



Economics in policy-making 9

Finance and money

Part One: The basics

This briefing provides an introduction to the financial system and its interactions with the economy. It is divided into two parts: The first part (9a) provides an overview of finance, money, credit and debt. The second part (9b) critiques the existing institutional arrangements and suggests alternatives.

It should be borne in mind that the systems described here are products of a complex institutional history – a fact which suits the beneficiaries of the status quo (e.g. private banks) very well, because it keeps the general public and civil society in a state of passive ignorance. For this reason we encourage perseverance with this extended briefing as it is critical in understanding finance, banks, debt, growth and urgently needed alternatives...

Modern finance: its functions and forms

The main function of the financial system is to facilitate the creation and allocation of economic resources – money, credit or other exchange instruments – across space and time in a manner that maximises human welfare. Aside from this, finance provides four other functions:¹

1. A payments system for the secure exchange of goods and services.
2. A means of managing uncertainty and controlling risk.

3. A signpost providing price information, thereby helping coordinate decision-making in various sectors of the economy.
4. A solution to the problems of asymmetric-information – when one party to a financial transaction has knowledge that the other party does not.

Modern financial systems are made up of mainly private institutions that carry out the above functions. Insurance companies, for instance, help control uncertainty by pooling risk, whilst stock-exchanges help ease information asymmetries by making the changing prices

of goods and services rapidly available to market participants. Banks are unique: not only do they create and allocate credit and money, but they provide the payment system that enables us to exchange with each other every day.

Finance can be obtained in three main ways:

1. Debt-based financing via 'credit creation': Consumers and companies can obtain finance through 'borrowing' money from banks, building societies or credit unions – collectively known as 'deposit-taking institutions'.

Actually, the term 'borrowing' or 'lending' is an inaccurate way of describing such activity because in reality banks create new credit and money when they make loans, fulfil overdrafts or buy existing assets.²

When loaning out money, for instance, a bank creates both an 'asset' (the loan itself) and a 'liability' in the form of new deposits credited to the borrowers' account. Importantly, the bank doesn't take money from anywhere else in the economy in order to fund this deposit, it simply expands its balance sheet.

After creating the loan, the bank will then charge interest on the loan to cover the risk of default and generate profits. (Unsurprisingly, banks pay interest to depositors at a much lower rate than that charged to borrowers)

2. Debt-based financing via bond issuance: medium and larger sized companies and governments also obtain finance by issuing debt-instruments called 'bonds' to investors. The investor, who could be an individual but these days is more often an institutional investor (e.g. a pension fund) loans a certain amount of money, for a certain amount of time (a term), with a certain interest rate. In return they receive a certificate, which is effectively an 'I.O.U' note that can be used to redeem the bond when it 'matures' at the end of its term.

Bond issuance does involve real 'borrowing' of money, and interest is charged to cover the opportunity cost (Briefing 1) of not having access to those funds for the fixed time period. Different types of bonds mature over different lengths of time, and therefore have different names to distinguish them. They are also, usually, tradable – there is an enormous market in the sale of corporate and government bonds (known as the 'bond market').

3. Equity-based financing: larger companies can also obtain finance through issuing equity (otherwise known as 'shares' or 'stocks'), where the investor buys a share of the company. Rather than receiving interest, the investor may receive a proportion of company profits in the form of a 'dividend'

(usually annually). The investor hopes that the value of the share will rise as the company grows. The opposite also applies of course – so if the company contracts, the value of its shares will fall and the investor will lose money. The risk is thus more equally shared between the investor and then recipient than is the case with debt-based financing.

Money, banks, credit, debt and interest

In orthodox economic models, money is just the oil that lubricates the exchange of goods and services. It enables us to move beyond 'barter' and is not viewed as a resource – such as labour or land – that determines long run economic trends such as employment or growth.

In such models, banks are simply intermediaries that recycle one person's savings into another person's loan, and vice versa. In fact, as discussed, banks are not primarily intermediaries but creators of credit (or money) that enables economic activity to take place.

More broadly, money – the way it works, how it is created and who shares it out – is of fundamental significance to the economy and its relationship with nature. Money is generally viewed as having three key functions:

- A store of value – holding money gives us confidence in our future ability to access goods and services; it gives us future 'purchasing power'.
- A medium of exchange – money enables us to conduct efficient transactions and trade with each other.
- A unit of account – without a widely accepted unit of measurement we cannot settle debts or establish effective price systems – both of which are key elements of capitalist economies.

