Inflation and labour markets: the view from Argentina¹

Recent developments in the global economy have once again brought to the fore the link between inflation and the labour market. In Argentina, labour market dynamics have long weighed on inflation, and both institutional and macroeconomic factors have added to inertia. In this note, we review recent inflation performance in Argentina – especially since the pandemic – and its relation to labour market conditions.

Recent inflation performance

The Argentine economy has shown high and persistent inflation for over a decade. Between 2018 and 2019, inflation rose significantly, reaching 53.8% year on year (yoy) in December 2019 (Graph 1). In 2020, the initial impact of the pandemic was a temporary drop in inflation. The initial drop in international commodity prices at the beginning of the pandemic and the strong domestic recession led to inflation dropping to 36.1% yoy by end-2020 (minus 17.7 percentage points compared with 2019).



Argentina headline and core inflation

Source: national institute of statistics (INDEC).

Sergio Woyecheszen, Central Bank of Argentina (BCRA). Note prepared for the BIS Emerging Markets Deputy Governors' meeting in Basel between 16 and 17 March 2023. All information included is current as of 12 January 2023. Inputs from the Economic Research area at BCRA are gratefully acknowledged. At the macroeconomic level, the pandemic response involved a significant increase in the fiscal deficit. With access to international markets curtailed and only a small domestic currency debt market, greater monetary financing of the Treasury was required. It also entailed a countercyclical domestic credit response (fostered by public policy) that was necessary to alleviate the effects of the crisis on families and companies. The resulting expansion of liquidity put pressure on the foreign exchange (FX) market and on exchange rate stability. Additionally, a set of factors largely linked to the pandemic explain rising inflation during 2021 – which was at a rate of 50.9% yoy as of end-2021. These factors include:

- hikes in the prices of services that had previously seen relative prices deteriorate significantly in 2020 due to the quarantine (for example restaurants, hotels, and cultural and recreational activities);
- an increase in international commodity prices and global inflation; and
- shortages of inputs due to international supply disruptions.

In 2021, the national government proposed reducing the fiscal deficit and its monetary financing, while the Central Bank of Argentina (BCRA) tightened monetary policy in response to inflation. However, high inflation inertia made it difficult to lower inflation. This inertia is due to backward-looking inflation expectations and the characteristics of wage negotiations, that make transitory shocks persist. Such persistence is due, to a large extent, to wage-price spirals (second-round effects).

Inflation increased sharply in the first quarter of 2022, reaching 6.7% month on month (mom) in March and 6.0% mom in April. Several exogenous factors contributed to this increase, over and above the pre-existing inertia:

- unfavourable domestic weather conditions (forest fires in the province of Corrientes that caused significant environmental damage affecting the supply of fruit and vegetables);
- a significant increase in the international prices of agricultural raw materials, energy and global manufacturing that accelerated after the start of the conflict in Ukraine;
- the war in Ukraine and economic sanctions imposed on Russia generated supply restrictions and major distress in global value chains, contributing to an increase in global inflation rates;
- increases in the prices of regulated goods and services (mainly the rates of public energy services) also had an impact, which – after a marked delay in their relative prices – put pressure on the general dynamics of prices; and
- the end of the freezing programmes and price agreements adopted by the national government that helped to temporarily contain inflation in the final months of 2021.

After a brief reduction of inflation in May and June 2022, domestic financial volatility increased from the beginning of July, while uncertainty about the exchange rate was rising and inflation expectations rose again, in the context of growing market concerns about the ability to fulfill commitments to the International Monetary Fund (IMF). Higher uncertainty was also largely due to the impact of the war in Ukraine on Argentina's fiscal and external accounts. The rise in international energy prices generated an expansion in spending by the national government on subsidies to

families and companies through the containment of public utilities tariffs for natural gas, electricity and public services such as transportation. The external accounts and the exchange market were under pressure during much of 2022 due to the need to allocate a significantly greater sum of dollars for energy imports. This set of factors explained a new acceleration in domestic prices. Inflation registered peaks of 7.4% and 7.0% mom in July and August 2022, respectively.

In 2022, Argentina agreed an extended fund facility with the IMF, through which the national government aimed to cut the fiscal deficit and its monetary financing, while the BCRA would maintain positive real interest rates – as it had already announced as part of its Objectives and Plans for that year. During 2022, fiscal and monetary policies were tightened. Additionally, the national government reached agreements with many private companies to slow the rise in prices for many products and thus to be in a position to reduce inflationary inertia. The first results are promising: monthly inflation gradually decreased to a level around 5% in November and December.

