

THE INTEREST-BEARING DEBT SYSTEM AND ITS ECONOMIC IMPACTS

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We are almost blind when the metrics on which action is based are ill-designed or when they are not well understood¹.

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CONTENTS:

EXECUTIVE SUMMARY	2
1. INTRODUCTION	3
2. THE DEBT PROBLEM	6
3. THE SIMPLE ECONOMY	8
4. THE UNSUSTAINABLE ECONOMY	11
5. THE UNSUSTAINABLE ECONOMY WITH FOREIGN DEBT	17
6. THE DEBT MODEL	22
7. SYSTEMIC INFLATION AND INFLATION POLICY	25
8. THE DEBT EXPLOSION AND FINANCIAL STABILITY	28
9. CULTURE AND INSTITUTIONS	35
10. CONCLUSIONS	38
11. BIBLIOGRAPHY	39
ACKNOWLEDGEMENTS	
APPENDIX MODIFIED FISHER APPLICATION NEW ZEALAND 1978-2010	

¹ Stiglitz et al 2009 p9.

EXECUTIVE SUMMARY

This paper shows how debt evolves in the interest-bearing debt-based financial system and why debt growth is exponential. It analyses the fundamental mechanisms of debt growth and provides a sound theoretical base to support the analysis. The theoretical foundation is a revised form of the Fisher Equation of Exchange that, for the first time, takes the structural effects of interest bearing debt on the financial system into account.

Some earlier work [such as Snyder, (1940); Danks/Social Credit (1955); Friedman, (1962)] may at a superficial first glance appear to have some common grounds with the analyses set out in this paper. This is not so. The only common ground of this paper with the cited works is that it supports a quantitative approach to the supply of money and credit in the economy. With some exceptions, mostly relating to war and economic crises, the world's money supply has always been based on the quantity of money rather than the price of money.

The change to a price-based monetary system accelerated after US President Nixon abandoned the US\$ gold peg in 1971. Since then, deregulation of the monetary and banking sectors, increased globalization and unrestrained capital flows have produced a system almost entirely dependent on the price of money.

This paper shows how the price of money paid as interest on deposits in the banking system produces a pool of unearned income that causes self-reinforcing exponential debt growth.

The price-based financial system has not prevented economic growth around the world, but that growth has come at incalculable human and environmental cost. It has led to economic, political and environmental instability and a widening gap between rich countries and poor countries as well as between rich and poor within countries.

The figures given in the paper are preliminary. They suggest that price-based debt expansion in developed economies is gradually becoming unstable. In New Zealand, around March 2009, the gross cost of paying interest on the pool of unearned income M_s exceeded the systemic inflation in the economy. In terms of the debt model shown at section 6 of the paper, the circulating debt M_{cd} is now smaller than the pool of unearned income M_s . Were it not for taxation on interest, New Zealand's economy would now be in a structural deflationary spiral because it would be unable to afford the deposit interest. This would lead to a collapse of the banking system.

The immediate effects of crises like the current one in New Zealand are large-scale loss of "savings" (M_v in the debt model) and equity, reduced incomes and purchasing power in the productive economy with associated job losses, growing income inequality and a declining quality of life.

The paper shows that the current price-based financial system based on interest bearing debt is self-destructive. It will destroy the global economy unless it is changed. The world must return to a financial system based on quantitative principles that remove or at least reduce to a minimum the growth of unearned income that is causing the unsustainable debt growth.

1: INTRODUCTION

Recent financial crises around the world, beginning in the United States in 2007², appear to have reinforced the widely held view among economists, governments and regulatory authorities that the world's financial problems are related to excess debt. Some say the excess debt arises from large fiscal deficits as in the Baltic States, Greece, Ireland and elsewhere. Others say it arises from housing or other bubbles generated from poor lending and borrowing practices, low borrowing costs, inadequate financial regulation or the rapid growth of "off balance-sheet" derivatives within the financial sector. Nearly everyone from the Governor of the US Federal Reserve and the heads of the International Financial Institutions down to university economists now agree excessive debt growth needs to be restrained.

In recent decades, thousands of learned papers and articles have been written about the phenomenon of rapidly expanding debt but little work has been done on debt growth from a structural or systemic point of view. Credit expansion has long been seen as a function of the demand for new credit moderated predominantly by its price, the risk perception of the borrower by the lender, the reserves financial institutions have to hold to manage their lending risks and, in some cases, deposit withdrawals.

There is now overwhelming evidence to suggest the existing debt management system is dysfunctional. The best efforts of the world's monetary authorities have failed to prevent excessive debt growth. Debt levels have continued to expand much faster than measured nominal economic output despite periods of turmoil in the world economy, high or low interest rates, widespread changes in financial regulation and even bank bailouts. This suggests a more fundamental cause of debt growth exists outside the present financial architecture that has either been taken for granted or overlooked by existing economic theory and practice.

This paper will explore the underlying causes of rapid debt growth and what can be done to prevent excessive debt growth in the future. Later papers will examine other initiatives that might then be taken to improve New Zealand's economic position.

Section 2 of the paper proposes that debt growth in modern debt-based economies is predominantly caused by the generation of unearned income in the form of interest paid on bank deposits³. Modern developed countries operate on a debt-based financial system whereby nearly all deposits arise from borrowing debt at interest through the banking system. The paper shows how unearned income arising from the payment of interest on deposits causes exponential debt expansion⁴.

To test the unearned income hypothesis, Section 3 models a simple economy. Figure 1 in Section 3 shows how that simple economy can function properly and still fully

² Arguably Northern Rock in the UK was the first collapse but it was caused by US toxic assets.

³ Earned income is the income generated from the production of goods and services that form part of the Gross Domestic Product (GDP). Unearned income is income arising from the payment of interest on bank deposits that is unproductive and does not add to GDP.

⁴ The decision whether to save or invest unearned income depends on the real interest rate (the difference between the interest rate paid and inflation) and the perceived risk weighted financial returns available in the investment sector. If real interest rates are very low, as in Japan, savings may be invested off-shore as happens with the so-called "carry" trade.

satisfy the requirements of the international System of National Accounts (SNA) *without debt expansion beyond the needs of the productive economy.*

Section 4 examines the economic transformation that occurs when deposit interest is introduced into the simple economy model shown in Figure 1. In Figure 2, deposit interest in the form of unearned income introduces inflation into the model and also stimulates debt growth, thereby proving the basic hypothesis linking deposit interest to debt growth. Equations are provided to show the debt growth is exponential. The analysis of Figure 2 shows that debt expansion and inflation are both readily quantifiable, and it demonstrates why, in practice, almost all price is inflation⁵. Figure 2 shows how the pool of unearned income arises incrementally from payment of interest on bank deposits but, in aggregate, remains outside it. The increment of unearned income from each production cycle is permanently transferred to the investment sector while the debt giving rise to it remains a burden on the productive sector.

Section 5 describes what happens when a country such as New Zealand runs persistent current account deficits, resulting in the loss of economic sovereignty under existing financial policy. This is shown in Figure 4. Section 5 also discusses the circulating debt (M_{cd}) and its speed of circulation (V_{cd}) in some detail. $M_{cd} \times V_{cd}$ equals the Gross Domestic Product $GPD(d)$ produced by debt.

Having proven the main thesis about debt growth, theoretical support for it is offered in Section 6 by introducing a new debt model that has been derived from Irving Fisher's well-known Equation of Exchange that dates back to 1912 (Fisher, 1912, Manning 2009). The revised Fisher Equation supersedes the original Fisher Equation of Exchange because it takes into account the growth of an independent investment sector based on unearned deposit income⁶. $M_{cd} \times V_{cd}$ mirrors MV in Fisher's original equation which didn't take into account the effect of interest-bearing debt. The paper shows how debt interest is compounded exponentially.

In the following Section 7, an entirely new concept of *systemic inflation* is discussed in some detail. In the debt model Systemic inflation is $M_{cd} * I * K$ caused by the interest rate $I\%$ paid on deposit interest. The study shows there is no mechanism within the existing debt-based financial system to directly manage inflation and that orthodox interest rate policy works through the debt servicing requirements of the investment sector. It establishes two primary concepts:

-Individually it is possible to save debt-free money but in aggregate, it appears difficult if not impossible to save earned income generated from debt. Conceptually, from Figures 2 and 4, saving in the debt system reduces the money available for consumption, resulting in either a fall in prices or a fall in consumption. In practice

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⁵ The simple economy of Figure 1 has very little if any inflation while in the economy shown in Figure 2 inflation in the productive economy is linked directly to the deposit interest rate. Figure 3 shows how total inflation has accelerated as developed economies have become more and more dependent on interest-bearing debt. This paper proposes that nearly all the inflation shown in Figure 3 arises from unearned deposit interest so that in practice all price arises from inflation.

⁶ Quite the opposite of previous work (such as Snyder 1940) whose early support for monetarism was based on empirical statistical analysis.

consumption usually falls much faster than prices because incomes are “sticky”⁷. Earned savings⁸ therefore tend to produce a loss of consumption capacity from the productive economy unless they are replaced by net non-income capital borrowing and consumer debt⁹, Mv in the revised Fisher Equation of Exchange. - Inflation in the existing debt system is systemic and unavoidable. Orthodox interest rate policy only briefly suppresses systemic inflation at great economic cost to the real productive economy and the wider community.

Section 8 sets out the historical debt growth in New Zealand along with another new concept, *the incentive to invest*. In aggregate, the pool of unearned deposit interest stays in the investment sector. The debt giving rise to it remains with and is serviced by the productive sector. The incentive to invest is defined as the growth of the investment pool M_s over and above the interest needed to service it expressed as a percentage of GDP, minus SNA price inflation.¹⁰

Section 9 contains a brief review of the way culture and institutions have contributed to the lack of awareness of the issues addressed in this paper. Historically, New Zealand “had” its 2008 financial collapse after October 1987, albeit without the added complications of a large “shadow” derivative economy. New Zealand (and Australia) avoided the 2008-2010 problems suffered by the United States because the lessons from 1987 ensured that the investment bubble based on direct excessive speculative borrowing was readily manageable¹¹.

The overall conclusions from the paper are that unearned income in the form of deposit interest is the direct cause of the problem of excessive debt, and that consequently, debt growth and its accompanying systemic inflation can only be managed effectively by greatly reducing and preferably removing the payment of interest on bank deposits. In the absence of multilateral agreements¹² to reduce or eliminate deposit interest, unilateral action is feasible¹³ but it requires carefully constructed financial instruments to manage cross border capital flows¹⁴.

⁷ “Sticky” is the term used in economics to describe resistance to downward pressure on variables like incomes and prices. For example, wages are “sticky” because it is very difficult in many countries to lower them once they have been increased.

⁸ Not to be confused with savings arising from UNEARNED income referred to above.

⁹ As happened in the United States where until recently consumption was maintained by growing household and consumer debt until consumers became debt-saturated and could no longer meet their debt-servicing obligations as discussed briefly at p15 of this paper.

¹⁰ See Figure 11. The incentive to invest is $(Mcd+Mv)*I*K/GDP(d) - \text{Inflation}\%$ where I is the interest rate on deposits and K is $(1-\text{tax rate on interest})$. When $I=0$ there would be little incentive to invest other than human nature. Man has always “saved for a rainy day” and that would continue. When I is close to zero there will be little or no inflation so savings will maintain their value.

¹¹ There was arguably a housing bubble but that arose directly from the mechanics of the debt system as described in this paper and not from speculative debt (see paper section 6 and Mv in the debt model)

¹² For example, through the Bank for International Settlements, the International Monetary Fund and the World Bank.

¹³ As will be shown in Paper 2 of this series.

¹⁴ The situation is different for different countries. Japan has near zero deposit interest but can sustain capital outflows (such as Uridashi and similar offshore investments) because it has a large current account surplus. Countries like New Zealand with large current account deficits cannot sustain such outflows and so will need to implement appropriate measures to maintain their current account balance and manage capital flows.

2. THE DEBT PROBLEM

The interest-bearing debt financial system in use all over the world today evolved from the fear King William III of England had in 1694 for the wrath of his subjects were he to increase their taxes to pay for his wars in Europe. Afraid of a political backlash and bereft of the will to responsibly address his financial difficulties, King William borrowed from a group of wealthy citizens. In doing so, he put off the day of reckoning by pledging future taxes in perpetuity to fund his debt. Future taxes had to be pledged because previous experience had taught lenders the Crown was not fully creditworthy¹⁵. The lending arrangements were written into law in the Tonnage Act of 1694. By that means “modern” banking was born in the form of the Bank of England. Since then, debt expansion has gradually accelerated, more recently aided by increased automation within the banking sector and on-going financial deregulation. The point has now also been reached where the role cash transactions play in generating measured economic activity has all but been eliminated in the developed western economies. That has happened despite the fact that cash, being debt free and interest free, provides a continuous and costless means of exchange as long as it is in circulation. Instead, cash has progressively been replaced by expensive interest-bearing debt created for profit by the commercial banking system¹⁶. In most developed countries, cash makes up 3% or less of the broad money supply, and much of that circulates outside the productive economy¹⁷. Unlike the famous greenbacks printed and spent into circulation by the United States government during the US Civil War (1861-1865), banks in modern debt-based economies buy cash from the Central Bank. The banks pay for the cash by issuing a cheque against their own internal accounts¹⁸. The use of cash as legal tender is limited to public demand for it, and it is in the banks’ interest that as little cash as possible is in circulation. Less cash means more bank debt and more profit for the banks.

