exchange rates is much stronger in non-IT countries, however, suggesting that policymakers are more constrained in the IT regime - they are attempting to simultaneously target both inflation and real exchange rates and these objectives are not always consistent. We also find that the response to real exchange rates is strongest in those countries following IT policies that are relatively intensive in exporting basic commodities. We present a simple model that explains this empirical result.

**Island Economy**

The central question for a monetary economy is: for a given amount of resources, can the trading environment be altered to allocate those resources more efficiently and thus raise the economy’s overall level of welfare? What this essentially means is by what means should the tools of financial repression and financial facilitation be utilised in a properly functioning economy. As money in general and the financial markets and asset pricing in particular is a very political process, there is not 1 single answer to this question. All societies value differ things, and as such their governments will strive to ensure that the demands of the economy to which they govern are sufficiently met as efficiently as possible.

A constant growth rule would include 3 aspects: innovation, labour supply (population), and persons. Resources growth is not constant, as rather it requires immediate 1 time increase in wealth. The money supply is not permanent like people and technology~~when those 2 fall, whole society does too as they are the rock of society. A monetary rule like this keeps IR rates constant £'s~~Short term, IT, Long term. When offshore or foreign trading is introduced, must institute caps to account for BOP differences year to year; even if BOP is more or less, do not go beyond cap to prevent too much fluctuation.

It is more correct to say 'innovation' not 'technology' when talking about progress, as technology refers more to computers while innovation could mean any sort of productivity increase, and so technology is innovation yet all innovation is not technology. It is easier to predict labour growth rate, while innovation is very hard year to year because of computers~~resources for instant and one-time wealth increase is difficult too. Computers (innovation) have increased wealth much lately as more borrowers can find more lenders at different rates, which increases wealth by increasing the efficiniency of the financial intermediation system.

The central bank uses policy tools to create policy instruments. It then identifies intermediate targets to attempt to achieve the policy goals, and uses information variables to determine if policy goals have been met. The policy goals are the desired result, and everything else is built around achieving the goals. The policy tools are rather concrete for a monetary economy, as are the policy instruments. The intermediate targets can be manipulated to some degree to achieve specific policy goals. The information variables commonly tend to be the intermediate targets.

So the goal is to analyse how the intermeidate targets affect the policy goals, and in fact if some of the information variables could be fixed what would then be the new outcome for the policy goals.

There is a quite dynamic interaction between the money supply, exchange rates, inflation rates, and interest rates. The monetary aggregate can be fixed by using a monetary rule, the market interest rate can be fixed by the government, as can the exchange rate to a degree (no country has a truly floating exchange regime). The inflation rate can not be fixed, and thus tends to be the primary target for most central banks.

However, by using a hypothetical model of the island economy and a suggested monetary rule, one can use past time series data collected from various central banks to analyse what expected output, employment, poverty, and inflation rates would likely be with a fixed monetary rule and fixed interest rates. Thus, how does monetary policy affect inflation rates, exchange rates, interest rates, employment rates, poverty rates, and output. A further study examines how fixed interest rates along with a monetary rule may influence these variables, and even further how exchange rates may better be understood through better calculation.

A further concern is the counterfeiting of money and thus true monetary value of currency; the swiss franc has long been premier in fighting counterfeiting and so the swiss franc is used for exchange rate comparison.

Study: impact of labour unions on unemployment, effect of inflation on interest rates, and the influence of trade policy on the trade balance and exchange rates.

Table  
***Linkage Process***

**3 Policy Tools**

1. reserve requirement ratios

2. discount rate policy

3. open market operations

**3 Policy Instruments**

1. reserve aggregate (non-borrowed reserves)

2. market interest rate (fed funds rate)

3. exchange rate

**4 Intermediate Targets**

1. monetary aggregate

2. market interest rate (fed funds rate)

3. inflation rates (price level)

4. exchange rates

**5 Policy Goals**

1. output

2. employment

3. inflation

4. poverty rate

5. exchange rate

**Information Variables**

-structural lags require monitoring of the link between intermediate targets and policy goals via these information variables

1. yield curve~~interest rates

2. commodity prices

3. exchange rates

4. inflation rates  
5. misery rates

VM= effects of: (ET + IRT + IFT + MS)

**-value (velocity) of money- exchange rates, interest rates, inflation rates, money supply??? Where did this come from**

The American economic system has seen its share of recession and growth through the years. All economies see a normal regression and progression trend throughout their existence, and the American economy is no different. However, the question we are now confronted with is whether or not we have developed sophisticated enough monetary and financial tools to be able to combat the deep regressions and instill a greater degree of stability in the American economy. Could it not be possible that many of the tools we have could be administered in a slightly differ manner so as to achieve greater operating efficiency as a nation.

-yield curve is a good economic indicator; but what if the government had no debt and issued no bonds; what would then be the interest

In an ideally balanced economy, the following variables will be in balance.

*E= CA + IA + GA*

Where E is the total balance of the home economy; CA is the effect of corporate actions; IA is the effect of individual actions; and GA is the effect of government actions. These 3 primary variables can be broken down further.

Government actions represent the single most influential force on home economic stability. GA is influenced by 4 factors: taxation policy (T); FG, FC, and FI, which stand for foreign influxes resulting from foreign policy determination. Taxation policy includes several pieces: the funds determined to be paid, the degree of instrument manipulation allowed due to taxation policies.

In the essence espoused here, taxation encompasses more than just the codification of funds required to be collected by the government. It also includes the policies that dictate which instruments may be used and how they may be used. The reason taxation encompasses these policy issues is that a change in the tax code can effect the same change in instrument usage as can policy debarment. This is because the tax code is very powerful, and policy changes can be written in, as is done so, while simultaneously changing taxation percentages.

We can now rewrite the equation as:

*E= CA + IA + (T + FG + FC + FI)*

*or*

*E= CA + IA + (T + FPD)*

Corporate actions constitute the second most influential category on home economic stability. CA is comprised of utilization of investment vehicles, which is influenced by government taxation policy. Therefore, taxation does not have to be accounted for again here. In dealing with the corporate aspect, focus can be directed to corporate manipulation of financial instruments. This includes the usage of offshore centres, which is influenced directly by government tax law.

Individual actions embody the least influential group of the 3 primary economic influencers. The usage of different investment vehicles is central here as with CA, but fewer instruments can potentially be used, there are just fewer options.

IA= Si + Bi + Ts + MFi + Ci

Where S is stocks; B is bonds; Ts is trusts; MF is mutual funds.

We can get total market cap of these instruments. Then divide by total market cap to see each’s influence.

Market cap is defined as total debt outstanding plus total equity (or assets):

**Island economy**

Economic indicator variables for regresand

-with assumptions based on real life case study of USA

-analyze past collapses and supposed reasons: apply those reasons here

-how the economy reacted to those: which EIV fluctuated most

-credit policies and utilization; v. instruments

**Measurement of regressors**

1) GA

2) CA

3) IA

**Measurement of regressands**

1) inflation

2) exchange rates

3) short-term interest rates

4) long-term interest rates

*E= CA + IA + GA*

-where E = IR + IF + ER

-where IR = SR + LR

-interest rates are measured by the term yield

*SR + LR + IF + ER = CA + IA + GA*

Home Economy

MP=

-interest rates and inflation rate targeting are the same

International Influences Added

-exchange rates are relevent and interest rates are influenced by other forces now

A. Effect of Financial Instruments on Home Economic Stability

-analyze investment vehicles firms use and their net impact on firm performance; home performance

1) hedging

-how it can be done most financially productive

B. Tax Effects from Diverted Funds on Economic Stability

**Ideal investment structure of the firm**

1. preferred dividends- 70% exempt

2. trust and tax shelters

3. by using tax shelters, although necessary for multinational business, corporations can effectively report 0 income, and pay taxes only through the AMT

Y = C (T-Y) + I(r) + G + X

**Empirical Facts**

1. work week not changed since WWII- labour-leisure

2. S not changed since WWII- consumption/savings

3. real interest rates are constant in the long run; portfolio allocation

4. price elasticity of money is = 1; this is because the demand for money is based on the purchasing power of money

5. for most measures of money, the real income elasticity of demand for money, α2, is close to 1.

6. money prices fluctuate over the business cycle

7. business cycle length since WWII has been 7.5 years

8. all velocity measures are procyclical—this once again suggests that attention should be focused on the long-run trend, or cycle average, behaviour of velocity when selecting the monetary or reserve aggregate.

9. real interest rates on capital assets are stable over time

10. prices become more volatile as the inflation rate increases

11. the price signals on which production decisions depend are imperfect predictors of future supply and demand conditions; this risk is unavoidable and represents an essential degree of risk a healthy economy must incur

12. different monetary aggregates covary differently with short term nominal interest rates.