The 'unit of account' (sterling, euro, dollar, or ounce of silver) has historically been determined by the state demanding the unit in which taxes must be paid.³ Since taxes are our most routine and legally important payments, we tend to use the same unit for all our other transactions.

In the UK, in common with most developed economies, the monetary system is monopolised by commercial banks: 97% of the money supply is created by bank credit creation (as explained above). The central bank (the Bank of England) creates just 3% of the money supply in the form of sterling notes, coins and reserves. Private banks must hold enough notes to meet customer withdrawals. Banks must also hold enough reserves in their accounts at the Bank of England to settle payments between themselves.

At any point in time, the total money supply in such countries will be equal to 'net lending' – the amount of loans created by banks minus the amount of loans that

have been repaid. If more loans have been paid off than created, the national money supply will actually contract, and vice versa. So, just as money is created when loans are made, it is destroyed when loans are repaid.

In modern, deregulated financial systems, central banks have chosen to have a very limited control over credit expansion by private-sector banks. Whilst all banks must hold a proportion of central bank reserves in order to settle their accounts at the end of any particular trading day, the Central Bank is not in a position to deny the banking system sufficient reserves. This is because bank's liabilities – the deposits in their bank accounts – have come to be used as the economy's main medium of exchange. If any bank was to become illiquid (i.e. unable meet its payment obligations) it could result in a collapse of the whole economy's payment system.

This system where the bulk of the money supply is created as commercial bank credit is usually termed 'fractional reserve banking'. Its emergence had very little to do with conscious design in terms of enhancing general welfare, economic efficiency or ecological sustainability. Rather, it was the outcome of historical accident and power relations, particularly those between banks and politicians.⁴

Endnotes

- 1 Adapted from Merton R (1995) 'A functional perspective of financial intermediation' *Financial Management* 24(2).
- 2 "When banks extend loans to their customers, they create money by crediting their customers' accounts.", pronounced Mervyn King, Governor of the Bank of England, in a recent speech <http://www.bankofengland.co.uk/publications/Documents/speeches/2012/speech613.pdf> 23 October 2012; for a detailed explanation, see Ryan-Collins, J., Greenham, T., Werner, R., Jackson, A., 2012, *Where does money come from: a guide to the UK money and banking system*, 2nd edition, nef (the new economics foundation): London, Chapter 2.
- 3 For classic accounts of the neutrality of money, see Menger, C. (1892). "On the Origins of Money" *Economic Journal* 2: 239–255; and Walras, L. (1954) *Elements of Pure Economics*. London, Allen & Unwin
- 4 See Knapp, G. F. (1905) *The State Theory of Money*, London: MacMillan; Innes, A.M. (1913) 'What is Money?' *Banking Law and Journal*, May 377–408; Grierson, P. (1977) *The Origins of Money*, London: Athlone Press. p19–21.

For a full explanation see

Ryan-Collins, J., Greenham, T., Werner, R., Jackson, A., *Where does money come from: a guide to the UK money and banking system*, 2nd Edition, nef (the new economics foundation): London, Chapter 2.

For a visual explanation of this process, see the campaigning organization Positive Money's website and videos: <http://www.positivemoney.org/>

Part Two: What's wrong with our financial system?

This second part of this briefing on finance and money is critical in understanding the 'growth imperative' which results from how money is created and presents the urgently needed alternatives.

Problems with modern bank-debt money

A structural growth imperative

Pre-industrial economies focused on the production and accumulation of goods with concrete use value – namely food, tools and livestock. Such goods, as products of the natural world, deteriorate over time when hoarded. In modern capitalist systems, however, the goal is to accumulate abstract exchange value in the form of money.

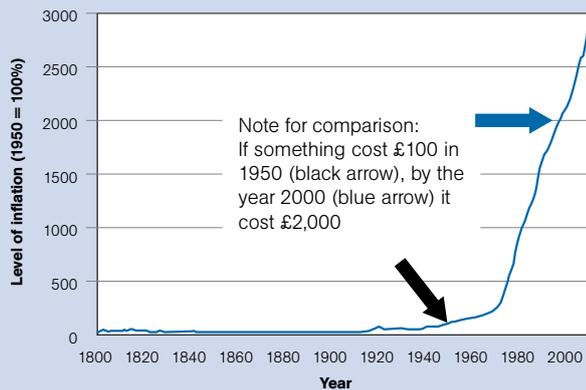
Money does not decay. Nor does it obey any other laws of the natural world: a deposit of money can grow by itself, earning initial interest which in turn generates interest of its own (called compound interest).

