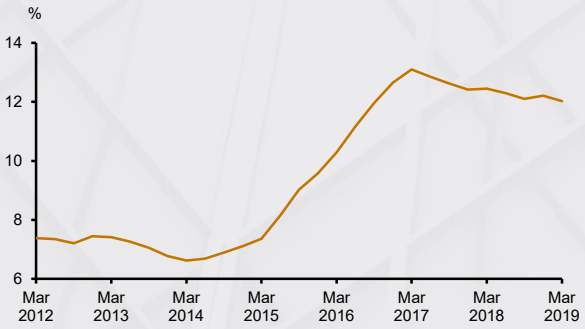
Unemployment duration and inflation

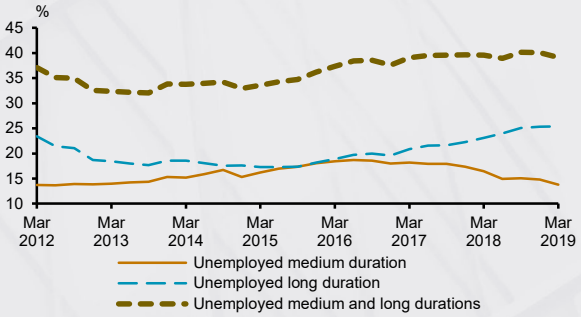
Unemployment rate increased significantly from the beginning of 2014 to the beginning of 2017, showing, thereafter, a moderate decrease until 2019Q1 (Figure 1). The increase in the unemployment rate was marked by an increase in the share of medium and long-term unemployed workers[1] in total unemployed population, that rose from 33.8% in 2014Q1 to 39.0% in the 2017Q1, remaining relatively stable until the first months of 2019.[2] It is worth noting that the relative stability of the share of unemployed workers of medium and long-term duration over the last two years hides an increase in the share of long-term unemployment duration that reached, approximately, a quarter of total unemployed people in 2019Q1 (Figure 2).

Figure 1 – Unemployment rate[1/]



Source: IBGE
1/ Series seasonally adjusted by BCB.

Figure 2 – Share of unemployed of medium and long durations in the total of unemployed people[1/]



Sources: IBGE and BCB
1/ Series seasonally adjusted by BCB.

A long time out of the labor force tends to make it difficult to get back into the job market and, as a consequence, reduces the worker's power to negotiate entry wages.[3] Compared to the short-term unemployed, those who have been out of the job market for longer periods may have a more tenuous link to the labor force and, thus, a greater propensity to accept lower wages when returning to work.

This box analyses some implications of the long-term unemployment duration phenomenon. For this purpose, we apply the pairing technique[4] using the Continuous National Household Sample Survey (PNAD Contínua) microdata to evaluate the evolution of the transition rate from unemployed to employed (disaggregated by duration) and the behavior of their entry wages. Additionally, we investigate if this unemployment composition influences the inflation dynamics.

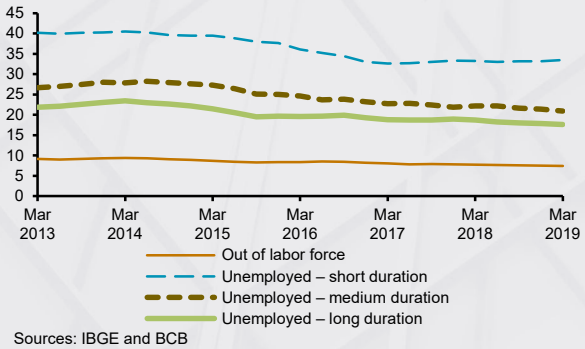
1/ In this box, unemployed people were separated into three categories. Short-term duration unemployed workers are those without a job for less than 1 year; medium-term duration unemployed, between 1 and 2 years; and long-term duration unemployed, for more than 2 years. For more details, see note 5 below.
2/ Data seasonally adjusted by the Banco Central do Brasil.
3/ See, for example, Farber (1999).
4/ For further details about the pairing technique, see box "Labor Market Flows in the Brazilian Labor Market", published in the September 2016 Inflation Report.

Unemployment duration, transition rates to employment and entry wages

The unemployed respondents are classified into three groups according to the reported time duration of job search: unemployed of short, medium and long-term duration.[5] After pairing the individuals in two consecutive quarters, each group's transition rate from unemployment to employment is calculated as the percentage of each group's population that found a job from one quarter to the other.

