

Metrics meta about a metametric: the consumer price level as a flawed target for central bank policy.

Summary. Inflation targeting is, at the moment, the policy of choice of central banks. This policy invariably targets consumer price inflation – which is however only one of many available price level indices, like prices of new investments and house prices. As there is no stable relationship between these price levels and as differences in developments between the different price levels might induce destabilizing behavior there is no reason why ‘low and stable’ consumer price inflation should guarantee monetary and financial stability. Following Keynes, a ‘low and stable’ increase of average nominal wages might do a better job! As price levels are designed to estimate the purchasing power of spending power but as income and spending power are not just used to consume or invest but also to pay down many kinds of (gross) debt it is advisable to use a joint definition of monetary stability and financial stability, which combines stable purchasing power of income with a stable ability of households and companies to pay down debts.

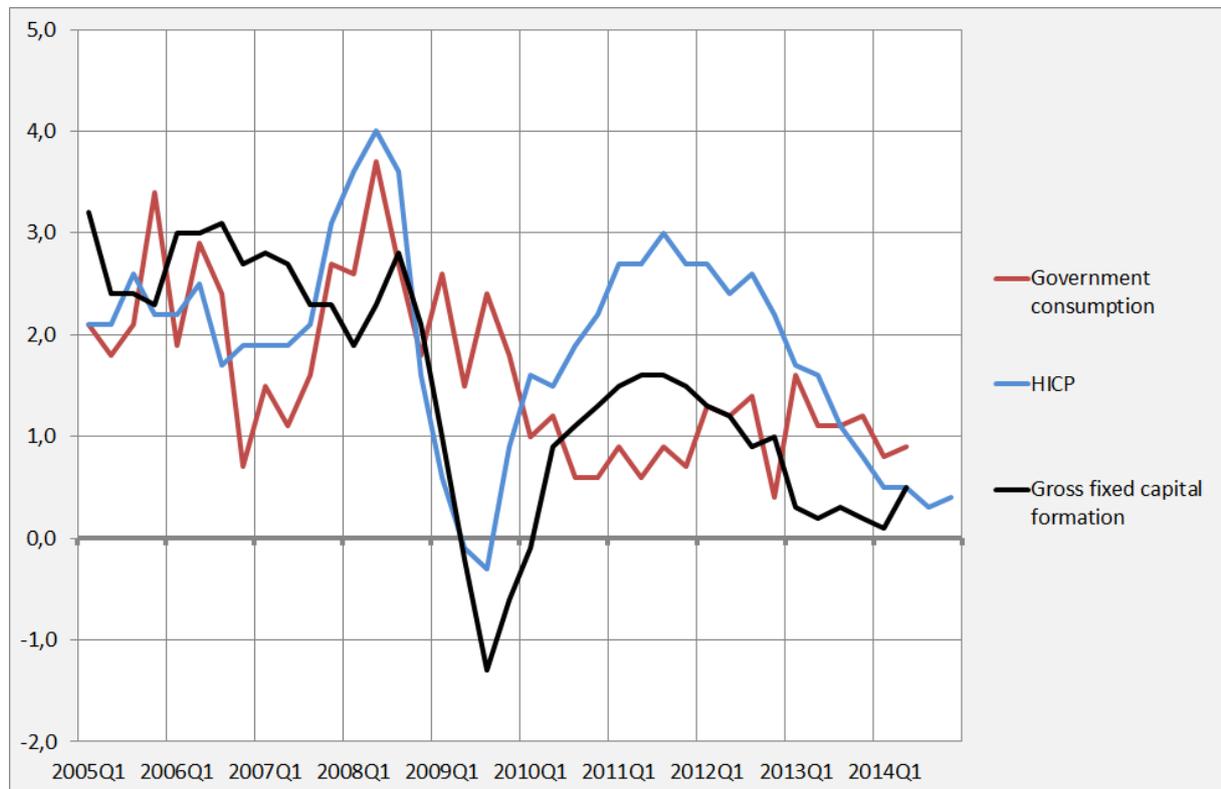
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Price indices, inflation targeting, central banks, monetary stability, financial stability.

1. Introduction

Central banks like the Fed, the ECB and the Indonesian and Indian central bank are ‘inflation targeters’. Too high or too low rates of inflation induce policy changes. These banks invariably target a specific kind of inflation: changes of the consumer price level or CPI (Bank for International Settlements (BIS), 2010). Why this particular price level? Economic statisticians estimate, aside from the CPI, a bewildering variety of price level metrics like the core price level and the price level of Frequent Out Of Pocket Purchases or FROOPP (both sub-indices of the CPI), the price levels of gross fixed investment and government consumption (both estimated as part of the National Accounts (NA)), producer price levels (a price of production costs), stock market price levels and house price levels (both asset price levels) or average hourly wage costs (a cost and, with some modifications, income price level). All of these price levels are measured as part of the national accounts or at least consistent with these accounts. And the CPI is only one of them. So, why do central banks around the world target this specific price level? It is clearly not because all price levels show the same developments, not even when we look at somewhat comparable metrics like expenditure price levels (Figure 1). Sizeable and persistent differences exist. Would it have been wise for the ECB to have targeted these other price levels, too? Considering the present situation in the Eurozone, is targeting inflation a viable policy at all?

Figure 1. Government consumption, HICP and gross fixed capital formation inflation, Euro area.



Source: Eurostat, GDP and main components - Price indices [namq_gdp_p]; HICP (2005 = 100) - monthly data (monthly rate of change) [prc_hicp_mmor]

Technical addendum to Figure 1: the ‘Harmonized index of consumer prices’ (HICP), the CPI of choice of the ECB, is not equal to the NA CPI, mainly because imputed rent of owner occupied houses is included in the NA metric and excluded in the HICP. Export and import prices are excluded because they are crucially influenced by the exchange rate.