Many trillions of dollars of interest-bearing debt are now being added to the world’s economies every year. It is now widely acknowledged such rapid debt growth is unsustainable because debt costs are absorbing a disproportionate and growing share of earned incomes. The existing monetary authorities have proved incapable of managing debt growth short of financial collapses such as the one that occurred during the recent worldwide crisis that began in 2007. Logically, if the present financial system is unable to cope with excessive debt growth, there must be some other mechanism at work that does not fall within existing economic theory.

This paper proposes the alternative view that debt growth in modern economies is predominantly caused by unearned income in the form of interest paid on bank

¹⁵ The previous King, James II defaulted on his debt ruining many of those who had lent him money.

¹⁶ The elimination of cash is quite recent. The preliminary figures in Appendix 1 suggest that in New Zealand in 1978 roughly half of all economic activity may still have been cash.

¹⁷ In the “black” unmeasured economy for example such as drugs, gambling and other illicit activities. In New Zealand, as of November 2009 there was NZ\$ 3.37 billion of notes and coin in circulation while the broad money supply M3 was NZ\$210.7 billion, so cash made up just 1.6% [Source Reserve Bank of New Zealand Table hc1]

¹⁸ The central bank/treasury makes a profit from selling notes and coins that cost much less than their face value to produce.

deposits¹⁹. The paper shows that whenever interest is paid on deposits a corresponding debt is created somewhere **in the productive economy**. That makes the debt giving rise to deposit interest a structural part of the productive economy. The interest has to be paid by the productive economy and must be included in prices. **Almost** the only ways to keep prices stable when interest is being paid on deposits are to increase productivity or to reduce disposable incomes²⁰.

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In the debt system the debt is created before its corresponding money deposit²¹. Since unearned deposit income cannot come out of thin air it must arise from new debt. Without new debt there can be no new money. Paying unearned income in the form of deposit interest demands that new debt be created within the productive economy to fund it. Otherwise deposits in the productive economy would keep falling²² as they are transferred from the productive sector to the investment sector or paper economy. In the debt system there *isn't* enough money in the productive economy to pay depositors interest on their deposits, unless it is first created into existence to pay to them. As long as unearned income deposits continue to increase, so must their corresponding debt carried as a permanent burden in the productive economy. That generation of new debt in the productive economy has been growing beneath the modern economic radar screen for many decades. If this new view of debt growth can be proved to be correct, either a way must be found to slow or stop paying interest on deposits or the world's debt-based economies must face imminent financial collapse as the debt servicing demands become unsustainable in the productive economy.

In practice the collapse has already begun in the United States and elsewhere. In the US, the debt grew so large and the expectations of the investment sector became so high, consumers were loaded with more debt than they could service, leading to large-scale debt default. When those defaults were fed back through the banking structure, destroying the banks' net worth, the whole financial system began to collapse. That collapse is on-going because the debt-servicing demands on consumers have not been substantially reduced while their net worth (their borrowing capacity) has gone down because property values have plummeted, and wages and most incomes are falling. Unless the financial system is changed quickly or bank lending and incomes are rapidly increased, the United States has entered a period of terminal decline.

Some readers may at first sight see some similarity between parts of this paper and earlier proposals²³ supporting the inflationary issue of interest-free credit. This analysis, especially section 4 of this paper clearly demonstrates that is not the case.

¹⁹ Deposits and debt go together but they are not the same. For every dollar of debt there is a dollar deposit somewhere. First someone signs a loan (debt) agreement with the bank. When the loan is drawn down (activated), a corresponding deposit is entered into the borrowers account. The debt (loan) and the deposit are numerically equal but the debt is an asset in the bank's books and the corresponding deposit is a liability in the bank's books. Deposit interest usually, though not always, makes up a large part of the interest borrowers pay on their loans. $\text{Loan interest} = \text{Deposit interest} + \text{the bank margin or spread}$.

²⁰ Raising interest rates to manage inflation causes a reduction in consumption capacity (Manning 2009)

²¹ The loan agreement with the bank always precedes the deposit appearing in the borrowers account.

²² This would produce a deflationary spiral in the productive economy because there would be less money circulating there to produce the same amount of goods and services.

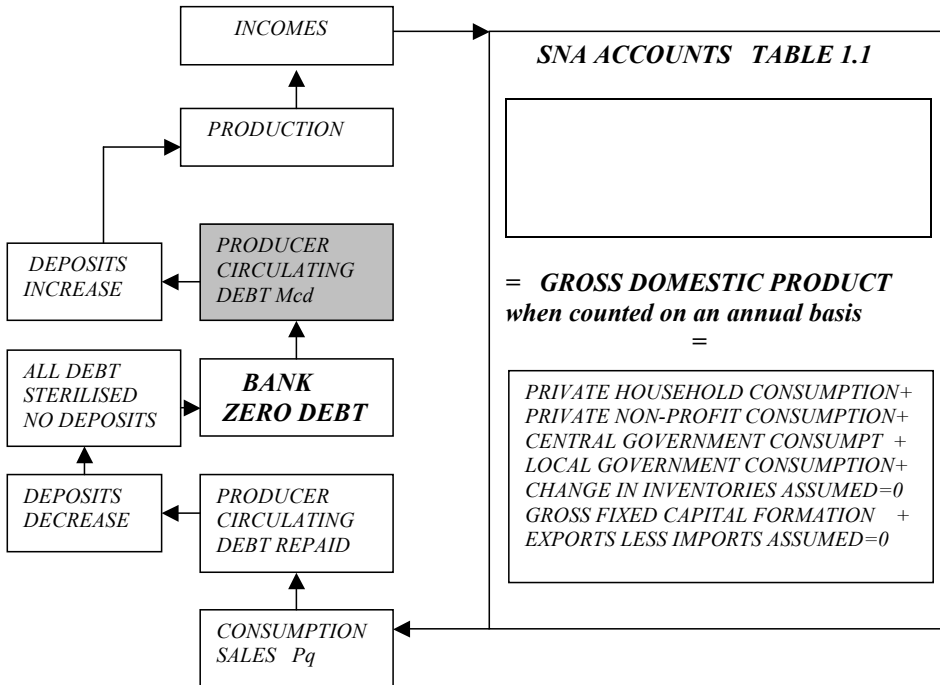
²³ Such as C.H. Douglas' ideas on social credit

3. THE SIMPLE ECONOMY

The first step in revealing how the present debt system works is to show how a simple debt economy can function *without* large-scale debt expansion and without deposit interest²⁴. It's close to the way economies used to work when they were based on cash rather than debt.

The simple dynamic debt economy is shown in Figure 1. Figure 1 satisfies the international System of National Accounts (SNA) in use worldwide except that it assumes for simplicity that a country has a balanced international trade account and that business inventories are stable.

FIGURE 1 THE SIMPLE DYNAMIC PRODUCTION CYCLE



Conceptually, there is no residual debt after any individual production cycle, and no residual deposits. Each cycle in Figure 1 is self-clearing and the debt is self-cancelling²⁵. *Nor can there be any aggregate earned savings*²⁶. If there were, the cycle would not be self-clearing. Inventories would change and/or prices P would change and/or output q would change. *In sum, what is produced is sold, including new capital goods.* Figure 1 allows for the circulating debt Mcd to change over time

²⁴ The simple model economy assumes that no interest is paid to depositors on the account balances.

²⁵ Interest on any production debt is included in both the income (production) and consumption sides of Figure 1 and so is self-cancelling, but increases in interest (bank spread) will lead to cost inflation and vice versa.

²⁶ For each individual who has "earned savings" others must carry a corresponding amount of consumer debt.

and for prices P and output q to also change according to the institutional rules in place for the time being, productivity growth and population changes. As described below, the simple model in Figure 1 does not need to make specific provision for a “market” in existing capital goods or for their progressive depreciation over time. In practice, the basic production cycle doesn’t literally “pulse” as shown in Figure 1. Instead there is an ongoing stream of production and consumption, a corresponding quantum of debt Mcd continuously in circulation and an equivalent quantum of deposits always in bank accounts.

It does not matter how many transactions there are in a production chain, or when they take place²⁷. Each transaction follows the cycle shown in Figure 1.

The production cycle shown in Figure 1 uses the circulating debt Mcd to produce capital goods as well as goods and services for consumption. The capital goods make up the “Gross Fixed Capital Formation” shown in SNA Table 1.1 on the lower right in Figure 1. Figure 1 assumes the producer of a capital good sells it to other existing deposit holders for the time being, so its purchase price comes out of employee incomes and the gross operating surplus. The banking system intermediates among deposit holders to enable such exchanges of capital goods to take place. The borrower repays loan principal by transferring future income to the lender. The lender can then consume the repayment or re-lend its purchasing capacity to others who wish, for the time being to consume more than they earn. Such arrangements are a matter of agreement between the parties and will usually include the payment of interest. Such payments are like borrowing from a non-bank finance company. They involve a transfer of wealth (future income) from the borrower to the lender but they do not affect the total amount of bank deposits. There is no inconsistency between the interest-free system of Figure 1 and the idea that willingness to delay consumption is “worth” an interest premium.

In the absence of interest on deposits, the system is in balance and there is no inflation.

A capital good would typically be put to good productive use to generate additional income in subsequent production cycles. The productive debt Mcd , incomes, the gross operating surplus and q would all rise to accommodate the real growth from new capital goods so repayments could be made from the economic expansion. That’s why, as shown in Figure 3, there was no inflation in Britain during the industrial revolution despite huge increases in population and output²⁸.

Sales and transfers of capital goods means the banking system is left with debtors and creditors in like amount at the end of the production cycle when Mcd is conceptually cancelled. That distributive effect leaves some players in the economy with net deposits and some with net debts, and that, as will be shown below, is where the problems with systemic debt expansion begin as soon as interest is paid on system deposits.

²⁷ Danks (1955) pp12-15

²⁸ In some countries, investment banking became widespread, pooling cash and deposits to fund capital investments such as rail, shipping and other industrial expansion.

In an interest-free environment, the chains of transactions needed to make productive investments in infrastructure, whether public or private, are the same as those shown in Figure 1. Investment in infrastructure made by a government or other public body is traditionally funded from taxation. If there are sufficient labour and material resources available, it could also be funded using new producer circulating debt Med within the context of Figure 1. In that case repayments are typically met in the form of (sometimes extra) taxes and levies. Since in Figure 1 the cost of such goods and services are stable, they are known. Private contractors bid against each other for public work. They do this on the basis of technique, method, and organisation. Contrary to what some authors might seek to suggest (Danks 1955), there is no conflict in such cases between private enterprise and an interest-free economy.²⁹

The story is a little different for *unproductive* capital goods such as residential housing where the capital expenditure does not increase production beyond the construction phase. Aside from increasing their work efficiency or working longer hours, most homebuyers have to pay for their home from their future earnings because they lack a new independent income stream to pay for the capital good. This greatly accentuates the distributive effect already referred to because residential homebuyers become heavily indebted to other players in the economy³⁰. Until about 200 years ago housing formed only a small part of economic activity. Since then, and particularly during the twentieth century, housing expectations in modern economies have risen sharply to the point where, in New Zealand, expenditure on housing absorbs just over 15% of all average household incomes³¹. The widespread concern worldwide about the economic role of residential property and property is valid but poorly understood.

Despite the various issues around capital goods, the simple economy works very well, especially where appropriate income redistribution is used to ensure a socially acceptable level of housing is affordable to all.

People all over the world owned property, borrowed and loaned money and successfully conducted all manner of economic transactions long before interest was routinely paid on bank deposits (Danks, 1955)³². Payment of interest on bank deposits relates to the structure of the debt system itself, not to interest-bearing contractual obligations between consenting parties where one party chooses to defer consumption and another chooses to buy the use of that party's consumption capacity³³. Reducing or removing interest on deposits would reduce or eliminate inflation, leading to stable rents and prices³⁴. Moreover, the paper shows that the incentive to invest (described in section 8) may soon turn negative, an investment situation WORSE than would be the case with zero interest in deposits.

²⁹ Danks (1955) pp 48-51.

³⁰ The quantum of residual debt is readily quantifiable but outside the scope of this paper.

³¹ Source: Statistics New Zealand Household Economic Survey (income) June 2009

³² Danks (1955) pp 57-58

³³ As discussed later in the paper, the system presently requires banks to compete for deposits but that competition would still be possible in the absence of deposit interest.

³⁴ Investment resource allocation would still be based on cost-benefit analyses exactly as happens now, but with the benefit that finance charges would play a smaller part in "efficient" allocation. In addition, other instruments such as variable reserve ratios are available to central banks to restrain demand for bank lending.

4. THE UNSTABLE ECONOMY

Having isolated the broad fundamental problem of debt and shown how a very low-debt simple economy can function (without inflation), the next step is to explore how the present system using deposit interest is structured and what causes exponential debt growth.

The only difference between the stable simple economy shown in Figure 1 and the unstable economy shown in Figure 2 is the introduction of interest on all bank deposits arising from debt³⁵. If Figure 2 demonstrates conclusively how debt expands exponentially when interest is paid on deposits, then it necessarily follows that the cause of unsustainable debt growth lies in the payment of deposit interest.

The introduction of deposit interest $I\%$ ³⁶ produces systemic changes throughout the economy. In Figure 2, to enable all production to be consumed, producers must first borrow (and then pay out in the form of incomes) the deposit interest through the production phase of the production cycle and then recover it by way of increases in their prices during the consumption phase. Incomes are assumed to keep pace with inflation. Otherwise the production cycle cannot clear itself.

When each production cycle is cleared there is residual debt and corresponding residual deposits as shown toward the bottom left of Figure 2. Those deposits take on a life of their own because they are reinforced by every subsequent production cycle but exist outside it. The pool of deposit interest plays no further part in production. Instead, it makes up what is usually called the investment sector or paper economy that includes the non-trade sector and derivatives market. Deposit interest acts as a debt pump, pumping more and more deposits into the investment sector M_s while leaving the corresponding debt in the productive sector. The investment sector is what creates the inflationary “market” in existing assets. The debt M_s supporting the investment sector is unrepayable because it supports unproductive unearned deposit interest that resides outside the productive sector.

