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**The role of money in a market economy**

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Ladies and Gentlemen<sup>1</sup>,

It is a great pleasure for me to speak here today at the Bargeldsymposium of the Deutsche Bundesbank. I would like to congratulate the organisers for devising a programme that covers such a vast range of practical aspects involved in managing a currency.

My fellow speakers at this symposium have already shared their expertise on many of these practical issues. I have nothing further to add to their insights and expert judgement. Instead, I would like to take a step back and address some crucial conceptual questions that surround the role of money in a modern market economy.

Let me start by briefly reviewing the key economic explanations for why the use of money has been such a prevalent phenomenon in history. To this end, I will adopt the common definition of money as being any object or token that is generally accepted as a means for paying goods and services and for settling debts.

I will illustrate the evolution of money in form of a linear parable, which leads from a barter economy to a system with commodities as a medium of exchange; and from there to a fiat currency regime. However, it is important to point out that in fact, the history of mankind's experimentations with money in its various incarnations has been far from linear. It is made of sudden breakthroughs – often in response to wars, famines or fiscal crises – followed by set-backs and regressions to earlier and less developed states of affairs.

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<sup>1</sup> I would like to thank Massimo Rostagno and Frédéric Holm-Hadulla for their contributions to the preparation of this speech.

## Money and Trust

Imagine a clever merchant who regularly loads his produce onto a cart and heads to the market place where all merchants meet to exchange their goods. This market place is impossibly complicated. Any merchant in need of a commodity that he does not produce himself has to search endlessly. Much of his time is spent in trying to find a partner in a direct barter “giving what was not wanted directly for that which was wanted” (as William Stanley Jevons would have described the situation).<sup>2</sup> Trading time could be protracted even longer, as a lucky encounter would not necessarily mean that a trade is perfected: lengthy quality verification might ensue, as both contracting individuals would have to be convinced that equal value was being given up as it was received.

In this task they could be assisted by a pricing table indicating all possible pairs of rates at which goods can be exchanged. If there are ten goods, the table already has forty-five dimensions; if there are twenty goods, the table has one hundred ninety dimensions, and so on. But in fact, the table would be a lot bigger and nearly impossible to consult: the combinations of pairs of trades are for all practical purposes infinite, if one considers that trades can either be made on the spot or by future delivery, and that any futures contract is priced differently according to the time at which delivery is to be made.

This extreme inconvenience leads to an insightful observation. The clever merchant notes that a certain commodity is more frequently exchanged. Why? Probably because it is easy to carry and certainly because it is durable – it does not physically decay and maintenance

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<sup>2</sup> See Jevons, W.S. (1875), *Money and the mechanism of exchange*, D. Appleton and Co., New York.

costs are low. Also, probably its verification costs are relatively small so most merchants, even those who do not need the commodity for consumption, are happy to engage in trades where this commodity features at least temporarily.<sup>3</sup>

These trades are multistage and sequential: market participants exchange their produce for that particular commodity with the expectation to be able to exchange that commodity again for the goods they desire. As this commodity has the highest subjective probability of trade, it becomes almost generally acceptable.

By joining in the network of sequential barter involving that particular commodity as an intervening vehicle of exchange, the clever merchant can minimise his market time, maximise time for production or leisure, and specialise more.

The exceptional good that enters so many exchanges becomes the medium of exchange; it becomes money. Money facilitates spot purchase-sale contracts because it minimises the time spent transacting. Money also enhances inter-temporal trading, namely contracts involving future delivery, because it provides a unit of account in which all such contracts can be expressed and acts as a 'record-keeping' device

