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Article

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CESifo Forum

Provided in Cooperation with:

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Suggested Citation: Gnan, Ernest (2009) : Energy, Commodity and Food Price Volatility: What Policy Responses?, CESifo Forum, ISSN 2190-717X, ifo Institut für Wirtschaftsforschung an der Universität München, München, Vol. 10, Iss. 1, pp. 21-28

This Version is available at:

<https://hdl.handle.net/10419/166347>

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ENERGY, COMMODITY AND FOOD PRICE VOLATILITY: WHAT POLICY RESPONSES?

ERNEST GNAN*

Introduction: Energy and food price volatility as a source of macroeconomic instability

The oil price roughly doubled both in USD and in EUR terms between early-2007 and mid-2008 to record highs of around USD 140 or more than EUR 80. In tandem, raw material and food prices soared, leading the IMF to diagnose the “*broadest and most buoyant commodity price boom since the early 1970s*” (IMF 2008a). As a result, headline inflation surged considerably above common definitions or perceptions of price stability. This development prompted a debate about the “return of inflation” and the “end of the Great Moderation”. Also in the euro area, after having been at low levels of around 2 percent over the past decade, inflation rose above 3 percent (indeed to considerably higher levels in some individual euro area countries) in 2008. Most of the sudden increase in inflation was due to a sharp hike in energy, raw material and food prices. But also core inflation gradually nudged upwards, as higher energy prices filtered through the production chain and into wages.

The surge in inflation triggered a debate about appropriate policy responses. The policy measures considered and/or actually taken at the time should be seen against the knowledge about the

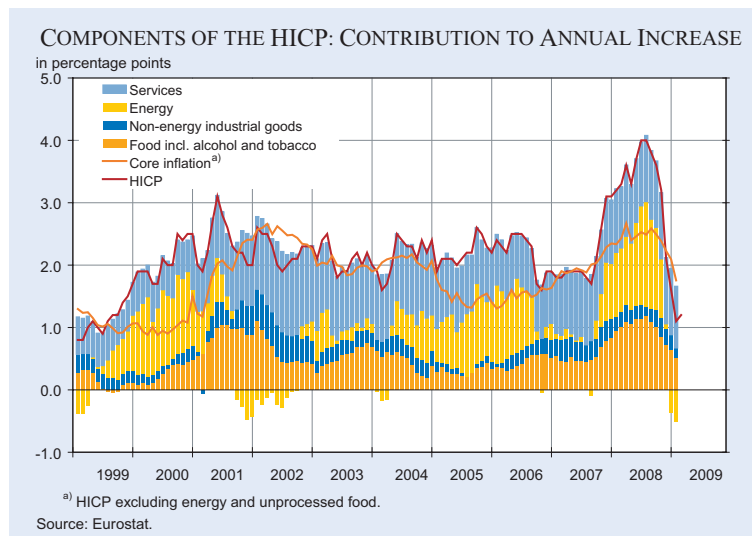
* Oesterreichische Nationalbank, Vienna. The views expressed in this article are those of the author alone and need not reflect the views of the Oesterreichische Nationalbank or the Eurosystem. I appreciate research assistance by Elisabeth Augustin, Wolfgang Harrer, Andreas Nader and Beate Resch as well as hints on relevant literature by Beat Weber and Jürgen Janger.

state of the economy, and expectations of the further path of growth and inflation, prevailing at the time:

- The financial “turbulences”, as they used to be called back in 2007 and early 2008, were considered to be limited to certain regions and financial market segments.
- Economic growth was expected to slow in response to the combination of the oil and food-price induced cost-push shock and some tightening of financing conditions due to increased risk premiums, but the slowdown was widely expected to be gradual, from very robust levels and with output close to or even above potential.
- As late as September 2008, oil, raw material and food prices were still generally expected to remain high over the medium run (for oil this meant a price level of around USD 100), as a result of continuing robust world demand, limited short-term supply responses and, in the case of oil, a growing awareness of a nearing depletion of natural resources.
- Therefore, regarding inflation, there were serious worries of a more lasting rise, going beyond the mere level shift in the energy price component of the consumer price basket, for at least three reasons. *First*, increased oil prices were filtering through the production chain into non-energy industrial goods and energy-intensive services,



Figure 1



such as transport and tourism, thus generating “indirect inflation effects”. *Second*, there were increasing concerns about second-round inflationary effects through higher wage settlements, aimed at compensating workers for the energy-induced loss in purchasing power and also reflecting robust employment growth and low unemployment rates. *Third*, as a result and also because of media-induced high public awareness of the surge in headline inflation, some indicators of inflation expectations pointed to the risk of a “de-anchoring” of inflation expectations (see e.g. IMF 2008b).