It does not matter how many transactions there are in a production chain, or when they take place³⁷. Each transaction follows the cycle shown in Figure 2. There is no inconsistency between the deposit interest based system of Figure 2 and the idea that willingness to delay consumption is “worth” an interest premium.

Figure 2 does not directly specify who in the economy has the deposits and who has the corresponding debt at the end of the production cycle (lower centre of Figure 2). However, net deposit holders emerge from the redistribution of debt arising from the purchase of capital goods as already discussed in relation to the simple economy in Figure 1. The production cycle itself remains a zero-sum game but in Figure 2 the cycle is constantly being loaded with the extra debt needed to pay the deposit interest (unearned income) on the investment sector M_s . In addition, when interest-bearing debt is used as in Figure 2 the consequential

³⁵ The analysis in this paper uses the average funding (deposit interest) rate counted over all of the domestic credit. The average funding rate for New Zealand is found at NZ Reserve Bank table hc10.

³⁶ Net deposit interest after tax is $I*K$ where K is $(1 - \text{tax rate on gross deposit interest})$

³⁷ Danks (1955) op cit pp12-15

transfer of wealth that takes place is accelerated in comparison with the stable economy of Figure 1 (Danks, 1955)³⁸.

It should be stressed that ownership of productive infrastructure is irrelevant from a national macro-economic point of view. Who owns what depends on political choice. In the case of publicly owned productive infrastructure, the benefits of the investment are distributed directly amongst the population. They may for example take the form of shorter travelling times for all (tunnel), improved education facilities (school), or improved public health (a sports centre). Where infrastructure is privately owned, the temptation to charge users for services may be greater and the resulting profits may accumulate in the hands of a few.

The investment sector funded by the accumulated interest paid on bank deposits produces nothing itself. It is paid for through inflation of the productive sector.

Neither the SNA (System of National Accounts) nor Figure 2 provides any direct mechanism to enable increases in interest rates to reduce inflation. Interest rate policy works through borrowers (such as home mortgage holders), the holders of the Ms debt that supports the accumulated deposit interest on bank deposits. Raising interest rates typically increases their interest payments on mortgage and other debt, and thereby reduces their purchasing power. Raising interest rates to “manage” inflation, as is commonly done under orthodox economic policy, transfers even more consumption capacity from the productive economy to unearned income for deposit holders in the investment sector³⁹.

Figures 1 and 2 provide an alternative insight into the real productive economy. The orthodox view is that people and firms borrow to invest on the basis their financial return will exceed their costs including interest. Their net profit after tax is often put in the bank and the holders of those banked profits then expect to be paid interest on it. Figure 2 shows such deposits (or other earned “savings”) by their nature force others in the economy into new debt to replace the savings in the economy if production and consumption levels in the economy are to be maintained. Figure 2 also shows that any deposit interest paid on those “savings” deposits increases Mcd and inflationary pressure in the productive economy. This is discussed further in section 7 of this paper where it is proposed that traditional “savings” as set out in the System of national Accounts (SNA) represent the difference between increases in consumer debt plus new bank debt for the purchase of capital goods on the one hand and principal repayments relating to previously purchased capital goods on the other. As shown in section 6 of this paper, those “savings” are represented by Mv in the revised Fisher Equation of Exchange. When interest rates are increased to manage inflation the higher deposit interest is not (immediately, anyway) compensated in wages and other incomes. In effect, producers and income earners are forced to gift to investors “savings” they do not have.

³⁸ Danks (1955) op cit p12.

³⁹ The quantum can be estimated from equations 1-3 on page 13. On an annual basis it is roughly the change in the deposit interest rate $\times K \times$ (the domestic credit (Ddc). At the moment in New Zealand a 1% change in the deposit interest rate alters the GDP by about 1.9%, leaving an ever-smaller window for the Reserve Bank to manage inflation using interest rates. In 1990, a 1% change in deposit rates would have produced about 0.9% change in GDP, and in 1980 just 0.6% , assuming an average tax rate on deposit interest of 25% [Source: Appendix 1]

The key to understanding Figure 2 is that only that part of the domestic debt that is not already committed as M_s to fund the unearned income pool or to M_v as “savings” is available as M_{cd} for use in the productive economy.

Debt can only be used once. If the debt M_s is used to support the pool of unearned deposit income it cannot also be used to fund the production cycle unless the corresponding M_s deposits are directly re-invested in new production or productive capital goods.

In aggregate, re-investment of deposits arising from the debt M_s into the production cycle is not common, in part because there is a financial incentive (discussed later) for them to remain in the investment sector, and in part because saving is instinctive. People have always saved. Instead, holders of unearned income deposits tend to find the investment “game” more profitable, trying to increase their share of those deposits by trading among each other in existing capital goods such as equities, property and financial derivatives. Figure 2 shows that the investment sector debt creates an exponential expansion of unearned income M_s given by the expressions (based on annual figures)⁴⁰

$$M_{s1} = M_{s0} * (I + I_1 * K_1) + I_1 * (M_{1cd} * V_{1cd} + M_{1v}) * K_1 \quad \text{where } M_{s0} = 0 \quad (1)$$

$$M_{s2} = M_{s1} * (1 + I_2 * K_2) + I_2 * M_{2cd} * V_{2cd} + M_{2v}) * K_2 \quad (2)$$

$$M_{sn} = M_{s(n-1)} * (1 + I_n * K_n) + I_n * M_{ncd} * V_{ncd} + M_{nv}) * K_n \quad (3)$$

Where M_{sn} is the investment debt held as assets by the banks to fund deposit interest
 $I_1 \dots I_n$ is the average deposit interest through each of the years 1 n
 $M_{1cd} \dots M_{ncd}$ is the average circulating debt through each of the years 1 n
 $V_{1cd} \dots V_{ncd}$ is the number of production cycles during each of the years 1n
 $K_1 \dots K_n$ is the proportion of deposit interest remaining after deduction of tax
 $T_1 \dots T_n$ during each of the years 1n
 $M_{1v} \dots M_{nv}$ is the average of debt representing “savings” through each of years 1 ...n

Equations (1) to (3) are derived directly from Figure 2. They create an exponential series, and the only difference between Figure 1 and Figure 2 is the introduction of deposit interest. The thesis that deposit interest is the cause of unsustainable debt growth is proven. Since the investment sector debt M_s is funded directly by the productive sector by price inflation, if M_s is exponential, both price inflation and the circulating debt M_{cd} in the productive sector must also be exponential.

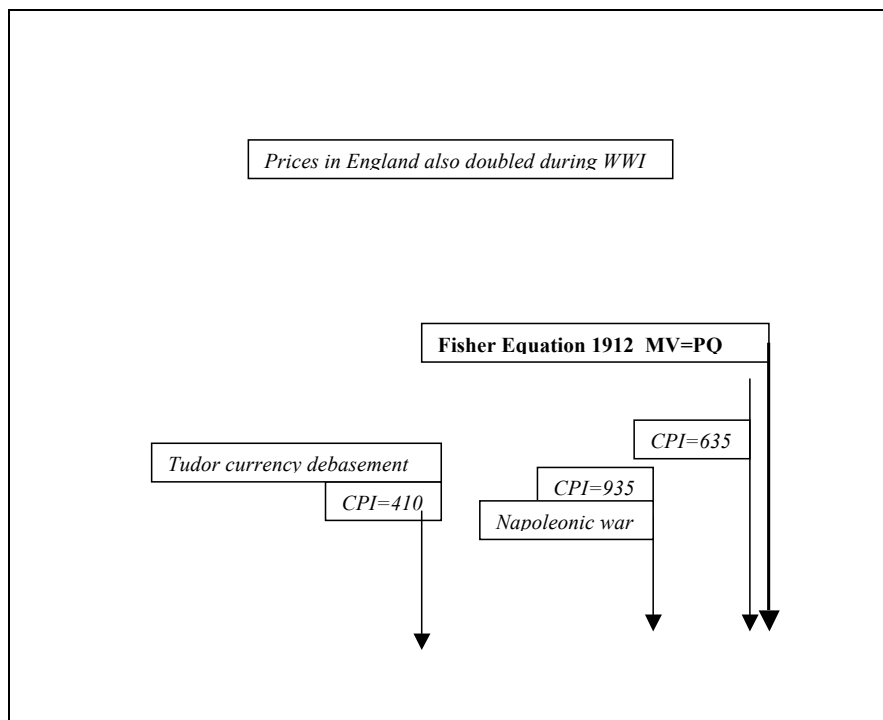
Figure 3 shows the dramatic impact of inflation in England over the past 700 years, and in particular the abrupt change that occurred following the introduction of the United Nations System of National Accounts (SNA) in 1953 and subsequent financial deregulation⁴¹. These effects have been accentuated by the decline in the cash economy to the point where, in developed countries, cash transactions contribute only

⁴⁰ Equations (1)-(3) include the effect of net debt M_v directly borrowed for investment, which is introduced in section 6 of this paper.

⁴¹ Such as the removal of the US\$ gold peg in 1971, “globalisation” and its accompanying freeing up of capital flows, the introduction of Basel I risk-based capital requirements and the repeal of the Glass-Steagall Act in the United States.

a negligible amount to measured economic activity. Those cash transactions were important because they were debt-free and interest-free and slowed the increase in debt growth in the economy. Until the advent of “modern” banking, there was no exponential increase in the financial system, not even during the industrial revolution when, in part due to vast industrial productivity increases, prices actually fell⁴².

FIGURE 3 THE VISUAL CHALLENGE
CPI (CONSUMER PRICE INDEX) ENGLAND 1300-2000⁴³



Sources: Inflation figures 1300-1800 from Gregory Clark “The Price History of English Agriculture, 1209-1914 ” *Research in Economic History*, 22, (2004): 41-124 and “The Long March of History: Farm Wages, Population and Economic Growth, England 1209-1869” *Economic History Review*, 60(1) (February, 2007): 97-136:

Inflation figures 1800-2000: O’Donoghue J, Goulding L (Office for National Statistics Great Britain and Allen G, (House of Commons Library) “Consumer Price Inflation since 1750”, *Economic Trends* 604, March 2004

⁴² By comparison, in New Zealand in 1893 (a crisis year – RBNZ (2009b)) production was estimated to be about 28 m pounds, bank debt was 13 m pounds, (deposits 14.5 m pounds at banks plus 4m pounds at savings institutions and building societies). Just over half the bank deposits were interest bearing. (Intermediated pastoral finance company lending is not included in these numbers) . The banks held about 3m pounds of coin and bullion and another 2.3m pounds of discounted notes and bills. There were about 1 m pounds of notes in circulation plus an unspecified (but large) amount of coin. [source NZ official year books]. Most transactions were in cash. As late as 1978 a substantial proportion of transactions contributing to GDP were in cash compared to almost zero in 2010. In 1893, deposit interest on total bank debt as % GDP was less than 1% compared to 15% in 2010.

In England, for many centuries, price increases arose from the physical change in the per capita money supply relative to per capita output. Between about 1560 and 1910 prices increased just 50% in 350 years before doubling during WWI.

Figure 2 shows how exponential growth in prices is a structural part of the debt-based financial system. Figure 3 suggests this has been a twentieth century phenomenon. The price index increased from 100 in the year 1300 and 635 in 1910 to around 50,000 today, an increase of 500 fold and 78 fold respectively. This means *almost all price must be inflation*⁴⁴.

Figures 1, 2 and 3 suggest inflation is predominantly caused by the interest rate on deposits. In that case, an obvious way to achieve a stable economy is to remove interest on deposits to return the financial system closer to what is shown in Figure 1⁴⁵. Low inflation cannot be maintained in an economy when it must increase as a function of the deposit interest I and often faster⁴⁶.

Reducing or removing interest on deposits would have no impact on bank lending decisions, nor, with appropriate policy instruments in place would it lead to excessive demand for new debt. Lending decisions relate primarily to the creditworthiness of borrowers. Bad lending decisions, like those in the United States in the years leading to the sub-prime boom and bust there in 2007, were about greed and deceit replacing common sense. The banks (mis)prioritised resource allocation, not the government or the public at large. This paper confirms demand for new debt would relate to borrowers' ability to pay. In a low inflation, low interest environment with stable prices and incomes related to real productivity gains, borrowers' debt to equity ratio would still limit their borrowing capacity. In addition, the banks' underlying ability to expand credit could be managed as well or better by quantitative restraints like reserve ratios than has been the case in recent decades using arbitrary policy interest rates settings to manage the price of credit. The internal rate of return on proposed investments would still guide business investment decisions as, in practice, it has always done with or without deposit interest. The number of capital projects and availability of new debt would still be governed by those decisions. This paper argues for a reduced moral hazard associated with demand for new debt. The world has seen the current system produce exponential increases in debt to the point of collapsing the global financial system. As discussed above, reducing or removing deposit interest doesn't remove interest from the economy, but with appropriate volume controls in place it will stabilise debt growth and improve resource allocation.

⁴⁴ In New Zealand the Consumer Price Index (CPI) increased by 583% between March 1978 and March 2010, while during the same period domestic credit increased by roughly 3000%. [source RBNZ table hc3].

⁴⁵ Together with stabilising the current account and progressively retiring foreign debt.

⁴⁶ Annual inflation in Figure 2 is $Mcd \cdot I$, but Mcd can be increased by any injection of debt, such as mortgage or consumer debt, from outside the production system which increases Mcd instead of I .