Labour market conditions

In this context of high and persistence inflation, the role of wages is worth assessing. We first describe recent labour market conditions and then present an econometric analysis of the main factors driving Argentina's inflation.

The general picture shows an overperforming labour market after the pandemic. During the third quarter of 2022, Argentina's employment rate, at 44.2% was close to the highest level reached during the new household survey series (starting in the second quarter of 2016). That high water mark was achieved in the second quarter of 2022. At the same time, for the fourth consecutive quarter, unemployment posted its lowest figures since the fourth quarter of 2015 (at approximately 7%). Meanwhile, the labour participation rate was also near its maximum peak, at 47.6% which was minus 0.4 percentage points compared with the second quarter of 2022, seasonally adjusted (Graph 2).

Nevertheless, in the last two years there has been an increase in low-quality labour market activity. The proportions of informal employees and self-employed people have risen, in contrast with decreasing levels of formal employment. The informal sector is, by definition, less regulated (Graph 3). This structural feature enabled a more dynamic recovery after the pandemic (following a significant decrease in the overall level of labour market activity). However, it also tends to imply lower wages and fewer benefits for workers, and may have caused a lower recovery of the average wage in the economy than might otherwise have been the case.





Source: national institute of statistics (INDEC).

Employment by category

In percent



Another structural feature of the labour market is strong unions and centralised negotiations that aim to protect the purchasing power of wages. Unions are independent of each other in their bargaining processes, but they tend to follow a similar trend.

The pandemic disruption led to different evolutions of real wages in formal and informal segments (Graph 4). In the last year, that difference seems to have vanished, with real wages at a lower level. The latest estimations point to a decrease in real wages of around 4% yoy in December 2022. In the face of this, unions have already negotiated important increases in wages for the first quarter of 2023. Average nominal wage increases are reaching more than 100% for 12-month settlements.



Real wages by type of employment

Due to Argentina's high-inflation regime, labour market tightness explains only part of the wage growth process. Inflation acceleration since the second quarter of 2022 impacted wage bargaining. There has been a shortening in the duration of wage contracts to hedge against volatile inflation expectations. On average, wage contracts have changed from a duration of one year to six months, in which there is a nominal wage increase every one and a half months. Also, higher inflation expectations triggered greater heterogeneity among wage agreements in terms of extensions and the percentages of increases.

That said, it is impossible to understand wage dynamics without looking at the evolution of the external sector and devaluation expectations. When inflation accelerates, wages begin to incorporate expectations about the trajectory of the exchange rate and inflation, where balance of payments dynamics plays a fundamental role.

In that regard, year 2021 was exceptional in two different ways. Firstly, the speed of the recovery was closely associated with the normalization in the marginal

propensity to consume, because of rapid vaccination and economic openness, coupled with an expansionary fiscal policy. Thus, the growth of the economy was possible without an increase in real wages. The second factor refers to additional exports caused by both price and quantity effects. Since output growth always increases demand for imports, this additional source of foreign exchange, allowed economic recovery without the need for a drastic jump in the exchange rate to correct the external imbalance.²

However, the picture in 2022 changed considerably. The data indicate that export quantities decreased by 2%, compensated partially by a jump in prices of about 16%. On the other hand, the war between Russia and Ukraine put pressure to energy's import prices, that grew by 16%. Moreover, strong GDP expansion of 5% caused an increase of import quantities of 12%. The combination of these effects, added to the 2021 current account surplus of almost USD 5 billion, a negative flow of USD 8 billion, worsening the prospects for international reserves accumulation and creating incentives to reverse the real exchange appreciation occurred during the pandemic.

The combination of tight labour markets, strong output growth and fragile external conditions contributed to progressively move the inflationary regime from a 3% monthly to a 6% during the second semester of 2022. In this context, workers tried, without success, to recover the losses in real wages experienced in the pandemic, but also, they raised the demands adjusting the claims to the new context of the accelerated crawling peg, high inflation and devaluation risk.

Despite high inflation, the government managed to avoid widespread indexation clauses in wage bargaining. However, there is anecdotal evidence of wage indexation for particular unions. During a brief period (2017–18) indexation clauses were applied in an inflation targeting programme. As the targeted objectives were not achieved, the use of these kinds of clauses was abandoned by both the unions and the government.