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<sup>3</sup> Several contributions to the related literature invoke the costs of verifying the characteristics and attributes of a good received in exchange (costs of inspection, measuring, property rights) as the prime reason for the emergence of a dominant medium of exchange. See, for example, Brunner, K. and A.H. Meltzer (1971), "The Uses of Money: Money in the Theory of an Exchange Economy", *American Economic Review*, 61(5), pp. 784-805; and Alchian, A.A.(1977), "Why money?", *Journal of Money, Credit and Banking*, 9(1), pp. 133-140. This insight has also been modelled in search theoretic frameworks; see Jones, R.A. (1976), "The origin and development of media of exchange", *Journal of Political Economy*, 84(4), pp. 757-776; and Oh, S. (1989), "A theory of a generally acceptable medium of exchange and barter", *Journal of Monetary Economics*, 23(1), pp. 101-119.

permitting enforcement of budget constraints over time.<sup>4</sup> Remember how infinitely complicated the pricing of promises denominated in all possible commodities, quantities and future dates was. Now, with all individuals agreeing to denominate inter-temporal contracts in the same commodity, the pricing problem can be significantly simplified. A monetary economy is more productive and more efficient in transferring consumption opportunities across time: money is a pre-condition of an efficient credit and savings markets.<sup>5</sup>

Let me insert a side-remark here. If saving is nothing more than deferred consumption, and if the currency is expected to be generally acceptable in exchange for consumption goods today as well as across time, a medium of exchange is a natural store of value for setting income aside in view of future consumption. Money does not earn interest, so it is dominated by other forms of savings which contractually yield a return. But in the end, all forms of savings have to be converted into money, if savings are ever to be converted into consumption. So, money is probably part of wealth and, in any case, any other form of wealth will need to be retrieved at a later time in the form of money.

Another day, the clever merchant makes a second smart observation. If only the extraordinary commodity acting as money could be replaced in

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<sup>4</sup> Several authors have claimed that the unit of account function is not necessarily connected with money's medium of exchange function; see Wicksell (1906), *Lectures on Political Economy*, London; and Niehans J. (1978), *The Theory of Money*, Baltimore. At the same time, the monetary asset will usually also serve as the economy's unit of account – i.e., prices will be quoted in terms of money – since otherwise additional accounting costs would be incurred.

<sup>5</sup> In theory, one could imagine a pure credit, non-monetary economy where all credit contracts are denominated in an abstract unit of account whose only function is to state prices. This is the world Eugene Fama describes in his pure financial theory of money (see Fama E. (1980), "Banking in the theory of finance", *Journal of Monetary Economics*, 6(1), pp. 39-57). However, in practice, people would only accept promises denominated in something abstract if they were certain that they would be able to exchange these promises for the commodity they desire. Hence, credit contracts need to be denominated in things that people value or are certain that they would be easily converted into other commodities.

trade by an IOU, a sight draft, a representative claim on a given quantity of the same commodity! Society could retain the exchange services of money while economising on the capital – say, gold or silver coins – which is used up to embody the commodity medium of exchange. Bills convertible into the commodity money would be circulating in lieu of – or at least in parallel to – gold or silver coins. Hence, a fraction of the stock of those precious metals could be unfrozen from circulation and diverted to other productive uses. Somebody will have to issue the bills, hold a reserve of coins and stand ready to convert bills into species on sight. But the law of large numbers will make sure that the precautionary reserve of species could be kept small in relation to the overall value of bills in circulation, as only a fraction of money-holders will want to convert at each point in time.

This new technology of money creation exploiting the law of large numbers is the pre-condition for two salient features of today's economies: the emergence of private banks and the emergence of inside money created by private issuers and circulating alongside outside money issued by the financial authority.

The emergence of banks can be thought of in the following manner: in a trading environment where people meet randomly, are unlikely to meet twice and each person's own trading history is his own private information, people issuing bills or IOUs cannot be easily punished if they ever fail to deliver on their promises. But then, it may become profitable for some agents to make themselves easy to monitor and find ways to communicate, enforce and protect a 'reputation' for never reneging on their payment promises. Banks are born as those agents

whose paying histories become public information.<sup>6</sup> Importantly, the emergence of banks benefits not the banks themselves (which usually charge a higher rate on their lending than they pay on their issuance of IOUs) but also society as a whole: the free negotiability of the bank's liquid liability expands the market participants' trading opportunities. Thus, this form of money creation is valuable and socially beneficial.