Interest-bearing debts and bonds can be thought of as structural drivers of growth. Why? Because, in order to pay back both an original debt and the interest it accumulates, a borrower must increase their economic output or benefit from an increase in the money supply (through inflation). Both of these require growth.

Since the money supply is almost entirely created by bank-debt, any increase in money supply must, in turn, involve an increase in debt – with its associated interest and compounding interest.¹

One counter argument used is that most of the interest received by creditors, and through the profits of banks, is

Figure 1: UK inflation since 1800.



eventually recycled back into the economy in the form of wages, consumption or investment.²

History suggests, however, that interest-bearing, debt-based monetary systems have always led to systemic, unsustainable increases in debt for those paying interest.

Such enormous build-ups of inequalities have rendered growth, inflation, or alternatively debt forgiveness compulsory in order to prevent economic breakdown.³

Furthermore, banks must hold a certain proportion of their profits in the form of capital to cover the risk of default. This capital, by its very nature, is withdrawn from the productive economy and hence at least some proportion of interest will never be recycled back into the economy, again demanding growth or inflation to maintain stability.

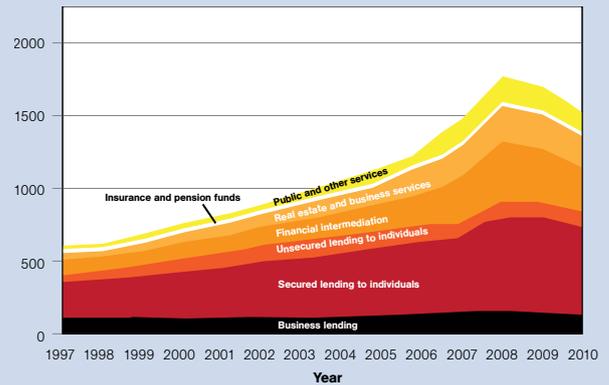
Conflict between the 'medium of exchange' and 'store of value' functions of money

Mainly because of the requirement to create growth and inflation in order to maintain economic and social coherence, modern bank-debt money has proved itself to be a poor 'store of value'. Inflation has become particularly rampant since the deregulation of the financial sector in the 1970s, and has caused consumers to lose 3–4% of their purchasing power every year (see Figure 1).

Creating money that does not lose its value has proven historically difficult. For a central bank to maintain the value of money perfectly, it would need to ensure an inflation rate of 0%. But because of the need for growth demanded by interest and the need for banks to hold capital, doing so would damage trading conditions.

Ultimately, different groups and communities will always have conflicting interests over these two functions of money. It's a struggle that was perhaps at its most clear before and after the American Civil War, between the 'Greenbacker' farmers who wanted 'easy money' that they could invest and support themselves with over

Figure 2: U.K. bank's net lending by sector, 1997-2010, sterling millions.



the farm year and the bankers of the East Coast who wanted to maintain the value of their money.⁴

Mis-allocation of credit leading to economic instability

Private banks determine not only how much money is created in the economy but also where that new money goes via their 'lending' (credit creation) decisions.

Up until the 1970s, the central bank played an active role in influencing credit allocation through regulation. In the last 40 years, however, deregulation and the digitalisation of money (in particular the move away from cash) has eroded public control over credit allocation.

Since the 1980s banks have increasingly begun to create credit for non-productive activities, such as consumption via credit cards, commercial and private mortgages (represented as 'secured lending to individuals' in Figure 2) and speculation on financial markets – such as currencies, bonds or commodities (represented as 'financial intermediation').