- The media, the general public and the body politic in many EU countries were at the time highly concerned about adverse consequences of the inflation surge for workers’ and pensioners’ real income, particularly for the poor. Governments replied with anti-inflation programs, while public dissatisfaction with the Euro-system’s perceived failure to contain (headline) inflation was mounting.

Meanwhile, as part of the sharp deterioration of the world economic outlook, oil prices – and with some lag – other energy prices have returned to low levels of somewhat above USD 40 even more abruptly than they had risen. While this may in principle be regarded as a welcome positive supply shock for energy importing countries in the current economic downturn, it also poses problems in other areas: *first*, the sharp downward pressure may, combined with the cyclical downturn, temporarily lead to negative inflation rates by mid-2009 in a number of euro area countries, exacerbating fears of deflation in the midst of a deep recession, creating the risk of a “downward de-anchoring of inflation expectations”; *second*, the return of energy prices to fairly low levels may act as a drag on longer-term, structural measures against climate change and energy saving measures; *third*, energy exporting countries such as Russia need to readjust to the sudden loss of income, deepening the effects of the global economic crisis. So, it was not only the strong increase in energy, commodity and food prices that caused headaches for policy makers, but also their extreme volatility, both upwards and downwards.

Against this background, this article discusses policy measures taken in response to the recent oil and food price shocks. Section 2 sets the frame by proposing two alternative or complementary readings on the sources of the current economic crisis,

one focusing on a supply cost-pull shock story, another emphasising a global demand-triggered bubble which also extended to energy and commodity prices. Sections 3 and 4 analyse policy measures taken by central banks and EU governments to contain inflationary – and, more recently, disinflationary – pressures and/or to mitigate their consequences. Section 5 draws some tentative first conclusions.

Sources of the crisis: Cost-push shock or endogenous consequence of a global demand bubble?

There is a vivid ongoing debate about causes of the current economic crisis, reaching from too lax monetary policies over regulatory and incentive failures to globalisation, excessive financial market liberalisation and capitalism proper (to mention but a few). For the purpose of this article, two further aspects may be noteworthy. First, the current economic crisis may have been triggered or aggravated by the initial upward energy and food supply shock. Second, the ultimate causes of this supply shock may, however, in turn have been rooted deeper in a global overheating of aggregate demand.

Energy and commodity prices may have triggered the current crisis through a number of channels. *First*, the marked terms of trade deterioration in industrialized, oil and commodity-importing countries affected conditions for production and dampened private household purchasing power and demand, leading to a downward revision of economic prospects. *Second*, against the background of sharply rising headline inflation rates, signs of indirect price effects on other sectors of the economy and incipient second-round effects on wages, central banks had to tighten monetary policy in order to avoid wage-price spirals and an upward de-anchoring of inflation expectations. This contributed to, or accelerated, a bursting of various asset price bubbles which had been building up since the turn of the millennium. This reading of events is supported by the fact that the peak of price developments in various asset markets had been passed already before the start of the financial turbulences in mid-2007.

So, as is argued here, the oil and commodity price shock may – directly through the supply shock and indirectly through the induced hikes in policy interest rates – have triggered the bursting of various bubbles and the current recession. But what caused

the hike in oil and raw material prices in the first place? Three basic factors are generally discussed in this context: supply, demand and price distortions due to speculation in commodity markets.