On-going efforts by central banks to control Consumer Price Index (CPI) inflation have done little to halt inevitable rises in prices within the existing interest-bearing debt-based financial system. They have superficially succeeded up to a point only at incalculable cost to human lives, wellbeing and development over the past century or more while at the same time transferring nearly all the increased wealth to the minority of people and institutions holding large deposits in the banking system. While the quality of life of some of the world's people has improved during that time the improvements are patchy and fewer than they might otherwise have been. Exponential debt growth appears to have reached the point where the productive economy can no longer satisfy the profit expectations of the investment sector despite excessive and unsustainable exploitation of the world's labour force and natural resources.

The unearned investment sector debt M_s shown in Figure 2 gives rise to the cumulative unearned interest income on the deposits in the banking system. Consumer prices are also locked into exponential expansion though normally at a lower rate than M_s itself.

Consumer prices inflate with the deposit interest rate $I \cdot K$ to pay the deposit interest on the existing M_s . M_s also increases by the amount of new debt that has to be added each production cycle to pay the deposit interest on the productive debt M_{cd} itself as well as on M_v "savings" borrowed directly to fund the purchase of new productive assets and consumer goods.⁴⁷

Figure 2 provides for numeric inflation equal to $I \cdot K \cdot M_{cd}$ to fund the interest on the investment sector M_s . For that to happen, M_s must be less than or equal to M_{cd} . Otherwise the interest difference has to be drawn from M_{cd} itself which means producers are paying some of the costs directly from their incomes. To keep paying all the interest on M_s , M_{cd} must increase at least in line with M_s as in Figure 10 of this paper. Those holding M_v debt backing deposits arising for example, through the use of credit cards and new mortgages that are used to buy capital and consumption goods that have already been produced also have to find some way to fund the interest on M_v . The M_v injections allow wage and income earners to consume beyond their financial means⁴⁸ but they are offset by "savings". Some leakage of M_s deposits back into M_{cd} or leakage of M_{cd} deposits out of M_{cd} (as earned savings, for example) is also possible. Any such net flows will destabilise the production cycle as previously discussed.

Since nearly all price is inflation the value of assets and goods and services would become far more stable and predictable if interest on deposits, and hence inflation were to be reduced or phased out. Interest destroys value. The present system not only guarantees unsustainable exponential debt growth, it also guarantees an exponentially increasing transfer of wealth from borrowers to bank deposit holders. This worsens the already critical problem of inequitable income distribution typical of much of the developed world, especially New Zealand and the United States.

⁴⁷ M_v is described at section 6 of this paper.

⁴⁸ The "keeping up with the Jones's" syndrome is encouraged through advertising and social pressure. The concepts of systemic inflation developed here are very close to the "one-for-one" link between interest and inflation predicted by Irving Fisher in his famous "The Theory of Interest", New York, Macmillan, 1930 that has never before been proven.

5. THE UNSUSTAINABLE ECONOMY WITH FOREIGN DEBT

Recent decades have seen vast changes in trade and capital flows giving rise to “free trade”, globalisation and financial deregulation. The collapse of the sub-prime mortgage market in the United States in 2007-2008 and subsequent systemic financial problems worldwide have led to some reassessment of that neo-liberal approach to economics. This section supports the view that liberalisation of trade and capital flows needs to be bounded by maintaining balanced current accounts. It shows how foreign debt drains the economies of debtor nations, increasing the “Figure 2 effect”.

Large-scale foreign debt is a relatively new phenomenon in modern economies⁴⁹. Until 1971 most of the developed world’s economies operated most of the time on a gold standard using fixed exchange rates (albeit for a time indirectly through what was known as the US\$ gold peg)⁵⁰. A fixed number of currency units would buy a troy ounce of gold. Whenever a country’s current account was out of balance the difference was settled in gold, and when a nation’s gold reserve was depleted it would devalue its currency by increasing the number of its currency units needed to buy a troy ounce of gold. This made its exports cheaper and its imports more expensive correcting the imbalance and reversing the gold flow.

US President Nixon was forced to abandon the US\$ gold peg in 1971 because the cost of the US war in Vietnam was causing substantial current account deficits. Without the US\$ gold peg in place many countries began to float their currencies, allowing them to automatically find their own levels against their trading partners according to the supply and demand for their respective currencies. In practice the expectation that currencies would find their own level has not been met in many cases because there has been no prompt penalty applied for growing surpluses and debts as JM Keynes proposed at Bretton Woods in 1944⁵¹. In many countries like New Zealand, the imbalances arise from non-trade related financial flows. Large accumulated imbalances create a feedback effect that weakens nations’ ability to manage their own monetary policy.

Progressive deregulation of capital flows, the growth of unearned income from interest on deposits (Ms) and the introduction of ever more complicated derivative trading instruments have long since destroyed the principle of automatic exchange rate adjustments based on real cash flows. Many debtor countries including New Zealand have all but lost their economic sovereignty. Their exchange rates are now substantially determined by speculative global investment flows such as the carry trade, and by United States based debt-rating agencies. The carry trade is counter-intuitive as it ignores the current account position while making it worse. The “carry” trade works by selling a low interest yield currency to buy one with a high interest

⁴⁹ Though national bankruptcies were far from unknown in earlier times. For example the French Court of King Phillip IV was bankrupted in the early 14th century having borrowed heavily for a failed crusade to the holy land. Other instances were King Phillip II of Spain and King Louis XIV of France.

⁵⁰ In times of crisis some countries were forced off the gold standard. This occurred during WWI when Britain was forced to borrow very heavily from the United States to help pay for the war. The US\$ gold peg was crucial to the system because of the pre-eminent role of the United States dollar as the world’s reserve (or trading) currency.

⁵¹ The Bretton Woods conference was where the WWII allies agreed on the framework for the post WWII financial architecture, including the World Bank and the International Monetary Fund.

yield. For example, an investor might sell the Japanese Yen and buy the New Zealand dollar or other currency that has a higher interest yield. This in turn pushes up the value of the “Kiwi” which encourages more imports and depresses exports making the current account balance worse. Current account debtors then have to offer higher rates of interest to sell their sovereign debt to fund their deficits. This cycle is self-reinforcing and leads to currency crises on a regular basis as well as causing major problems for those trading in productive goods and services internationally.

Figure 4 is the same as Figure 2 except that it makes provision for current account deficits. It clearly demonstrates how “carrying” the current account deficit through the productive economy as set out in the System of National Accounts increases inflation throughout the productive economy as well as increasing the pool of unearned deposit income that makes up the investment sector.

The balance on external goods and services is shown in Table 1.1 of the SNA as a (foreign) debt arising outside the production cycle shown in Figure 2⁵². The trade deficit for any period forms part of the nation’s accumulated current account. Theoretically, with a floating exchange rate and open capital markets there should not be any surpluses or deficits in the current account. Persistent current account deficits should produce a lower exchange rate, automatically correcting the inwards and outwards flows of goods and services. In practice a single monetary policy instrument such as the Official Cash Rate (OCR), as it is used in countries like New Zealand, is insufficient to manage two independent variables, such as inflation and the exchange rate⁵³. Moreover, for New Zealand, the inward capital investment is itself substantially in the form of interest-bearing debt. The exchange rate for the New Zealand dollar and the deposit interest rate I used in this paper have become at least as dependent on the profit expectations of foreign lenders as on the OCR policy rate of interest set by the Reserve Bank of New Zealand.

john.walley 31/1/11 4:47 PM
Comment: The RBNZ would say they let the exchange rate look after itself, they ignore it.

Current account deficits result from aggregate withdrawals from the accounts of importers and parties repatriating profits or otherwise transferring funds offshore. Transfer of funds abroad should result in a corresponding sum of bank deposits in offshore beneficiary accounts⁵⁴. Those offshore deposits are used to buy investments that are recorded in the debtor country’s financial (capital) account⁵⁵. In one form or the other, the nation’s current account deficit is paid for by the sale or mortgage of part of the country and its productive assets. On-going failure under monetary policy to curb current account deficits is serious, as national wealth is being systematically transferred to foreigners. In the case of New Zealand, as of March 2009, the net international investment position (NIIP) was about NZ\$b 161, 87% of GDP that then stood at NZ\$b 184.8⁵⁶. Meanwhile foreign claims against New Zealand’s net non-

⁵² The trade deficit is subtracted from the consumption side in SNA Table 1 so the trade account results in “saving” when it is in surplus and “dis-saving” when it is in deficit. The deficit is, for those countries whose currency is not a reserve currency, necessarily met by borrowing on the current account accompanied by compensating inward capital flows.

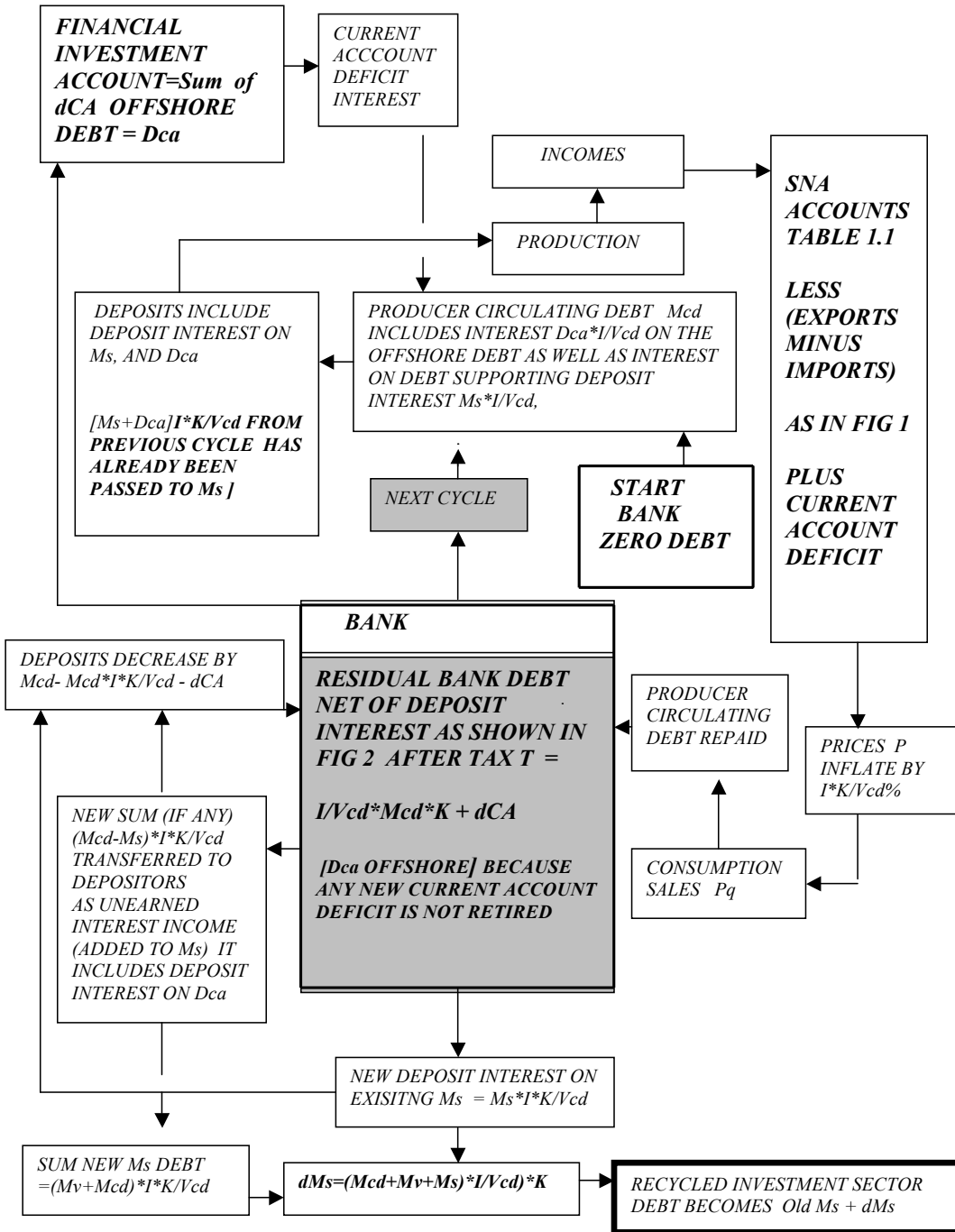
⁵³ There is now a considerable body of research on this but the statement is obvious from high school mathematics. You can solve for y with one variable x in $y=(f)x$, but not in $y=(f)x+(f)z$

⁵⁴ Any good primary economics textbook should set out the process.

⁵⁵ For the New Zealand dollar, Statistics New Zealand publishes detailed information quarterly in its “Balance of Payments and International Investment Position”

⁵⁶ NIIP \$176.6b–derivatives \$2.0b–managed funds \$3.7b–overseas shares held by NZ residents\$10.6b

FIGURE 4: THE EFFECT OF CURRENT ACCOUNT IMBALANCES



residential productive capital assets have reached 56%, including control of nearly all the banks operating in New Zealand.