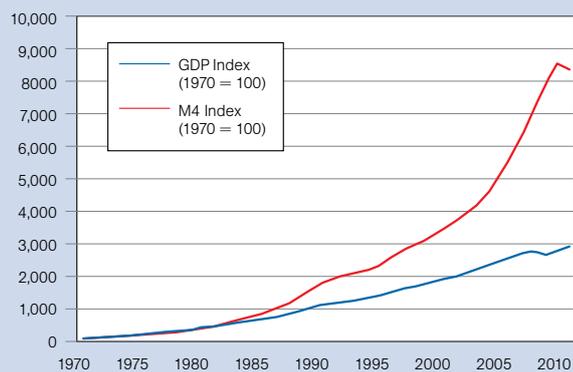
In the short term these activities can be more profitable and, where lending is secured, less risky than lending to businesses or large scale infrastructure.

But the flip side of this is that speculative credit creation has led to asset price booms, where the price of property and other assets is pushed to unrealistic levels.

Take housing price booms as an example. As larger and larger mortgages are needed to buy homes, the proportion of people's incomes that goes toward paying off their mortgages rises until eventually they are forced to reduce their spending in the real economy. This leads to inevitable 'bust', as demand falls, businesses default, unemployment rises, banks lose confidence and reduce their lending and house prices begin to fall.

Since the seventies, two large credit bubbles and busts in the housing market have occurred, the most recent contributing to the worst financial crisis since the great depression of the 1930s.

Figure 3: Money supply against nominal GDP since 1970⁵



As Figure 3 demonstrates, the amount of money in circulation (shown by the red line) is diverging from the value of the goods and services we actually produce (shown by the blue line – nominal GDP).

As well as creating financial instability, speculative credit creation increases inequality. This is because the gains from asset price booms go to the owners of those assets, who tend to already be wealthy.⁶

Fast rising asset prices also encourage investors and companies to turn away from productive investment, where returns tend to be lower and longer term, which further feeds the credit bubble. This process (making a ‘fast buck’ out of speculation rather than investing in the actual productive economy) is often referred to as ‘financialisation’.⁷

Hyman Minsky’s ‘Financial Instability Hypothesis’ describes a cycle of recurring phases in the capitalist process.⁸ At the beginning of each cycle, Minsky says, profits are low and banks act more conservatively. But over time, profits rise and both banks and firms grow in confidence, becoming more indebted (i.e. borrowing or buying fixed assets) with resulting over-investment in assets that results in asset price inflation which breeds even greater confidence. This eventually leads to ‘ponzi-financing’ where banks lend on the basis of assumed increases in asset prices – rather than what really happens. Eventually, the imbalance of debt to income becomes so unsustainable that people start to default on their loans. As a result, banks become less willing to lend, which in turn makes growth and wages stagnate. The asset price bubble bursts as house prices begin to fall, and debt-deflation ensues. This is where real outstanding debt increases as real income falls, leading to the inevitable crash.⁹

Mis-allocation of credit leading to social and ecological harm

In the same way that banks can ignore the macro-economic impacts of their activities, there is no incentive for banks to account for the social or environmental impacts of the activities they finance. Low-carbon

infrastructure, for instance, is not as profitable in the short-term as environmentally harmful (but lucrative) activities like fossil fuel prospecting, and is hugely under-financed as a result.

The existence of externalities and market failure (briefing 8) is well established in economic literature. One approach to correcting them is to use regulatory or market-based mechanisms, such as – in the case of environmental externalities – green taxes. Ultimately, measures like these should make investing in environmentally damaging activities less profitable, and thus reduce demand for financing them.

What are the alternatives?

Whilst, regulation and alternative taxation systems will take time to bed down, the natural resource and climate change crisis facing the planet requires more immediate action. If we are to move to a low carbon economy and safeguard the earth’s natural resources, a massive flow of capital is needed *now* to fund that transition.

Given that existing financial institutions (in particular private banks) appear incapable of delivering the transformation we need an alternative, urgently. A number of alternatives exist:

Alternative 1: Public banks

Research shows that national development banks can play a key role in stimulating innovation in new sectors.¹⁰

A credit creating institution in the hands of the public or the government would be ideally placed to invest in the large scale, green infrastructure we need.

The UK’s coalition government has created two institutions – the green investment bank and the business investment bank - that could potentially fulfil this role. At the moment, however, these institutions are funds or intermediaries, rather than banks: they are not legally able to create credit in the way that we have described, and depend on government and private sector investment of existing money.

