

Monetary policy and measures of inflation

Miguel Angel Pesce

1. Introduction

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. In spite of the differences that may arise from its definition, the concept of inflation proves to be quite understandable. Inflation is usually referred to as a process of sustained rise in the general level of prices. However, neither the meaning of sustained nor the general level of prices upon which inflation should be measured are usually explained. Irving Fisher holds that the general level of prices is the average price of all the transactions conducted within an economy over a certain period of time, regardless of the goods and services involved, namely: consumer goods or capital goods, inputs or products, intermediate or final goods, real or financial exchanges, domestic or overseas purchases. In this sense, therefore, a broad concept of “inflation” is more comparable to the gross value of production deflator than the consumer price index (CPI).

As with its definition, the best way of measuring inflation is not obvious, particularly if we focus on the different ways in which we may use the outcomes obtained. This is important in terms of guiding policy decisions and monitoring economic performance. Hence, choosing a particular index is critical for monetary policy since one of its main targets is to maintain the purchasing power of domestic money. Some countries have supplemented this objective with others such as the sustainability of other macro variables: the level of activity, of employment or of interest rates, *inter alia*.

As stated above, different price indices are intended to measure the impact of price increases upon people’s consumption capacity or, in terms more relevant to monetary policy, the changes in the purchasing power of money. The way the main groups of good and services are formed, the products included and the relative importance attached to each, when constructing an index, should account for the structure of household expenses in each country, which – according to these indices – show significant differences.

The CPI is usually used as the best indicator of the performance of retail prices or the purchasing power of money, due to the relevance that this kind of index gives to the total traded goods and services in the market within an economy. However, the CPI is not always deemed the most relevant indicator for monetary policy purposes. Moreover, from a technical point of view, it shows some weak points (Quah and Vahey (1995)).

It is worth mentioning that over recent years central banks have started to follow underlying inflation indices, core inflation, with the aim of analysing the development of medium-term trends underlying current price variation rather than temporary or seasonal fluctuations. In this sense, it has been confirmed that the instruments of monetary policy should be aimed solely at stabilising these indicators of underlying inflation. As from the introduction of this concept, core inflation, it is also necessary to find an appropriate measurement, which – as with the CPI – gives rise to other considerable difficulties and methodological disagreements.

Since mid-1980s, the development of the world economy has undergone major structural changes. These changes have had strong effects upon the role played by different variables over the inflation process. Broadly speaking, these changes resulted in an environment of strong real growth combined with low levels of inflation over the first years of the present decade. In the monetary field, the unprecedented growth of financial assets gave way to high levels of international liquidity together with low real interest rates. These structural changes

in the real, financial and monetary sectors have hindered the forecasting and measurement of inflation. In this scenario, in recent years the indicators used by monetary authorities to measure the compliance with their objectives in terms of inflation and those of economic policy have started to be questioned.

2. The factors of international economy that hinder the development of inflationary processes.

Over the last few years major changes in the international economy have occurred, exerting effects upon inflationary processes. For instance, we may mention a sustained increase in international trade, particularly related to the role played by India and China and other emerging economies that led to an increase in competitiveness within international markets, and a flood of new financial instruments within a framework of abundant global liquidity.

There has been a strong growth of international trade from the mid-1980s, as statistics show. This increase came with a continuous decrease in tariff and trade barriers, which on average decreased from 26% in 1986 to 8.8% in 2007. Table 1 shows that in many countries from different regions the levels of commercial protection fell sharply from the 1980s.

Focused on the United States, given its importance and share in the world economy, we may note that its trade openness indicator has grown strongly, spurred by the rise in imports over the last 25 years. Graph 1 shows how the United States' imports increased by the end of the 1980s. If we take into account the different components of these imports, we can see in Graph 2 that the rise in consumer goods is above average.

Combined with an increase in quantity flows, import price in real terms showed signs of stability. Graphs 3A, 3B and 3C show that the import prices of manufactured products from both industrialised countries and the rest of the world followed a relative stable path between 1990 and 2002; this behaviour is further followed by non-manufactured products. As a result, the implicit import price deflator, which showed an increase during the 1970s, stabilised from the early 1980s to the early 1990s, and subsequently recorded a slight drop up to 2002, as can be seen in Graph 4.

Although it is obvious that the trade issue alone is not enough to explain the development of the different indicators of inflation, it may well have exerted some "control" over them. Hence, the different indicators used to measure inflation within the United States have benefited from an increase in the share of imported goods in local supply and, as we can see, in the last 10 years headline inflation has surpassed that observed for durable goods, which can be partly explained by the higher level of trade mentioned.

Graph 5 shows that the evolution of goods prices, which is more subject to competitiveness and trade, was much more favourable than that of services. We also emphasise that the development of the headline indicator (all items) is consistent with that of energy (Graph 6). This is due to the fact that, in general, the share of energy items in the consumer basket of developed countries is higher than that of emerging and developing countries where food items have greater weight (and therefore in these countries CPI is more closely related to the changes in the prices of foodstuffs).

This last concept is of vital importance when economic authorities have to design, implement and monitor the performance of economic variables. Therefore, the structure of each economy should be considered at the time of designing an index. In this sense, the consumer basket of developed countries, which is taken as a basis for weighing purposes, is markedly asymmetrically compared to that of emerging countries.

As mentioned above, in developing countries the components of food and goods have a higher weight in the consumer basket, while in developed countries consumption expenditure

is more related to industrial and technological goods and services. Furthermore, there is an inverse relationship between per capita income and the share of the food component in the indices in several countries: when per capita income is lower, the weighting of the food component in the index grows. In developing countries a greater percentage of the population live in poverty and are therefore more affected by food price increases.

At the same time, in each economy the evolution of relative prices is influenced by several elasticities – price and income – as well as the country's trade situation (whether the country is a net exporter or importer of the product). Besides the mentioned difference in the composition of consumption baskets, emerging countries generally show higher values for demand elasticities than developed countries. Moreover, in recent years price increases for agricultural commodities have been accompanied by rises in the values of their respective demand elasticities; for example, the demand elasticity of inputs by foods increased from 0.3 to 0.36 between 2000 and 2008, maintaining an upward trend.

| | 1980–1999 | 2000–07 |
|--|------------------|----------------|
| Growth in food demand, annual rate | 1.02 | 1.35 |
| Growth in relative prices of food, annual rate | 0.12 | 1.60 |
| Presentation by Mehmet Yorukoglu, CMBT, August 2008, Brasilia, Brazil, data based on IMF WEO | | |

The above-mentioned structural changes in the international economy and the structural characteristics of the individual countries are the basis for divergent inflationary dynamics between different groups of countries. As the component of expenses for food is higher in emerging countries, there were mounting pressures in the general price level, as has been seen in recent years.