Within the SNA international accounting system, a current account surplus is shown as “Saving”⁵⁷ in the same way as a surplus in the balance on external goods and services. However, the idea that New Zealand has regularly generated billions of dollars of “Saving” as claimed in Table 1.2 of the National Accounts when it has been accumulating large annual current account deficits⁵⁸ and a very heavy foreign debt burden is inconsistent with the production cycles shown in Figures 1 and 2. There is no provision in Figures 1 and 2 for generating earned “Saving” other than through the balance on external goods and services⁵⁹ which has also been negative in New Zealand in most recent years⁶⁰. Instead, as shown in sections 6 and 7 of this paper, “saving” is represented by Mv in the debt model developed from the Fisher Equation of Exchange. Physically, Mv is the part of net new debt after principal repayments, injected into Mcd as already referred to above, that is withdrawn from the circulating debt Mcd for investment such as superannuation funds, compulsory savings schemes and private term deposits,

In the SNA National income and outlay account the current account balance is shown as part of the nation’s cash flow but it is, apparently, except for goods and services, kept *outside* of the production system. In practice, current account shortfalls seem to result from deficit balances relating to productive activities and the foreign borrowing is needed to meet profit and interest payments on the offshore debt and deficits from current transactions⁶¹. To allow for this, the circulating debt Mcd shown for New Zealand in Figure 5⁶² “carries” the current account deficit dCA with it through the productive cycle as shown in Figure 4. The deficit is ultimately exchanged for capital assets of the same value in the debtor economy, as discussed above and required by orthodox economic theory⁶³. Figure 5 shows that despite the overall trend, increases in the circulating debt are not quite automatic because Mcd is affected by several factors such as falling interest rates, fluctuating current account deficits, and changes in the bank spread. Figure 6 shows the speed of circulation Vcd of the circulating debt Mcd in New Zealand, Vcd typically falls a little during rapid monetary expansions as in the early 1980’s. It rises under “tight” monetary conditions as in the late 1980’s. The slope of the Vcd trend line shown in Figure 6 is thought to be due to structural changes in payments systems.

In the debt financing system the speed of circulation Vcd must be at least 1.00. Otherwise not all of the productive debt Mcd would be being used productively and borrowers would be bearing unnecessary financial losses.

⁵⁷ The SNA National income and outlay account shows a current account surplus, “investment income from the rest of the world, net” on the income side and the residual “Saving” on the “use of income” side.

⁵⁸ As shown in the National Accounts; National income and outlay account, Table 1.2

⁵⁹ Shown on the right hand side of Figure 1 as “exports less imports”

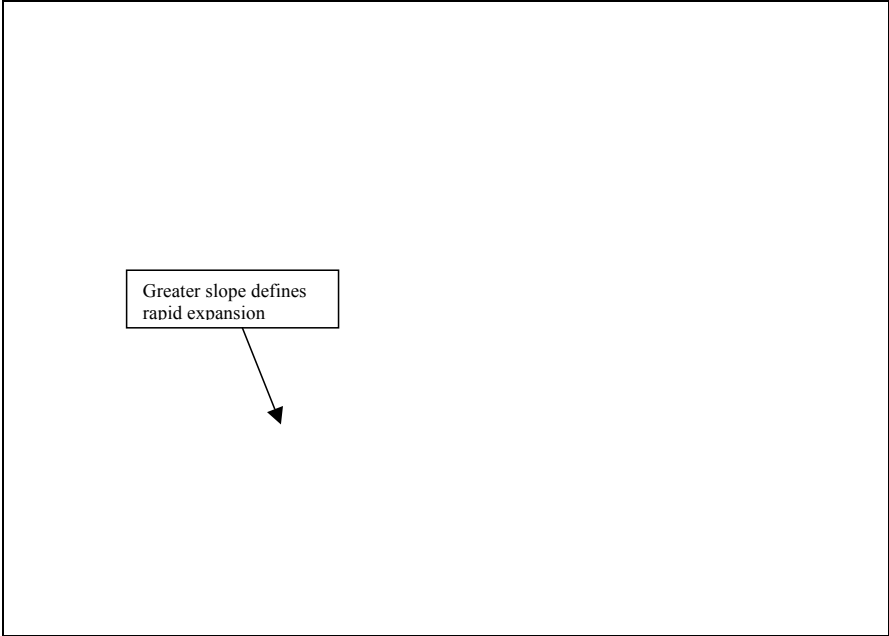
⁶⁰ The SNA National income and outlay account is suspect not just over the issue of saving but also because it incorporates an imaginary number “consumption of fixed capital” to allow for depreciation that has nothing to do directly with cash flows in the productive economy. “Consumption of fixed capital” belongs only to assessments of net capital stock. The appropriate figure to use for income/outlay purposes is “principal repayments on capital goods”.

⁶¹ Statistics NZ Balance of Payments and International Investment Position March 2009 Table 10

⁶² In line with the common saying that countries with current account surpluses export inflation while those with current account deficits import inflation.

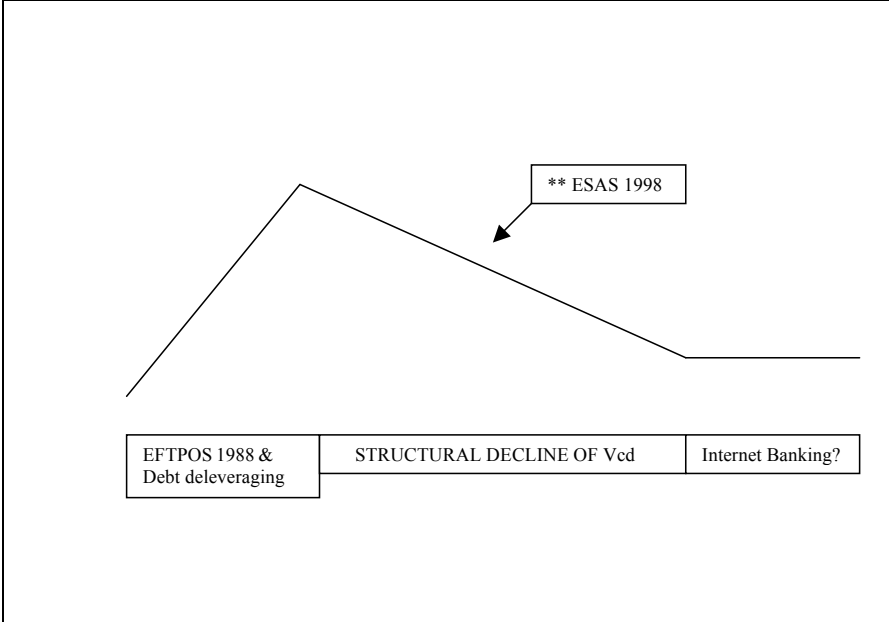
⁶³ Though in practice there is an on-going transfer through the cycle rather than a lump sum at the end.

FIGURE 5: CIRCULATING DEBT M_{cd} NEW ZEALAND 1978-2010*



Source: Appendix 1 *Note: Figure 5 includes assumed adjustment for taxation on deposits at 40% from 1978-1986 and 25% from 1987-2010. Exponential fit is much better if it is taken from 1991 after the very high interest rates of the 1980's had been reduced.

FIGURE 6: SPEED OF CIRCULATION V_{cd} OF CIRCULATING DEBT M_{cd} *



** Exchange Settlement Account System (instant funds transfer) Source: Appendix 1

6. THE DEBT MODEL

Theoretical support for the role deposit interest plays in modern debt-based economies is now available. It is derived from a new debt model of the economy that has been developed in recent years. The debt model has been constructed by amending the well-known equation of exchange first put forward by Irving Fisher in 1912 which states:

$$MV=PQ \quad (4)$$

Where M=the money supply in circulation\

V=the speed of circulation of money M

P =the price level

Q=the total economic output.

The National Accounts (SNA) and Figures 1, 2 and 4 are fully consistent with the revised Fisher equation of exchange given below. The revision takes account of the introduction of interest-bearing debt and deposit interest into the financial system. The first version of the debt model was published in the paper: Manning, L “The Ripple Starts Here: 1694-2009 : Finishing the Past”, presented at the 50th Conference of the New Zealand Association of Economists (NZAE), Wellington, July 2009⁶⁴. The basic equations are:

$$Md = (Ddc + Dca - R) = Mp + Ms + Mv = Mcd + Dca + Ms + Mv \quad (5)$$

subtracting *Dca* from both sides of equation 1 produces:

$$Ddc = Mcd + R + Ms + Mv \quad (6)$$

And from the original Fisher Equation ($MV=PQ$)⁹

$$McdVcd = PQ(d) \quad (7)$$

where:

Md = total debt comprising domestic credit *Ddc* (including in New Zealand only) Kiwibank loans

and advances + Accumulated Current Account deficit *Dca* less Reserve Bank Capital Reserves *R*

Ddc = Domestic Credit⁶⁵ + (in New Zealand) Kiwibank loans and advances

Dca = accumulated current account debt,

R = central bank capital reserves⁶⁶,

Ms = debt held by productive sector to fund the unearned income on the total debt,

Vcd = speed of circulation of circulating debt *Mcd* physically used for domestic production,

Mcd = circulating debt physically used for domestic production = (*Md* - (*Ms* + *Dca* + *Mv*)).

Mp = (*Dca* + *Mcd*) = total productive debt not being *Ms* or *Mv*

P = prices,

Q(d) = quantity of national product (GNP) produced by debt *Mcd* – (In New Zealand that is only slightly different from GDP)

Mv = provision for speculative “bubble” lending that is not part of the productive economy.

The model is a much more refined form of monetarism that began economic liberalisation in the 1960’s (Friedman 1962). While it is based on the volume of debt,

⁶⁴ http://www.nzae.org.nz/conferences/2009/pdfs/The_Ripple_starts_here_1694-2009_Finishing_the_Past.pdf.

Non-members can access the paper by Google search: NZAE The Ripple Starts Here (use “quick view”). The model has since been slightly revised – in particular, for the practical model *Dca* has been omitted from both sides of the revised Fisher equation.

⁶⁵ Reserve Bank of New Zealand (rbnz) Table hc2 ; RBNZ private email

⁶⁶ In this preliminary work the RBNZ “capital reserve” has been used but further research is needed to determine which reserves (if any) should best be incorporated in the model.

it is unrelated to volume based reform proposals like Social Credit adequately discussed in New Zealand (Danks, 1955) that have never had a viable theoretical basis to support them.

The premise in both the debt model and Figure 1 is that the circulating debt $Mcd = Prices P \times output q$ where q is the quantum of domestic output produced by Mcd over a single cycle. Taken over a whole year, the SNA definition of Gross Domestic Product produced by debt ($GDP(d)$) is given in the debt model by the expression $Mcd * Vcd$, where Vcd is the number of times the debt Mcd is used during the year⁶⁷.

The SNA therefore reflects an expression of the original Fisher Equation of Exchange⁶⁸. The only difference between them is that the money supply M in the Fisher equation of exchange included hoarded cash, whereas in the debt system shown in Figure 1 for practical purposes there is now very little cash contributing to measured GDP. In Figure 1 Mcd cannot include hoarding beyond the term of the production cycle because all bank debt is zeroed at the end of the cycle⁶⁹.

In the debt system, debt-based GDP is a direct function of the circulating debt for production Mcd used to produce it. As shown in Figures 2 and 4, Mcd is influenced by the accumulated pool of unearned deposit income Ms , by changes in the accumulated current account deficit Dca , and by the directly borrowed investment pool Mv . The crucial role debt was to play in generating economic output may not have been obvious at the time the SNA was developed during the late 1940's and early 1950's but it should have been recognised in the period since then, especially given the turmoil produced by the various financial crises over the years.

Aside from offering theoretical support for the main thesis of this paper, the revised Fisher equation of exchange also provides other insights into the way the modern debt-based economy functions. One of these, of interest to New Zealand's recent economic performance, relates to the impact of banks increasing their reserves by increasing the bank spread, which is the difference between the lending (or claims) rate they charge their clients and the interest they pay on their customers' deposits (their funding rate).

Were the banks to set aside some of their income for reserves instead of feeding it into the income stream in wages and profits the effect would be similar to the case for aggregate earned savings⁷⁰. In both cases, deposits arising from the circulating debt

⁶⁷ The debt model (equations 5-7) excludes the residual economic contribution to GDP arising from cash transactions. The contribution of cash transactions in industrialised countries is now very small. See appendix 1 for preliminary assessment of the historical figures for the New Zealand economy. A more general revised Fisher equation (Manning, 2009) extends the model to allow for cash contributions.

⁶⁸ The Fisher equation has been very widely discussed in relation to the economic difficulties arising from the sub-prime mortgage defaults in the US 2007-2009.

⁶⁹ As previously noted, in practice there is a continuous flow of production and consumption so deposits arising from Mcd are always present, but they are being used in the production cycle, not hoarded.

⁷⁰ Earned savings, could they occur in aggregate, would be the portion of total productive (earned) income hoarded by consumers for later use, for example as a deposit on a future home purchase, superannuation funds (including funded government superannuation schemes), and worker/employer savings schemes like Kiwisaver in New Zealand.

M_{cd} are withdrawn from the production cycle. While earned savings, could they in the aggregate occur, would be transferred from the productive sector to the investment sector M_v, bank reserves are withdrawn from circulation altogether and do not form part of the productive money supply. Less income would then remain available to consume the productive output. In the short term, in Figures (1,2,4), the market would not be able to clear and either prices P would tend to fall or output q would tend to fall as inventories rise, creating deflation and unemployment. More typically P and q would both fall. The *only* other possibility is that consumers seek to replace the shortfall by borrowing more from the bank to maintain their levels of consumption.

Widespread borrowing for consumption purposes does not alter the principle that in the basic economic cycle described in Figures (1,2,4) “Earned Saving” must equal net borrowing, M_v, after principal repayments to purchase new capital goods plus Consumer Debt. This principle is at odds with orthodox views about saving.^{71 72}

Banks seek to increase their reserves when they foresee future losses from bad debt arising during economic downturns. They then need higher reserves because losses are drawn from the banks’ net worth that includes their reserves⁷³. The increases in reserves can be funded from retained profit or by increasing the bank spread,. They could also generate new capital through the issue of shares, bonds, or debentures. Recent figures for New Zealand are shown in Table 1.