Alternative 2: Green quantitative easing

So far, the Bank of England has created £375 billion (by the end of 2012) via the purchase of UK government bonds in the financial markets in an attempt to drive down interest rates and encourage investment into the real economy. This quantitative easing program may have helped prevent deflation and eased recession somewhat, but it does not seem to have tempted banks to scale up investment in productive activities.¹¹

An alternative would be for the Bank of England to buy different forms of assets, for example, bonds issued by national banks or by agencies set up to invest in the real (productive) economy. Once capitalised, these institutions would be able to start lending immediately without waiting

for funding from the private or government sectors. A number of policy options around this idea have been put forward by **nef** and other organisations.¹²

Alternative 3: Credit guidance by the government or central bank

This would involve putting mechanisms in place to indirectly guide bank lending. For instance, the government could specify that commercial banks must allocate a certain quantity of their lending to the industrial sector (such policies are often termed 'window guidance' or 'strategic credit creation'). Or, they could apply differential interest rates to different categories of lending.

Another indirect control on the price and availability of credit could be instigated by applying different capital adequacy ratios (i.e. the amount of shareholders own funds, or equity capital, that banks need to hold versus what is lent) against different categories of lending.

Although these instruments are unfamiliar to the UK in recent times, they have been instrumental in the rapid industrialisation of Japan, Korea, Taiwan and China in the decades since the 1970s.¹³ The state ownership of Lloyds Banking Group and Royal Bank of Scotland (and the extensive restructuring required of the latter) offers an opportunity to test a wide range of monetary policy instruments.

Alternative 4: Nationalisation of the money supply.

Historically, there are many examples of states directly creating money and putting it in to circulation free of interest. Indeed, prior to the invention of modern banking at the end of the seventeenth century, most states used simple accounting techniques (such as tally sticks in the UK, minted coins or printed paper money) to fund their activities. They ensured the widespread adoption of these techniques through taxation.¹⁴

There are also numerous historical examples of governments funding spending through the issuance of 'government money'. These include the issuance of 'Greenbacks' by the U.S. government during and after the Civil War, and 'Bradbury Bills' in the UK during World War I.¹⁵ Similarly, the governments of Germany, Japan and the USA at times issued significant amounts of government money, mainly during the nineteenth century.¹⁶

Many leading economists, including Irving Fisher,¹⁷ Milton Friedman,¹⁸ Henry Simons,¹⁹ James Tobin²⁰ and Herman Daly²¹ think that governments alone should have the power to expand money supply. This, they argue, would create a much more stable banking system.

Such a system would require banks to practise what's known as 'full', or '100% reserve' banking. What this means is that they would have the full value of all their customers' deposits stored as 'reserves' – cash or 'liquid' assets that could be rapidly sold for cash. Instead of simply creating and destroying money any time somebody took out or paid in money, banks would be pure intermediaries (as most people think they are now),

matching up savers and borrowers in the way that peer-to-peer lenders do.

nef, along with Huber and Robertson (2000),²² have already proposed how full-reserve banking could work in the UK in a joint submission to the Independent Commission on Banking.²³ Their proposal has recently been backed by two research economists at the International Monetary Fund (IMF) who examined the proposal using state-of-the-art macro-economic modelling to show how it would both reduce existing debt and stabilise the economy.²⁴

While the issuance of government money to fund spending is often thought to be inflationary, this need not be the case, especially if limited by the growth potential of the economy. Inflation is the result of too much money chasing too few goods and services. If an economy has spare capacity, (e.g. it is not at full employment), additional money allocated to the right places should create additional economic activity rather than driving up prices. This type of money issuance could be limited to specific sectors and for specific amounts of time and the Government could then tax it back out of circulation.

Alternative 5: Regional or local money systems

A final alternative is that of 'local' or 'community' currencies. These are payment systems created by non-state and non-bank actors. They are often described as 'common tender'²⁵ (as opposed to legal tender) or 'complementary currencies' to highlight the fact that they work in tandem with national currencies rather than replacing them entirely.

They generally focus on fulfilling the 'medium of exchange' function of money and are not designed to be hoarded as a store of value.