In this sense, the weights of items in the indices used for monitoring policy targets become very relevant considering the trend described above. Shocks to food prices in emerging countries, where contribution to inflation indices is four times higher than in the developed ones according to some studies, require different policy responses.

On the other hand, given the divergence with respect to headline indicators in recent years, the use of underlying inflation indices as policy objective clearly indicates that core indices would not be key indicators to assess the current situation of the economic cycle. It seems that they are not suitable indicators of purchasing power of an important group of people in various countries, since they exclude food and energy, which are a significant part of the consumption basket.

Finally, in a context of low inflation and high growth, there was an impressive rise in financial assets and, as mentioned, the liquidity surge that supported it was not followed by inflationary pressures. As shown in Graph 7, monetary aggregates, (taken as liquidity proxies in the United States), particularly M2 and M3, have shown a strong expansion in real terms since 1995, which did not reflect on inflation indices. However, as headline inflation remained stable and in comfortable levels, asset prices were persistently climbing (technologicals' first, mortgage and commodities related then followed, see Graph 8). This situation was worsening due to the weak framework of regulation and supervision of banking and capital markets that characterised the global economy in recent years.

In this context, if monetary policy objective is concentrated basically on a consumer inflation index that excludes particular items such as food and energy, it is possible that the effects of liquidity surge might arise somewhere else. It is important to remember that the nominal objective chosen to maintain stable, whatever it is, entails short- and long-run economic

aspects regarding activity and income distribution that are not explicitly acknowledged¹. It is important to emphasise that in a headline CPI, even without exclusions, some prices such as physical assets, land and dwellings, or the prices of financial assets like bonds and securities purchased by households, are generally left outside the scope of the index.

In this respect, the ongoing financial crisis shows some inconsistencies in so-called “single objective” monetary policies characterised by having price stability as a unique target. In an environment of growing liquidity in financial international markets, the disequilibrium in some financial asset markets was absent from the setting of monetary policy objectives, as they were just designed to keep a nominal variable trimmed, in terms of the available basket of goods and services, such as the consumer price index or a core inflation indicator. Sooner or later the adjustment process would take place over the real economy. Besides, from a political economy perspective, it is difficult to stand for the efficiency of indicators that set aside some components that have strong and direct impacts on the purchasing power of a large part of the population.

3. Monetary policy objectives and inflation indicators: Argentine experience

Based on the previous exposition, let us now turn to monetary policy objectives and inflation indicators for Argentina.

High macroeconomic instability and abrupt monetary regime changes over the last decades have made it more difficult to analyse the available historical data and to develop a reliable indicator for inflation trends.

It is worth noting that after the deep financial crisis of 2001/02, different price indices reveal divergent situations: some of them show core inflation running above headline inflation, while other indicators present the opposite situation. This could also arise from a peculiarity of the Argentinean case, where what we usually understand as a “core” CPI inflation index is more volatile than the headline (Graph 9). Analysing the methodology and figures, we could find an explanation for the situation that started after the end of 2001, as the prices of goods and services under public regulation have had few changes in the period, resulting in a more “stable” headline CPI as the share of regulated items on the indicators amounts to around 20% of the basket.

This fact takes us back to the issue of choosing the categories or types of expenditure, the goods and services to be included, as well as the weight of each item in the basket for the index. As mentioned, the composition of the index must reflect the consumption patterns of households, which might be significantly different across countries.

In the case of Argentina, the consumption basket is built from the National Households Expenditure Survey (Encuesta Nacional de Gastos de los Hogares, ENGH) undertaken by the Statistics and Census National Institute (INDEC), which provides information on both the goods and services purchased by families and the share of each item in total consumption expenditure.

Something important to take into account in the construction of price indices is the need for keeping up to date the information on household expenditure patterns, as well as goods and services availability given the usual changes in habits and tastes of the population. At the

¹ Even if real economy aspects are set aside, inflationary or deflationary environments impose distributional effects between population segments according to whether one is a creditor or a debtor.

same time, keeping an updated record of the outlets where prices are collected is also most important. All of these adjustments are even more relevant in a context of extreme relative prices changes, such as those seen in Argentina after leaving the convertibility regime in 2002 (Graphs 10 and 11).

Consumers usually react to changes in relative prices by reassigning expenditure depending on their price elasticity between goods and services. For instance, if the price of red meat is about to increase relative to that of poultry, demand for the latter might go up as it becomes relatively cheaper. This expenditure adjustment is absent in a Laspeyres-type CPI, the most used methodology for price indices, and red meat will be more strongly weighted against poultry, leading to an overstatement of inflation. Also, our experience during the 2002 crisis showed that people changed their consumption pattern significantly, particularly regarding food, housekeeping supplies and personal care products, replacing usually purchased branches by so-called “second branches”. However, if the price items with inelastic demand go up, the index will indeed show an accurate inflation figure as the share of those items in households’ total expenditure will certainly increase.

Considering the previous year, the base period for the current official CPI was changed to April 2008, taking as a reference the last ENGH for 2004/05, with a geographic scope of Buenos Aires city and the Greater Buenos Aires area. The previous index was based on the expenditure survey for the years 1996/97, and lacked the effects of the changes in consumer demand in the last 10 years, and particularly after the relative price adjustments undergone by the economy in the aftermath of the convertibility regime breakdown. This omission made a clear case for updating the base period, the basket composition, and the outlet sample.