Inside money then naturally derives from the business of banks issuing IOUs, bank bills or bank deposits, which are readily convertible into commodity currency and thus coexist with outside money as a monetary counterpart in transactions.<sup>7</sup> The difference between outside and inside money is that the former is an asset for the economy as a whole, but it is nobody's liability. Inside money, instead, is named this way because it is backed by private credit: it would cancel out if all the claims held by banks on private creditors were to be settled. So, it is one form of currency that is created – and can be destroyed – within the private economy.

As a consequence, reputation and trust in the ability of individual banks and the banking system as a whole to redeem the bills, the IOUs or the deposits is essential in order for the new fractional reserve system to

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<sup>6</sup> Cavalcanti and Wallace justify the emergence of banks in a random-matching model of monetary exchange as those agents whose trading histories are public information (see Cavalcanti, R.O. and N. Wallace (1999), "A Model of Private Bank-Note Issue", *Review of Economic Dynamics*, 2(1), pp. 104-136; the analysis builds on the search theoretic environment of Kiyotaki, N. and R. Wright (1996), "On Money as a Medium of Exchange" *Journal of Political Economy* 97, pp. 927–954; and Trejos, A. and Wright, R. (1995). "Search, Bargaining, Money and Prices," *Journal of Political Economy* 103, pp. 118–141). They show that a social optimum requires note issue by banks. In addition, those notes are used in trade among the agents whose trading histories are private. In their environment, a social optimum requires inside money.

<sup>7</sup> In 1960, John G. Gurley and Edward S. Shaw published a very influential book, *Money in a Theory of Finance*, in which they developed a theory of finance that encompassed the theory of money and a theory of financial institutions. In the book, they first proposed the distinction between outside and inside money.

function. Trust is the critical word. It becomes an intimate attribute of money.

Returning once more to our parable, there is one more observation for the clever merchant to make: the bills circulating in lieu of gold and silver coins provide an exchange service to the society of merchants, which has a value per se. By virtue of its general acceptability the medium of exchange provides a service to the user, namely it minimises the time and effort needed to trade on a market. This exchange service implicit in the use of money can be valued independently of the value that gold and silver receive in their non-monetary uses. Given certain conditions, that value would not be lost, even if convertibility were to be abolished.

Yes, we have reached the stage of a fiat money regime, one where the monetary medium is made of intrinsically worthless tokens of paper or some other inexpensive material. Regimes of this sort have always existed in the history of monetary standards in the aftermaths of wars or deep economic depressions. Since August 1971, however, – when President Nixon delinked the US dollar from the backing of gold at a pre-specified parity<sup>8</sup> – the entire world has been operating under a fiat currency regime.

## **Pre-conditions for sound money**

Of course, our parable is a very simplified caricature of the historical evolution towards a fiat money regime. In particular, what is important to keep in mind, is that this evolution was not without setbacks, that is, periods during which the trust in money was fundamentally undermined.

Thus, it is interesting to ask ourselves: what are the conditions for a

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<sup>8</sup> The US dollar had been inconvertible to individuals since 1933. In 1971 President Nixon made it inconvertible to foreign central banks as well.

monetary system to remain viable? I see three conditions.

First of all, an absolute pre-condition is trust on the side of the holder of such inconvertible notes that the value of the medium of exchange with respect to the universe of goods remains predictable and steady. If a currency cannot guarantee this, it loses general acceptability in trade and loses attractiveness as a store of value: it ceases to be money.

The second condition descends directly from the first: a fiat currency needs public regulation and – in its pure form at least – cannot be manufactured by unfettered private issuers. It is easy to understand why. Any unregulated private issuer would have the incentive to increase note issuance well beyond the socially-optimal level. This is due to a failure of private issuers to account for the negative externalities that increased production of currency, and the concomitant erosion in its value, would have on those using it. In fact, unfettered private issuers would produce currency up to the point where the value of the exchange services provided by the last unit of currency produced is equal to the marginal cost of producing it. But if issuing unconvertible notes is costless – or nearly costless – then an agent with the right to issue notes would do so in infinite quantities, because only when the money stock becomes infinite is the exchange service value of the last unit in terms of goods indeed driven to zero.