On the *supply* side, the slow response of production capacities, especially for oil, be it for technical reasons, be it for uncertainty about the profitability of such investments, resulted in a steep supply curve, making prices highly sensitive to changes in demand.¹

Against the background of inelastic supply, the *second* explanatory factor, demand, seems thus to have played a crucial role for price fluctuations. Energy consumption is closely correlated with economic growth. Both, the strong catching up of emerging market economies as well as the robust growth in the industrialised world, contributed to the surge in world energy prices. The move towards bio-fuel acted as a spill-over channel from energy to food prices, but other factors such as changes in eating habits and a rising world population played a role as well in the surge in agricultural prices. With the benefit of hindsight, at least part of the vigorous world growth performance over the past years was a reflection of credit-led overheating that was triggered by low risk-free interest rates and an under-pricing of risk (see e.g. BIS 2008). The view of oil price shocks being the endogenous result of overly expansionary macroeconomic policies was already raised for the first and second oil price shocks of 1973–74 and 1979–80 by Barsky and Kilian (2001).

This leads to the third factor, *speculation*. Despite widespread public allegations that commodity prices were substantially driven by speculation, empirical econometric research only found rather limited evidence that the financialization of commodity markets may have distorted spot prices (see e.g. European Commission 2008; IMF 2008b; Heath 2008). Interestingly, this is at odds with market practitioners' own assessment of market dynamics (see e.g. Gnan and Gudmundsson 2008). Furthermore, even if commodity prices had not been driven by "market dynamics" in a narrow sense, this need not rule out that a global, demand-driven bubble economy may – through expectations on the future path of the world economy – also have driven commodity prices. In other words, for a commodity price bubble

to develop there is no need for underlying commodity futures markets to have malfunctioned.

The sharp decline in current and expected world GDP growth setting in after the Lehman Brothers crisis in September 2008 was accompanied by an abrupt reversal in world oil and energy prices. The bursting of the "energy bubble" in principle constitutes a positive supply shock for energy importing countries. However, as the economic outlook has meanwhile deteriorated sharply with no recovery in sight in the short term, lower commodity prices may provide little stimulus for investment and consumption, primarily contributing to an increase in private savings. Instead, the commodity-price driven sharp fall in inflation may in the current circumstances be destabilising for expectations. For energy-exporting countries, in turn, the bursting of the energy bubble constitutes a sharp terms of trade deterioration, adding yet another adverse shock to the negative demand-side effects of the world economic downturn. Thus, sharp energy and commodity price fluctuations may not only have triggered the current crisis but may also aggravate its further process.

Monetary policy facing multiple adverse shocks and a rapidly changing inflation outlook

From the second half of 2007 onwards, central banks in industrialized countries faced an unpleasant combination of adverse shocks. *First*, rising energy and food prices boosted headline inflation considerably above declared inflation targets or definitions of price stability. Central banks were not so much worried by a temporary rise in headline inflation (as evidenced e.g. by the Eurosystem's medium-term focus in the definition of price stability) but by actual or possible indirect and second round effects as well as effects on inflation expectations.

Second, the financial turbulences which started in mid-2007, required exceptional measures in terms of liquidity provision to the banking and financial system. In the Eurosystem, the "separation principle" emphasized the difference between "liquidity policy" and the "monetary stance" aimed at providing a level of interest rates adequate to maintain price stability. In line with this separation principle, the Eurosystem provided the banking system with the required central bank money to ensure its functioning, while the monetary stance was kept on hold for about a year (with the main refinancing rate at 4 per-

¹ In addition, given the geopolitical location of major parts of world oil resources, political uncertainties also repeatedly contributed to market nervousness and price volatility.

cent) between mid-2007 and mid-2008. In July 2008, the main refinancing rate was slightly tightened by 25 basis points to 4.25 percent – with the Lehman Brothers crisis still not in the picture – in view of mounting inflationary pressure.

The *third* shock came from aggregate demand. As was to be expected, the negative cost shock of energy, raw material and food prices dampened actual and expected growth – and potential growth. In addition, there was a sharp correction in asset (in particular stock and housing) prices worldwide, and restrictions on credit, sharply rising risk premiums and/or reduced availability of credit in a number of European countries dampened consumption through wealth effects and investment.

The unfolding of these various shocks is illustrated by dramatic forecast revisions since mid-2007. While in mid-2007 growth in the euro area was expected to hover around potential in 2008, the actual turnout has been below + 1 percent. Consensus Economics forecasts for 2009 swung by a full 4 percentage points within little more than a year, from + 2 percent in January 2008 to – 2 percent in February 2009, with further downward revisions in the pipeline. Due to various lags, *inter alia* in price formation of various non-oil energy sources such as natural gas, and in the broader transmission of energy and commodity prices in the pricing chain, the cyclical downturn initially brought little relief on the inflation front. On the contrary, inflation remained at high levels well

into the autumn of 2008. Only the sharp fall in energy prices, gathering pace in late 2008, finally pushed inflation rates abruptly downwards.