As a result, the new CPI based on April 2008 takes into account the information from the last ENGH, and excludes some expenditure that was included in previous index as a means to make the current indicator more representative of middle and lower-income households

| CPI weights, April 2008 base period | |
|--|----------------|
| Major groups | Weights |
| General level | 100.00 |
| Food and beverages | 37.87 |
| Apparel | 7.33 |
| Housing | 12.14 |
| Household furnishing and operation | 4.89 |
| Medical care | 5.58 |
| Transport and communications | 16.56 |
| Recreation | 5.08 |
| Education | 4.26 |
| Other goods and services | 6.31 |
| Source: Indec | |

Regarding underlying inflation indicators intended to grasp the persistent and generalised effects of price evolution on the economy, which are usually prescribed as being appropriate for monetary policy analysis, INDEC has released different CPI categories in Argentina since 2004: seasonal, regulated and other components. The CPI other components is considered as a proxy for core inflation as it is stripped of seasonal items and items whose prices are linked to administrative decisions on taxes or tariffs.

Although core inflation is expected to be less volatile than headline inflation, the CPI other components behaves in more erratically than the CPI headline. This has to do with the exclusion of regulated items from the overall index, as those goods and services show discrete and unusual changes over time, and accounts for around 20% of the CPI. At the same time, seasonal products explain nearly 9% of the headline, adding little volatility to the CPI.

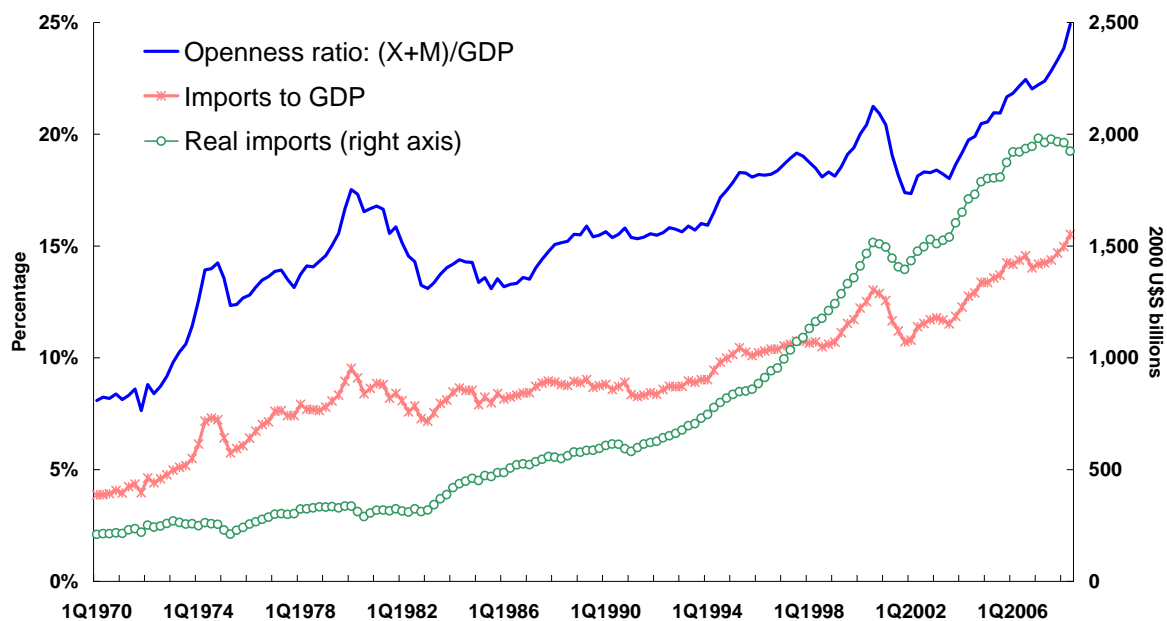
It is worth noting again that exclusion methodology might leave out valuable information regarding inflationary trend. The larger the share of excluded items from the CPI, the more underlying inflation could deviate from the figures reported by the core index. As an example, in the context of the recent oil price increases lasting for more than five years (giving rise to the question of whether it was a temporary shock or a permanent relative price adjustment), as well as those of foodstuffs, it is not clear that excluding those prices from the underlying inflation measures has been an accurate way to measure inflation. It is particularly important when discussing monetary policy actions to prevent second-round effects, and when food and energy inflation erodes households' purchasing power. As noted, the impact from energy and food items on the CPI depends on its weights in the basket, and one can see that increases in food prices have a more direct effect on the headline index and also an earlier pass-through to core inflation than in the past.

Within this scenario, where different kind of shocks have been hitting economies such as Argentina's in recent years, exclusion methodology for core inflation indices are not a definite gauge of the phase of the business cycle.

Another relevant issue for countries like Argentina, a net exporter of agricultural commodities, is the pass-through of the volatility on international quotes to local prices via changes in the terms of trade. This particular situation raises the question of the proper monetary and exchange rate policies for emerging economies in that context, mainly due to the impact on domestic consumption of this relative price adjustment.