Of course, one can think of incentives for banks to preserve their franchise, thus partly counteracting their temptation to drive the last unit of their own currency to zero and reap the entire exchange value that private traders assign to that unit. For example, the bank could commit to buy back its notes whenever their value relative to a certain basket of goods declines. But time inconsistency problems apparently make these arrangements prohibitively costly to run, because there is – to my

knowledge – no evidence in history of a fiat currency regime, where all money is inside money and no money is contractually redeemable, at least ex ante, into some real asset available in the bank's inventory.<sup>9</sup> A currency that offers zero exchange services at the margin is a currency without real value, a currency that supports an infinite price level: in effect, a failed currency.

Third, public regulation has to be designed in such a way that any market failure resulting from unfettered private issuance is not simply replaced by government failure: this essentially requires that the right to issue currency be placed outside the remit of fiscal authorities and instead be entrusted to an independent public agency, such as a central bank. This central bank's task should then find a technology that forces money to be maintained in a certain proportion to real income and to the real value of transactions and that ensures its general acceptability.<sup>10</sup>

Barring changes in the money multiplier – a concept to which I will return – if the nominal money stock grows at the same pace as real income, the price level will be stable and money will maintain its value in terms of goods and services across time.

Note that in such a fiat money environment, the outside/inside money distinction remains valid and meaningful. The stock of fiat money can now be thought of as a claim of consumers and investors vis-à-vis the public agency, which is outside the perimeter of the private economy. So,

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<sup>9</sup> Friedrich von Hayek famously argued in favour of a 'denationalisation' of fiat money; see von Hayek (1976), *Denationalisation of Money: An Analysis of the Theory and Practice of Concurrent Currencies*, London. He claimed that, if only government obstacles could be removed, a free competitive market for privately issued currencies would provide the optimal quantity (and a wide variety) of monetary products, all of a superior quality with respect to what a public central bank could offer.

<sup>10</sup> Under certain conditions, this may also include legal intervention by the government in the form of declaring a currency legal tender; see Moutot (2011), "Systemic risk and financial development in a monetary model", *ECB Working Paper, No. 1352*.

from the standpoint of the private sector, it remains an external, 'outside' claim: it is outside money. Also, banks can issue deposits convertible into outside money, which is now the monopolistic prerogative of the regulated public agency, the 'central bank'. Indeed, in many – though not all – modern-day monetary systems, banks are mandated to hold reserves in outside money in their accounts at the central bank, as a statutory fraction of the total amount of their customers' deposit accounts. This places a maximum limit on the total amount of loans that commercial banks are allowed to extend through issuance of own liabilities and, by implication, on the volume of inside money that they can legally create.

The ratio between the total amount of inside money and the quantity of outside money is the reciprocal of the reserve ratio – the statutory reserve ratio plus the ratio of banks' desired excess reserves over deposits – and is sometimes referred to as the money multiplier. As long as banks are held accountable for discharging their obligations in terms of the fiat outside currency at par, and as long as the quantity of the fiat outside currency is kept in check by the public agency, the existence of a money multiplier – even a large one – does not pose risks of over-supply for the overall stock of money, i.e. the sum of inside and outside money. The money multiplier, as many other economic ratios, is not steady, however. Its wild fluctuations in situations of economic duress can be very harmful for the economy.

Monetary orthodoxy holds it that, in a fiat currency regime, what chiefly matters for determining the value of the currency is the quantity of money injection. In modern central bank operating practices, a central bank controls the quantity of money creation by exercising a firm control over the real interest rate at which money is lent to the economy (in lending

operations), or over the price of the assets which the central bank purchases in exchange for money (in outright transactions). Provided the real interest rate or the price at which monetary injection occurs is decided by the central bank in all independence, and with an exclusive view to maintaining a stable price level, it is less important, at least within certain limits, whether the central bank lends against private or public collateral.