13. broad monetary aggregates covary positively with output.

Conventional theory says that as technology improves, so does demand for labour. This is actually opposite, as technology increases, demand for labour decreases in that industry, but opens up positions in other industries for the people to work in.

**Which Variables to Fix**

1. Interest rate

2. Savings

3.

The expansion of wealth for a society must be analysed directly with the money supply. The money supply is our direct most observed indicator of wealth, and although wealth can only increase by a few avenues.

A monetary rule for monetary economies is as follows:

MGR = (X)technology + (Y)resources + (Z)personnel

Table

**Ways to Increase Wealth**

1. technology

2. resources

3. personnel- productivity and efficiency gains

Wealth must be increased before consumption and utility can permanently increase. This leads to an increase in output. Without legitimate permanent increases in the real wealth of a society, increased consumption cannot be maintained; it can ebb and flow with the business cycles, but cannot reach a sustained higher level.

A simple, linear IS-LM framework with an expanded financial sector.

Explain the role of money and banking in monetary policy analysis by providing an endogenous explanation for substantial steady-state differentials between the interbank policy rate and the collateralized loan rate, the uncollateralized loan rate, the T-bill rate, the net marginal product of capital, and a pure intertemporal rate. There is a differential of over 3% per annum between the T-bill rate and the net marginal product, thereby contributing to resolution of the equity premium puzzle (Goodfriend, McCallum: 2007).

The internal consistency of a model is essential if it is to be used as a tool in policy analysis (Espinosa, 1991).

Rational expectations constitute a controversial challenge to traditional formulation of economic policy and thus monetary policy analysis. Elements of rational expectations affecting monetary policy are: (1) natural rate hypothesis (2) efficient markets (3) ineffectiveness of stabilisation policy (4) irrelevance of large-scale macro-econometric models for monetary policy analysis (5) knowledge of feedback rules (Sinai, 1981).

Historical data is commonly more accurate than new data because over time the the early data errors are decreased through frequent and often substantial revision. The overstated variance of initial data has negative implications for the use of structural models to evaluate changes in economic relationships.

Macroeconomic models that do not include an endogenously-determined money supply may lead to false forecasts of the effects of fiscal stimulus (Levy, 1981).

Thus, how does monetary policy affect inflation rates, exchange rates, interest rates, employment rates, poverty rates, and output. A further study examines how fixed interest rates along with a monetary rule may influence these variables, and even further how exchange rates may better be understood through better calculation.

**Sampling**

**-explain in depth where data came from; each and every item**

**-if data was modified explain how**

**-how will you test the hypotheses**

**General equilibirum analysis for how shifts in money supply affects other markets.**

**Substitutes and complements**

**How would a world monetary union would work; same currency; same bill but replace each one with the nation’s people.**

**Different economic unions around the world to a single one eventually. Show evolution.**

The problem here is that there are many different ways to implement financial tools. Are there specific instruments that could be targeted in the American financial system and utilized more effectively to give better dispersion.

**Hypothesis 1:** the Fed is instituting too expansionary of a monetary policy, which will lead to too much inflation

**Hypothesis 2:** foreign entrance into the domestic market must be regulated more effectively or the domestic economy will suffer

1) stock markets, foreign listing IPOS and economical effects

2) imports, quotas

3) cash policy- currency valuation

4) taxation, investments, options

Stata

1. IR, InflR, EXR~~suiss franc, small stable, not too much counterfeiting

UR~~poverty/welfare~~better than GDP for country growth

**Process used to solve research question**

**Statistical Analyses**

I. monetary supply increases (%) with changes in the inflation rates and unemployment rates

II. interest rate increases (%) with changes in the inflation rates and unemployment rates

III. individual investment vehicles- changes in their accounting policies for individuals and corporations

**3 Measures of Macroeconomic Welfare**

1. inflation rate

2. unemployment rate

3. GDP

-misery index is another possibility

**1. Time Series Analyses**

IF= IR + EX + S + T + GDP + UR + BOP

UR= IR + EX + S + T + IF + GDP + BOP

GDP= IR + EX + S + T + IF + UR +BOP

**2. Cross-Sectional**

Events

**Data Needed**

1. inflation rates from 1920

2. interest rates from 1920: 1 year, 10 year, 30 year

3. tax rates- indicator variable?

4. savings rates- indicator variable?

5. rates of return on stocks

6. rates of returns on derivatives: how many to include??

7. rates of returns on bonds: 1 year, 10 year, 30 year

8. unemployment rates

9. misery index  
10. balance of trade yearly

11. US GDP

12. estimation true GDP: black market valuation

13. yearly expansion of the money supply

14. average yearly reserve requirements

15. social unrest index

16. war index

17. family size index

18. religion index

19. % multinational companies

20. international connectedness index

21. offshore centres

22. exchange rates: influence offshore locations

23. real v. nominal interest rates

What is the current state?

Analyse investment options?

Estimate likelihood of current recession occurring again?

Where will that recession be?

What could be done to prevent it?

Estimation of what could happen if certain financial instruments were utilised more effectively?

**Government Policies**

I. Monetary supply compared to inflation rates and interest rates; FED

**Indicators of Economic Health**

I. Inflation rates

II. Unemployment rates

III. Misery index

IV. bond yields

V. stock gains

VI. credit rates

VII.

**Regressions to be run**

1. time series: what should we expect

2. OLS- what is expected

**3 Empirical Facts**

1. average work week length hasn’t changed since WWII

2. S rate is constant over time

3. real interest rate on capital assets in US has been stable over time

**2 Empirical Facts**

1. price elasticity of money is = 1

2. for most measures of money, the real income elasticity of demand for money, α2, is close to 1

-Marquis and Witt (1989); Mehra (1992)

Empirical facts- those statistics that have remained unchanged; first empircal fact is that the price elasticity of money is 1, regardless of measure of money being used (M1, M2, M3); this is because the demand for money is based on the purchasing power of money; 1 1% increase in prices needs a 1% increase in money

**1. Events - OLS**

**2. Island Economy Time Series**

~~POV~~MIS

IF= IR + EX + S + T + GDP + UR + BOP

UR= IR + EX + S + T + IF + GDP + BOP

GDP= IR + EX + S + T + IF + UR +BOP

**3. Island Economy w/Offshoring Time Series**

IF= IR + EX + S + T + GDP + UR + BOP + OFF

UR= IR + EX + S + T + IF + GDP + BOP + OFF

GDP= IR + EX + S + T + IF + UR +BOP + OFF

**2.11 Country Analysis**

Each country sets specific regulations and procedures for fulfillment relevant to their individual economic goals. As such, we can learn a lot about monetary policy by examining how different economies devise their monetary strategies and further what their specific monetary goals are. In addition, the available financial Instruments and the tax code implemented to benefit from their usage are a major part of any entity’s monetary policy.

A country’s monetary policy is the actions undertaken by a central bank, such as the Federal Reserve, to influence the availability and cost of money and credit and help promote national economic goals. Establishing effective monetary policy is a course of actions that directly influence members of a host economy, and has indirect effects to members of foreign economies. This is because changes in monetary value will be felt in the host country where the money is based initially and more forcefully, with foreign banks holding substantial reserves being influenced in time as well.

There will commonly be several regulatory bodies as well as decrees issued in reference to the specific policy to be suggested.

Table here

**British-**

**Chinese-**

**Russian**

**American-**Federal Reserve Act of 1913 gave the Fed Reserve the responsibility of setting monetary policy.

**table here**

**American**

*From these analyses, it is clear that each economy has distinct goals and differing strategies they devise to achieve those goals. However, primarily due to its importance in the world economy, and additionally due to the author's familiarity with, the US monetary system can serve as a great example for the purpose of examining active monetary stabilisation policy in action.*

**Structure of American Government’s financial system**

**Table here**

Congress- passes budget

Federal Reserve – Monetary policy

Open market operations (primary US tool)

-buys and sells securities to influence money supply

-bankers bank

-regulate and supervise financial institutions

-serves as the banker and fiscal agent for the federal government

US Treasury – issues securities to pay debts

-has its checking account with the Federal Reserve

Different bureaus

IRS- collects taxes

Mint

**table here**

**Conclusions & Results**

**-table by table, explain the results and how they correspond to the hypotheses**

**-did results support hypotheses or not**

**-results can be insignificant**

**-summarize what you did and main findings**

**-point out directions for future research**

**-summary first**

Inflation targeting is the best, interest rate targeting helps GDP, and exchange rate targeting helps BOP.