One reason to target the CPI is (by necessity!) practical: fast as well as robust information about this price level is available. This led the bank of Sweden, one of the earliest ‘inflation targeters’, to adopt this metric after the bank was, in 1992, forced to abandon targeting another price level, the fixed exchange rate against the ECU, the predecessor to the Euro (Bank of Sweden, 2014). But are there also compelling empirical or theoretical arguments which led central banks to adopt the CPI as the target of choice? One often stated reason to target the CPI is behavioral: we’re all consumers and everybody is acquainted with consumer prices, which means that the CPI is supposed to be a metric which is easily understood by the public (see multiple papers in BIS (2010)). But that would mean that central banks should target FROOPP (which, after the introduction of the Euro and in the Eurozone, increased consistently faster than the CPI), as behavioral economists discovered that our ‘inflation experience’ is mainly influenced by items like gasoline and latte (FROOPP item weights can be found in Eurostat, 2014). The banks however target the CPI, as it’s broader. But ‘domestic demand’ inflation’ is even broader – and this isn’t targeted. Focusing on the CPI leaves about half of final expenditure or aggregate demand out of the picture. According to the NA, consumer expenditure is about 56% of aggregate demand in the Euro Area (EA), while investment spending is about 18% and government consumption

(street lights, primary and secondary education and the like) about 22%, the rest being net exports and some minor items. And even final expenditure is only part of all transactions in our economy: another part are, according to the NA, income transactions like the paying of wages, which have their own price level. Or the purchases of existing fixed assets, like houses. Which means that consumer spending is not only just half of aggregate demand, it is an even smaller share of total monetary turnover ('PT' in the $MV=PT$ formula, if you like). Furthermore, the differences shown in figure 1 are especially large in the immediate post 2008 years. So targeting the CPI might lead the central banks astray at the exact moment when good policies are needed most. Which underscores the question: why the exclusive focus on the CPI?

It could be that economic theory shows that focusing on the CPI is the right thing to do. And the CPI (or closely related metrics like wholesale prices and retail prices are explicitly or implicitly the metric of choice of leading economists (Sargent 1981; Sargent, Williams and Zha, 2004; Lucas, 2007; Bernanke and Mishkin, 1997). But none of these economists explains why they exclude other price level metrics (assets, production, income, investments, even government consumption) from their work.¹ Speeches and books celebrating 20 years of inflation targeting do sometimes acknowledge that inflation targeting did not prevent the Great Financial Crisis from happening and occasionally mention some problems with asset prices – but do not question the wisdom of using the CPI (King, 2012; Cobham e.a., 2014). Graduate teaching of neoclassical macro does not question the use of the CPI as the inflation metric of choice at all (Sims, 2011). Influential policy models like the New Area Wide Model of the European Central Bank (ECB) do use more price indexes but do not question the idea that central banks should and do pursue inflation targeting and should and do target the CPI (Christoffel, Coenen and Warner, 2008).² So, there seems to be a consensus that the CPI should be the target price level of choice. But except for some (important) practical reasons, few explanations are offered for *why* the CPI is singled out. Even BIS (2010), a collection of 21 articles about 'monetary policy and the measurement of inflation', does not contain one thorough discussion of why the CPI should be our metric of choice. The article by Leung, Chow and Chan about Hong Kong comes closest but even their discussion is rather limited. Which makes us change our question a little: Given that there does not seem to be much evidence that we should use the CPI as a target variable, are there theoretical or empirical arguments that central banks should use another or a broader concept of inflation and price stability? This question will be discussed in the remainder of this article. The aim of this discussion is modest. I will only try to show that sound alternatives exist, sound being defined as 'based upon consistent definitions and concepts' as well as 'based upon a consistent and coherent set of estimates'. In the last paragraph, the very idea that monetary stability is the same thing as low and stable inflation will be discussed. But first, we will have to take a closer look at the models.

2. The role of price levels in macroeconomic models

The monetary policy models of choice of the last two decades – Dynamic Stochastic General Equilibrium (DSGE) models- unquestioningly assume that 'credible' central banks which target CPI

¹ If anybody knows about an article or book in which these authors do discuss this in a thorough way please prove me wrong.

² In their footnote 22 these authors do point out a possible exception : "*We note that, even in the absence of import adjustment cost, the prices of the consumption and investment goods may differ due to differences in the home bias parameters*".

inflation will reach their goal. We can compare these theoretical models with the main model used to estimate the macro economy, the NA's. Leung, Chow and Chan (2010) show, for the case of Hong Kong with its famously flexible market system and a remarkably low level of government consumption, that total domestic demand inflation (an average of the three NA expenditure price levels) is not only driven by CPI inflation but, *with changing intensities*, also by fixed investment price inflation (or deflation) and government consumption inflation (or deflation), which is consistent with the situation in the Eurozone (figure 1). The implication (though they do not mention this) is that the domestic demand price level, consistent with the (nominal) accounting identities of the NA's, is *not uniquely determined by the CPI or even predicted by the CPI* (more on these accounting identities in the). Which means that we can and even *have* to question why the DSGE models use the CPI as the target variable of choice or, better, why they exclude the other price levels. Reading these models we see that, to an extent, the snake bites its own tail: central banks often do target the CPI (though generally not to the exclusion of other goals) which means that these banks are modeled as targeting the CPI (often to the exclusion of other goals). Behind this seems to be – reading between the lines; the models are not explicit about this – an old and morally correct economic idea. Adam Smith already stated that ‘Consumption is the sole end and purpose of all production’. And, as all of us are consumers, the CPI is important to all of us. So despite the fact that the CPI is only a subset of all prices measured by economic statisticians, it is special as it is the price level of the ‘sole end and purpose’ of production. Also, wages and pensions and rents often were and sometimes still are indexed to this particular price level, which makes it even more important. Household consumption is however only part of total consumption: government consumption (among other things: parts of health care) is important, too. The models however dismiss this. DSGE models generally define ‘government consumption,’ as wasteful by definition (Knibbe, 2014C; for DSGE consistent criticisms: Stähler and Thomas (2011) and Iwate (2012)).³ In other words, these models assume that a teacher paid for by the government is not productive while a teacher paid for by a household is productive.⁴ A kind of market fundamentalism which, as the Iwate and the Stähler and Thomas articles show, is not a *necessary* element of these models but which does enable the modelers to exclude the prices of government consumption from the consumption price level.⁵ Comparable remarks can be made about fixed investment prices. The DSGE assume that ‘the representative household’ not just buys all consumer goods – but also all investment goods. Firms do not invest but rent their equipment from consumers. And since, by assumption, there will be intertemporal optimization and equilibrium, this means that there will be optimal relative price levels of consumer and investment goods, which means that only one price level has to be stabilized to get monetary stability. The existence of other price levels and the differences between the trajectories of price levels are assumed away. More on this below.