Does this imply that the distribution of central bank liquidity does not matter? The answer is yes, but only to the extent that it does not undermine the incentives for private and public agents to systematically violate their solvency conditions.<sup>11</sup> By contrast, if these conditions are violated, risks of fiscal and financial dominance could emerge. This calls for the central bank to pay close attention not only to the quantity of its liabilities, notably outside money, but also to the quality and composition of the assets that back money

## **Institutional underpinnings of sound money**

Depending on the institutional environment, the authorities with the right to issue money could also face a strong inducement for overproduction. Suppose, for instance, that this right lies with a fiscal authority, as has been the case over long stretches of history. The fiscal authority could finance state expenditure by raising taxes; but this would require the establishment of costly administrative structures. It could even finance spending via its printing press. In a fiat money regime, at the margin, the cost attached to this operation would be close to zero. The benefit, however, would be positive and equal to the value of the new public undertaking multiplied by the opportunity cost of financing the new public

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<sup>11</sup> The implications of central bank action for the distribution of credit are explored e.g. in Goodfriend (2011), "Central banking in the credit turmoil: An assessment of Federal Reserve practice", *Journal of Monetary Economics*, 58(1), pp. 1-12.

function with taxes. The pecuniary value of that benefit to the government issuing money is called seigniorage.

Yet, from the perspective of society as a whole, the creation of additional money would entail higher costs, as the currency would be debased as a store of value and its exchange services in transactions would be degraded. Unpredictable changes in the value of money would undermine its function as a means of exchange. In fact, if these changes are frequent and large in scale, the monetary system may even degenerate into a barter economy.

As historical episodes of hyperinflation demonstrate, such fears are clearly of immediate concern for economic life.

Therefore, society needs strong independent institutions to preserve the value of money. There has to be a mechanism that removes the wedge between the authorities' perceived cost of expanding the money supply and the costs felt by society at large. Only if this mechanism is established will it be possible to effectively counteract the inducement for the authorities to abuse their competence to issue money.

The emphasis on strong institutions as a pre-condition for sound money has deep intellectual roots in Germany. The concept of "Ordnungspolitik" is often invoked as a recipe for success in setting up institutions conducive to a stable and prosperous economy. It focuses on providing a framework that fosters a level playing field for economic competition and avoids excessive interference from other policy domains, and notably from monetary policy. To put it in the words of Walter Eucken, a founding father of the ordo-liberal school of thought: „Alle Bemühungen, eine Wettbewerbsordnung zu verwirklichen, sind umsonst, solange eine

gewisse Stabilität des Geldwertes nicht gesichert ist.“<sup>12</sup> To this end, Ordnungspolitik entails stringent rules that restrict discretionary policy intervention and thereby provide a stable and predictable environment for private savings, consumption and investment decisions.

The successful track record of this framework has also very profoundly inspired the design of the institutional architecture of European Monetary Union (EMU). In particular, monetary policy is entrusted to an independent central bank with a primary objective to ensure price stability. An explicit price stability objective assigned to the central bank is a technology that can ensure that – over the medium term – the supply of money is kept commensurate with the real expansion of incomes and transactions, so that money maintains its value.

Since the introduction of the euro, this monetary policy framework has proven highly effective in ensuring price stability. But it requires a stronger underpinning in the areas of fiscal, financial and structural policy.

## **Money in crises**

Even with strong institutions in place, no monetary system is fully immune to adverse shocks that may temporarily upset economic and financial stability.