Graph 1

USA: Real imports, openness ratio and imports to GDP

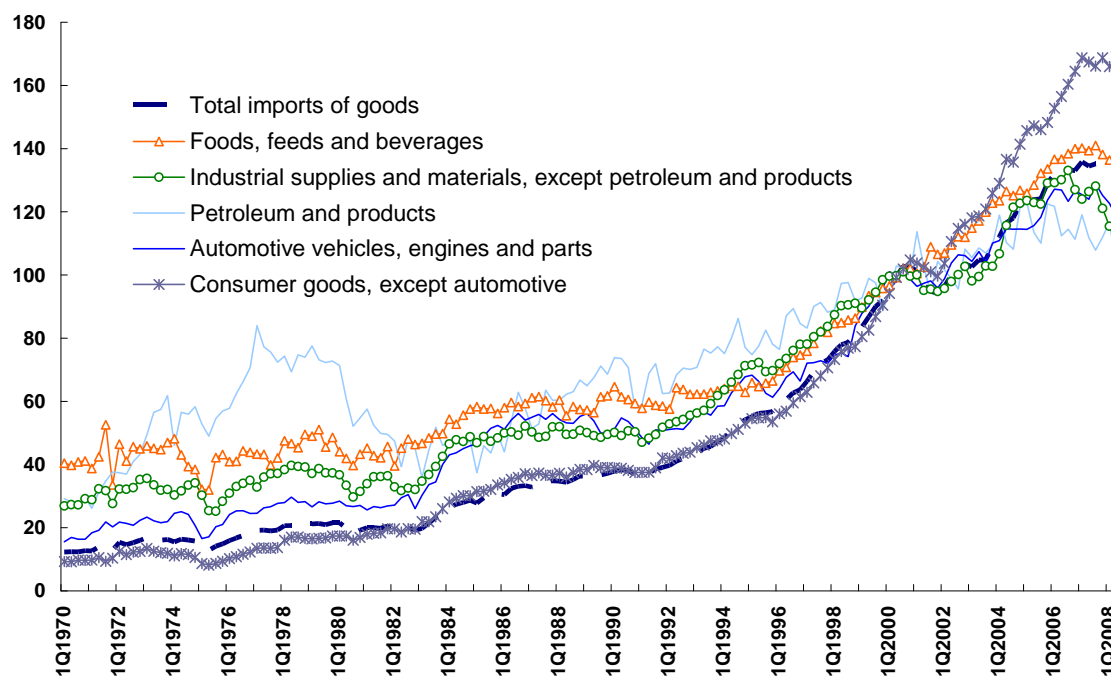


Source: Bureau of Economic Analysis

Graph 2

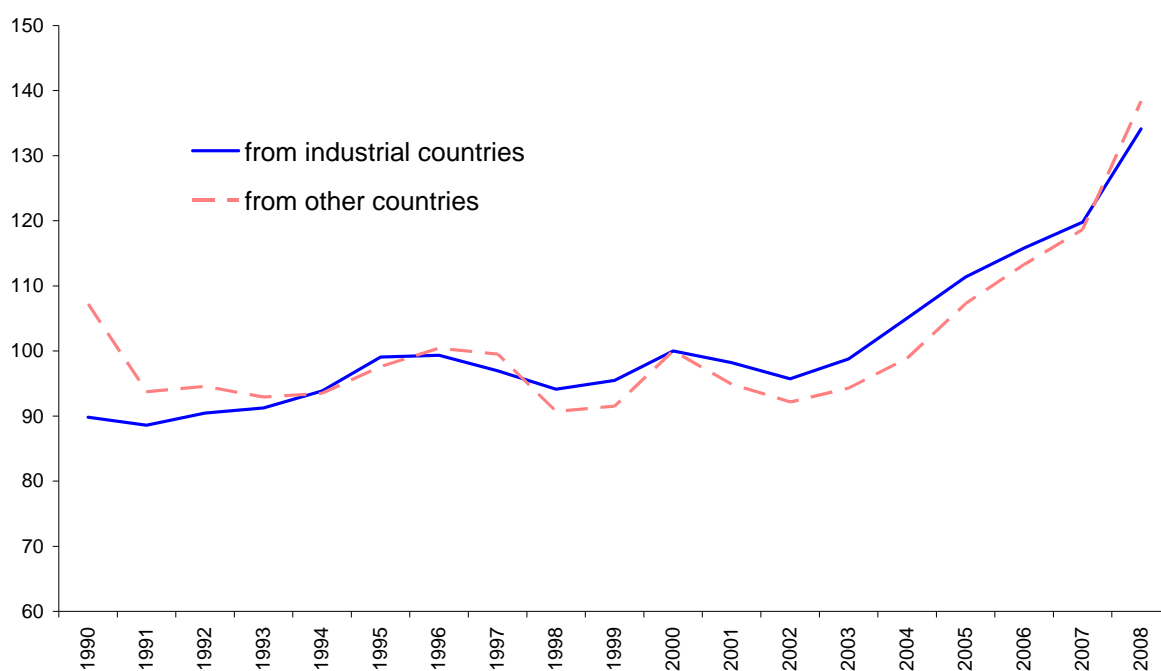
USA: Real imports by type of product

2000=100 index



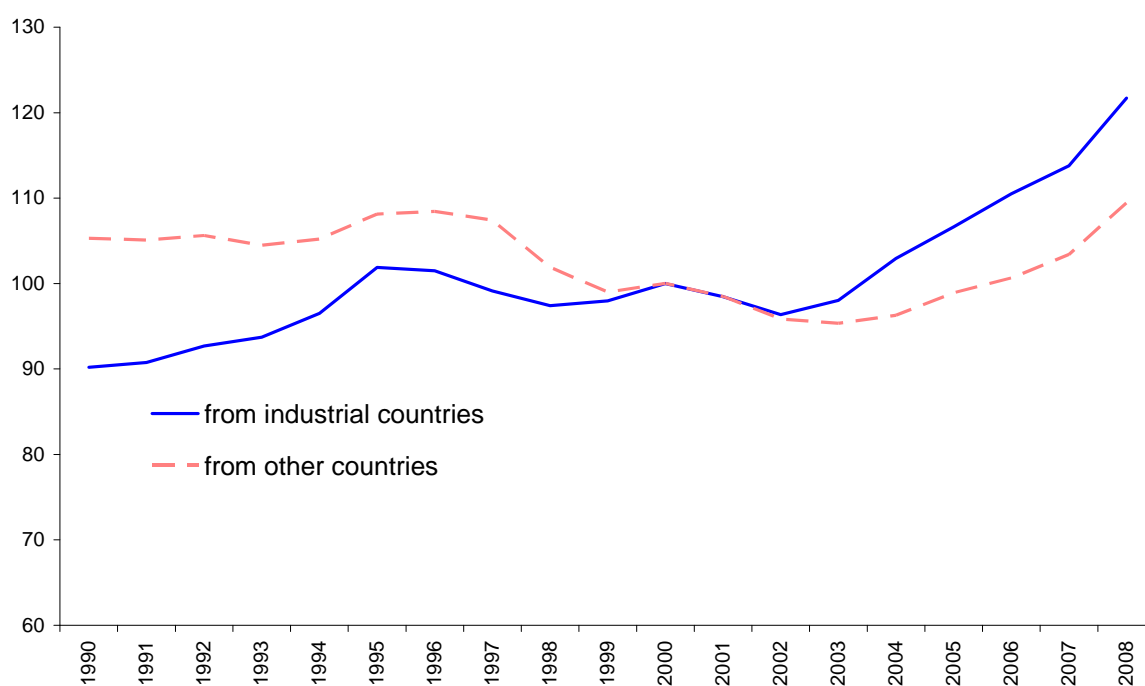