The interests of the ruling elite always have and always will dominate governmental regulations, and consequently the society as a whole. However, it is still widely accpeted that even if perfect information dispersion to the ignorant masses were possible, our human nature can still intercede and render the effort null. Even if this perfect information were able to be communicated to the society at large, what guarantee do we have that fixed-interest rates would in fact work to stabilise the economy by limiting growth and therefore recession?

And even if fixed-interest rates do stabilise the economy, some will still benefit; to whom is it to decide who should prosper and who should fail? What happens when one of the other many macroeconomic variables or natural disasters or whatever else decides to rear its head, that fixed-interest rates would still work; there are simply too many unknowns in the world of economics to be sure about any economic theory. But what we can ascertain from economic theory is that fixed-interest rates always stabilise business fluctuations.

However, an important issue arise. If interest-rates are fixed, what happens when inflation strikes. The answer is that inflation should never strike. Inflation is a consequence of seigniorage, and thus should never be cited as a solution or a cause.

There are numerous tools countries can use for economic objective completion today, including:

inflation targeting, interest rate targeting, exchange rate targeting, money supply targeting, and fiscal policy—tax laws. To reach these goals macroeconomic indicators such as GDP and poverty, inflation, and unemployment rates are examined. Interest rates and exchange rates can be manipulated by the government via the money supply to sometimes influence these macroeconomic indicators.

**Literature Review/ theoretical framework/ hypothesis development**

**-review relevant literature and establish hypotheses to be tested**

**-hypotheses must be developed from theory, not data mining**

-need poverty rates literature

(Dehejia, Rowe: 2000) We argue that the traditional question 'fixed vs. flexible exchange rates?' is not well-defined, because 'flexible exchange rates' does not explicitly specify any particular monetary policy. In traditional analyses, 'flexible exchange rates' was interpreted as implying a fixed money supply. But fixing the money supply (or fixing its growth rate at k%) is rarely advocated nowadays. To reflect today's policy debate, the traditional question should be replaced by the question 'fixed exchange rates vs. inflation targeting vs. price level targeting?'. We then build a simple macroeconomic model of a small open economy. The model incorporates an 'outside lag' in the effect of monetary policy on aggregate demand, so that inflation targeting and price level targeting are always imperfect. We use this model to compare the stabilization properties of three different monetary rules: a fixed exchange rate, a fixed inflation target, and a fixed price level target. We show that price level targeting is best for stabilizing output, the real exchange rate and the real interest rate, relative to their natural rates.

(Bordo, etc. 1995) The Great Contraction would have been attenuated, mitigated, and shortened had the Federal Reserve not allowed the money stock to decline and had it followed a constant money growth rule. To test this hypothesis, a model is simulated that estimates separate relations for output and the price level and assumes that output and price dynamics are not especially sensitive to policy changes. The simulations include a strong and a weak form of Friedman's constant money growth rule. The results support the hypothesis.

(Obstfeld, 1982) This paper investigates the long- and short-run neutrality of open-market monetary policy in a world of fixed exchange rates and imperfect substitutability between bonds denominated in different currencies. Using an illustrative portfolio-balance model, it shows that when the public discounts the future tax liabilities associated with the national debt and the central bank supports the exchange rate by trading non-interest-bearing foreign assets, open-market policy has a short-run effect, but no long-run effect, on the domestic price level and interest rate. When the foreign-exchange intervention assets earn interest that is rebated to and capitalized by the public, open-market policy loses even its short-run efficacy - the capital -account offset to monetary policy is complete.

(Leeper, 1995) Identifying monetary policy effects is a tricky business. Different but seemingly reasonable identifications can imply wildly different policy effects, including perverse ones. Five models of private and monetary policy behavior in the US are presented. Identical policy experiments were performed on each model, with the results showing different qualitative and quantitative effects of policy from one model to the next. Although reality probably lies closer to Model 1 than to Models 2 or 3, the latter models are instructive. Because each model has its problems, it would be wise for a policy advisor to be eclectic in formulating policy advice. It is also important that the advice accurately reflect the fact that it is not based on a single, universally accepted view of monetary policy's role in the economy.

(Papadimiriou, Wray: 1995) Data on US monetary policy were analyzed from 1959 to the present to determine how well Federal Reserve chairman Alan Greenspan's proposals would have faired had they been adopted in the past. Over the entire period examined, the real ex post short-term interest rate averaged just less than 1.5%, with a maximum of nearly 9.5% and a minimum of -5.5%. Assuming that the average real rate of 1.5% is a proxy for Greenspan's equilibrium real rate, then a real rate above this should indicate an economy facing disinflationary pressures. A rate below this should presage dangers of accelerating inflation. The results of the analysis show that Greenspan's policy would have been mistaken 74% of the time. The only justification for frequent changes of policy is, to a great extent, the Fed's intuition regarding what will lower inflation expectations and the Fed's hypothesis that lower inflation expectations are necessary to prevent a future acceleration of inflation.

(Geweke, Runkle: 1995) Improving monetary policy requires accurate empirical descriptions of the current policy and the relationship between that policy and the economic variables policymakers care about. Policy identification entails a specification of the instrument the Federal Reserve controls and a description of how that instrument is set based on information available when a policy decision is made. A study investigates the sensitivity of conclusions about monetary policy to the specification of period length. A model including total reserves, nonborrowed reserves, and the federal funds rate, based on an understanding of the Fed's operating procedures is identified. The study suggests that time aggregation from a biweekly interval to a quarterly interval is not a problem when identifying monetary policy. Movements in total reserves, nonborrowed reserves, and the federal funds rate typical of those observed in a 2-week data have similar effects with or without time aggregation.

(Hakes, Gamber: 1992) A reaction function approach is used to test the hypothesis that the Federal Reserve responds to its most recent money growth error with a corrective movement in its policy instrument. The model is estimated over the period 1975.1-1987.8. This period is divisible into 3 distinct monetary policy regimes, where each regime is defined by the operating procedures employed by the Fed. The federal funds rate is used for the subperiod 1975.1-1979.9, nonborrowed reserves for the subperiod 1979.10-1982.9, and borrowed reserves for the subperiod 1982.10-1987.8. The estimates of the reaction functions suggest that the Fed responded in a corrective manner to errant money growth in both the 1975.1-1979.9 and 1979.10-1982.9 subperiods, with the greater response occurring in the 1979.10-1982.9 subperiod. No evidence is found that the Fed responded to errant money growth in the 1982.10-1987.8 subperiod. Further, the results combined with recent evidence regarding the money supply annoucement puzzle provide empirical support for the existence of a policy anticipation effect.

(Judd, Motley: 1992) An examination of the effectiveness in controlling long-term inflation of feedback rules for monetary policy that link changes in a short-term interest rate to an intermediate target for nominal gross domestic product (GDP) or M2 is presented. The results indicate that a rule at aimed at controlling the growth rate of nominal GDP with an interest rate instrument could be an improvement over a purely discretionary policy. In addition, the findings suggest that the rule could provide better long-term control of inflation without increasing the volatility of real GDP or interest rates. Such a rule could make a contribution to policy, even if it were used only to modify the Federal Reserve's traditional discretionary approach.

(Butkiewicz, Lewis: 1991) In recent years, the Federal Reserve has often made extended-credit loans through the discount window to failing and troubled financial institutions. Data for the period 1973-1990 are used to examine whether the Fed's crisis intervention has been offset with defensive open-market operations. Two reduced-form bivariate vector autoregressive models of Fed behavior are specified. The results indicate that there is a very short-term monetary expansion resulting from bank bailouts, but this expansion is offset fairly quickly through open-market sales. The evidence indicates that the Fed has been able to avoid conflict between its dual roles as lender of last resort and as manager of the nation's monetary policy. Criticisms that institution-specific lending is inflationary appear to be overstated.

(Espinosa, 1991) Some of the issues that arise in a selection of models that attempt to analyze the consequences of hypothetical monetary policies are highlighted. In these models, fiscal and monetary policies are constrained by the requirements of financing government expenditures, and the choice of ways to finance such expenditures affects the real interest rate. Among the most controversial issues in macroeconomics is whether fiscal and monetary policies have real effects. The answer depends on the definitions of monetary policy and "money" and on assumptions about the nature of the interactions of fiscal and monetary policies. In this study of selected models, the effects of monetary policy changes as embodied in open market operations and changes in reserve requirements are examined. It is argued that the internal consistency of a model is essential if it is to be used as a tool in policy analysis.