To see why, it is useful to recall the dual role of money as a medium of exchange and as a store of value. A key challenge for those who have to manage a currency is that the intensity with which either of these two functions prevails at a given point in time differs in crisis and normal conditions. And, of course, a solid definition of ‘normal’ versus ‘crisis’

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<sup>12</sup> “All efforts to establish a competitive economy are futile without a certain degree of stability in the value of money.” Walter Eucken (1955) *Grundsätze der Wirtschaftspolitik*, Tübingen.

conditions is necessary for the public entity in charge of monetary control to be able to switch from one mode of currency management to another as the conditions evolve.

In normal times, the means of payment function is the prevailing motive to hold money. Households and firms tend to invest in assets, which promise to remunerate creditors' decision of parting from money and lending in exchange of an uncertain cash flow to be received in the future. When the overall risk implicit in the discounting of these cash flows is moderate, a small positive yield paid on fixed income assets is sufficient to compensate creditors for their decision to forgo current consumption, and money is dominated by those assets as store of wealth. Agents bear money not for its maturity value but for its exchange value. Money holdings relative to the overall private wealth are kept at the minimum buffer level necessary to finance expected transactions plus, probably, a small margin to face unexpected expenses. These are times when the regularity which quantity theorists emphasise – the close relationship between the growth of money supply and inflation – becomes more intimate and evident in macroeconomic statistics, as the portion of money balances motivated by pure transaction purposes is large and steady. The monetarist prescription that money creation needs to respect a strict factor of proportionality relative to a non-inflationary path of real income growth finds its most pertinent and compelling application in these normal times.

But imagine a situation in which agents suddenly lose confidence in other assets which are claims on private issuers. The cash flows to be expected of these claims are now discounted by an abnormally large risk factor. All assets are promises of payoffs in terms of currency at some future point in time. As the uncertainty around these payoffs increases,

however, agents scramble for currency in an attempt to short-circuit the credit cycle. Short-circuiting the credit cycle means that the creditor attempts to compress the time interval that contractually separates his purchase of a claim on a stream of future cash flows from the time when cash is received. A scramble for currency is a collective – often desperate, panicky – attempt to shorten this cycle.

But, collectively, this is not a possibility except at highly punitive discounts. Why is it not possible for everybody to convert claims to currency into currency at once? Because a large fraction of those claims – say, fixed income bonds or equity issued by companies – is backed by the issuers' long-term investment projects. When starting those projects, firms and other productive agents raised currency by issuing claims whose maturity was expected to match the productive cycle of their underlying real investment. But the underlying real investment cannot be liquidated instantly, except in fire-sales that are highly destructive of their realised market value. In this process, where everybody seeks to convert non-monetary assets into currency, the value of non-monetary assets is curtailed, the value of wealth itself falls, and the fraction of money over wealth increases. Money is now primarily viewed as a store of value.

What type of money increases most in these conditions? It depends on the extension and ramifications of the collective loss of confidence. In a crisis of the kind which we experienced in October 1987, a pure 'stock market shock', investors become particularly worried about the value of very long-term assets, equity stocks traded in the stock market. In 1987, as stocks precipitously lost their value in a matter of few hours' trading, the market dynamics involved investors trying to liquidate their stock positions against money, any type of money: both outside currency and inside money balances or bank deposits. In those conditions, bank liquid

liabilities were considered secure enough to preserve investors' wealth.

But in banking crises of the proportions observed in 1930-1933 or following the collapse of Lehman Brothers in September 2008, bank liquid liabilities – deposits, inside money – appear as insecure as bank equity. Net redemption demands then become unusually large, and banks – running low on cash reserves – are forced to raise additional funds to avoid defaulting on their obligations.

A bank can raise funds from additional borrowings, possibly by borrowing from the money market or by using lines of credit held with other banks. But under those conditions other banks might be either equally strained and unable to provide credit, or unwilling to expose themselves to a stressed bank. So raising funds may just mean selling assets, or calling in short-term loans. Both operations destroy finance and inside money. These are the most intractable financial shocks, as they potentially undermine the payments network on which a monetary economy is so deeply dependent.