The best known examples are from the Great Depression era where in both the United States and Europe, 'stamp scrip' currencies were issued to support businesses and local production as national currencies became scarce because of deflation.²⁶

One surviving currency from this period is the Swiss WIR credit-clearing circle created in 1934. This mutual credit scheme, presided over by the WIR cooperative bank, creates credit that is denominated in, but not exchangeable into, Swiss Francs. Loans can be issued amongst the bank's 60,000 members – mainly small and medium size enterprises – and can only be spent within this network of businesses. In 2008, the volume of WIR-denominated trade was 1.5 billion Swiss francs.²⁷ Evaluation of the Swiss WIR system suggests it has had a stabilising, and 'counter-cyclical' effect on the Swiss economy, as businesses have used it more during recessions.²⁸

In such 'mutual credit' systems, credit is linked directly to the productive or spare capacity of the people and businesses involved, because credits within the system are backed by delivery of goods and services by members – i.e. they have real value.

Developments in technology have made it easier and cheaper to exchange these types of currencies. Some thinkers suggest that scaling up their use could really boost the resilience of our financial system – a system that has become overly dependent on the type of state-monopoly, debt-based money that these papers (9a and 9b) have described.²⁹

Endnotes

- 1 Binswanger constructs a simple circular flow model based on a closed pure credit economy to demonstrate this growth imperative – see Binswanger, M. (2009). "Is there a growth imperative in capitalist economies? a circular flow perspective." *Journal of Post Keynesian Economics* 31(4): 707–727.
- 2 *Ibid.*
- 3 Historically, rulers have periodically offered massive debt write-downs or jubilees in order to maintain social order in the face of unpayable debts. See Graeber, D, 2011, *Debt: The First 5000 years*, Melvyn House: Brooklyn, NY.
- 4 Carruthers, B. G., and Babb, S. (1996) "The Color of Money and the Nature of Value: Greenbacks and Gold in Postbellum America", *American Journal of Sociology*, Vol. 101, No. 6, <http://www.jstor.org/stable/2782112>
- 5 Source: GDP statistics from Bank of England, "The UK Recession in Context, 3 centuries of data. M4 statistics from Bank of England interactive database, M4 (code LPQAUYN).
- 6 Galbraith, J. *Inequality and Instability: A Study of the World Economy Just Before the Great Crisis*, OUP: USA.
- 7 Palley, T. 'Financialization: What it is and Why it Matters', November 2007, PERI working paper.
- 8 Minsky, H.P. (1982). 'Can "It" Happen Again? Essays on Instability and Finance', Armonk, NY: M.E.Sharpe.
- 9 Fisher, I. "The Debt-Deflation Theory of Great Depressions," *Econometrica*, 1 (October 1933), 337– 57.
- 10 Mariana Mazzucato, 'Without banking reform, investing in innovation is too great a risk', *The Guardian*, 11 September 2012, <http://www.guardian.co.uk/commentisfree/2012/sep/11/banking-reform-innovation-great-risk>
- 11 See Lyonnet, V., and Werner, R. (2011) 'The lessons from QE and other 'unconventional' monetary policies – evidence from the Bank of England', Unpublished working Paper - Centre for Banking, Finance and Sustainable Development, School of Management, University of Southampton.
- 12 See example proposals for 'Green Quantitative Easing', retrievable from - <http://www.greennewdealgroup.org/?p=175> and <http://www.neweconomics.org/blog/2012/07/05/quantitative-easing-a-wasted-opportunity>
- 13 Werner, R.A. (2002). *Monetary Policy Implementation in Japan: What They Say vs. What they Do*, Asian Economic Journal, Volume 16 no.2, Oxford: Blackwell, pp. 111-51.; World Bank, (1993). *The East Asian Miracle, Economic Growth and Public Policy*, Oxford: Oxford University Press.
- 14 Graeber, D. (2011). *Debt: The First 5000 years*, Melville House Publishing: Brooklyn, New York; Wray, R., (1998). *Understanding Modern Money: The Key to full-employment and price stability*, Cheltenham: Edward Elgar.
- 15 Carruthers, B.G., and Babb, S. (1996) "The Color of Money and the Nature of Value: Greenbacks and Gold in Postbellum America", *American Journal of Sociology*, Vol. 101, No. 6, <http://www.jstor.org/stable/2782112>; Davies, G., (2002). *A History of Money*. Cardiff: University of Wales Press, p. 27 and p. 663.
- 16
- 17 Fisher, I. (1936). "100% Money and the Public Debt", *Economic Forum*, Spring Number, April-June 1936, 406-20.
- 18 Friedman, M. (1960). *A Program for Monetary Stability*, New York: Fordham University.
- 19 Simons, Henry C. (1948). "Economic Policy for a Free Society." University of Chicago Press: Chicago, Illinois, pp. 165–248.
- 20 Tobin, J. (1985). "Financial Innovation and Deregulation in Perspective", *Bank of Japan Monetary and Economic Studies*, 3, 19–29.
- 21 Daly, H. (1999). *Ecological Economics and the Ecology of Economics*. Edward Elgar.
- 22 Huber, J., and Robertson, J. (2000). *Creating New Money*. London: nef. Retrievable from <http://www.neweconomics.org/publications/creating-new-money>
- 23 Dyson, B., Greenham, T., Ryan-Collins, J. and Werner, R., A. (2010) *Towards a Twenty-First Century Banking and Monetary System: Submission to the Independent Commission on Banking*. London: nef retrievable from <http://www.neweconomics.org/sites/neweconomics.org/files/Submission-ICB-Positive-Money-nef-Soton-Uni.pdf>
- 24 Benes, J., and Kumhoff, M. (2012). *The Chicago Plan Revisited*, IMF Working Paper 12/202. retrievable from <http://www.imf.org/external/pubs/ft/wp/2012/wp12202.pdf>.
- 25 Rochford, S., von Gunten, C., Mainelli, M. and Harris, I. (2012). "Capacity, Trade and Credit: Emerging Architecture for Commerce and Money". London: Z/Yen Group
- 26 Fisher, I. (1933). *Stamp Scrip*, New York; Adelphi Company; Publishers; Copyright 1933, retrievable from <http://userpage.fu-berlin.de/roehrigw/fisher/>
- 27 Lietaer, B., Hallsmith, G., (2011). *Creating Wealth. Growing Local Economies with Local Currencies*, New Society Publishers, p.117.
- 28 Stodder, J., (2009). 'Complementary credit networks and macro-economic stability: Switzerland's Wirtschaftsring', *Journal of Economic Behaviour & Organisation*, 72 (2009), pp.79–95.
- 29 Lietaer, B., Arnspurger, C., Goerner, S. and Brunnhuber, S., (2012). *Money and sustainability: The Missing Link*, Triachy Press: Club of Rome, retrievable from <http://www.clubofrome.org/?p=4478>