Source: Bureau of Economic Analysis

Graph 3.A
USA: Price of total imports
 2000=100 index



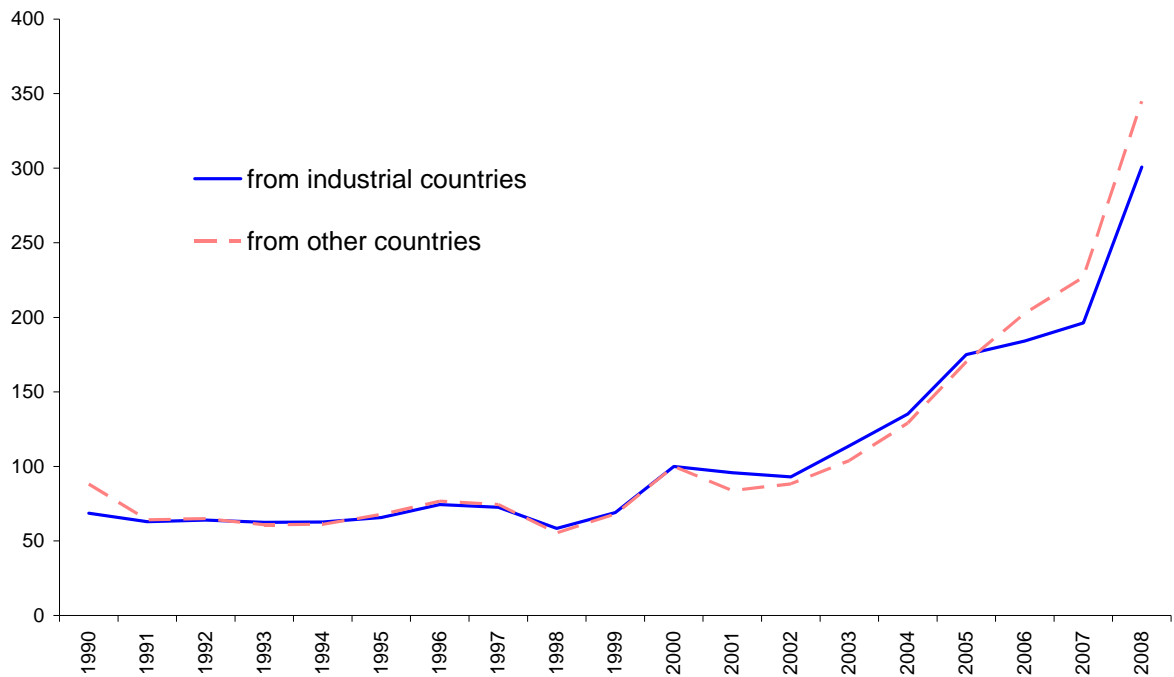
Source: Bureau of Labor Statistics

Graph 3.B
USA: Price of manufactured goods imports
 2000=100 index



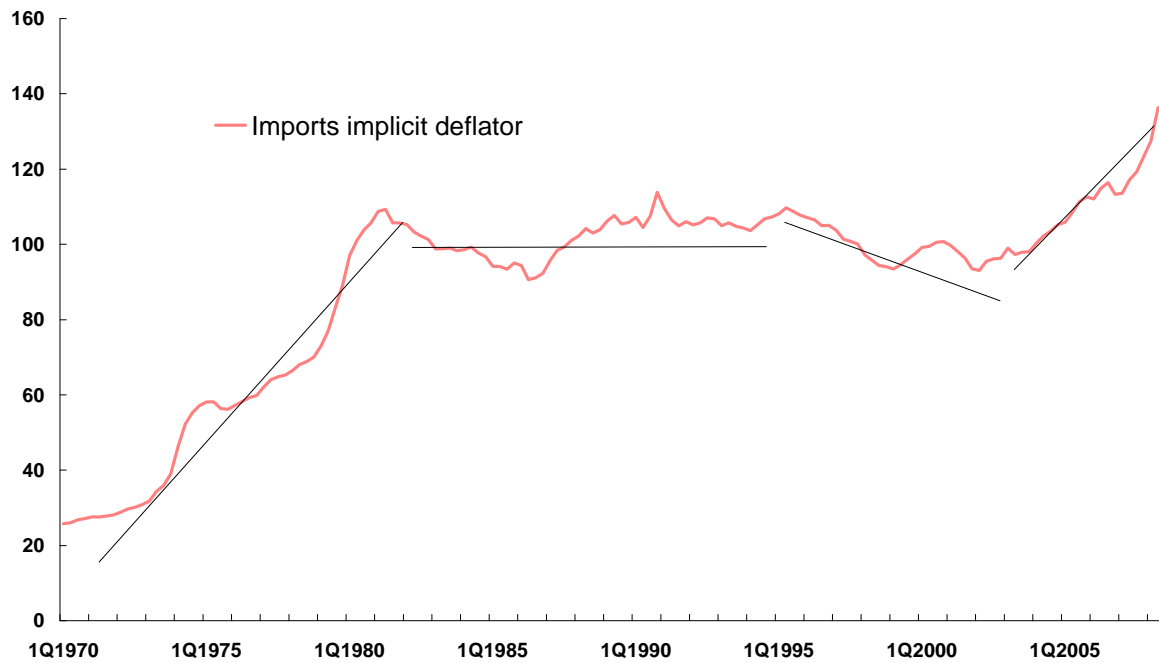
Source: Bureau of Labor Statistics

Graph 3.C