Under these conditions, the quantity theoretic relationship between money-growth and inflation is suspended: the link between money and spending in the economy is blurred by the hoarding of currency. The money multiplier drops, the inside money system is wounded at its very root, and its beneficial social function is threatened. Combined with a collapse of demand due to wealth effects and amplified by price and wage rigidities causing unemployment and under-utilisation of productive resources, a financial cataclysm can turn into a macroeconomic calamity.

What is the most appropriate response of a central bank mandated to price stability in these conditions? The central bank has to promptly and decisively resist the shortage of liquidity, the contraction of finance and

the destruction of spendable purchasing power, which is partly embodied in inside money. A central bank that is mandated to price stability has to accommodate the increase in demand for currency. At the same time, it has to ensure that it never becomes fiscally or financially dominated.

Yet would a strong expansion in central bank money not be inflationary? No, an expanded central bank liquidity buffer is non-inflationary under these conditions. When it is used as a store of value (not as a means of payment) and a security buffer for weak financial institutions, money becomes temporarily disconnected from spending decisions. Under these conditions, a large stock of base money is a sign of deflationary risks rather than a harbinger of future inflation, as was observed in the 1930's.

The art and science of central banking will have to be implemented in the identification of the time in which normalisation will mean a return of money to its traditional means of payments function. At that time, when inside money will resume its traditional role in liquidity provision, when the multiplier will start increasing, the central bank will have to be quick in re-absorbing the excess outside currency created in the crisis times. Money will have to be put back along the trajectory indicated by the quantity theoretic relation.

## **Conclusion**

Let me conclude with a few words on how these considerations affect the ongoing debate on putting EMU on a sounder footing.

An effective monetary policy is one which can resist inflationary pressures and stabilise inflation at low and stable levels. For this, an independent central bank is an absolutely necessary condition. But it is not sufficient. The fiscal counterpart needs to be disciplined and the

overall macroeconomic framework needs to foster stability.

In such a system, the central bank can concentrate on the determination of the interest rate charged on its liquidity provision to the banks with a view to maintaining inflation at low and stable levels. The fiscal authority for its part has to ensure that its fiscal policy stance remains consistent with debt sustainability, at whatever real interest rate may be determined by the central bank. Then households and firms can focus on their undertakings without having to worry about sudden shifts in economic policy that change the calculus underlying their decisions.

Judging against these ideals, we must acknowledge that the track record of EMU has been mixed.

Despite the challenges that several countries in EMU are currently facing, it is important to emphasise that the ECB has delivered on its price stability mandate, with CPI inflation averaging around 2% per annum. Moreover, the ECB has contributed to averting acute downside risk to inflation during the crisis, which would also have impacted adversely on economic stability. To this end, the Governing Council forcefully reduced the main policy rates and adopted several non-standard measures that preserve the transmission of monetary policy signals to the economy. Its full operational independence and the clear orientation of its price stability mandate have been crucial cornerstones in guiding these interventions.

At the same time, our experiences since the start of EMU underscore the importance of other policy domains for economic stability. In a benign economic environment before the crisis, the institutional framework of EMU has not prevented the accumulation of fiscal imbalances, losses in economic competitiveness and the build-up of excessive risks in the

financial sector. When the financial and economic crisis erupted, these vulnerabilities became a major propagator of economic uncertainty and distress. In fact, the mutually reinforcing nature of these vulnerabilities even led some observers to question the integrity of the currency as a whole.

This clearly demonstrates that an independent central bank with a clear price stability objective is a necessary but not a sufficient condition to preserve trust in a currency.

Euro area policy-makers have reacted to these insights by embarking on a wide range of reform efforts to strengthen the institutions governing other policy areas. These include, inter alia: a reinforcement of the EU fiscal framework modelled after the German “debt brake”; an incentive mechanism at EU level to encourage structural reforms; and a closer integration of financial supervision that is commensurate to a strong integration of financial markets across borders.

The ECB supports these efforts to strengthen the institutional architecture of EMU. In fact, I am convinced a swift and determined implementation of these reforms will put the soundness of our common currency beyond doubt.