On the other hand, salaries set by the government, such as the minimum wage, have some influence on wage behaviour. They are useful as a threshold to guide private sector negotiations in terms of nominal expectations. Some social expenditure by the government is tied to the evolution of the minimum wage. The government set a, once and for all, supplementary "end of year bonus" for low wage formally employed workers.

Finally, there are no significant effects of cross-border or domestic migration in labour market and wage dynamics. Further, no long-lasting pandemic effects are observed that could have an impact on wage negotiations. Labour markets already seem to have normalised. The only significant change is the increase remote working, although that is only suitable for certain kinds of jobs.

² As early documented by Prebisch (1949), in economies with incomplete input output matrices, output growth causes an increase in imports, not only of consumption goods, but more importantly, of capital goods and inputs that cannot be domestically produced due to the lack of technical knowledge. Given the low-price elasticity of domestic exports, therefore, devaluations solve the external imbalance, but through their negative effect on output caused by inflation and the subsequent fall in real wages. This "technological dependency" is still a major problem in Argentina.

Inflation and labour markets: an econometric analysis

There are different channels through which wage dynamics influence inflation. These are related to the relative tightness of the labour market and to different institutional arrangements such as the existence of powerful trade unions or labour protection legislation that may influence workers' bargaining power.

The effect of wages on prices may be exerted either directly, as the source of the shock on prices, or indirectly, fueling inflation inertia. The latter occurs when the economy has powerful formal or informal mechanisms for adjusting nominal contracts to past inflation. This prevents the rate of inflation from falling (or from falling fast enough), even when the shock that generated the initial price rises has faded. The initial shock may be a currency devaluation or a rise in commodity prices, or energy prices as happened in 2022. Wage-price spirals, or *second-round effects*, make inflation persistent.

We analyse long- and short-run relationships between inflation and wages in Argentina between 2004 and 2022. The variables involved are the consumer price index in its core or underlying version, the nominal exchange rate, wages, activity, amount of money, the interest rate for deposits in domestic currency, international energy prices, international food prices and the foreign producer price index (for details, see the Annex).

In the long run, almost 80% of the behaviour of prices is associated with nominal wages, while the remaining 20% depends on the nominal exchange rate (see equation (1) in the Annex). This long-run influence of money wages on prices is somewhat higher than in other Latin American countries: it is 72% in Brazil, 70% in Colombia and Uruguay, 60% in Mexico and 48% in Chile (García-Cicco et al (2022)). There is also a negative relationship between the real wage and the real exchange rate: persistent real depreciations have been associated with lower real wage levels on average, and vice versa.³ This is not found in other Latin American countries, and may help to explain why devaluations are an important source of "distributional conflict" in Argentina, because they lead to high wage demands to recompose the real wage, that end up feeding back into inflation.⁴

The other long-run relation links real money balances, economic activity, the interest rate and the exchange rate, and can be interpreted as the long-run transactional money demand (see equation (2) in the Annex). The influence of monetary aggregates on inflation through this channel is less direct. If the general price level were to rise to eliminate a potential excess of supply of money, this rise could be the result of "excess demand" in the goods market, due, for instance, to tighter labour market conditions. Since market economies usually work under conditions of less than full employment, and the elasticity of labour supply is quite high (for instance, it can be increased through immigration even when the domestic

³ Since the estimated coefficients sum to one, the long-run relation shows a necessary negative relationship between real wage and real exchange rate.

⁴ Historically, wage earners faced negative distributive shocks every time a discrete jump in the exchange rate occurred. Between 1930-2018 strong external crises occurred in 1931, 1948, 1971, 1975, 1981/82, 1989 and 2002 and 2018.

labour market is nearly full employment), the former does not seem to be a plausible mechanism for Argentina, except under very exceptional circumstances.

In any case, monetary aggregates can affect inflation through the effect of the exchange rate, a channel that seems more relevant for peripheral economies like Argentina, whose currency has lost its role as a store of value for domestic savers. Due to a long history of abrupt changes in exchange rate arrangements, with its negative effects on inflation, the private sector has developed adaptative mechanisms to preserve the real value of its financial wealth.⁵ Among them, even in normal times (*i.e.* when there are no objective reasons to believe that there will be a change in the exchange rate regime), and more intensively in periods of high uncertainty such as the pandemic or when inflation accelerates, as in the post pandemic, the private sector has tended to rebalance their portfolio currency composition, from domestic to foreign currency (Corso (2021)). Therefore, domestic private sector's dollar demand as store of value for precautionary reasons, creates further tensions on the balance of payments, additional to those traditionally caused by the real sector, and therefore on prices, thus validating the reasons for dollar demand in the first place, as a self-fulling prophecy.