The current prospects for inflation are in a way a mirror image of developments a year ago. This time, a supply shock depresses inflation sharply. Downward pressure from the demand side is for the time being more muted (for a discussion of flat Phillips curves – see e.g. Rumler et al. 2008; Gnan et al. 2006). This is reflected in core inflation moving down more smoothly.

Against this complex – and extremely rapidly changing – background, central banks worldwide had to switch priorities from initially containing inflationary pressures and inflation expectations (up to the first half of 2008), over providing liquidity to “frozen” money markets and fragile financial institutions (from mid-2007 onwards), towards safeguarding macroeconomic and financial system stability in an environment of rapidly falling growth and headline inflation, amidst the poor transmission of expansionary monetary impulses through credit markets.

It is interesting to note that energy and raw material prices, whose extreme surge initially posed a major challenge for monetary policy in containing inflation expectations, also in most recent months, due to their even more abrupt collapse, again probe central banks’ ability to guide expectations.

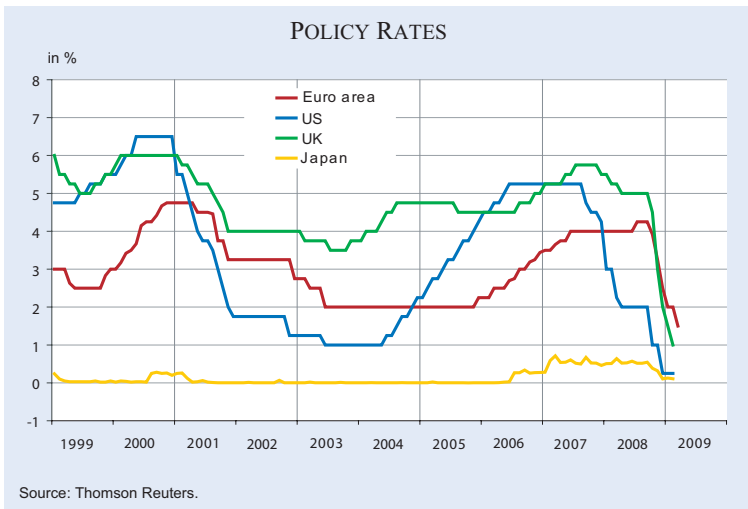
Table 1

Evolution of GDP and inflation forecasts over time

	GDP				Inflation			
	2007	2008	2009	2010	2007	2008	2009	2010
06.2007	2.7	2.3			2.0	2.0		
07.2007	2.7	2.3			2.0	2.0		
08.2007	2.7	2.3			2.0	2.0		
09.2007	2.6	2.2			2.0	2.0		
10.2007	2.6	2.0			2.0	2.0		
11.2007	2.6	2.0			2.0	2.1		
12.2007	2.6	1.9			2.1	2.3		
01.2008	2.6	1.8	2.0		2.1	2.4	1.9	
02.2008	2.6	1.6	1.9		2.1	2.5	2.0	
03.2008		1.5	1.8			2.7	2.0	
04.2008		1.5	1.7			2.9	2.1	
05.2008		1.5	1.6			3.1	2.1	
06.2008		1.7	1.4			3.3	2.3	
07.2008		1.6	1.2			3.6	2.4	
08.2008		1.5	1.1			3.6	2.5	
09.2008		1.3	0.9			3.5	2.4	
10.2008		1.2	0.5			3.4	2.2	
11.2008		1.0	-0.2			3.4	1.8	
12.2008		1.0	-0.9			3.3	1.4	
01.2009		0.9	-1.4	0.8		3.3	1.0	1.7
02.2009		0.8	-2.0	0.7		3.3	0.8	1.6

Source: Consensus Economics Inc.