(Lastrapes, 1989) Shifts in US monetary policy regimes affect the stochastic process that generates foreign exchange rates. Using a univariate autoregressive conditional heteroskedastic (ARCH) process, a model for the nominal dollar exchange rate is derived. Knowing the properties of the exchange rate process is important for developing asset and contingency claims pricing models, characterizing exchange rate volatility, constructing optimal portfolios, and understanding how exchange markets function. Changes in the operating procedures of the Federal Reserve System and the extent to which they lead to nonstationarity of the ARCH process for dollar exchange rates are examined. Results suggest that US monetary policy significantly affects the variance of the nominal exchange rates. It also is shown that, when specifying ARCH models, the possibility of changes in unconditional variance should be considered. It is suggested that additional work could be done to model time variations more precisely.

(Walter, 1989) Monetary aggregates are measures of the US' money stock. The Federal Reserve's legislative mandate is to set a monetary policy consistent with high employment, stable prices, and moderate long-term interest rates. While the Fed cannot directly control the quantity of money, it can control variables that influence short-term interest rates, name the quality of reserves held by depository institutions and the monetary base, and thereby influence the growth rate of the aggregates. Changes in the aggregates normally are followed by temporary changes in aggregate output and employment and permanent changes in prices.

To produce estimates of monetary aggregates, the Fed's Board of Governors must estimate the deposits held in financial institutions. When quarterly figures become available, they provide benchmarks that the Board uses to make more accurate estimates for intervening dates. In periods when the Fed has sought tight control of the growth rate of aggregates, unusually fast or slow money growth generally occurs.

(Levy, 1981) The objectives of the Federal Reserve are investigated by developing and estimating a money supply-reaction function. Special emphasis is placed on measuring the responsiveness of the Federal Reserve to budget deficits and the government borrowing in order to test the widely-held belief that deficits are conducive to inflation. A principal assumption underlying the model of monetary policy presented is that the Federal Reserve responds to a wide range of interacting objectives and that it considers those objectives within the setting of a structural model of the economy. Correspondingly, the money supply-reaction function is developed and tested as part of an IS-LM framework. It is shown that the Federal Reserve has been inclined to expand the monetary base in response to government deficits. Estimates also indicate that the monetary base is expanded in response to increases in inflationary expectations and preceding increases in the monetary base, but is not statistically correlated to higher unemployment rates, a mechanical growth trend, or certain interest rate rises. The implication of these results is that macroeconomic models that do not include an endogenously-determined money supply may lead to false forecasts of the effects of fiscal stimulus.

(Cullison, 1982) This paper investigates whether financial innovations have obscured the relationship between narrow monetary aggregates and nominal income and examines the monetary base to determine whether it has potential as an intermediate target for monetary policy. The relationship between money and gross national product (GNP) is examined by regressing the percentage change in GNP on the percentage change in the monetary aggregate; the relationship of M1 to GNP is examined, as is the relationship of the monetary base to GNP, and the model is described. Statistical evidence is presented which demonstrates that the trend in income velocity of the monetary base remained remarkably constant from 1959 to 1981 and that the trend in income velocity of M1 also remained remarkably constant except for the period from 1975-1978. The results imply that the demand for money (M1) has been generally stable since 1959, but that the monetary base has borne a slightly closer and more predictable relationship to the long-run trend in GNP than has M1.

(Wallace, 1984) A simple model is described which provides a coherent analysis of how monetary policy affects people in different circumstances. The model has 3 types of agents: borrowers, lenders, and those who hold assets valued in terms of the current price level. A government is assumed to run a permanent budget deficit which is financed by the issuance of fiat money and bonds. The model's monetary policy problem is how to choose paths of money and bonds to finance this deficit. The model demonstrates that various policy choices affect the 3 types of agents differently. Where the government has a large prospective deficit and is a net debtor and where the real interest rate is high (as in the US today), a more accommodative monetary policy would raise the price level but lower rates of inflation and real interest. Such an outcome would make the holders of nominally denominated assets worse off and borrowers better off, while lenders could be made either better or worse off. The model also indicates that the Federal Reserve's task of weighing conflicting interests as it selects a monetary policy is a difficult one.

(Kopecky, etc. 1983) In 1979, the US Federal Reserve Board adopted procedures for the short-term control of the aggregate money stock based on a nonborrowed reserve operating target. This replaced an operating target based on interest rate control. Shortly thereafter, the Depository Institutions Deregulation and Monetary Control Act of 1980 (DIDMCA) established reserve requirements for nonmember banks. A model of a dual banking system is used to analyse the money stock effects of the DIDMCA in conjunction with a nonborrowed reserve operating target. The behavior of member and nonmember banks is described under conditions of either the presence or the absence of reserve requirements, incorporating the effects of deposit and currency demands and interbank deposit flow shocks. Analysis reveals that reserve requirements significantly affect monetary control when nonborrowed reserves serve as the control target. However, monetary control improvement depends on the Federal Reserve exerting tight control over the total reserve structure. Appendices.

A study is undertaken to examine the effect on bank profits and rate of return on capital of changes in interest rates and other components of monetary and regulatory policy. The procedure has 3 features: 1. There is no adjustment for differences in liquidity, risk, and maturity between various assets and liabilities. 2. User costs for financial items (interest rates, services changes, reserve requirement costs, and deposit insurance premiums) are included. 3. Relative price changes between financial and nonfinancial items are taken into account. Economic financial statements and estimation of rates of returns to capital are derived for a longitudinal sample of 18 New York-New Jersey commercial banks in the Federal Reserve District No. 2 for 1973-1978. The results show that profits are relatively more responsive to changes in loan than deposit rates. This implies that the use of a spread is not supported. It is also found that increases in interest rates that leave the spread unchanged increase variable profit. If the flow costs of reserve requirements were to be eliminated on demand and time deposits, variable profit would increase by about 5% in each case. (Hancock, 1985)

(Radha, Thenmozhi: 2004) Forecasting interest rates is of great concern for financial researchers, economists and players in the fixed income markets. The purpose of this study is to develop an appropriate model for forecasting the short-term interest rates i.e., commercial paper rate, implicit yield on 91 day treasury bill, overnight MIBOR rate and call money rate. The short-term interest rates are forecasted using univariate models, Random Walk, ARIMA, ARMA-GARCH and ARMA-EGARCH and the appropriate model for forecasting is determined considering six-year period from 1999. The results show that interest rates time series have volatility clustering effect and hence GARCH based models are more appropriate to forecast than the other models. It is found that for commercial paper rate ARIMA-EGARCH model is most appropriate model, while for implicit yield 91 day Treasury bill, overnight MIBOR rate and call money rate, ARIMA-GARCH model is the most appropriate model for forecasting.

(Lu, Wu: 2005) In this paper, we study the fundamental relation between the numerous macroeconomic releases and the term structure of interest rates via a dynamic factor model. We use two dynamic factors to extract the systematic information from a wide array of noisy and sparsely observed macroeconomic releases, and then link the two factors to the daily term structure of interest rates using no-arbitrage arguments. The two dynamic factors can predict over 76 percent of the daily variation in LIBOR and swap rates across all maturities from one month to ten years. Inflation-related releases have large and positive impacts on interest rates of all maturities. Shocks on these releases lead to parallel shifts on the yield curve. In contrast, shocks on many employment and output related releases generate a slope effect on the term structure. Upward shocks on these variables tend to flatten an otherwise upward sloping yield curve. The estimated factor dynamics and market prices of factor risks provide further insight on the fundamental reasons behind the different term structure impacts from different macroeconomic releases.

(Kalimipalli, Susmel: 2001) In this paper, we introduce regime-switching in a two-factor stochastic volatility model to explain the behavior of short-term interest rates. The regime-switching stochastic volatility (RSV) process for interest rates is able to capture all possible exogenous shocks that could be either discrete, as occurring from possible changes in the underlying regime, or continuous in the form of 'market-news' events. We estimate the model using a Gibbs Sampling based Markov Chain Monte Carlo algorithm that is robust to complex non-linearities in the likelihood function. We compare the performance of our RSV model with the performance of other GARCH and stochastic volatility two-factor models. We evaluate all models with several in-sample and out-of-sample measures. Overall, our results show a superior performance of the RSV two-factor model.

(Chun, 2009) This is the first study to examine the forecasting performance of the individual participants in the Blue Chip Financial Forecasts - a unique collection of cross-sectional time series survey data on interest rates and inflation. An empirical examination reveals that fed funds futures prices best predict the fed funds rate at very short horizons, and that survey forecasters are competitive at short horizon forecasts of short to medium maturity interest rates. The Diebold-Li model with VAR(3) dynamics, enhanced by shrinking the parameter estimates toward the long run mean using the Qrinkage estimator, emerges as the best performing model for long horizon forecasts of yields up to 2 years. For forecasting 5 and 10-year maturity yields, autoregressive Qrinkage models dominate. Individual survey forecasters, including the mean forecaster, do particularly well at forecasting inflation. Unlike the case of inflation, the presence of superior individual forecasters provides evidence against a naive combination strategy of averaging survey data for forecasting interest rates.