CASE STUDY

The briefing on finance and money has provided you with some of the key considerations and issues concerning the creation of money. The following case study shows how green investment in Germany has worked for a renewable energy transition and presents some lessons learned which could be applied to the UK. Financing the necessary green investment to tackle the environmental issues we are facing is possible, as this successful example shows.

How has green investment worked in Germany?¹

The energy transition in Germany is the largest infrastructure project in half a century. It aims to strengthen the economy and create new jobs. With its *Energiewende* (Energy Turnaround), Germany raised the bar in terms of setting the pace for renewable energy policies. By switching to renewable energy, Germany has created more than 380 000 new jobs, has built up the world's leading green technology sector, and has reduced its dependency on fossil fuel imports.

What can the UK learn from this?

The economic benefits of the transition already outweigh the additional cost of business as usual. The switch to a highly efficient renewable energy economy, of course, requires large-scale investment. Renewable energy, however, only seems to cost more than conventional energy (due to subsidies and other government interventions, for example), but it is getting cheaper, while conventional energy is getting more expensive. Furthermore the price of fossil fuel does not include environmental impacts, which are treated as externalities (briefing 8) and described in the section on *Mis-allocation of credit leading to social and ecological harm* in this briefing.

By replacing energy imports with renewables, Germany's trade balance and energy security are improving. Already, more than 380 000 Germans work in the renewables sector – far more than in the conventional energy sector. While some of these are manufacturing jobs, many others are in installation and maintenance. These jobs for technicians, installers, and architects have been created locally and cannot be outsourced. Germany is rebounding from the economic and financial crisis much better than other countries.