The choice to focus exclusively on the CPI matters. Focusing less on the CPI and more on other price levels might have led the ECB to more accommodative and credible monetary policies instead of the in hindsight (and not just in hindsight, Krugman, (2011)) ill-timed and ill-fated decision to increase interest rates in 2011. The DSGE models do not provide us with compelling reasons to restrict ourselves

³ The phrase ‘generally’ is based on my reading a number of these models and upon the opinions voiced in the Iwate and Stähler and Thomas papers, not on an exhaustive investigation. Prove me wrong.

⁴ Hume (1742) already explicitly discusses the consequences of differences in the price level of government consumption – an example which is, alas, not followed in DSGE models.

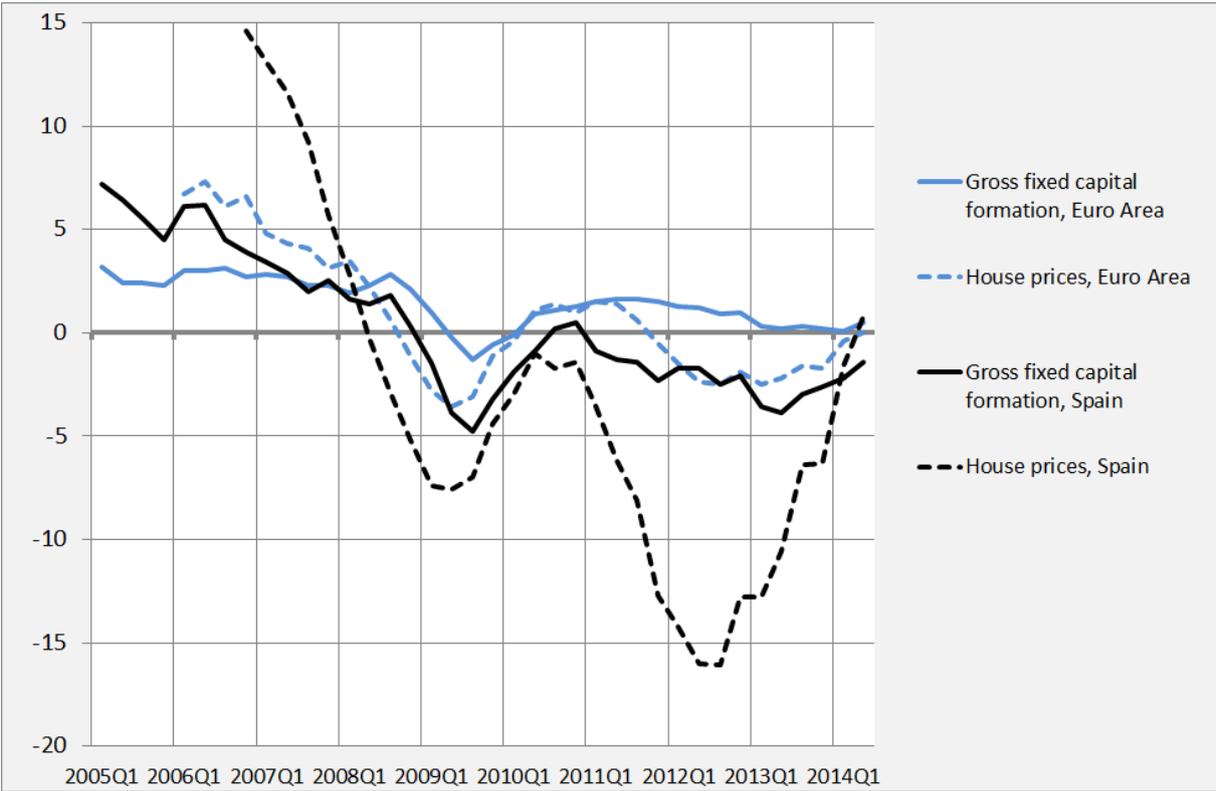
⁵ Introducing government consumption or investments would make these models run into problems with the Arrow paradox.

to the CPI. But are there other models or ideas which suggest that we should look at other price levels, in addition to or instead of the CPI? Next we will investigate some of these alternatives.

3. Asset prices

Asset prices are absent from central bank operational definitions of price stability. According to Hyman Minsky, this is a mistake. Inspired by Keynes and Fisher, he stated that the relation between prices of existing fixed assets and something like the GDP price level is crucial to (investment) spending and therewith to the business cycle (Wray and Tymoigne, 2008). Which means that we have to look at the price level for investment goods and also at prices of existing assets. With the construction bubbles in Spain, Ireland, Nevada and the Baltic countries in mind this idea seems obvious: house prices, for instance, are included in the new Eurozone Macro Economic Imbalance Procedure Scoreboard. But at the time (2004-2007) they weren't. And house prices are still not compared with investment prices. The usefulness of Minsky's idea of a "two-price" system can be established empirically. (Again: we're pointing out the possibility of an alternative, not testing it extensively). When we substitute the price level of investments for the general price level and substitute house prices for prices of assets, it appears that Minsky had a point (figure 2).