(DeGennaro, etc. 2008) This study investigates the relationship among interest rates on the long-term governments bonds of five industrialized countries. Both standard and new unit root tests are applied, all of which confirm the presence of exactly one unit root. New cointegration tests are also applied to these data. In contrast to previous research on short-term bonds, stock prices, and exchange rates, these results find little evidence of cointegration among the five long-term interest rate series. Thus, when modeling or forecasting these central government long-term bond yields, one may assume separate sets of fundamentals and difference the data to achieve stationarity. An error correction model may not be appropriate.

(Hnatkovska, 2008) What is the relationship between interest rates and the exchange rate? The empirical literature in this area has been inconclusive. We use an optimizing model of a small open economy to rationalize the mixed empirical findings. The model has three key margins. First, higher domestic interest rates raise the demand for deposits, and, hence, the money base. Second, firms need bank loans to finance the wage bill, which reduces output when domestic interest rates increase. Lastly, higher interest rates raise the government's fiscal burden, and, therefore, can lead to higher expected inflation. While the first effect tends to appreciate the currency, the remaining two effects tend to depreciate it. We then conduct policy experiments using a calibrated version of the model and show the central result of the paper: the relationship between interest rates and the exchange rate is non-monotonic. In particular, the exchange rate response depends on the size of the interest rate increase and on the initial level of the interest rate. Moreover, we also show that the model can replicate the heterogeneous responses of the exchange rate to interest rate innovations in several developing economies.

(Catao, Mackenzie: 2006) This paper looks at the dramatic decline in global real interest rates in recent years from a historical perspective and examines the various factors that may account for this trend. We show that current levels of real interest rates on long-term bonds in advanced economies are not low by historical standards and that it is the real long bond rates of the early 1980s through much of the 1990s that look anomalous. We also find that current global long-term interest rates are roughly in line with what one would predict given current price-earnings (P/E) ratios and under reasonable assumptions about the equity risk premia and the expected rate of growth of earnings in advanced countries. Finally, we provide econometric evidence that global long-term interest rates are significantly affected by commodity prices, expected productivity growth, and fiscal consolidation in advanced countries.

(Jaaskela, Vilmunen: 1999) This paper investigates the measurement of anticipated interest rate policy and the effects of these expectations on the term structure of nominal interest rates. It is shown that, under the expectations hypothesis, the level of long-term interest rates depends on three factors: the level of the monetary policy interest rate, ie the steering rate; the spread between the market interest rate and the steering rate; and market expectations of the next steering rate change. The theoretical model builds on the assumption that market participants have only imperfect knowledge of the mechanism whereby changes in the steering rate are determined. As a consequence, expectations formation, although realistic, need not be entirely rational. Steering rate changes take the form of discrete jumps and occur infrequently on a daily scale. Given these assumptions, discussion of the determination of the term structure is related to the literature on uncertainty about monetary policy regimes and small samples, ie peso problems. Empirical analysis based on Nelson–Siegel estimates of the daily yield curves in Finland in the period 1 January 1993 to 31 October 1997 complements the theoretical discussion. The observed differences between estimated market expectations and actual tender rate changes are quite large in the sample, particularly for the longer maturities. The approach applied in this study is promising, not only in the sense of potentially providing estimates of market expectations concerning future discrete changes in monetary policy interest rates but also in the sense of its apparent potential in accounting for the often reported poor empirical performance of the expectations hypothesis.

(Adao, etc. 2004) What instruments of monetary policy must be used in order to implement a unique equilibrium? This paper revisits the issues addressed by Sargent and Wallace (1975) on the multiplicity of equilibria when policy is conducted with interest rate rules. We show that the appropriate interest rate instruments under uncertainty are state-contingent interest rates, i.e. the nominal returns on state-contingent nominal assets. A policy that pegs state-contingent nominal interest rates, and sets the initial money supply, implements a unique equilibrium. These results hold whether prices are flexible or set in advance.

(Angelini, 1994) The paper addresses the issue of the impact of the foundation of the Federal Reserve System in 1914 on the behavior of short-term interest rates. Empirical evidence is presented showing that no change of regime can be detected in the process governing short-term rates in the years straddling the foundation of the Fed.

(Thornton, 2008) Monetary policy is now conducted by targeting a very short-term interest rate. The Fed and other central banks attempt to control the price level by manipulating aggregate demand by adjusting their interest rate target. At best, money's role is tertiary. Indeed, a few prominent and influential macroeconomists have suggested that money is not essential, or perhaps is irrelevant, for the determination of the price level. Against this backdrop, this paper argues that the essential feature of money is that it guarantees "final payment" and is essential for price determination. It also suggests that the ability of the central banks to control interest rates may be greatly exaggerated.

(Marzo, etc. 2008) We study the term structure implications of the fiscal theory of price level determination. We introduce the intertemporal budget constraint of the government in a general equilibrium model in continuous time. Fiscal policy is set according to a simple rule whereby taxes react proportionally to real debt. We show how to solve for the prices of real and nominal zero coupon bonds.

(Serna, Arribas: 2008) The disparate evidence obtained by the empirical literature of the expectations theory of the term structure of interest rates has been interpreted in different ways. One explanation stems from the findings of Mankiw and Miron (1986) who observed that the term spread in the U.S. had substantial predictive power in line with the expectations theory before the founding of the Federal Reserve in 1914. Afterwards, the Fed's commitment to stabilising interest rates caused changes in short rates to become unpredictable on the basis of the spread. Consequently, these authors argue that monetary policy regime, and the extent to which it involves smoothing interest rates, determines the performance of the expectations theory. The argument of Mankiw and Miron has been extended and formalised by McCallum (1994), who develops a model of the interaction between the expectations theory, a time-varying autoregressive term premium, and an interest rate smoothing monetary policy combined with the use of the spread as an indicator. Kugler (1994) and Boero and Torricelli (1998) derive an exact solution to the McCallum model. Nevertheless, both of them limit their theoretical contribution to the case of one-period short rate. These two articles, together with Hsu and Kugler (1997), constitute the empirical applications of the model. All three conclude that the model is able to explain the results from standard tests of the expectations theory. The present research is intended to complete the existing theoretical and empirical literature about the McCallum model. Thus, we derive a generalisation of the exact solution of the model for any pair of maturities and, on the basis of the derived solution, we test the McCallum model for a wider range of maturities (all the above cited studies only use 1-month and 3-month interest rates) and for the Spanish term structure, to which the model has not yet been applied.

(Boyarchenko, 2008) The validity of analysts' beliefs that the dependence of bond prices on crude oil prices changes sign over time and that the overall economy performance is correlated with the slope of the yield curve is examined. These beliefs are mapped into the term structure of interest rates framework by allowing for regime switching in the term structure and by using crude oil prices and an overall economy performance index (CFNAI) as factors. Fitting is done using Gibbs sampling, which allows for fewer assumptions on the regime switching parameters than classical methods and, thus, provides a more flexible model. The predicted yields are calculated using the eigenfunction expansion method.

(Spiro, 2008) Abstract The international capital market is the marginal provider of capital to the Canadian economy, and the current account balance is the measure of demand pressure from Canadian borrowing in that market. If the foreign supply of capital to Canada is less than perfectly elastic, Canadian interest rates will have to rise as Canadian borrowing increases. Past attempts to test empirically for the effect of Canadian fiscal policy on interest rates have generally been unsuccessful, because the link between fiscal policy and the current account balance is indirect and influenced by other factors such as monetary policy. In equilibrium, there is likely to be a strong correlation between fiscal balances and the current account balance. Econometric analysis is complicated by the fact that the current account balance and the Canada- U.S. interest differential are non-stationary variables, which may render OLS estimates unreliable. These variables were found to be cointegrated, and vector error correction was used to estimate the relationship, which produced estimates quite similar to those coming from OLS regressions. Over the past two decades, it appears that the Canadian three month T-bill rate increased by at least 50 basis points for each percentage point increase in the current account deficit as a percentage of GDP. There is no guarantee that an impact of this magnitude will hold in the future, but it is a strong indication that lower foreign borrowing by Canada should result in considerably lower real interest rates than those experienced in the past.

(Kim, Moon: 2008) This paper presents a monetary model of the term structure of interest rates. This model is intended to explain the stylized facts in Treasury yields including counter cyclical variations of bond risk premia without challenging both short-run and long-run monetary facts. To this end, we study the roles of segmented asset market, habit formation, and inflation targeting in a cash-in-advance model. We provide a monetary general equilibrium justification of an affine term structure model with a flexible market price of risk. Quantitative results show that the model can capture the features in the nominal term structure.