TABLE 1: RECENT CHANGES IN BANK SPREAD IN NEW ZEALAND

YEAR	2005	2006	2007	2008	2009	2009	2009	2009	2010
	MAR	MAR	MAR	MAR	MAR	JUN	SEP	DEC	MAR
%spread	2.37	2.10	2.04	1.67	2.85	2.99	2.85	2.76	2.55
claims	7.51	8.14	8.36	9.01	6.96	6.52	6.39	6.22	6.16
deposit	5.14	6.04	6.24	7.34	4.11	3.53	3.54	3.54	3.60

Source RBNZ Table hc10

Mainly to increase their reserves, the banks operating in New Zealand drew almost NZ\$3.5b (nearly 2% of GDP) more from the New Zealand economy in the calendar year 2009 than they were drawing on an annual basis in March 2008. That is why many people justifiably complained the banks failed to promptly pass on to their clients the interest rate cuts from late 2008 through much of 2009. The withdrawal of so much debt from circulation had a powerful deflationary effect on the New Zealand economy and is one direct cause of its protracted recession⁷⁴. The banks operating in New Zealand forced their clients to directly cover the banks’ lending risk *after* the government had already eased interest and deposit rates. By doing so they caused some of the very defaults they were seeking to protect themselves against.

⁷¹ Though “Savings” equals “investment “ still applies to the current account

⁷² For example, “Economics Principles and Policy” William J Baumol and Alan S Blinder, 4th Edition Harcourt Brace Jovanovich, 1988

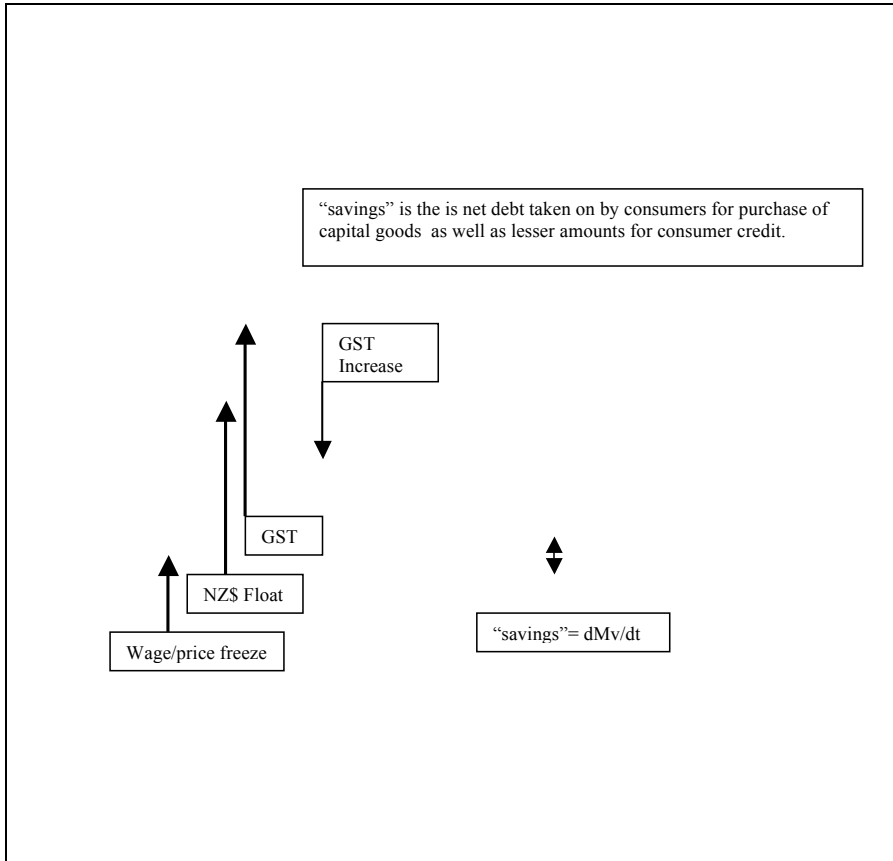
⁷³ Paying losses from deposits is illegal and traditionally happens only when banks fail. That is why some western countries, including New Zealand, presently have deposit insurance systems.

⁷⁴ Bank reserves do not form part of the “money” supply. Arguably March 2008 represented a low point in the banks’ historical spread, but the economic impact of the withdrawal of bank reserves from earned incomes was nevertheless very real.

7. SYSTEMIC INFLATION AND INFLATION POLICY

In this paper and in the debt model the price inflation $Mcd I^*K\%$ available to pay interest on the accumulated investment sector M_s as shown in Figures 2 and 4 has been labelled *systemic inflation*. That systemic inflation together with the corresponding increases in Mcd itself and Mv totalling $(Mv+Mcd+M_s)I^*K$ gives rise to the investment sector M_s . Figure 7 shows systemic inflation for New Zealand calculated from the debt model. Systemic inflation is a new economic concept.

FIGURE 7: SYSTEMIC INFLATION NEW ZEALAND 1982-2010⁷⁵



Source: Appendix 1. Preliminary calculations are based on 40% assumed average tax on deposit interest from 1978 to 1986 and assumed 25% tax from 1987 to 2010. The data is subject to recalibration when better tax estimates become available. Lower tax rates would reduce the systemic inflation figures shown.

⁷⁵ A recent article in The Guardian/UK newspaper 27/4/10 by Dean Baker refers to suggestions within US President Obama’s Council of Economic Advisors that the “CPI overstates the true rate of inflation”. While Figure 7 is a preliminary first approximation only it does not appear to support the Council of Economic Advdors’ thinking.

Eliminating systemic inflation by removing deposit interest would resolve New Zealand (and the world's) inflation problems⁷⁶. The monetary policy decisions presently giving rise to the saw-tooth price jolts and attendant boom and bust cycles shown in Figure 7 could be avoided and residual inflation reduced to low levels⁷⁷.

In New Zealand, the sharp reductions in interest rates from the end of 2008 reduced the inflationary impact of systemic inflation at the same time banks began increasing their margins and “shutting up shop” by making lending more difficult. The banks’ actions drew money out of the economy at the same time the government was trying to stimulate it. Better policy coordination would have reduced the depth and length of the recent recession.

Aggregate increases in inventory are also a sensitive indicator of declining purchasing power in the economy. They mean consumers lack the disposable income needed to consume all the current production. That lack of income can arise in part from efforts to hoard “earned” savings⁷⁸. It can also be caused by reductions in employees’ incomes that result from increases in interest rates applied under orthodox monetary policy settings to manage inflation. Consumers’ disposable incomes will fall unless the interest rate increases are fully compensated in employee incomes⁷⁹. There is a reduction in consumption with accompanying unemployment until either inventory is returned to normal levels or consumption demand expands.

While a full discussion of savings lies outside the scope of this paper, government efforts in New Zealand to increase savings for investment purposes, as, for example in the 2010/2011 budget speech of 20th May 2010 are problematic. Trying to draw savings from the productive debt Mcd in a wholly debt based financial system *prevents* the productive economy from expanding properly because it reduces both consumption capacity and the gross operating surplus in the economy as a whole. Such saving would make sense only if it were re-directed immediately as part of Mcd into new productive investment, thereby offering significant productivity gains to the economy. This paper shows such investment would then need to be accompanied by increased incomes to enable that new production to be consumed. Exactly the opposite is happening. Savings are being withdrawn from consumption and mostly invested in the investment sector *offshore*. Conceptually they form Mv in the revised Fisher equation. This gives New Zealand the “worst of both worlds”. The economy

⁷⁶ People would still “save”, given the chance, even with zero deposit interest, as long as there is little or no inflation. People saved for thousands of years before the debt system was in use because, like some other species, HUMANS ARE HOARDERS. Protecting themselves against hard times is instinctive.

⁷⁷ Japan has had almost zero inflation and zero deposit interest for the past decade and has maintained modest real GDP growth through that period. Source: WEO (World Economic Outlook). Current account surpluses remove purchasing power from Mcd. Japan’s current account surplus from 2004-2008 alone was over US\$900 billion which is why the Bank of Japan had to inject about US\$ 1 trillion into the Japanese economy during that time to avoid deflation.

⁷⁸ That will be made a lot worse by current suggestions in New Zealand to implement compulsory superannuation contributions that will result in lower living standards unless ALL the money collected is channelled into productive investment, that is, into the circulating debt Mcd.

⁷⁹ As already described, disposable incomes are reduced by the extra interest claimed by the investment sector as a result of the higher interest rates.

receives little or no productive investment from the savings⁸⁰ while it is also being drained by the withdrawal of consumption capacity; exactly the opposite of what the government and monetary authorities say they want.

This paper reduces the savings debate to a single simple proposition:

In aggregate it is possible to save debt-free money but it is not possible to save debt⁸¹ unless that debt exists as speculative investment M_v outside the productive economy. The debt model shows at Figure 7 how “savings” in New Zealand are represented by net excess borrowing for new capital goods and consumer credit. If the M_v “savings” are reinvested in the productive economy they become part of M_{cd} and have to be reflected in new productive incomes while those who took on the extra debt still carry it until it is paid off.

There does not appear to be any financial mechanism available in the current financial system, as it is detailed in this paper, to bring about long term inflation stability other than by very low (or zero) deposit interest rates. Low deposit interest rates will, in turn, probably require quite drastic action to prevent capital flight and bring the current account into balance, such as by the application of an appropriate surcharge on New Zealand dollar exchanges for foreign currency. Preston (2009) has suggested something similar. While an export led recovery to reverse the current account crisis, promoted so widely among economists and in government circles, is a “nice” idea, it is unlikely New Zealand now possesses enough independent productive capacity to meaningfully achieve it within an acceptable time frame. The situation is more likely to worsen as more and more manufacturing capacity and services are moved offshore or placed under the control of foreign operators who shift their profits off-shore.

There are no existing monetary policy instruments available to adequately address the systemic nature of inflation in the productive economy.

A separate paper is needed to further “flesh out” the impact of taxation on unearned income deposits. While the New Zealand banks supply a tax deduction certificate for each account they hold, that aggregate information may need to be collated from the banks themselves, and then some assessment made of how that tax is adjusted within individual tax returns; a complex task beyond the scope of this paper. That necessarily means Figures 5-7, Figure 10 and Appendix 1 are provisional and indicative. The additional research is needed because the debt model application is dependent on the numerical value of the accumulated deposit interest M_s . The taxation of deposit interest significantly affects the net M_s value⁸² and hence the values for the circulating productive debt M_{cd} and its corresponding speed of circulation V_{cd} .

⁸⁰ There might be some repatriation of dividends on the investment but, in New Zealand, that appears to be minor when compared to the transfers being sent offshore from M_{cd} .

⁸¹ As discussed at footnote 64 in respect of current account surpluses in Japan, saving will lead either to deflation or to job losses and unemployment as purchasing power falls.

⁸² Using the gross pre-tax value of M_s , as in Manning (2009), distorts the numerical model application.

8. THE DEBT EXPLOSION AND FINANCIAL STABILITY

There are two primary pools of debt affecting the New Zealand economy. The first is the Net International Investment Position (NIIP) that is the sum of all foreign investment in New Zealand less the sum of all New Zealand investment abroad. The accumulated current account deficit Dca is used as a proxy for NIIP in this paper and in the Debt Model because it is much easier to understand and gives very nearly the same figure for practical purposes. In this paper the sum of current transfers (a relatively minor correction) has been deducted to bring the figure into line with the National Accounts. This is New Zealand's foreign debt.

The second debt pool is the country's Domestic Credit, Ddc, the broad base of debt supplied at interest by the New Zealand banking system. The accumulated current account deficit Dca and the Domestic Credit Ddc, added together with a minor correction made by subtracting the Capital Reserves of the Reserve Bank and adding (in New Zealand) Kiwibank loans and advances, constitute for the purposes of this work, the Total debt Md⁸³. Figure 8 shows New Zealand's foreign debt (accumulated current account deficit less accumulated current transfers) plotted against the increase in GDP. For illustrative purposes, a constant total of NZ\$35 billion has been added to the foreign debt to show how the foreign debt curve almost exactly follows the GDP curve⁸⁴.

Figure 8 shows that for all practical purposes, all of New Zealand's nominal GDP growth for nearly thirty years has been borrowed abroad. The country has persistently lived beyond its means, adding to its debt problem.

Figure 9 shows the debt explosion in New Zealand. It shows the curve for Domestic Credit plus the Accumulated Current Account deficit plus Kiwibank loans and advances less RBNZ capital reserves, This is the same as Md in the debt model. Two trend curves are added. The first, the exponential trend curve, is not a perfect fit over the past few years because the exponentials have changed due to a lengthy period of interest rates considerably below the past averages. New Zealand's debt explosion is actually a mix of changing exponentials rather than a single one⁸⁵. The second trend line is a third order polynomial that fits the data almost exactly, for the time being, with $R^2 = 0.9987$, but despite that, the underlying trend is exponential not polynomial. Associate Professor Steve Keen (<http://www.debtwatch.com>) has done a great deal of similar analytical work on Australian debt.

The process set out in Figures 2 and 4 does not seem to have been described anywhere before, but, as Figure 9 clearly shows, debt expansion in New Zealand has actually taken place, as it must, in accordance with the revised Fisher Equation of Exchange and the debt model presented in 2009⁸⁶. ***New Zealand's total debt⁸⁷ has***

⁸³ Further development of the debt model might eventually suggest corrections to Md, but $Md = Ddc + Dca - R$ gives a reasonable first approximation of the status of total debt in the New Zealand economy. In New Zealand, Kiwibank loans and advances also need to be added to Ddc.

⁸⁴ The NZ\$35 billion is an arbitrary amount added for visual effect.

⁸⁵ A better exponential fit is obtained by shortening the time series so it leaves out the very high interest rate period from 1980 to 1992.