Figure 2



Anti-inflation measures by governments: Addressing “causes” and “symptoms”

The public discussion about policy measures against the inflationary impact of commodity price increases focused on energy and food prices, since these two items are directly included in the consumer price basket and make up a substantial part of the basket. By contrast, other commodity prices, such as various ores or steel, attracted much less attention, despite equally large price movements. Measures taken by governments may be categorized along various (overlapping) dimensions:

- “market-based” (e.g. enhancing competition, abolition of previous supply restrictions etc.) versus “interventionist” (e.g. price regulation, tax reductions aimed at compensating for market price increases) measures;
- measures influencing the *causes* of price developments (e.g. energy supply and consumption, market malfunctioning) versus measures ameliorating their *consequences* (e.g. income subsidies, tax relief measures for certain sectors of the economy, freezing of public fees and administrative prices);
- measures aiming to influence *supply*, *demand*, or the *functioning of the market* in a certain product;
- measures targeted to bring *immediate relief* versus *long-term solutions*.

In the European Union, all of the above approaches were pursued in parallel, with both the Community and individual Member States playing active roles. The general thrust of the EU’s reply to high energy prices was in principle to allow the increase in the

relative price of energy and energy intensive products to show its effect in terms of a reallocation of resources. The need for efficient market adjustment was taken as yet another rationale for the Lisbon Agenda to be implemented vigorously. The energy price boom was also seen as yet another motivation to rapidly adopt measures to increase energy efficiency, which had been part of EU packages against climate change. Concrete measures at the EU level focused on, *first*, facilitating investment by households and industry

in energy efficiency and use of renewable energy sources and a more environment-friendly use of fossil fuels, thus curbing energy demand and reducing energy dependency; *second*, improving the functioning of energy markets, with the aim of improving market matching and curbing profit margins in the energy sector; third, stabilizing energy supply (through diversification among suppliers and energy transport routes) and making supply more responsive to energy demand, *inter alia* by promoting investment in exploration, production, refining capacity and alternative energy sources. The role of international “energy diplomacy” received prominence during the “gas crisis” (non-delivery of gas by Russia for two weeks) following a dispute between Russia and Ukraine in January 2009 (see Council of the European Communities 2008; European Commission 2008a; Euractiv 2009a and 2009b).

Regarding food prices, immediate responses at the EU level aimed, *first*, at increasing supply by reducing or abandoning supply restrictions emanating from the Common Agricultural Policy. The measures included in particular the sale of intervention stocks, the reduction of export refunds, the removal of the set-aside requirements for 2008, the increase in milk quotas, and the suspension of import duties on cereals. *Second*, market functioning was envisaged to be enhanced by a closer monitoring of competition in the retail sector by the European Commission. *Third*, regarding the demand for agricultural products, the role of first-generation bio-fuels was reconsidered, with future emphasis being shifted to second-generation bio-fuels made from by-products. *Finally*, jointly with other international organisations, measures were taken to alleviate the humani-

tarian consequences of high food prices and to foster food production in developing countries (see Council of the European Union 2008; European Commission 2008b).

Measures of individual EU Member States were in principle embedded in a general understanding that measures could be considered to alleviate the impact of higher oil, gas and food prices on the poorer strata of the population but that they should remain temporary and targeted. *“Distortionary fiscal and other policy interventions should be avoided as they prevent the necessary adjustment by economic agents”* (Council of the European Union 2008). More specifically, it was stated that support for the poor should be designed in a way as not to delay necessary structural adjustments towards reduced energy consumption. Income compensation should therefore be disconnected from energy consumption; direct income transfers should e.g. be preferred over fuel vouchers. Similarly, oil-related taxes should not be reduced, since this would send misleading signals to energy producers and markets that the public purse would offset higher energy prices. Competition in the oil producing, processing and distribution industry should be enhanced. Taxes and subsidies as well as R&D policies should be geared towards a more efficient use of energy and the exploration and use of renewable sources of energy (see European Commission 2008a; Brook et al 2004; IMF 2008a).