(Coenen, etc. 2003) This paper employs stochastic simulations of a small structural rational expectations model to investigate the consequences of the zero bound on nominal interest rates. We find that if the economy is subject to stochastic shocks similar in magnitude to those experienced in the U.S. over the 1980s and 1990s, the consequences of the zero bound are negligible for target inflation rates as low as 2 percent. However, the effects of the constraint are non-linear with respect to the inflation target and produce a quantitatively significant deterioration of the performance of the economy with targets between 0 and 1 percent. The variability of output increases significantly and that of inflation also rises somewhat. Also, we show that the asymmetry of the policy ineffectiveness induced by the zero bound generates a non-vertical long-run Phillips curve. Output falls increasingly short of potential with lower inflation targets.

(Bardsen, Hurn: 2001) The link between London interbank interest rates and future inflation in the UK is investigated over a period which includes several changes in monetary policy regime. Recursive estimation is used to identify appropriate breakpoints in the sample and a moving-block bootstrap is used to facilitate correct inference. The general conclusion which emerges is that the informational content of the term structure is sensitive to changes in monetary policy. In particular, the relationship between interest rates and future inflation is found to break down after 1985.

(Iwata, Wu: 2001) Using a nonlinear structural VAR approach, we estimate the effects of exogenous monetary impulses in the presence of a zero lower bound constraint on nominal interest rates and examine the impact of such a constraint on the effectiveness of counter-cyclical monetary policies. We find that a binding zero bound on nominal interest rates can eliminate more than 50% of the effect of an exogenous monetary impulse on output based on the data from Japan. The conditional impulse response functions allow us to isolate the effect of monetary shocks operating through the interest rate channel when other possible channels of monetary transmission are present. Moreover, we also find that the zero bound on nominal interest rates could severely limit the ability of central banks to pursue a counter-cyclical monetary policy when facing adverse macroeconomic shocks.

(Skallsjo, 2004) The paper studies optimal monetary policy and its implication for the term structure of interest rates when the nominal short rate is bounded at zero. We state the monetary authority's optimization problem in continuous time according to two specifications, interest rate stabilization and interest rate smoothing. For the former the optimization problem is solved analytically, while numerical procedures are adopted for the latter. The paper then turns to study implications for the term structure of interest rates under risk-neutrality. Term structure equations are solved numerically and implications for yield curves and yield volatility curves are discussed. Data for a low-interest rate country like Japan for 1996-2003 exhibits s-shaped yield curves and yield volatility curves. According to our results this shape is consistent with a smoothing objective for the short rate.

(McCallum, 1994) This paper addresses a prominent empirical failure of the expectations theory of the term structure of interest rates under the assumption of rational expectations. This failure concerns the magnitude of slope coefficients in regressions of short rate (or long- rate) changes on long-short spreads. It is shown that the anomalous empirical findings can be rationalized with the expectations theory by recognition of an exogenous random (but possibly autoregressive) term premium plus the assumption that monetary policy involves smoothing of an interest rate instrument -- the short rate -- together with the responses to the prevailing level of the spread.

(Adam, Billi: 2005) Ignoring the existence of the zero bound on nominal interest rates one considerably understates the value of monetary commitment in New Keynesian models. A stochastic forward-looking model with an occasionally binding lower bound, calibrated to the U.S. economy, suggests that low values for the natural rate of interest lead to sizeable output losses and deflation under discretionary monetary policy. The fall in output and deflation are much larger than in the case with policy commitment and do not show up at all if the model abstracts from the existence of the lower bound. The welfare losses of discretionary policy increase even further when inflation is partly determined by lagged inflation in the Phillips curve. These results emerge because private sector expectations and the discretionary policy response to these expectations reinforce each other and cause the lower bound to be reached much earlier than under commitment.

(Dai, Philippon: 2005) Macroeconomists want to understand the effects of fiscal policy on interest rates, while financial economists look for the factors that drive the dynamics of the yield curve. To shed light on both issues, we present an empirical macro-finance model that combines a no-arbitrage affine term structure model with a set of structural restrictions that allow us to identify fiscal policy shocks, and trace the effects of these shocks on the prices of bonds of different maturities. Compared to a standard VAR, this approach has the advantage of incorporating the information embedded in a large cross-section of bond prices. Moreover, the pricing equations provide new ways to assess the model's ability to capture risk preferences and expectations. Our results suggest that (i) government deficits affect long term interest rates: a one percentage point increase in the deficit to GDP ratio, lasting for 3 years, will eventually increase the 10-year rate by 40-50 basis points; (ii) this increase is partly due to higher expected spot rates, and partly due to higher risk premia on long term bonds; and (iii) the fiscal policy shocks account for up to 12% of the variance of forecast errors in bond yields.

(Chari, etc. 1995) This paper presents a quantitative general equilibrium model with multiple monetary aggregates. The framework incorporates a banking sector and distinguishes between M1, the monetary base, currency and various measures of reserves: total, excess and non borrowed. We use a variant of the model to analyze two sets of empirical facts. The first set of facts is that different monetary aggregates covary differently with short term nominal interest rates. Broad monetary aggregates like M1 and the monetary base covary positively with current and future values of short term interest rates. In contrast, the non borrowed reserves of banks covary negatively with current and future interest rates. Observations like this `sign switch' lie at the core of recent debates about the effects of monetary policy actions on short term interest rates. According to our model, the sign switch occurs because movements in non borrowed reserves are dominated by exogenous shocks to monetary policy, while movements in the base and M1 are dominated by endogenous responses to non-policy shocks. The second set of facts that we consider is that broad monetary aggregates covary positively with output. We quantify the Friedman and Schwartz hypothesis that this covariation reflects the effects of exogenous shocks to monetary policy, and the hypothesis that they reflect the endogenous response of monetary aggregates to shocks in the private economy.

(Aggelis, 2006) This paper investigates the transmission of monetary policy onto retail bank interest rates and analyses how this has evolved with the advent of the Euro as a single currency for Euro Area member countries. In order to capture efficiently these relationships, this study employed an error correction model, embodied in a VAR model. This study focuses on the period from January 1985 to January 2004 as well as on the pre- and post- Euro sub-periods. Estimation results for the Euro area suggest that the pass-through mechanism differs widely across countries and retail rate series in both, the short and the long-run. The consumer lending rates display the highest divergence across Eurozone countries, while saving and corporate rates are displaying the lowest. This study also shows that consumer lending rates display a higher degree of stickiness / sluggishness when compared to the other bank retail rates for most of the Euro area countries.

(Fuhrer, Madigan: 1997) This paper assesses the importance of the zero lower bound on nominal interest rates for the interest-rate channel of monetary policy. We simulate several interest-rate setting policy rules with either high or low inflation targets. We determine the extent to which the zero bound prevents real rates from falling, thus cushioning aggregate output in response to negative spending shocks. For small temporary and large permanent shocks, the output path with zero inflation lies modestly below that for higher inflation. For large shocks persisting a few quarters, differences in output paths across high- and low- inflation scenarios can be larger.

(Goukasian, Cialenco: 2006) This paper analyzes the response of the Term Structure of discount rates to the changes in the Federal Funds Target Rate. It also suggests a method of hedging fixed income portfolio's risk to the unexpected changes in monetary policy. We use two alternative widely used models of term structure of interest rates - the Extended Nelson-Siegel and the Extended Vasicek models. We show that only the slope of the term structure of zero-rates (also known as the spread between medium and short term rates) reacts significantly to the monetary policy. We also demonstrate that in our case, the Extended Vasicek model outperforms the Extended Nelson-Siegel model in capturing the impact of the monetary policy on the shape of the term structure. The results here can be used in practice to hedge the risk of the changes in the shape of the term structure of rates, due to monetary policy actions.

(Sanchez, 2005) The link between exchange rates and interest rates features prominently in the theoretical and empirical literature on small open economies. This paper revisits this relationship using a simple model that incorporates the role of exchange rate pass-through into domestic prices and distinguishes between cases of expansionary and contractionary depreciations. The model results show that the correlation between exchange rates and interest rates, conditional on an adverse risk premium shock, is negative for expansionary depreciations and positive for contractionary ones. For this type of shock, interest rates are found to be raised to prevent the contractionary effect of a depreciation regardless of whether the latter effect is strong or mild. Interest rates are predicted to also rise in response to an adverse net export shock in contractionary depreciation cases, and to be lowered in the case of expansionary ones.