⁸⁶ Manning 2009

FIGURE 8: INCREASE IN GDP v INCREASE IN ACCUMULATED CURENT ACCOUNT NEW ZEALAND 1978-2010

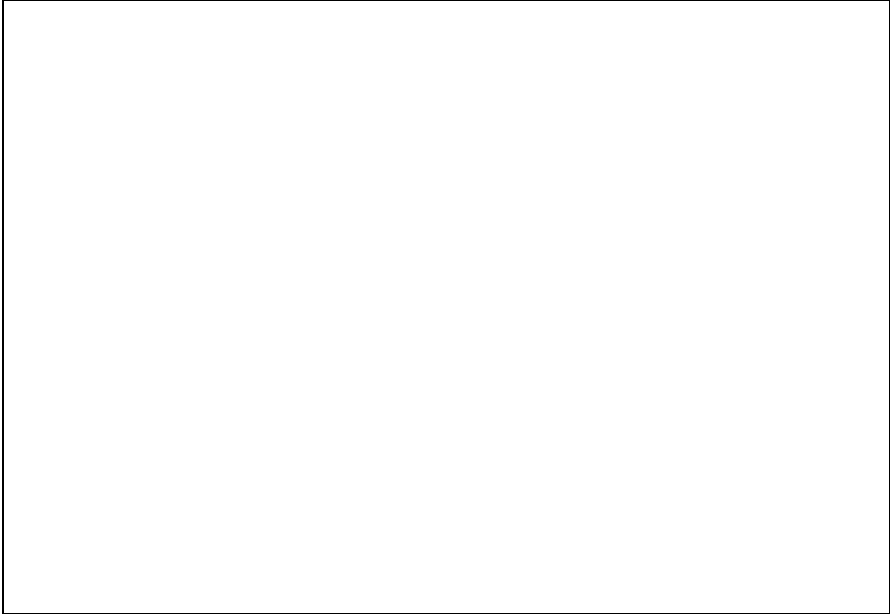
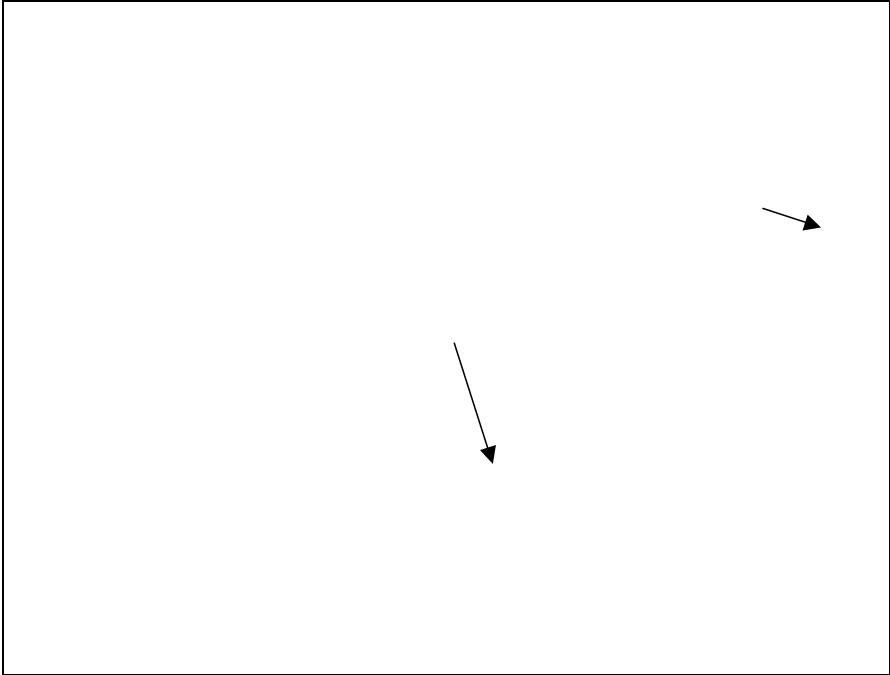


FIGURE 9: THE DEBT EXPLOSION IN NEW ZEALAND 1978-2010



⁸⁷ Measured as the accumulated current account deficit + domestic credit + Kiwi bank loans and advances less Reserve Bank capital reserves

expanded almost 25 fold in the past 30 years, from about NZ\$ 19.6 billion in March 1981 to NZ\$485 billion in March 2010. The physical demand for that debt expansion was satisfied until recently in New Zealand using a method of debt creation called fractional reserve banking. More recently following further deregulation of the financial system under the Basel I and Basel II Accords⁸⁸ those reserves have been replaced in many countries by rules relating to “capital adequacy”. The effect, though, is still the same. The banking system is still able to multiply its “risk weighted” capital many times over.

The mechanics of fractional reserve banking are widely known and described in many good primary economics textbooks⁸⁹. The process was that central banks⁹⁰ purchase securities, mainly bonds, usually from commercial banks. The banks “sell” a loan to the central bank that then “pays” for the loan by writing deposits into their reserve accounts at the central bank (RBNZ 2008b). Because the central banks, from an accounting point of view, have borrowed from the commercial banks, the central banks pay interest (called the coupon rate) to the commercial banks on the deposits the central bank has itself created for them.

john.walley 31/1/11 4:57 PM

Comment: Re footnote the FED is a government institution not owned by banks other than 12 regional Reserve Banks – surplus goes to Treasury.

Central banks gift the “high powered” deposits they put into the commercial banks’ reserve accounts and pay interest in perpetuity on those gifts⁹¹.

From the public perspective it is very hard to conceive of a less fortunate way for governments through their central banks, some of which are not even publicly owned, to increase the base money supply. The “risk-weighted” capital method now in use may be even worse than the reserve method because there is no direct mechanism for central banks to rapidly expand lending when there is a credit squeeze (such as, for example, from 2007-2010) other than by the injection of new central bank funding or government treasury debt.

The reserves created by the banking system from the banks’ sales of bonds to their central banks were like cash. They are what the banking system used to exponentially expand lending in the manner set out in the textbooks so that banks could continue lending and pay interest on the deposits held in their clients’ deposit accounts.

In the investment sector every loan made by commercial banks to facilitate the purchase an **existing** capital good such as property, shares or securities requires deposit interest to be paid. Each of those loans produces its own corresponding

⁸⁸ Issued by the Bank for International Settlements (BIS) in Basel Switzerland

⁸⁹ See for example Blaumol W.J & Blinder A.S. “Economics Principles and Policy”, Harcourt Brace Jovanovich, fourth edition Chapters 13 & 14

⁹⁰ Central banks are bankers’ banks that are responsible for implementing government monetary policy and maintaining the stability of the financial system. Some central banks like those of Australia, New Zealand and Canada are publicly owned while others like the US Federal Reserve Bank, (the FED), are predominantly privately owned by the banks themselves. The central banks in turn have their central bank called the Bank for International Settlements (the BIS) based in Basle Switzerland, which plays a dominant role in regulating world banking and financial institutions.

⁹¹ The central banks retain the power to sell their bonds, that is require repayment from the banks, but that is rarely done to any large extent because it would cause a big drop in bank lending capacity. Treasury T-bills (bonds with less than 1 year term) and the Official Cash Rate (OCR) are typically used to adjust lending capacity.

residual Ms debt and exponentially increases the pool of unrepayable⁹² unearned deposit interest as shown at the bottom of Figures 2 and 4. Annually, the pool of deposit interest on the accrued residual debt Ms increases on itself at the rate of the deposit interest rate $I*K$ as shown in Figures 2 and 4 “pumped” into the deposit interest pool from the production cycle⁹³. Whenever Mcd is less than Ms, as has been the case in New Zealand in 2009 and 2010 the investment sector must drain the productive economy to keep the debt system going.

The size of the non-productive investment sectors Ms and Mv, especially when “off-book” derivative transactions are included, relative to the amount of circulating debt Mcd together with the net worth the banks have accumulated to cover any debt defaults, has increased the instability of the present debt system.

Domestic banks **must** expand Mcd to support the deposit interest burden on the domestically accrued debt. If the banks do not lend enough to do so they would be unable to pay all the deposit interest due on their customers’ deposits unless Mcd itself is reduced assuming Vcd is structurally stable. The effect is clearly shown in Figure 10⁹⁴.

The debt model identifies two constraints on the present debt system:

(1) The pool of unearned income Ms from deposit interest must be equal to or less than the circulating debt Mcd. Otherwise there is insufficient inflow of unearned income to meet deposit interest payments. In New Zealand, Ms has been stifling the productive economy for decades.

(2) The speed of circulation Vcd of the circulating debt Mcd must be above 1.00, otherwise there would be unused circulating debt in the financial system⁹⁵.

The present fractional reserve mechanism of debt expansion is haphazard because it is not properly based on the true demand for debt from within the financial system as shown in Figures 2 and 4 and in the debt model referred to in this paper. Instead, present debt creation is dictated by monetary policy that produces discontinuities in the available supply of new debt. Despite the best efforts of the monetary authorities, those discontinuities inevitably lead to mismatches in the production cycle and associated expansions and recessions characterised by boom and bust cycles.

Lending must continuously and smoothly satisfy the mechanical systemic demands of the financial system rather than the whims of monetary policy. This paper

⁹² The accumulated deposit interest funded by Ms is unrepayable because the holders of the deposits are not the same as those who hold the debt. Provided the bank does not fail, Ms always remains in the system whatever happens, even when debtors default on their loans.

⁹³ Some degree of quantification of price effects within the investment sector appears to be theoretically possible using the debt model and deserves further research.

⁹⁴ See Figure 9 and bottom p29 for reason why the Ms and Mcd exponentials have diverged from their respective Ms and Mcd curves especially over the past decade or so.

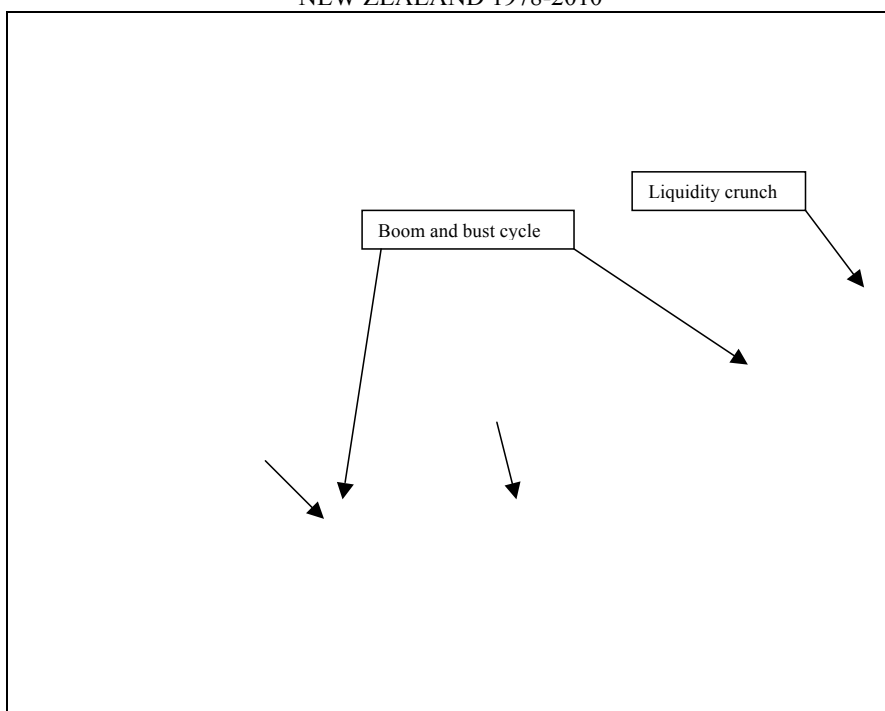
⁹⁵ In New Zealand, Vcd in 2010 was about 1.65 based on preliminary model calibration.

provides a basis for more accurate assessment of the amount of new debt needed for the smooth running of the economy without the distortions created by orthodox monetary policy.

Financial system stability also depends upon unearned income deposits arising from deposit interest remaining in the investment sector or paper economy as it is often called⁹⁶. For this to happen the expected financial return from keeping the deposits in the investment sector must exceed the perceived benefit arising from any corresponding investment in production or consumption. The numerical incentive for deposits to remain locked into the investment sector is the extra annual amount $(Mv+Mcd+(Mcd-Ms)*K)*I$ added to the investment sector deposits because they inflate the investment sector by that amount raising prices there relative to the productive economy.

During the periods when the circulating debt Mcd expanded faster than the accumulated deposit interest Ms there was a relative improvement in the incentive to invest, creating booms and then busts as investment expectations surged ahead of economic growth. As Figure 10 shows, that is no longer the case in New Zealand. In the March years 2009 and 2010 the productive debt Mcd, which represents the system

FIGURE 10 UNEARNED INCOME Ms AND CIRCULATING DEBT Mcd
NEW ZEALAND 1978-2010



* The figure is preliminary

⁹⁶ The only other place it can go is into the productive economy, increasing incomes and gross operating surplus thereby increasing measured inflation. There is little doubt such transfers do occur both ways.

liquidity, collapsed in a way not seen in the past 30 years. The structural demand for deposit interest Ms is consuming some the circulating debt Mcd because Mcd is not increasing fast enough to service the existing pool of deposit interest. According to the model calibration given in Appendix 1 Mcd has fallen slightly in both 2009 and 2010 while Vcd has risen in response to reductions in interest rates. The only way to correct this is to inject liquidity into the productive system to expand the economy either by new production or by inflation. This has been starkly portrayed in the United States during the housing market crisis in recent years where the stimulation package there was aimed at the financial sector but not the productive sector.