In practice, EU Member States took a broad range of measures aimed at absorbing some of the negative income impact on (particularly but not exclusively poorer) households, and to help specific economic sectors. It is not possible to give a detailed account of the various measures in individual EU countries here. A rough overview, however, yields the following picture. Several countries reduced excise duties or VAT on energy or food. Almost all countries adopted measures to support vulnerable households. Several Member States adopted measures to help specific sectors. Only a small minority of countries seem to have taken no measures at all. So, in sum, the conclusion is that the “strict” principles outlined above were not fully adhered to in practice. Measures at the national level had a focus on supporting household income, be it through tax reductions or by means of various forms of income subsidies. Admittedly, some of the measures marketed under the label of “anti-inflation packages” may have had different motivations. Still, the fact that

most member countries found it necessary and appropriate to take steps against the consequences of higher inflation illustrates how serious the inflation threat was considered at the time the measures were taken.

Conclusions: Using the crisis as a motivation for longer-term reforms

The commodity and energy price boom between 2007 and 2008 represented a major supply cost shock to the world economy (which may, in turn, as has been argued here, have been the endogenous result of a global demand bubble). The resulting strong increase in inflation rates prompted central banks to tighten monetary policies, given the risk of a de-anchoring of inflation expectations and second-round effects. Governments took multiple measures, both of a structural nature in order to rebalance supply and demand for commodities and to improve the functioning of commodity markets, and measures aiming to alleviate short-term adjustment problems for people or sectors affected most.

The unexpectedly large and rapid global economic downturn since autumn 2008 has sharply altered policy priorities. Commodity prices collapsed even faster than they had previously risen, bringing headline inflation to very low levels, with the prospect of – temporarily – negative headline inflation rates in many countries around mid-2009. Central banks worldwide have responded with unprecedented cuts in official rates, accompanied by “non-standard” measures aimed at countering credit constraints and mounting risk premiums.

Governments responded with large banking support and economic stimulus packages. Interestingly, many of the previous government measures aimed at countering the surge in food and energy prices or alleviating their consequences, now – more by chance than by design – turn out to fit also in the current global recession. Both the demand-side measures such as income subsidies for the poor and specific sectors most affected by the price surges, and the supply-side oriented measures involving public and private investments in energy conservation and the development of alternative sources of energy now turn out to form useful elements of larger expansionary fiscal programs. As a result, governments did not have to rescind any of these measures but rather can build on them now.

The positive supply shock from falling commodity and energy prices, while in principle favourable in the current economic situation, may be less beneficial than the previous price increase had been detrimental, since the effects from oil price shocks are not symmetrical for price increases and decreases. Well-known reasons include “*adjustment costs associated with sectoral reallocations, the implications of uncertainties for spending on consumer durables and investment, and nominal wage rigidities*” (see Schneider 2004). In addition, in the current situation of a sharp drop in aggregate demand and confidence, the expansionary effect on both production and income from lower prices may affect spending behaviour less than under normal circumstances. Moreover, the commodity and energy price-induced sharp decline of inflation may trigger perceptions of deflation, with various negative connotations attached. It will be important for central banks to explain the sources of the sharp decline in inflation as being primarily driven by energy costs and less by output gaps.

What lessons can be learnt? *First*, in a globalised economy, the usual distinction between supply shocks and demand phenomena may become blurred. As a result, standard textbook policy prescriptions may become inadequate. *Second*, global phenomena such as commodity price bubbles may need global policy responses. *Third*, if bubble phenomena also extend to commodity markets, monetary policy may in the future also need to pay closer attention to emerging imbalances in these markets; at the same time, much the same as for asset price bubbles, the limitations of what monetary policy can achieve should be borne in mind. *Fourth*, if – despite the evidence so far – the financialization of commodities markets were to be found to contribute to overshooting and volatility of prices, appropriate regulatory frameworks might be called for. *Fifth*, it is not so much high commodity prices as their excessive volatility which causes problems. Also, the recent sharp decline adds to global macroeconomic uncertainty and may destabilize expectations.

The current economic crisis should be taken as an opportunity to look beyond immediate emergency financial sector and economic stimulus packages: public expenditure programs and tax cuts should be embedded in a longer-term strategy that addresses structural issues including increasing energy efficiency and cutting carbon emissions (see e.g. the

European Commission’s Second Strategic Energy Review – European Commission 2008c). The currently rather low energy prices cannot be taken for granted over the medium and long run. It is wise to invest now into reducing Europe’s dependency on oil and gas, as a short-term spending measure, as a medium-term measure to reduce macroeconomic volatility, and as a long-term measure to enhance sustainability.

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