(Goodfriend, McCallum: 2007) The paper reconsiders the role of money and banking in monetary policy analysis by including a banking sector and money in an optimizing model otherwise of a standard type. The model is implemented quantitatively, with a calibration based on U.S. data. It is reasonably successful in providing an endogenous explanation for substantial steady-state differentials between the interbank policy rate and (i) the collateralized loan rate, (ii) the uncollateralized loan rate, (iii) the T-bill rate, (iv) the net marginal product of capital, and (v) a pure intertemporal rate. We find a differential of over 3% pa between (iii) and (iv), thereby contributing to resolution of the equity premium puzzle. Dynamic impulse response functions imply pro-or-counter-cyclical movements in an external finance premium that can be of quantitative significance. In addition, they suggest that a central bank that fails to recognize the distinction between interbank and other short rates could miss its appropriate settings by as much as 4% pa. Also, shocks to banking productivity or collateral effectiveness call for large responses in the policy rate.

(Wu, 2001) This paper provides a new analysis of the effects of monetary policy on the term structure of interest rates using a tractable dynamic asset pricing model which incorporates a responsive monetary policy rule. The model shows how a change in the policy rule simultaneously affects inflation, interest rates, volatilities, co-movements between long and short rates, and is able to account for some empirical regularities of the term structure across different policy regimes in the United States.

(Friedman, 1980) The object of this paper is to bring to bear on financial-non financial interactions a richer approach to modeling the determination of long-term interest rates. in a series of previous papers. I have developed an alternative model based explicitly on the truism that any factor affecting long-term bond yields does so by (and only by) influencing some borrower's supply of bonds and/or some lender's demand for bonds. Rather than model the bond yield directly, as in the single-equation term-structure approach, this work instead models the supply of and the demand for bonds ,and determines the bond yield at the level necessary to equate resulting total supply and demand. The specific bond supplies and demands modeled in this work are those in the U .S. market for corporate bonds; this market is the primary source of long-term external lands to finance business fixed investment, and the corporate bond yield is also the long-term interest rate most frequently used in single-equation models of term-structure relationships. This paper reports the implications of this supply-demand model of long-term interest rate determination for the effectiveness of monetary and fiscal policies, as modeled in all other respects by the MJT-Penn-SSRC (henceforth MPS) econometric model of the United Stares. The new research tool applied in this paper is therefore altered MPS model from which the usual single term-structure equation has been removed and into which a supply-demand model of the bond market has been substituted. The only difference between this altered MPS model and the familiar NIPS model therefore lies in the determination of long-term asset yields and prices. Since these long-term yields and prices are such an important part of the overall bearing of financial market developments on nonfinancial behavior, however, the altered model exhibits interesting implications for fiscal and monetary policies.

(Stiller, 1979)Three hypotheses concerning the controllability of rationally expected real interest rates are examined here. These hypotheses, which are suggested by recent literature, assert in different senses that the stochastic properties of expected real interest rates are independent of the Fed policy rule. We discuss the meaning and implications of the hypotheses, and how they might be tested. Evaluation of the hypotheses is attempted by examination of the Fed`s "quasi-controlled experiments," historical changes in policy regimes, Granger-Sims causality tests, Barro unanticipated money regressions, and other methods. Questions as to the relevance of any such methods are discussed.

(Okina, Shiratsuka: 2004) A major feature of recent monetary policy in Japan has been heavy reliance on the so-called policy duration effect. This policy employs a commitment to compensate for the central bank's inability to lower the interest rate below zero by altering the anticipated course of monetary policy actions. This paper analyzes the behavior of the yield curve and examines the effectiveness and limitations of monetary policy commitment under zero interest rates with four indicators for policy duration effect. Specifically, we extend our previous study (Okina and Shiratsuka (2003)) by applying wavelet analysis to indicators for policy duration effect. As in the previous study, the policy duration effect was found to be highly effective in stabilizing market expectations for the path of short-term interest rates, thereby reducing longer-term interest rates and flattening the yield curve. The policy duration effect, however, failed to reverse deflationary expectations in financial markets.

(Chadha, 2003) We examine empirically whether asset prices and exchange rates may be admitted into a standard interest rate rule, using data for the US, the UK and Japan since 1979. Asset prices and exchange rates can be employed as information variables for a standard 'Taylor-type' rule or as arguments in an augmented interest rate rule. Our empirical evidence, based on measures of the output gap proxied by marginal costs calculations, suggests that monetary policy-makers may use asset prices and exchange rates not only as part of their information set for setting interest rates, but also to set interest rates to offset deviations of asset prices or exchange rates from their equilibrium levels. These results are open to several alternative interpretations.

(Konstantinov, 2002) We present an arbitrage-free model of the term structure of interest rates where the short rate is subject to rare jumps of predetermined magnitudes. A two dimensional hidden Markov switching process governs the jump probabilities. We apply the model to the targeting process of the Federal Reserve, interpreting the jumps as changes to the federal funds target, and the short rate as the market federal funds rate. We calibrate the model with money market and interbank spot curves, using an EM algorithm. The smoothed inference of the regime fits well with the historical evidence on the monetary policy stance. The model generates time-varying term premia at business cycle frequencies. The slow variation of the jump risk premia causes the expectations hypothesis of the term structure to break down at yearly horizons. We are able to qualitatively replicate the "predictability smile" in Campbell-Shiller yield spread regressions.

(Devereux, etc. 2004) This paper compares alternative monetary policy rules in a model of an emerging market economy that experiences external shocks to world interest rates and the terms of trade. The model is a two-sector dynamic open economy, with endogenous capital accumulation and slow price adjustment. Two key factors are highlighted in examining the response of the economy to shocks, and in the assessment of the effectiveness of monetary rules. These are: a) balance-sheet related financial frictions in capital formation; and b) delayed pass-through of changes in exchange rates to imported goods prices. We find that, while financial frictions cause a magniFcation of real and financial volatility, they have no effect on the comparison or ranking of alternative monetary policies. But the degree of exchange rate pass-through is very important for the assessment of monetary rules. With high pass-through, there is a trade-off between between real stability (in output or employment) and inflation stability. Moreover, the best monetary policy rule in this case is to stabilise non-traded goods prices. But, with delayed pass-through, the same trade off between real stability and inflation stability disappears, and the best monetary policy rule is CPI price stability.

(Jorda, Salyer: 2001) This paper shows that greater uncertainty about monetary policy can lead to a decline in nominal interest rates. In the context of a limited participation model, monetary policy uncertainty is modeled as a mean-preserving spread in the distribution for the money growth process. This increase in uncertainty lowers the yield on short-term maturity bonds because the household sector responds by increasing liquidity in the banking sector. Long-term maturity bonds also have lower yields but this decrease is a result of the effect that greater uncertainty has on the nominal intertemporal rate of substitution - which is a convex function of money growth. These predictions are broadly supported by the data: the conditional variance of monetary policy shocks identified from a conventional monetary VAR negatively affects the yields of federal funds, and the three and six-month treasury bills.

(Bartolini, Prati: 2003) The volatility patterns of overnight interest rates differ across industrial countries in ways that existing models, designed to replicate the features of the U.S. federal funds market, cannot explain. This paper presents an equilibrium model of the overnight interbank market that matches these different patterns by incorporating differences in policy execution by the world's main central banks, including differences in central banks' management of marginal lending and deposit facilities in response to shocks. Our model is consistent with central banks' observed practice of rationing access to marginal facilities when the objective of stabilizing short-term interest rates conflicts with another high-frequency objective, such as the targeting of exchange rates.

(Devereux, Lane: 2001) This Paper investigates the effects of exchange rate regimes and alternative monetary policy rules for an emerging market economy that is subject to a volatile external environment in the form of shocks to world interest rates and the terms of trade. In particular, we highlight the impact of financial frictions and the degree of exchange rate pass through in determining the relative performance of alternative regimes in stabilizing the economy in the face of external shocks. Our results are quite sharp. When exchange rate pass-through is high, a policy of non-traded goods inflation targeting does best in stabilizing the economy, and is better in welfare terms. When exchange rate pass-through is low, however, a policy of strict CPI inflation targeting is better. In all cases, a fixed exchange rate is undesirable. In addition, financial frictions have no implications for the ranking of alternative policy rules.

(Favero, etc. 1996) In this paper we analyse the impact of monetary policy shocks on the term structure of interest rates in US and Germany. We estimate the term structure of spot rates and of the instantaneous forward rate following the methodology proposed by Svensson (1994). We interpret the instantaneous forward rate as the expectations for the overnight rate prevailing at each point in the future. Exploiting the fact that intervention on policy rates take place in occasion of regular meetings of the FOMC in the US and of the Bundesbank Council in Germany, we estimate the term structure of spot rates and of instantaneous forward rates the day before and the day after regular meetings. From the estimation of the term structures before meetings we derive a measure of expectations for Central Banks interventions. On this basis we can assess the predictability of monetary policy under the null of the validity of the pure expectational model. We perform this exercise both by regression analysis and by the implementation of a non-parametric test proposed by Pesaran and Timmermann (1990). We then proceed to derive a measure of policy shocks by using information on the effective intervention. Such measure of policy shocks is available both for dates in which some intervention was effectively implemented by Central Banks and for dates in which a policy of no intervention was decided. Finally, we evaluate the impact of monetary policy on the term structure of interest rates by regressing the change in the yield curve between the day before and the day after meetings on expected and unexpected modification in policy rates. We conduct such exercise for the US and Germany over the period 1991-1995 to evaluate the sign and the magnitude of the response of the term structures in the two countries to expected and unexpected modifications in monetary policy.