Figure 2. House prices inflation and gross fixed capital formation inflation, Euro Area and Spain



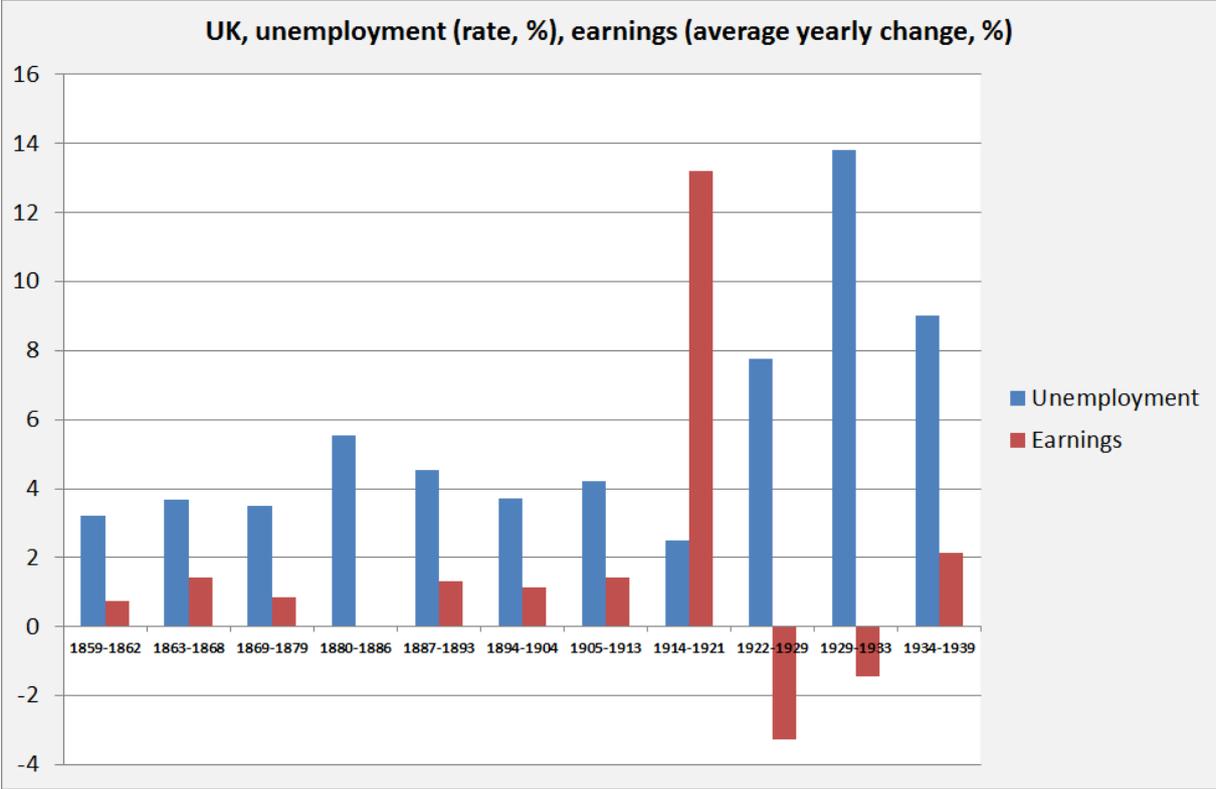
Source: Eurostat, see figure 1 and House price index (2010 = 100) - quarterly data [prc_hpi_q]. As house prices on the Euro Area level are only available for the Euro Area with a changing composition the investment data differ a little from figure 1, which shows gross fixed capital formation for the 18 country Euro Area.

Figure 2 shows that for Spain as well as the Euro area the crisis and stagnation neatly coincide with the development of the house price one side and gross fixed investment prices on the other. Note that in Spain after 2009, investment price deflation must have added greatly to the debt deflation problems of companies and banks - well before the Spanish *CPI* started to deflate in 2014. This suggests another reason to question the exclusive focus on the *CPI*. Since most debt finances the acquisition of assets, the evolution of asset prices plays a central role in determining whether debt can be serviced.

4. Income price levels.

In addition to expenditure and asset price levels, income price levels, such as the price level of wages, are estimated by statisticians. Examples are *average* hourly or monthly wages. I like to restrict the concept of the price level to prices actually paid. Labour is sometimes paid by the hour but more generally by the month or, looking at contracts (including possible *CPI* indexation), de facto by the year. Monthly and yearly hours are however variable (in Germany, many workers can stack overtime into an overtime account which can be drawn upon when the economy is slow) which means that comparison over time is more straightforward using the 'price per hour' concept, which is also closer to the cost price concepts used by companies (which pay these wages). From a household perspective, however, income per month may be more salient. The point: price levels of income are hard to measure meaningfully- in part because wages should be treated differently when considered as income than when considered as costs. But that does not mean that they are not important. To the contrary. About eighty years ago and in stark contrast to the opinion of classical economists J.M. Keynes stated: "*But the money wage level as a whole should be maintained as stable as possible, at any rate in the short period.*" (Keynes, 1936, chapter 19). He really might be called a 'wage targeter' instead of an 'inflation targeter' (Knibbe, 2014A and 2014B). And his stance was, looking at the UK facts, understandable: Between 1920 and 1932 earnings of British laborers decreased with about 33% - but unemployment only increased; comparable but somewhat milder developments can be witnessed in the nineteenth century (See Figure 3).