USA: Price of non-manufactured goods imports
 2000=100 index



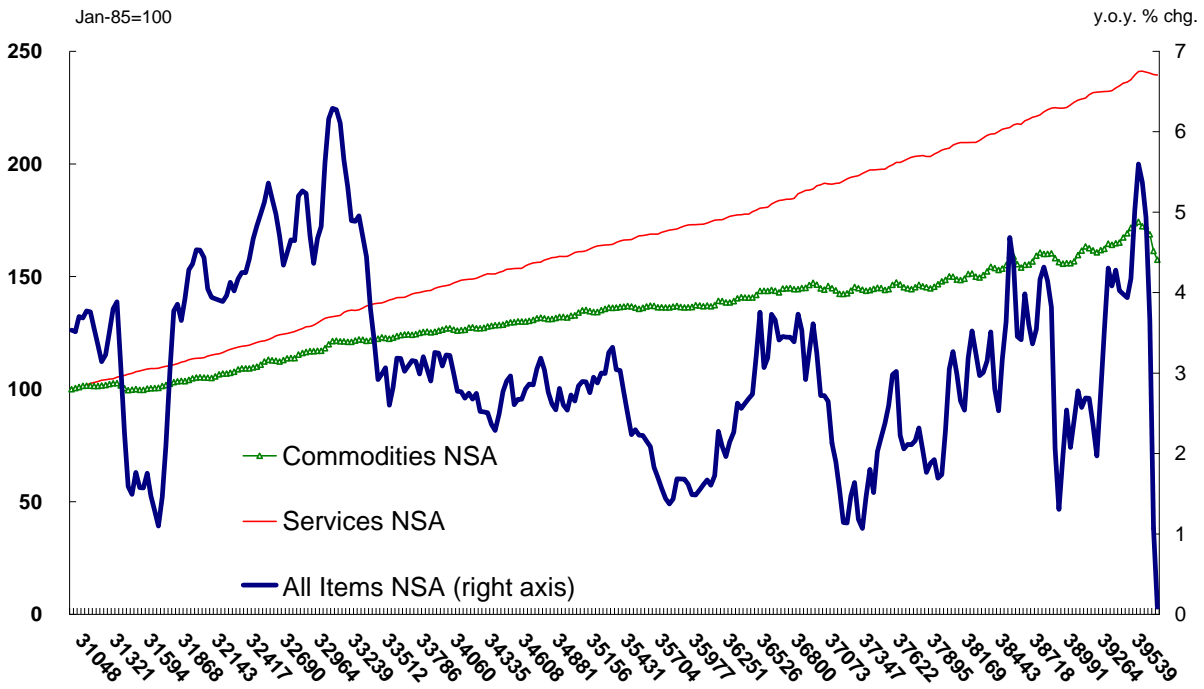
Source: Bureau of Labor Statistics

Graph 4
USA: Price of total imports
 2000=100 index



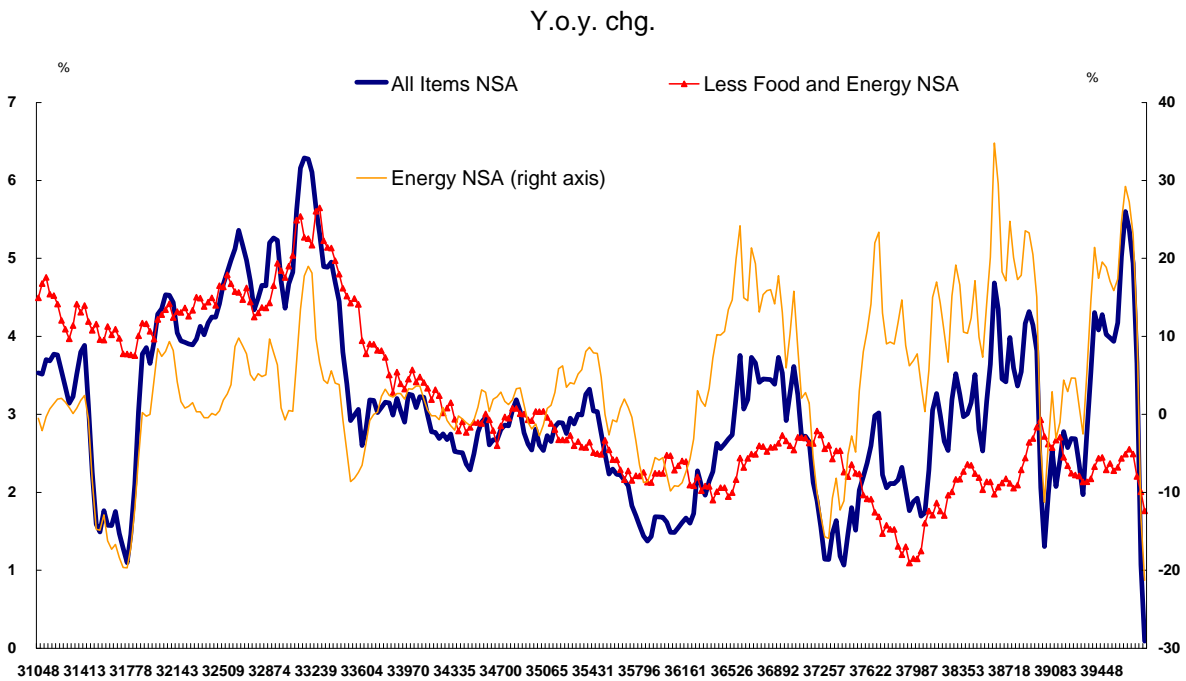
Source: Bureau of Economic Analysis

Graph 5
USA: CPI for all urban consumers