Ex post annual real returns



This defensive behaviour seems fully justified, ex post. In fact, over the last 40 years, not only the real return of peso denominated assets -time deposits- have usually been negative, but it has also been strictly dominated by the average return of dollar-denominated assets (in case of dollars, measured by the rate of domestic devaluation) (Graph 5). As documented in Corso (2021), between 1977 and 2020, the

⁵ As mentioned in the previous section, this long history of devaluations is not necessarily the outcome of "bad monetary policy". It has been an inevitable result of growth, in an economy with an incomplete input output matrix.

former had a negative return of 7.5% and the return of the letter was 9.1% positive in real terms. This is why, to revert this tendency, and with the support of the IMF, the Central Bank of Argentina is currently committed to ensure positive returns in peso denominated assets (see the Plans and Objectives of the bank 2023).

We go on to examine the short run, decomposing 12-month core inflation rate into a persistence and a contemporary component (see the Annex). In turn, inflation persistence is disaggregated into its own persistence and the persistence of the other determinants; and the contemporary component is also disaggregated into a "news" and a residual component. The different terms of the decomposition include: the nominal exchange rate, wages, activity, monetary (money balances and interest rate), external (international energy and food prices, and the foreign producer price index), the nominal exchange rate gap (the difference between the official exchange rate and the exchange rate that emerges in financial markets through the sale and purchase of bonds denominated in foreign currency) and, finally, deviations from the long-run relationship previously described.

The exercise shows that persistence (or inertia) has been a very significant determinant of core inflation since 2005. Moreover, relative to own persistence, the persistence of the rest of the explanatory variables has increased over time, reaching a contribution of 47 percentage points by the end of 2022 (Graph 6.A). In 2022, the news on inflation have gained momentum, growing to 27.4 percentage points of the accumulated inflation for 12 months (Graphs 6.A and 6.B).



During the last three years, inflation persistence itself (lagged inflation), and the persistence of wages and of the exchange rate gap are the most relevant factors for overall inflation persistence (Graph 7). Persistence due to money growth is relatively low (except in 2019 and certain months in 2020), and the role played by activity in inflation persistence is subdued. Recently, wages played a growing role in inflation persistence (18.5 percentage points). The persistence of the exchange rate gap has gained traction since mid-2021 (19.8 percentage points, Graph 7.B) while "own" inflation persistence has lost some share (16.2 percentage points) since June 2022.



Graph 7

Inflation: persistence decomposition

Finally, the decomposition of the contemporary component shows that both economic activity and the nominal exchange rate contributed to lower core inflation in the last two years (in the sense that they moved below what their trend would have indicated). In turn, the role played by news about money wages on inflation dynamics over the whole period is revealing. Disinflationary episodes in the last 15 years went together with limited wage increases that facilitated this decline (Graph 8.A).⁶ The reverse effect (news on wages positively contributing to rising inflation) is less clear over the whole sample, but has gained ground in the last two years, since the recovery that followed the pandemic.

Wages played a disinflationary role during the pandemic and considerably reversed this trend since June 2021, becoming the main driver of the news component in 2022 (explaining 88.7% of the contemporary component in November). This has been the case even though news about the exchange rate exerted a deflationary role during this period. The influence of wage news on inflation is another feature of the macroeconomic situation in Argentina that differentiates it from the other Latin American countries (see BCRA (2020, 2022)).

Additionally, external factors in 2021–22 added to contemporary inflation (including higher international prices after the outbreak of the war in Ukraine). Moreover, international prices are likely to have played a non-trivial role in domestic inflation indirectly, both through their effect on wages and on the residuals, given their possible link to higher inflationary expectations ("forward-looking elements"), not captured explicitly in the econometric exercise (Graph 8.B). As mentioned in the previous section, in a context of high inflation, expectations tend to be linked more strongly to exchange rate dynamics and the risks of a discrete devaluation. For that reason, post-pandemic monetary policy is committed to creating conditions that ensure positive real returns on domestic assets to anchor expectations and limit the portfolio dollarization.

⁶ In other words, when inflation was lower than persistence would have dictated (in 2006, 2013, 2015, 2017 and 2020), wages contributed by adjusting *below* what their own influence in the past indicated.