Figure 3. The Keynes anomaly. Average yearly wages changes and unemployment in the UK, 1852-1939

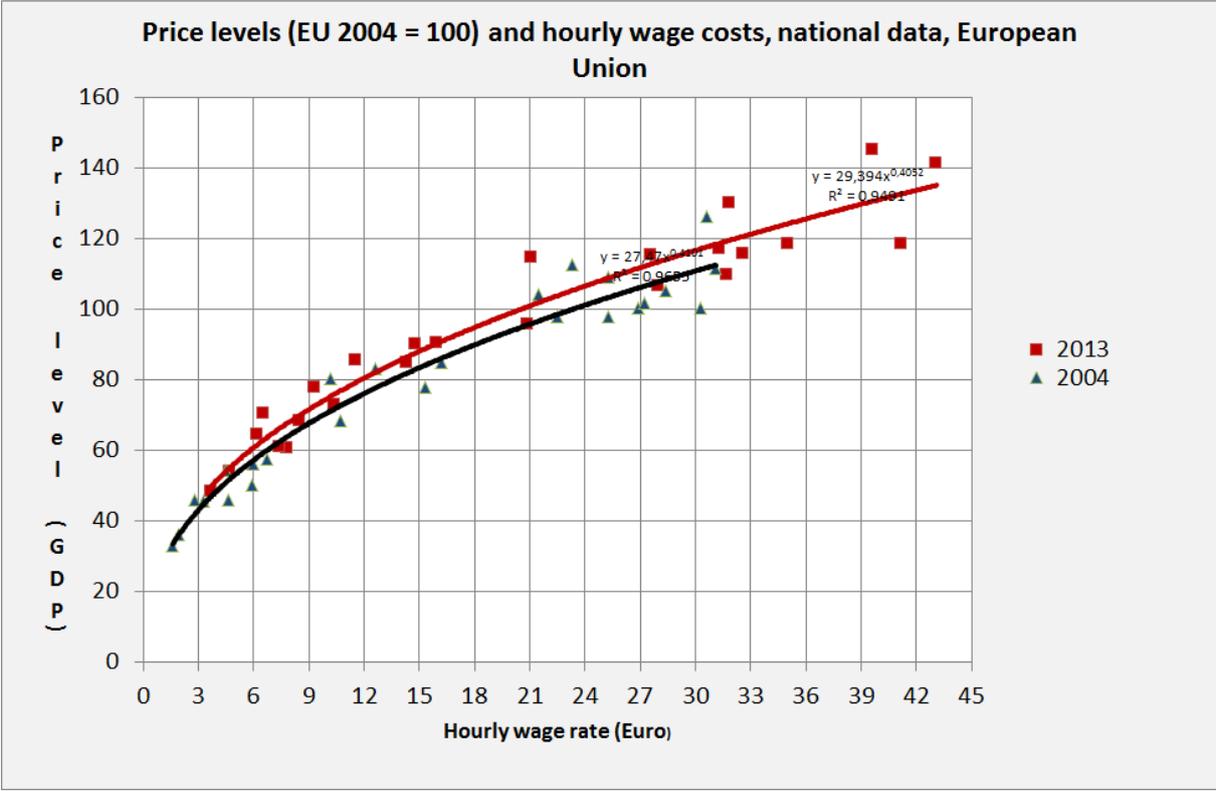


Source: Bank of England, ‘Three centuries of data’, <http://www.google.nl/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0CCwQFjAB&url=http%3A%2F%2Fwww.bankofengland.co.uk%2Fpublications%2FDocuments%2Fquarterlybulletin%2Fthreecenturiesofdata.xls&ei=lpuYVMTPEMeyUeH1gLAL&usg=AFQjCNHdilZGDt4Az7OCUC1dxo6LcWquzA&bvm=bv.82001339,d.d24>

The intellectual necessity to come to grips with this ‘classical’ anomaly (which was not restricted to the twenties, though this period was the longest post 1850 period with declining ‘money wages’) might well have been one of the reasons why he developed the ideas written down in the General Theory. Nowadays, comparable ideas like ‘wage led growth’ are presented by ILO researchers (Lavoie and Stockhammer, 2012) while the ‘paradox of flexibility’ idea rekindled by Krugman and Eggertson (2010) has a similar ring to it. The idea that we must take income prices seriously when thinking about monetary stability has a solid pedigree. Anyway – a close relation between the price level and the wage rate is clearly visible in the data (Figure 4). Though it is remarkable that the UK, with a wage rate of 21 Euro per hour, had about the same price level as Belgium, which new a 41 Euro per hour price level.⁶

⁶ The British can pay for this as they work much more hours than the Belgians.

Figure 4. Hourly wage level and price level, purchasing power parity data for European Union countries



Source: price levels from Eurostat, Purchasing power parities (PPPs), price level indices and real expenditures for ESA95 aggregates [prc_ppp_ind]; hourly wage rates from idem, Labour cost levels [lc_lci_lev]

5. Monetary stability: stable purchasing power of money or stable spending power of households?

When one reads the pre-1980 minutes of the Fed or the annual accounts of De Nederlandsche Bank or the German Bundesbank from those days it strikes the mind that the approach to inflation was more balanced than today. More attention was paid to for instance the GDP deflator and wage levels, next to the CPI index. And the Bundesbank (Bundesbank, 1970, pp. 44-56) also had a rather sophisticated, 'Post-Keynesian', endogenous quadruple accounting take on money growth: it did look at the increase in the amount of deposits money but this was explained in the stock-flow consistent framework of monetary statistics (more on this framework below), distinguishing between different sectors and kinds of loans. The exclusive focus of central banks on the CPI (at least when it comes to monetary policy targets) is fairly recent. This change seems to be related to a 'Gestalt-switch' in economics away from economics based upon monetary flows of spending and lending and towards the kind of 'general equilibrium' economics central to the DSGE models which have been so influential during the last decades. Central to these models is the idea that there is only one 'consumption good'. Robert Lucas (1972) for instance assumed: "*In addition to labor-output, there is one other good: fiat money, issued by a government which has no other function.*" This 'one good' idea is still central to DSGE modelling (Sims, 2011). But Lucas at least admitted the existence of money. Later models even abandoned this idea. In Christoffel, Coenen and Warne (2008) the New Area Wide Model of the ECB, probably the most influential DSGE model ever, is explained. On p. 9 of this working paper they state: "*the assumption that a fraction of households is limited in their ability to participate in asset markets has been abandoned, along with the usage of money as a means of facilitating transactions*".