A likely outcome should deposit interest I or the incentive to invest approach zero would be an increase in finance company lending and greater investment in equities and other productive activity. The “incentive to invest” as shown in Figure 11 is an entirely new economic concept.

FIGURE 11 INCENTIVE FOR DEPOSITS ARISING FROM DEBT TO REMAIN IN THE INVESTMENT SECTOR NEW ZEALAND 1988-2010*



* Note: Figure 11 includes assumed taxation rates on Ms of 40% from 1978-1986 and 25% from 1987-2010

9. CULTURE AND INSTITUTIONS

The financial debt mechanisms described in this paper could have been observed and understood at any time since the Bank of England was established in 1694. They could have become more obvious as debt growth and accompanying monetary expansion accelerated over the past century. One reason the mechanics of the debt system have not come to light until now could be the asymmetrical exercise of power in the world economy through dominance of its national and international financial institutions by vested interests.

The French economist Perroux (1966) first introduced the concept of dominant revenue. He traced the evolution of economic domination from the landowners (aristocracy) of the middle ages through mercantilism (merchants) of the colonial period to industrial capitalism (industrial corporations) from the industrial revolution until post world war II, and more recently to finance (banking and financial institutions). Strange (1996) has reinforced the notion of power as “the capacity to conceive, legitimise, implement and control rules for individual and collective action” even when there is large-scale opposition to those rules. Other writers like Palley, (2009) suggest what some of the “problems inherent in the neo-liberal US growth model” are. None of them examines the system mechanics underlying those problems.

Finance as the “dominant revenue”⁹⁷ is maintained through an unbroken chain of authority reaching down from the Bank for International Settlements (BIS) through international financial organizations like the International Monetary Fund (IMF) and the World Bank, to Central Banks like the US Federal Reserve and its member organisations, and some universities like the University of Chicago who have continued to support existing orthodox economic theory after it became apparent the present system had become dysfunctional. In the United States especially, the lack of effective constitutional restraints on campaign spending, advertising and lobbying have effectively rendered democratic institutions like the US Congress and the US Executive branch captive to the centres of power, especially that of finance. The financial collapse that began in the United States in 2007⁹⁸ has reinforced the view among many economists that the time has come to consider new options for managing the financial system.

Some of the debt “contagion” that has swept the world in recent years probably would have been avoided had the world adopted the principle of balanced trading accounts proposed by John Maynard Keynes representing the UK delegation at the Bretton Woods conference in 1944⁹⁹. That UK position was effectively vetoed by the United States, leading progressively to the expansion of capital flows that have caused so many problems in recent decades.

The mechanisms described in this paper are still forcing the vast US capital base to expand exponentially, while the US economy has become ever less able to support it.

⁹⁷ Exemplified in recent times by the huge bonus payments made by the dominant US banks and Wall St trading houses while the rest of the economy is staggering in disarray.

⁹⁸ Northern Rock in UK was first large failure, but the failure was induced by US “toxic” assets.

⁹⁹ The conference at Bretton Woods New Hampshire in 1944 established the basic outline of the international financial system that was to be established after WWII.

This is due in part to economic expansion in other parts of the world, especially the BRIC countries (Brazil, India and China), as well as United States' offshore military interventions¹⁰⁰. These events are producing growing current account deficits in the US, increased government debt and relatively lower domestic consumption capacity.

Inflationary consumer borrowing in the US and elsewhere, using residential property as security, allowed excess consumption to continue until the point was reached where consumers could no longer fund their debt. This happened in part because under the Basle II accords that regulate bank investment risk residential property carries a much lower risk weighting than business lending (RBNZ, 2009c). Those factors combined with the growing concentration of wealth in US society suggest US economic power and the "full spectrum (military) dominance" of the Project for the New American Century¹⁰¹, are likely to erode over time. Over time, such broad institutional influences are likely to weaken the role of finance as the dominant revenue.

Weakening finance as the dominant revenue is also inherent in the necessary changes in the world's financial structure implied in this paper. This could, in turn, lead to the third great economic revolution the world has seen, being one based on human and natural capital in its broadest sense. The third revolution, just beginning, will recognise and accept the environmental constraints of human activity and ethical limits to human population expansion, valuing the quality of life rather than, or at least as well as, the quantity of material wealth¹⁰².

An exclusive right for a publicly-owned authority to issue new debt (and money) would mean that private banks could no longer create new debt. New debt (and e-money) spent into circulation would still finish up in deposits with the private banking system. These earned deposits could then be used by deposit-holders and/or on their authorisation by the banks on terms, including the rates of interest, they see fit. The banks would be acting as savings and loan institutions. Should deposit-holders not spend their money, they are in fact limiting their own consumption by saving. One (instinctive) purpose for doing this is to create a reserve for times of need. Saving for a specific purpose is another. If they lend their deposits with or without interest to another party, they allow a matching increase in the level of consumption of the other party. Where interest is charged, the borrower must pay both the capital and interest back. The borrower does this as agreed either by increasing his productivity or, if required, in turn reducing his level of future consumption. The choices made by the two parties are entirely subjective. They are not subject to regulation.

¹⁰⁰ Funded in part from government borrowing rather than taxation. Military materiel is largely produced domestically in the US, providing incomes, but is consumed offshore, making foreign wars inherently inflationary as Britain found out during the Napoleonic Wars, WWI and WWII when prices roughly doubled as shown in Figure 3.

¹⁰¹ <http://www.newamericancentury.org> The semi-official military and foreign policy of the United States government under George W Bush. The site states: "The Project for the New American Century is a non-profit educational organization dedicated to a few fundamental propositions: that American leadership is good both for America and for the world; and that such leadership requires military strength, diplomatic energy and commitment to moral principle."

¹⁰² The first great revolution was the development of agriculture and associated land and property rights and the second was the Renaissance and the development of science that has brought the world, for better or worse, to where it is today.

The bankers' "spread" which covers the banks' costs and profit as well as occasional changes in their provision for bad debts need not change at all. As prices stabilise, the **rate of increase** of their volume of business should, however, decrease. The values of land, housing and rents, superannuation schemes, savings banks deposits, life insurances, hire-purchase items would stabilise. Consumer confidence would increase with their sense of economic security.

Governments in democratic countries are periodically elected on the basis of programmes including their promises about how they will manage public institutions and protect the public interest. If voters perceive a government has done its work well, the government may be returned to office. If voters are unhappy, they may vote another government in. Contrary to what some past authors may have believed¹⁰³, properly functioning financial mechanisms are themselves independent of the political orientations of the government currently in power.

¹⁰³ Danks (1955) pp57-59

10. CONCLUSIONS

The paper shows how exponential debt expansion in the financial system used worldwide is caused by interest paid as unearned income on bank deposits. It describes analytically for the first time the fundamental transfer mechanism whereby the financial system “pumps” deposits from the production cycle into the investment sector or paper economy. This process produces endemic systemic inflation in both the productive and the investment sectors. In the current economic system inflation is unavoidable except in the presence of substantial current account surpluses.

Neither the System of National Accounts (SNA) nor orthodox economic theory provides a direct mechanism to manage systemic inflation. Instead, orthodox inflation policy works through the investment sector. Higher interest rates increase systemic inflation while at the same time increasing deposit interest and reducing purchasing power. The inflation transmission mechanism persistently damages the profitability in the productive economy as inflation is temporarily slowed by lower consumption, lower producer margins and higher unemployment.

While some, mostly debt-free, individuals may succeed in hoarding financial reserves, the existing debt system does not appear to allow for any aggregate earned savings. As a result, earned savings have to be offset by net borrowing of new capital, consumer or other non-productive debt from outside the production cycle.

Speculative global financial flows make current account imbalances worse and cause instability by “chasing” large deficit, high yield currencies. This process creates a self-reinforcing cycle of overvalued currencies, high interest rates, and financial crashes especially where central banks rigidly apply very low inflation targets.

Excessive debt growth has now reached the point where the global financial system is imploding because the productive economy can no longer satisfy the profit expectations of the investment sector.

The pool of unearned income in the investment sector does not usually mix with the production cycle because there is a net financial incentive for unearned interest deposits to remain in the investment sector.

An economic debt model based on a revision of the Fisher Equation of Exchange provides analytical support for the analysis given in this paper.

The theory and model described in the paper allow, in principle, ready quantification of debt expansion, systemic inflation, growth and the incentive to invest.

Exponential expansion of debt and prices can be slowed or stopped by reducing or removing deposit interest from the financial system. This could be done on a multilateral basis but is more likely to be implemented unilaterally as proposed in paper 2 of this series.

Cultural and institutional “capture” of economic debate may explain why the causes of debt growth and inflation have not been closely examined before now.

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APPENDIX 1- MODIFIED FISHER APPLICATION NEW ZEALAND 1978-2010
USING AGGREGATE FIGURES

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Year	CA*	DC*	I%*	GDP*	Mo	Vo	PQd*	%DC*	Mstax	Ms	Mcd	Vcd	Mv
1978	4.8	9 (est)	8.7	15.4	0.404	30	3.3	45	40	2.7	1.5	2.20	4.6
1979	5.4	9.8	7.0	17.5	0.455	30	3.8	45	40	2.9	2.0	1.88	4.7
1980	5.9	11.2	8.0	20.4	0.491	30	5.7	45	40	3.1	3.4	1.68	4.5
1981	6.4	12.9	9.0	23.7	0.535	30	7.7	45	40	3.4	4.9	1.55	4.3
1982	7.1	15.9	9.0	28.8	0.593	30	11	45	40	3.7	8.0	1.38	4.0
1983	8.0	21.8	8.8	32.5	0.650	30	13.0	45	40	4.2	13.8	0.95	3.6
1984	9.4	25.4	10.1	36.3	0.652	30	16.7	45	40	4.8	15.4	1.08	4.9
1985	11.4	30.4	10.5	41.0	0.718	30	19.5	48	40	5.6	19.6	0.99	4.8
1986	14.0	40.0	14.3	47.3	0.831	30	22.4	51	40	7.2	26.7	0.84	5.8
1987	16.6	44.6	14.2	56.8	0.868	30	30.7	54	25	9.6	28.4	1.08	6.3
1988	19.0	50.1	12.3	63.8	0.861	30	38.0	57	25	12.1	29.9	1.27	7.8
1989	22.6	50.5	11.5	68.7	0.953	25	44.8	60	25	14.6	24.9	1.80	10.6
1990	25.6	54.3	10.8	72.7	1.075	20	51.2	63	25	17.3	25.4	2.02	11.3
1991	28.1	57.8	10.8	74.5	1.120	15	57.7	65	25	20.2	24.2	2.38	12.9
1992	32.7	64.1	8.4	74.3	1.024	13	61.0	68	25	22.8	25.2	2.42	15.6
1993	37.2	65.9	6.3	76.6	1.082	12	63.7	71	25	25.0	22.8	2.79	17.7
1994	42.6	74.2	5.4	82.8	1.219	11	69.5	74	25	27.1	27.7	2.51	19.0
1995	48.2	79.1	5.8	88.9	1.301	10	75.9	77	25	29.6	30.2	2.52	18.9
1996	54.0	88.5	7.2	94.6	1.399	9	82.0	80	25	33.2	34.1	2.40	20.7
1997	60.4	98.6	7.3	99.2	1.503	8	87.2	83	25	37.5	37.4	2.33	23.2
1998	66.2	107.9	6.5	102.9	1.547	7	92.0	85	25	41.7	39.6	2.32	26.6
1999	70.9	118.1	6.4	104.6	1.682	6	94.6	87	25	46.4	40.8	2.32	30.3
2000	77.1	129.9	4.4	110.9	1.830	5	101.8	88	25	50.0	47.4	2.15	32.0
2001	84.2	139.1	5.4	117.2	2.044	4.5	108.0	89	25	54.8	50.6	2.14	33.2
2002	91.0	154.3	4.7	125.9	2.237	4	116.9	90	25	59.5	60.0	1.95	34.3
2003	98.0	166.6	4.6	132.4	2.289	3.75	123.8	91	25	64.5	68.0	1.88	35.9
2004	105.1	181.1	4.4	141.7	2.483	3.5	133.1	92	25	69.8	73.3	1.82	38.3
2005	114.2	207.2	4.8	151.7	2.686	3	143.0	93	25	76.3	90.7	1.58	40.1
2006	125.1	221.8	5.7	160.3	2.811	2.75	151.8	94	25	84.9	94.5	1.61	42.7
2007	136.2	246.5	6.2	168.3	2.945	2.5	160.2	94.5	25	95.2	105.6	1.52	47.4
2008	148.7	270.6	7.0	181.3	3.038	2.25	173.7	95	25	108.2	112.8	1.54	52.7
2009	160.9	287.3	6.45	184.8	3.40	2	177.7	95.5	25	121.4	111.5	1.59	58.4
2010	166.4	294.2	3.52	186.1	3.52	0	179.1	96	25	128.9	110.4	1.69	60.6

* CA = accumulated current account deficit NZ\$b – sum current transfers; DC=Domestic Credit NZ\$b; I%= annual average deposit interest rate; GDP = Official SNA GDP NZ\$b; PQd=Column 5-Column 6 x column 7 NZ\$b; %DC = estimated proportion of DC funded at deposit interest rate; Ms=Column3-RBNZ “capital reserves” + Kiwibank loans and advances, NZ\$b*Column4*Column 9 *(1-Column10) + accumulated Ms column 11 from previous year. Mcd= Column3-RBNZ “capital reserves” + Kiwibank loans and advances-column 11-col 14; Vcd=Col8/Col12; Mv=[[Col3-RBNZ “capital reserves” +Kiwibank loans and advances – Col11] * (Col4- Col8*SNA inflation)]/100