(Kumah, 1997) Recent empirical research on the effects of monetary policy shocks on exchange rate fluctuations have encountered the exchange rate puzzle and the forward discount bias puzzle. The exchange rate puzzle is the tendency of the domestic currency (of non-U.S. G-7 countries) to depreciate against the U.S. dollar following domestic monetary tightening. Forward discount bias puzzle is the failure of empirical research to find results consistent with the requirement that if uncovered interest parity holds then domestic monetary tightening (given that foreign monetary policy remains put) should be associated with an initial impact appreciation of the domestic currency followed by a gradual depreciation. This paper takes the current debate in the monetary policy literature on the measurement of monetary policy shocks a step further into international finance. The main objective here is to assess the relative performance of monetary policy identification schemes in helping solve (or generate) the puzzles mentioned above. The identification schemes considered include a fully recursive identification scheme, a semi-recursive identification scheme and a structural VAR model that explicitly incorporates international monetary policy interdependence into the identification of monetary policy shocks. The structural VAR identification scheme yields very plausible contemporaneous and dynamic estimates of the effects of monetary policy shocks on bilateral exchange rates for the data-set of the respective countries considered, and the puzzles largely disappear.

(Michaelides, Kalyvitis: 2000) We examine the impact of U.S. monetary policy shocks on exchange rates using the monetary policy indicator proposed by Bernanke and Mihov (1998). We find evidence for instantaneous, rather than delayed, U.S. dollar overshooting after a monetary shock when relative output and relative prices are included in the VAR specification. The forward premium puzzle persists due to the interest rate differential response.

(Nascimento, 2005) Interbank money market rates represent the shortest end of the yield curve. In equilibrium they are determined by monetary policy and banks' liquidity and reserve management operations. The central bank pursues interest rate stabilization while targeting long-term economic goals. Its success depends on the perceived commitment and credibility of the monetary policy. Banks are subject to liquidity shocks and minimum reserve requirements constraints. They use interbank money market loans to obtain insurance against liquidity shocks. This paper analyzes the determinants of interbank rates for all maturities in the money market spectrum. We develop a multivariate cointegrated VAR in error correction form, while taking into account the interbank money market institutional features, the reserve requirements regime and the monetary policy operating operational procedures. We find interbank money market rates form two blocks moving together: a short-term and a long-term block. The one-week rate - which is anchored to the main refinancing operations - links the two blocks. Interest rates respond to several long run factors. Although each rate is more responsive to its own spread with the target other spreads are also important. Neglecting the effect of other maturities' spreads on the interest rate adjustment misses a richer framework. We can gain additional insight into interest rates dynamics by looking at broader decomposition of the yield curve.

(Eichenbaum, Evans: 1993) This paper presents new empirical evidence on the effects of monetary policy shocks on U.S. exchange rates, both nominal and real. Three measures of monetary policy shocks are considered: orthogonalized shocks to the Federal Funds rate, the ratio of Non Borrowed to Total Reserves and the Romer and Romer (1989) index. Using data from the flexible exchange rate era, we find that expansionary shocks to U.S. monetary policy lead to sharp, persistent depreciations in U.S. nominal and real exchange rates as well as to sharp, persistent increases in the spread between various foreign and U.S. interest rates. The temporal pattern of the depreciation in U.S. nominal exchange rates following a positive monetary policy shock is inconsistent with simple overshooting models of the type considered by Dornbusch (1976). We also find that U.S. monetary policy was less volatile under fixed exchange rates than under floating exchange rates. Finally, we find less evidence that monetary policy shocks had a significant impact on U.S. real exchange rates under the Bretton Woods agreement.

(Alvarez, Atkeson: 1996) We examine the impact of monetary injections in the Grossman-Weiss-Rotemberg Model and show that monetary shocks can lead to nominal exchange rates that are more volatile than inflation, money growth or interest rate differentials. Moreover, movements in real exchange rates following monetary injections can be persistent and nearly as large as movements in nominal exchange rates nominal exchange rates.

(Faust, 2002) This paper proposes a new approach to identifying the effects of monetary policy shocks in an international vector autoregression. Using high-frequency data on the prices of Fed Funds futures contracts, we measure the impact of the surprise component of the FOMC-day Federal Reserve policy decision on financial variables, such as the exchange rate and the foreign interest rate. We show how this information can be used to achieve identification without having to make the usual strong assumption of a recursive ordering.

(Roubini, 1988) The traditional approach to the estimation of the offset and sterilization equations can be criticized for the ad-hoc specification of the reaction function of the monetary authorities and the endogeneity of the domestic credit and foreign reserve variables in the estimated equations. The paper proposes an alternative analytical model where the sterilization and offset equation are derived from an explicit maximization problem solved by the monetary authority. In such a model, the optimal intervention and sterilization policies of the monetary authority are shown to be dependent on the different disturbances hitting the economy and the preferences of the monetary authority. In particular, under a wide range of domestic and foreign disturbances the optimal response of the central bank will lead to negatively correlated comovements of domestic credit and foreign reserves if the central bank cares more about the interest rate smoothing objective relative to the foreign exchange reserve stabilization goal. Conversely, positive correlations between domestic credit and foreign reserves will be observed if the foreign reserve objective is dominant.

(Gatti, etc. 2002) In this paper we propose an Open Economy Financial Accelerator model along the lines of Greenwald-Stiglitz (1993) close in spirit but different in many respects from the one proposed by Greenwald (1998). The first goal of the paper is to provide a taxonomy of the effects of a devaluation in this context. The direct (first round) effect on output, taking as given net worth and interest rate, is negative for domestic firms (due to the input cost effect) and positive for exporting firms (due to a positive foreign debt effect). The indirect (second round) wealth effect (on output through net worth, taking as given the interest rate) is uncertain, depending on the relative size of the domestic and exporting firms. There is also an indirect effect on output through the response of the domestic interest rate to a devaluation due to the risk premium effect. Due to the uncertainty on the sign of most of these effects, it is difficult to assess the overall impact of a devaluation. One cannot rule out, however, an economy-wide contractionary effect of a devaluation. If the devaluation affects negatively the net worth of domestic firms, the domestic interest rate may rise (due to the risk premium effect), exerting an additional contractionary impact on output. If, on top of that, the monetary authorities force a further increase of the interest rate in an effort to curb the exchange rate, the contractionary effect will be emphasized.

(Kozicki, Tinsley: 2003) Despite a large literature documenting that the efficacy of monetary policy depends on how inflation expectations are anchored, many monetary policy models assume: (1) the inflation target of monetary policy is constant; and, (2) the inflation target is known by all economic agents. This paper proposes an empirical specification with two policy shocks: permanent changes to the inflation target and transitory perturbations of the short-term real rate. The public sector cannot correctly distinguish between these two shocks and, under incomplete learning, private perceptions of the inflation target will not equal the true target. The paper shows how imperfect policy credibility can affect economic responses to structural shocks, including transition to a new inflation target - a question that cannot be addressed by many commonly used empirical and theoretical models. In contrast to models where all monetary policy actions are transient, the proposed specification implies that sizable movements in historical bond yields and inflation are attributable to perceptions of permanent shocks in target inflation.

(Sargent 1983) Commodity money is modeled as one or two of the capital goods in a one-consumption good and one or two capital-good, overlapping generations model. Among the topics addressed using versions of the model are (i) the nature of the inefficiency of commodity money, (ii) the validity of quantity-theory predictions for commodity money systems, (iii) the circumstances under which one commodity emerges naturally as the commodity money, (iv) the role of inside money (money backed by private debt) in commodity money systems and (v) the circumstances under which a government can choose the commodity to serve as the commodity money.

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**A model of commodity money**

**Thomas J. Sargent and Meil Wallace**[\*](http://www.sciencedirect.com/science/article/B6VBW-45GSFPT-33/2/0257f73035752dea468ffe95a3f88237#fn1)

University of Minnesota, Minneapolis, MN 55455, USA

[Journal of Monetary Economics](http://www.sciencedirect.com/science/journal/03043932)

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