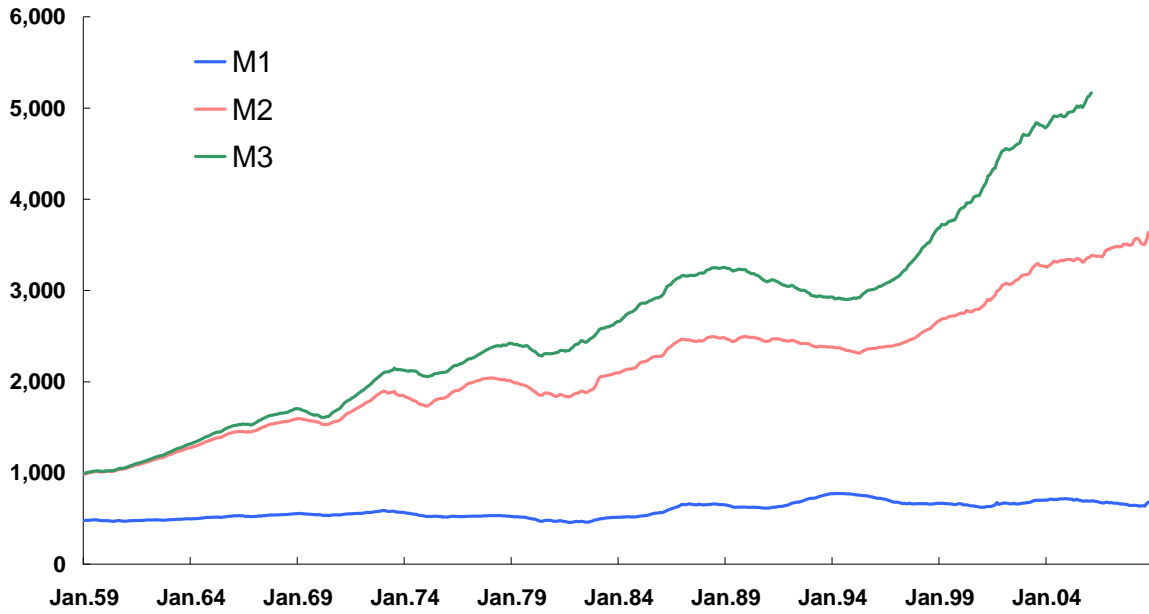
Source: BCRA from Bloomberg data

Graph 6
USA: CPI for all urban consumers

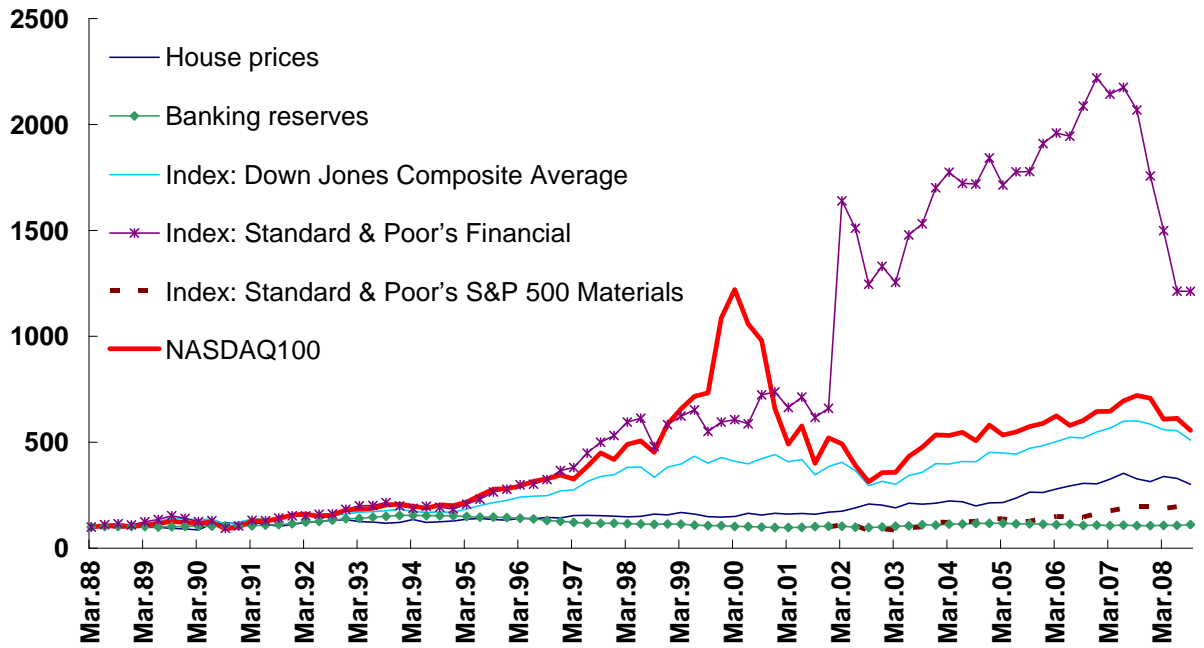


Source: BCRA from Bloomberg data

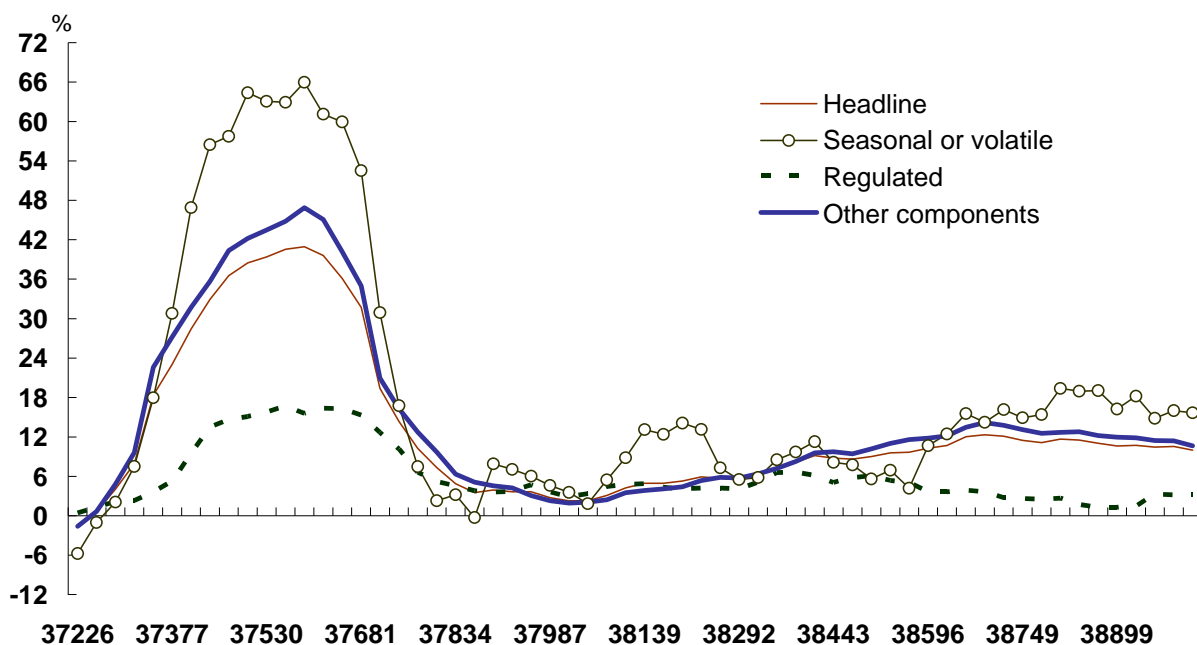
Graph 7
USA: real monetary aggregates
 M1, M2 and M3