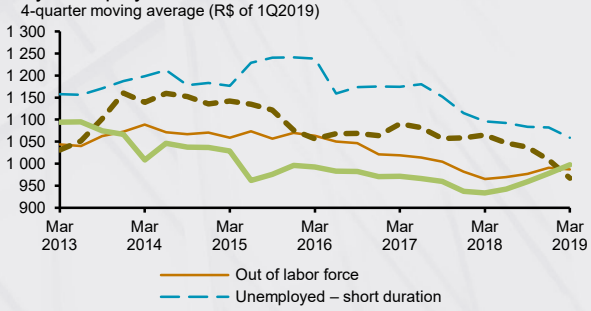
The analysis shows that the transition rate decreases considerably depending on how much time the person is unemployed (Figure 3). Considering the average values observed between 2012Q1 and 2019Q1, the transition rate goes from 36.7% among the short-term unemployed to 20.4% among the long-term unemployed. And, in the case of finding a job, the wage is lower for the long-term unemployed (Figure 4). On average, the entry wages of the medium and long-term unemployed were respectively 7.4% and 13.6%, lower than those of the short-term unemployed.

Figure 3 – Transition rates to relocation
by unemployment duration
4-quarter moving average (%)



Sources: IBGE and BCB

Figure 4 – Real income when returning to the labor market
By unemployment duration
4-quarter moving average (R$ of 1Q2019)

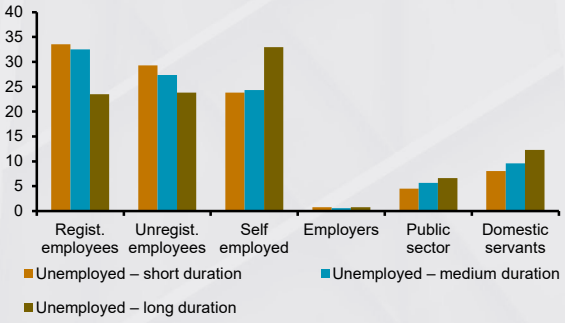


Sources: IBGE and BCB

In addition to the differences in probabilities of the transition from unemployment to employment and in the entry wages among the three categories of unemployed workers, there are also some particularities regarding what happens to these groups when returning to the labor market.

Considering the distribution by occupational category, we observe that the proportion of individuals that find a job in the formal or informal market is greater among those coming from the medium and short-term duration unemployment compared to those in the long-term duration category. On the other hand, the highest proportion of people in the long-term duration category find more self-employed or domestic jobs when returning to the job market (Figure 5).

Figure 5 – Distribution upon re-entering job market
By occupational category
Average from 2012 to 2018 (%)

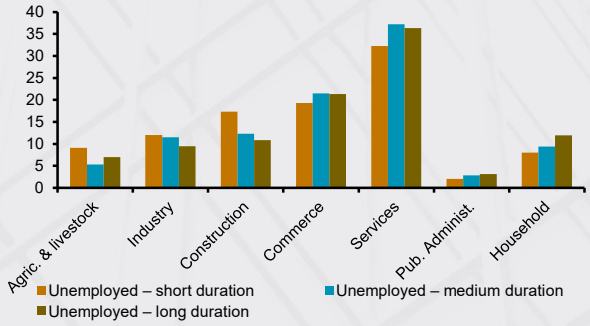


Sources: IBGE and BCB

5/ The question 76 (4076) of the PNAD Contínua asks the interviewee to inform, based on the last day of the week of reference, for how long he is unemployed and trying to get a job. The answers allow to classify the unemployment duration in four groups: i) less than 1 month; ii) between 1 month and less than 1 year; iii) between 1 year and less than 2 years; and iv) two years or more. In this box, options i and ii were grouped to form the short duration unemployment group.

The comparison of distributions by activity shows that, in general, the longer an individual remains unemployed, the greater the probability of returning to the job market in activities such as commerce, services, public administration or domestic services, and the lower in the industry or construction (Figure 6).[6]

Figure 6 – Distribution upon re-entering job market
By occupational sector
Average from 2012 to 2018 (%)



Sources: IBGE and BCB

Comparing the characteristics of the unemployed by unemployment duration, we can see some differences among the categories that may be related to the differences in the probability of finding a job as well as the entry wage level (Table 1). The proportion of men recedes as the unemployment duration increases. In addition, since the proportion of those who are financially responsible for the household is higher among the short-term unemployed, this group may have incentives to search for a job in a more intense way and that could help to explain the greater probabilities of this group finding a job. Considering the distribution by educational level, one observes that the proportion of individuals with at least complete high school is slightly higher among the unemployed of medium and long-term durations. The lower educational level of the short-term unemployed may be associated with higher work turnover and, consequently, lower continuous unemployment periods. Regarding the distribution by age and by color or race, no significant differences were identified among the three groups of unemployed people. Nor were there any relevant variations in search methods by occupation.[7]