Perhaps no other legislation has been copied worldwide as much as Germany's Renewable Energy Act (EEG)

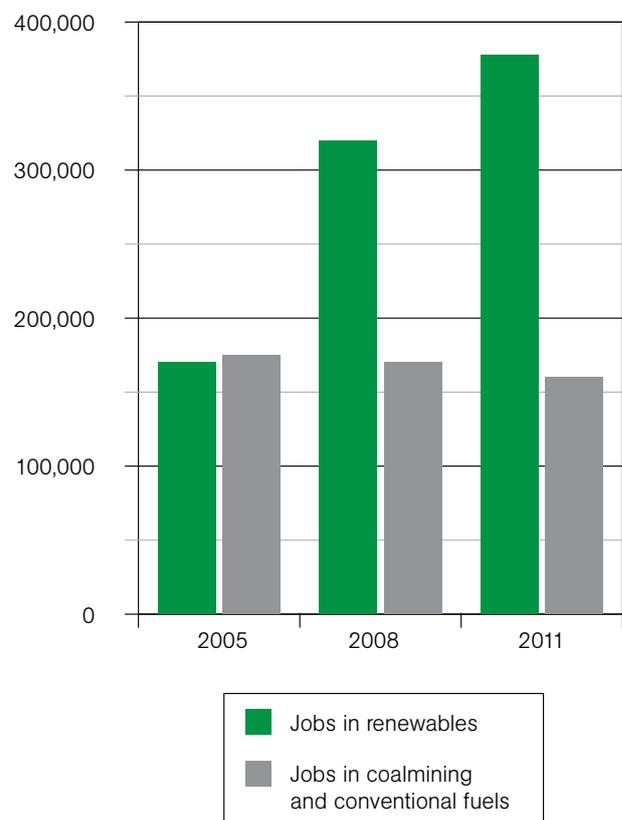
The law created three central pillars: (1) the obligation for grid operators to buy energy produced by renewable sources, (2) grid-priority for renewable energy sources and (3) secured feed-in tariffs for over 20 years

for renewable energies, which allow stability to aid investment. So, the law specifies that renewables have priority on the grid and that investors in renewables must receive sufficient compensation to provide a return on their investment, irrespective of electricity prices.

'Tax the bads, not the goods' – Environmental taxation increases taxes on environmentally harmful activities (such as fossil fuel consumption). But it is also revenue-neutral, as the tax revenue can be used to lower the costs of something which is in *societies best interest* (e.g. increasing employment). The policy was very successfully implemented in Germany and has created hundreds of thousands of jobs as well as reducing fuel consumption.

The impact can be seen in Figure 4.2

Figure 4. Employment in renewables in Germany.



CASE STUDY

These figures represent 'gross job creation', meaning the absolute number of jobs that have been added. A study of the German market estimates a net job creation of around 80 000, rising to 100 000–150 000 in the period from 2020 to 2030. One reason why renewables have such a tremendous positive impact on net job creation is that renewable power directly offsets power from nuclear plants, and very few people work in those sectors.

Much, if not all, of the German green investment has been funded via its national investment bank, the [KfW](#). The KfW underwrites local / regional bank's (known as 'Sparkassen') loans meaning it can charge very low interest rates (around 2 per cent) for home insulation, solar and what is known as 'retro-fitting', etc.

This contrasts with the [UK Green Deal](#) where the rates are considerably higher around 7–8 per cent. This might be marginally less than high street banks would offer, but looks a bit absurd in the current UK environment where you can re-mortgage your house for 2.5 per cent.

To find out more about the KfW see the article from UCL's energy institute.³

Endnotes

- 1 Energy Transition. (no date). Key findings. Retrieval from <http://energytransition.de/2012/10/key-findings/>
- 2 Energy Transition. (no date). Key findings. Retrieval from <http://energytransition.de/2012/10/key-findings/>
- 3 Schröder, M., Ekins, P., Power, A., Zulauf, M., and Lowe, R. (2011). *The kfw experience in the reduction of energy use in and CO₂ emissions from buildings: operation, impacts and lessons for the UK*. Retrieval from <http://sticerd.lse.ac.uk/dps/case/cp/KfWFullReport.pdf>

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The [Marine Socio-Economics Project](#) (MSEP) is a project funded by The Tubney Charitable Trust and coordinated by **nef** in partnership with the WWF, MCS, RSPB and The Wildlife Trusts.

The project aims to build socio-economic capacity and cooperation between NGOs and aid their engagement with all sectors using the marine environment.

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Design by: the Argument by Design – www.tabd.co.uk

Published by **nef** (the new economics foundation), April 2013 as part of the MSEProject to build the socio-economic capacity of marine NGOs. www.neweconomics.org Tel: 020 7820 6300 Email: chris.williams@neweconomics.org Registered charity number 1055254.