Graph 8
Asset prices
 Index 1st quarter 1998=100

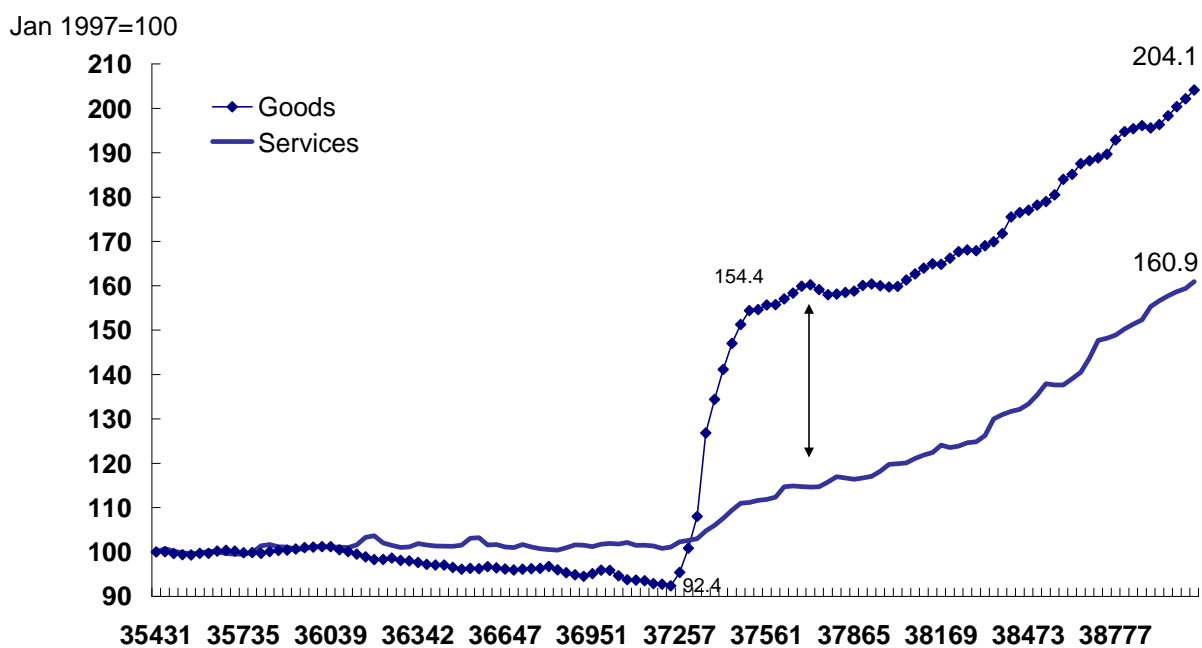


Graph 9
Greater Buenos Aires CPI. Components
 Y.o.y. change



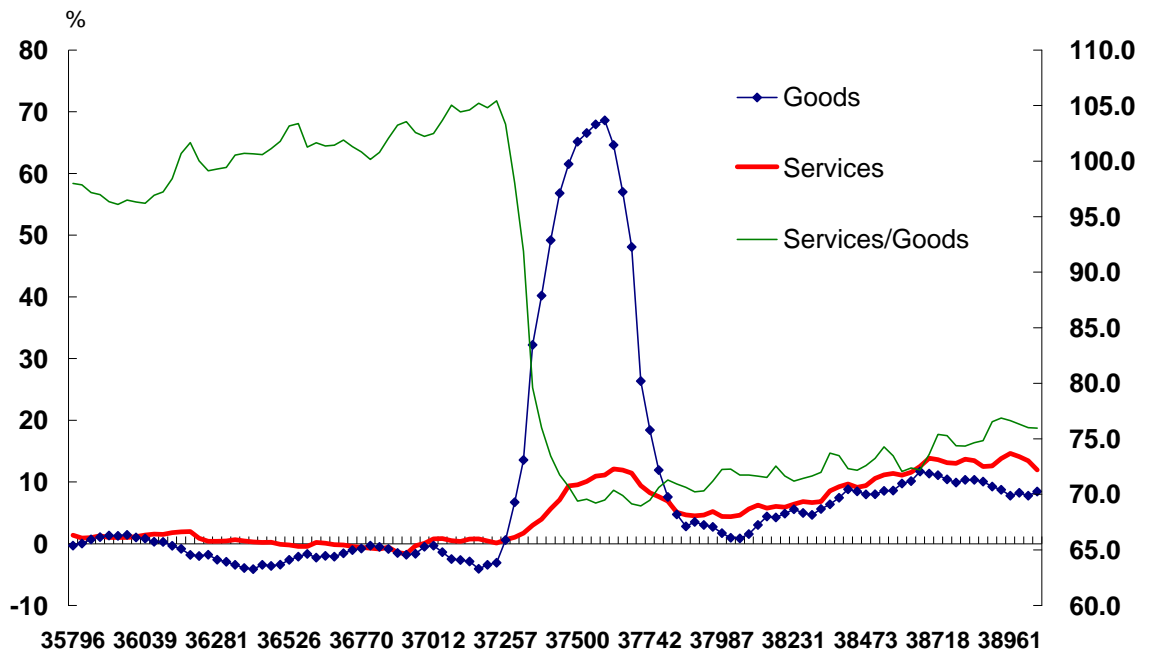
Source: INDEC

Graph 10
Greater Buenos Aires CPI. Goods and services
 Index Jan. 1997=100



Source: INDEC

Graph 11
Greater Buenos Aires CPI. Goods and services
 Y.o.y. change and ratio services/goods



Source: INDEC

Bibliography

Cecchetti, Stephen (2008): “Commodity prices, inflation and monetary policy”, presentation at the Central Bank of Argentina’s Money and Banking Seminar, September.

Fisher, Irving (1922): *The purchasing power of money*, MacMillan, New York.

Quah, Danny and Shaun Vahey (1995): “Measuring core inflation”, Bank of England working papers 31.

Viñals, José (2008): “Commodity prices, inflation and monetary policy”, presentation at the Central Bank of Argentina’s Money and Banking Seminar, September.

Ward, M and Y Dikhanov (2000): “What is inflation?” World Bank, March.

Yorukoglu, Mehmet (2008): “Economic convergence and decoupling in monetary policy”, Current Issues in Economic Governance Conference, April, Bilkent, Ankara