Concluding remarks

Inflation in Argentina was high before the pandemic shock, with a labour market structure featuring strong unions and centralised negotiations aiming to protect the purchasing power of wages. This helps explain a high level of inflation inertia leading to the persistence of transitory shocks. To a large extent this is due to wage-price spirals (second-round effects). Also, the rise of inflation since the second quarter of 2022 has influenced the structure of wage bargaining, increasing the frequency of wage negotiations and heterogeneity in the magnitude of rises.

In the post pandemic, the combination of strong recovery along with the weakness of external conditions, contributed to put pressures on inflation and wage claims. Consequently, the official response was to move up the interest rates and hinder monetary expansion to anchor expectations and limit the private sector's portfolio dollarization.

Econometric analysis shows the relevance of wage dynamics for understanding the short- and long- term trends of inflation in Argentina. Their impact is either direct (through "news" or shocks on wages themselves) or indirect, as a reaction to changes in other variables that affect domestic prices, such as the nominal exchange rate or international prices. The reaction will be more intense, all things equal, the higher the downward real rigidity – a feature that, due to strong labour unions and their bearing on distributional conflict, seems to distinguish Argentina from the rest of the region (Trajtemberg and Valdecantos (2015), García-Cicco et al (2022)). Still, the analysis is relevant for other economies as it corroborates the role of wage-price spirals in driving inflation persistence. Indeed, as BIS (2022) points out, such processes distinguish low- from high- inflation regimes.

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Annex: Econometric methodology

To document the long-run relation, we perform a cointegration analysis using the system-based procedure of Johansen (1988), Johansen and Juselius (1990) and Juselius (2006). In addition to identifying these cointegrating relationships, an assessment of exogeneity or weak endogeneity is performed; analysing which of the system variables respond to deviations from the long-term relationship(s) (see Johansen (1992), Urbain (1992), Ericsson (1994) and Juselius (2006)).

The variables involved are the consumer price index in its core or underlying (IPC) version, nominal exchange rate (E), wages (W), activity (Y), amount of money (M), interest rate for deposits in domestic currency (i), international energy prices (energy), international food prices (food) and foreign producer price index (PPI). The long-run relations found for Argentina between 2004 and 2022 are:

$$IPC = 0.80 \times W + 0.20 \times E$$
[1]

$$M - IPC = 1,19 x Y - 1.53 x i + 0.31 x E$$
[2]

The "weak exogeneity" tests indicate that IPC and wages respond to deviations from the long-run relationship of equation [1] and M-IPC and E respond in the case of equation [2].

To examine the short-run regularities, we decompose the cumulative inflation rate (π) over h periods (in this case 12 months) into a persistence (P) and a contemporary (C) component (see García-Cicco et al (2022) for a detailed methodological description).

$$\pi = P + C \tag{3}$$

Persistence (*P*) of inflation can be disaggregated into its own persistence (*Pp*) and the persistence of the rest of the determinants (*Po*).

$$P = Pp + Po$$
[4]

The contemporary component (C) is also disaggregated into the news (N) and residual (R) components.

$$C = N + R$$
^[5]

The news refers to the part of the observed contemporary change in a variable that cannot be explained, neither by its own past, nor by the effect of the rest of the determinants considered. This would be the case when wages rise due to a change in labour market legislation. The residual component includes the effect of possible omitted variables (for example, assumptions about inflationary dynamics not explained by the past and present) and measurement errors, among others.

Again, we focus on core inflation and the different terms of the decomposition include: the nominal exchange rate, wages, activity, monetary (money balances and interest rate), external (international energy and food prices, and the foreign producer price index), the nominal exchange rate gap (the difference between the official exchange rate and the exchange rate that emerges in financial markets through the

sales and purchases of bonds denominated in foreign currency) and, finally, the deviations from the long-term relationship described by equation [1].⁷

The exercise is based on the analysis of three groups of graphs. The first two show a black line with the dynamics of inflation and a set of bars that indicate the contribution of each of the three components: persistence, news and residuals for the whole sample from 2005 to 2022 (Graph 6.A) and for the subperiod initiated by the pandemic (December 2019 – November 2022) (Graph 6.B). The second group of graphs examines the role exerted by the persistence of the different variables involved (Graphs 7.A and 7.B), while the third group measures the weights of news and residuals (Graph 8.A and 8.B).

⁷ The deviations from the long-run relationship described in equation (2) is not included in the exercise because, according to weak exogeneity tests, core inflation does not respond to correct those deviations (the adjustment coefficient of the corresponding equilibrium correction term is not significant).