This 'one good - no money' approach to the CPI leads to a fundamental misunderstanding about price indices, namely the idea that these are designed or can be used to estimate 'the purchasing power of money', money (if present at all in the models!) just being another good.⁷ This flawed idea has for a long time been a staple of classical economic thinking and in fact still is to a surprising extent. In the first sentence of an article in a 2010 Bank of International Settlements publication, '*Monetary policy and the measurement of inflation*', Miguel Angel Pesce (vice president of the central bank of Argentina) states: "*The way in which **the purchasing power of money** is measured poses some questions at the time of assigning it a clear meaning and determining how it should be measured properly*". Pesce joins the company of the founding fathers in this. Fisher (1922) even included the phrase "the purchasing power of money" in the title of his landmark book on the measurement of price levels, while Wicksell (1836 [1898]) or, more recently, Issing (2003) and Simon-Wren Lewis (2011) also use this phrase, Wicksell by the way tentatively including 'house prices' in his idea of the CPI (see especially chapter 2).⁸

Price indices are however explicitly designed to estimate the purchasing power of specific kinds nominal expenditure, not the purchasing power of money, as every manual on the estimation of price indices shows.⁹ Above, we've seen that different price indices can show different developments which even might lead to a situation where, in one situation (consumption) the so called 'purchasing power' of money *decreases* while, at the same time but in another situation (investments) the 'purchasing power' of money *increases*. We use money (expressed in units of account but also a store of value) as a tool to spend

⁷ Christoffel, Coene and Warner distinguish between three type of goods (a consumer good, an investment good and a government consumption good) with three different prices but their 'monetary authority' targets consumer price inflation which, as they assume a somewhat complicated but in the end fixed relation between the price of the consumer and the investment good, also sets the price of the investment and the government consumption good. Aside: they mistake government intermediate expenditure for government consumption.

⁸ Interestingly, Mises (1912) states, using the concept of class in a surprisingly Marxist sense, the price level is not just a function of trade and the amount of money but of the class structure of society, too.

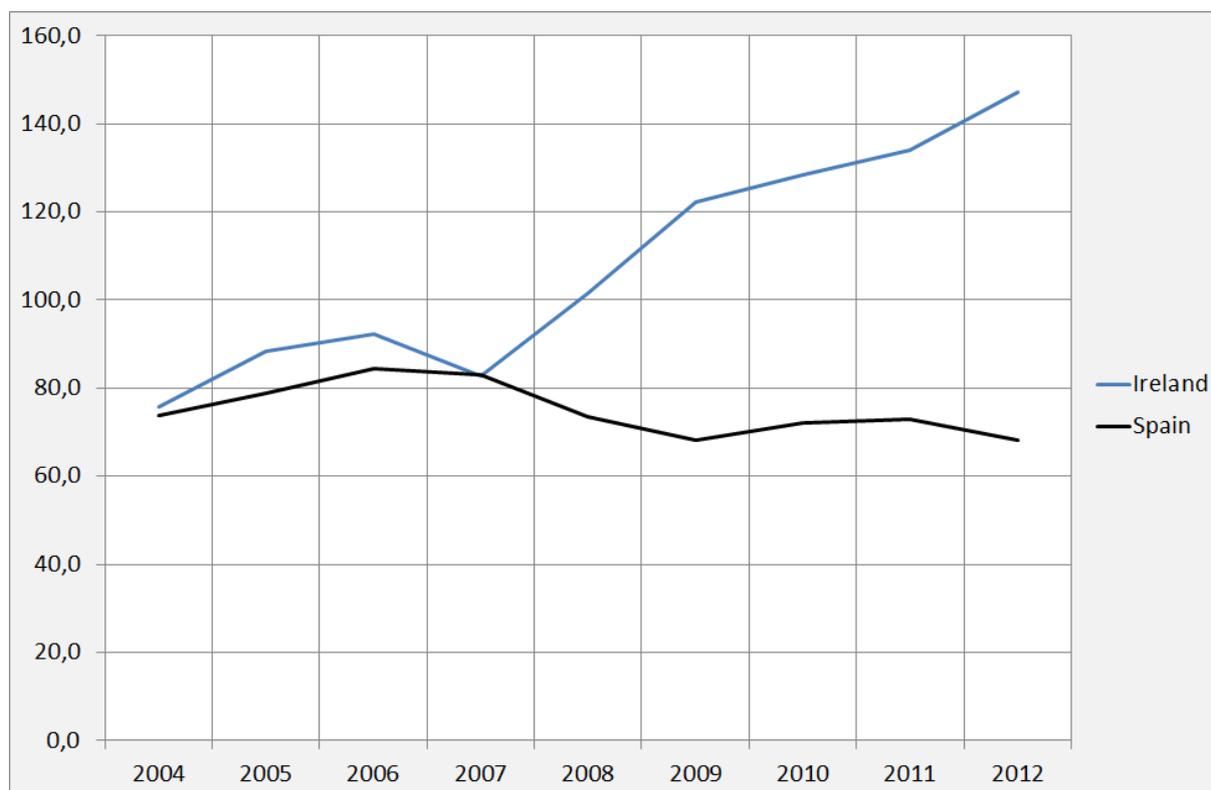
⁹ The very first serious attempt to measure the price level (Fleetwood, 1707) already tried to estimate the purchasing power of a fixed *income* (a student stipend) instead of the purchasing power of money.

the monetary value of our income (also largely expressed in the unit of accounts, but only a very limited store of value). Money and income are not the same thing. (About the habit of economists to mix up the unit of measurement with the object of measurement see also Fullbrook, 2014). Price levels are about the purchasing power of income, not about the purchasing power of money. The composition of spending is dependent on the purchasing power of income while the same composition is used to establish the weights used to calculate the price level. Or, to be more precise and to restrict us to CPI, the spending power of households is not only based upon income but also on their ability to borrow – an idea which is fully consistent with the estimation of consumer expenditure in the national accounts and the stock-flow consistent models of somebody like Wayne Godley. Which means that monetary stability is not just about stable prices –but also about stable spending power.

6. Money and debt

The introduction of borrowing and spending power into the discussion brings us to ‘financial stability’. Financial stability is defined by the ECB (2012B), as (in the very first sentences of this publication): “*a condition in which the financial system – which comprises financial intermediaries, markets and market infrastructures – is capable of withstanding shocks and the unravelling of financial imbalances. This mitigates the likelihood of disruptions in the financial intermediation process that are severe enough to significantly impair the allocation of savings to profitable investment opportunities*”, a definition which more or less excludes consumption and mortgage borrowing and denies the endogenous character of money. Let us therefore define financial stability simply as the ability of households and companies to pay back their debts, without compromising existing consumption and investment patterns. For a time it was assumed by, at the time, leading economists that CPI targeting would ensure financial stability (Greenspan, 2007; Lucas 2007). But it didn’t. Claudio Borio, a leading monetary historian, states that no regime – Gold Standard, Bretton Woods, inflation targeting - has ever achieved the combination of monetary and financial stability for a prolonged period of time (Borio, 2014). Which, as he suggests, might be due to ‘deep links’ between the two kinds of stability, without however specifying the nature of the links between money as a means of exchange and monetary debts. Our task here is to investigate if there are indeed ‘deep links’ between CPI targeting and financial (in)stability. I will refrain here from Minskyan behavioural ideas but will stress the nature of our money, which I will try to do in a down to earth way, sticking as closely as possible to the official definitions of money as well as our everyday experiences. Before doing this I will have to state a little about the nature of money in a market society. Money is famously defined as a combination of ‘means of exchange, unit of account and store of value’. For an analysis of monetary as well as financial stability this definition is useful – but also woefully incomplete. Money – at least the deposit money issued by money creating banks – finds its origin in the issuing of debt. Which means that almost all money we use for exchange has a debt counterpart. The definition above is applicable to many kinds of money, most of the time it is however only used to describe the official state moneys, like dollars or euros. Next to these state backed kinds of money other more private kinds of money however exist, too, and not in measly amounts. The quarterly results of Google show that, on March 31, 2013, the amount of ‘receivables’ on its balance sheet was about \$7.6 billion or about 50 percent of quarterly turnover. These receivables clearly are a kind of money: a legal means of payment, a store of value (the very reason why they are included in the balance sheet) and expressed using a clear unit of account. And they have a debt counterpart on the balance sheets of the buyers: \$7.6 billion of ‘payables’. Note that I do not use the words ‘means of exchange’ here but ‘means of payment’. The term ‘means of exchange’ suggests the existence of something before the transaction. But before the transaction there was no value. Before the transactions there was nothing but the reputation of the buyer – but after the transactions, consisting of the issuing of debt by the buyer and the acceptance of this debt by the seller, there is \$7.6 billion of value. Figure 5 shows the amount of ‘receivables’ money in Ireland and Spain, the increase of this kind of money to a full 138 percent of GDP in Ireland no doubt mitigated the consequences of the disastrous decline of the amount of deposit money on Irish bank accounts after 2008.

Figure 5. 'Receivables' as a % of GDP, non-consolidated data, Ireland and Spain



Source: Eurostat, Financial balance sheets [nasa_f_bs]

But the main point here is that the amount of this kind of private money was above 100 percent of GDP. The Eurostat statistics show very large differences between countries: in Switzerland it is only about 8% of GDP, which might however be related to Swiss 'Wir-geld', a kind of receivables-backed parallel money.¹⁰ The transactions mentioned above are not too different from the use of a credit card, though in the case of a credit card a third party, a money creating bank, is involved which means that the issuing of debt by the buyer does not create less liquid 'receivables' money but highly liquid 'deposit money'. As Minsky stated 'Every economic unit can create money – the point is to get it accepted'.¹¹ And people create (and destroy) money all the time – a process often directly related to economic transactions in the GDP economy, of which consumer expenditure (and hence the consumer price level) is such an important component. Value does not lead to exchange; exchange leads to value. Santarosa (2012) gives the example of seventeenth and eighteenth century Bills of Exchange, which started to function as paper money once the 'joint liability rule' was introduced (everybody who used them to pay was ultimately liable for the entire amount).

Central banks are however not occupied too much with these 'private moneys' but with the official state money, i.e. chartal money and 'Monetary Financial Institutions'-bank (MFI-bank) deposit money, the latter being defined as bank credits which are backed by a pledge of a borrower to pay back the bank using the same credits, as well as a state guarantee of a 1:1 exchange rate with chartal state money. According to the statistical definitions of the ECB – and this is consistent with practices of central banks all over the globe – the change in the amount of MFI and state money is defined as (ECB 2012A, p. 147):

¹⁰ http://en.wikipedia.org/wiki/WIR_Bank

¹¹ Modern stamps, which even have their own unit of account, are a less important but clear example.

$\Delta M3 \equiv (\text{Current and capital account balance}) - (\text{External financial transactions of resident non-MFI's}) + (\Delta \text{ credit to euro area residents}) - (\Delta \text{ longer-term financial liabilities}) + (\Delta \text{ other counterparts (net)})$

This is the same formula which, back in 1970, was already used by the Bundesbank (see the very clear graph in Bundesbank, 1970, p. 51). The crucial variable which links financial with monetary stability is " Δ credit". This shows the change in the amount of debt of households and companies (and, to a limited extent, governments). This increase can end up in the 'GDP-economy' via M3, the kind of money used for transactions', like chartal money and deposits on checking accounts and 'near checking accounts'. It can however also end up as 'longer-term financial liabilities', or longer term savings accounts. And M3 money can (with an increase in mortgage debt as a " Δ credit" counterpart) can also be used to purchase existing assets, like houses. Interestingly, Werner (2014) shows that an estimation of the velocity of money which takes account of these effects yields a much more stable 'V' than the standard estimation which, following Friedman (1956) using GDP and M3 or M2 (Werner, 2014). In the end, however, income created in the GDP economy has to be used to pay back the debts and a fundamental misalignment between income and debt can arise once credit or financial flows change course, increase or decrease – the present Eurozone situation of debt deflation being an example. People and companies use part of their income, in the shape of money (M3 or longer term financial liabilities) to pay down debts, which can lead to a situation of lower spending in the GDP-economy and output gaps as well as a lower amount of money. These output gaps will decrease the price level or at least lower the rate of inflation and wage increases. Which shows some of the 'deep links' between financial and monetary stability – as well as economic stability.

On a less technical level it is important to note that, during the last decades, the relative of the different economic sectors like the GDP-economy and the asset economy shifted. Recent (but long overdue) research has however shown that mortgage and housing related credit has, *since 1870*, become ever more important on the balance sheets of banks and MFI's, which, on a global scale, continues until the present day (Jorda, Schularik and Taylor, 2014; Zu, 2014). When mortgages are related to new construction there is a clear relation to the GDP-economy (though recent history and present developments in China teach us that construction is bubble-prone).¹² In the case of existing houses this borrowing – which, in the case of MFI-borrowing for a new house, leads to an equally sized increase in the amount of 'broad' deposit money – leads to debts and monetary assets with no direct counterpart in the income generating part of the economy. As recent developments have shown, this can easily lead to financial as well as monetary instability. Focusing exclusively on a low and stable level of CPI inflation, as the ECB did, did not prevent this. And there are other examples. Think of the 'Volcker shock' of 1980-1981 with its high policy interest rates (up to 20%), which were meant to enhance 'monetary stability' in the US but also ushered a severe but relative short crisis in this country and also triggered, and to an extent caused, the even more severe financial and economic crisis in Latin America and the subsequent 'lost decade'. This financial crisis was of course also possible because of a fast increase in foreign debt, thanks to the recycling of 'petro-dollars' - but that's exactly the point (Eichengreen, 2012). The very nature of our money enables monetary and financial instability and any kind of policy which only targets either financial or monetary stability is bound to fail – certainly when monetary stability is defined in a narrow sense as low and stable CPI inflation.

¹² We should not be too negative about price increases of houses. In the long run, quality of houses (size, comfort, insulation, kitchens, showers, toilets) has increased. The increased importance of houses is also caused by a, largely demographically induced, lower occupation rate of houses.

7. Summary and discussion

Price levels are weighted averages (and economics is to some extent the science of complicated weighted averages). The weights – including the differentiation between consumer prices, investment prices, house prices and whatever – mirror institutional, political, legal, economic, distributional and social differences in society. What we buy for a buck depends on these differences, and economic models, like the DSGE models, which define such differences away are unable to explain the development of price levels and the consequences of changes in them. It has to be repeated – it is bizarre that the ECB (a bank, if you didn't know already) uses a DSGE model which explicitly rules out the existence of money. But why do prices exist? According to Fieke van der Lecq (1996), in a market people agree on prices (crucially: before a transaction is made!) because reality is fundamentally uncertain, in the Keynesian 'We simply do not know' way. It's not a coincidence that DSGE and other Walrasian general equilibrium models which assume money and, by implication, monetary prices away have to assume perfect foresight to be able to do so. Market contracts - labour contracts, rent contracts, mortgage contracts, construction contracts, even the implicit contract of a price label in a supermarket – are fundamentally future oriented, contrary to the situation in DSGE models, where everything is certain in a stochastic way and where no money is needed. This means that, by definition, these contracts lead to short term and long term debts. We're hardly aware of many of these debts, but as this very moment many Greek and Spanish laborers are not receiving their wages and becoming painfully aware of this aspect of market contracts. We've also seen that such price contracts create monetary assets and liabilities, like receivables and payables, which can become rather liquid. In addition, only a limited amount of contracts are about consumer purchases while most money creating contracts and transactions are not about consumer purchases but about mortgages or business to business contracts. In an uncertain world money is used to get some certainty – which in this case consists of the fact that contracts which create debts use the same unit of account as the money which will redeem the debts. This is true regardless of what happens to the 'goods and services' price level. In that sense, the purchasing or debt redemption power of one unit of account is certain – by definition. It can extinguish one unit of debt, be it a mortgage debt or the wage-debt owed by an employer to an employee. The spending power of incomes, including the ability to obtain credit when needed, which we need to obtain the money to extinguish the debts, is not certain (see also Mason and Jayadev, 2012). Not even when CPI inflation is low and stable. In that sense, CPI inflation targeting is fundamentally misguided. 'Monetary stability' might better (or also) be defined as a situation in which the gross debt redemption power of incomes – profits, wages - is stable and companies and households are able to serve their debts (including 'payables' and 'wages due' and the like), rather than as low and stable CPI inflation.

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