Table 1 – Characteristics of unemployed people
Average of the entire survey period

	Total	Short duration	Medium duration	Long duration
Transition rate to occupation (%)	32.9	36.5	24.6	20.2
Average real entry wage (R$)	1 127.5	1 157.3	1 070.3	1 003.7
Average age (years)	30.3	29.9	29.3	32.1
Shares (%):	0.0	0.0	0.0	0.0
Man	47.9	52.6	44.0	35.9
White	37.0	37.0	38.0	36.3
Responsible for the residence	25.3	27.5	20.5	21.8
At least high school completed	51.5	48.7	56.3	56.7

Sources: IBGE and BCB

Characteristics not captured by the PNAD Contínua, such as educational qualifications, past work experience, accumulated savings, among others, can contribute to explain the differences in the probability of finding a job and in the entry wages. Moreover, the period of unemployment itself may lead to some obsolescence of the individual's work capacity, as well as contribute to a likely discouragement of searching for occupation. In addition, the unemployment duration may also suggest to the potential employer that the worker would not have the skills required for the job vacancy.

6/ It is also possible that the time for reallocation in the labor market is associated with the last activity of the individual when he was working. The verification or refutation of this hypothesis requires further analysis.

7/ The most common method for getting a job is contact, personal or via resume, with employer, followed by consultation with relatives or friends. This approach is similar across the three unemployed groups.

Short and long-term unemployment durations and the inflation dynamics

To investigate whether unemployment composition has an effect on inflation dynamics, we estimated a state space model considering a modified Phillips curve that incorporates the unemployment rates of short and long-term durations[8, 9]. In the model, the unemployment rate relevant to the inflation dynamics is represented by the weighted average of the two categories, and the weights are obtained during the estimation process. If the weight of the short-term unemployment rate (coefficient α of the model described in note 9) is equal to the weight of the long-term unemployment rate, the estimated Phillips curve is equivalent to a curve estimated using aggregate unemployment. This would indicate that there is no analytical gain in the segregation of the unemployment rate by time horizon. However, if the estimation assigns greater weight to one of the rates, there would be evidence that the unemployment rate with the higher weight is more closely related to the inflation dynamics.

The model was estimated using different inflation measures[10] and, due to the short extension of the PNAD Contínua series, the unemployment series used in this research were linked with those of the PME (Monthly Employment Research - PME - IBGE)[11]. For all the inflation measures used, we assigned a weight close to the unit to the short-term unemployment rate, which is in line with the previously obtained evidence that these unemployed people are more strongly linked to the labor force[12], and with the conclusions drawn from other countries[13]. Given the limited data available, this subject could be better evaluated in the future when we have longer series on the Brazilian labor market without methodological breaks.

References

Ball, L., e Mazumder, S., 2019. "A Phillips curve with anchored expectations and short-term unemployment",

8/ For this econometric analysis, the average and long-term unemployed, as previously defined, were grouped as long-term unemployed. Thus, the aggregate unemployment rate is equal to the sum of the short- and long-term rates ($U = U_c + U_l$).

9/ This approach is similar to that adopted by Llaudes (2005). Defining a modified unemployment rate as $U_m = \alpha U_c + (1-\alpha) U_l$, the following model is proposed:

$\Pi_t = \beta \Pi_{t-1} + \gamma[\alpha \, Cycle_{c,t} + (1- \alpha) \, Cycle_{l,t}] + \varepsilon_{\Pi,t}$, where Π is the inflation subtracted from the average inflation.

$U_{c,t} = Trend_{c,t} + Cycle_{c,t}$

$U_{l,t} = Trend_{l,t} + Cycle_{l,t}$

$Trend_{c,t} = Trend_{c,t-1} + Stoch_{c,t-1}$

$Stoch_{c,t} = Stoch_{c,t} + \varepsilon_{trend\_c,t}$

$Cycle_{c,t} = \rho_{c,1} Cycle_{c,t-1} + \rho_{c,2} Cycle_{c,t-2} + \varepsilon_{cycle\_c,t}$

$Trend_{l,t} = Trend_{l,t-1} + Stoch_{l,t-1}$

$Stoch_{l,t} = Stoch_{l,t-1} + \varepsilon_{trend\_l,t}$

$Cycle_{l,t} = \rho_{c,1} Cycle_{l,t-1} + \rho_{c,2} Cycle_{l,t-2} + \varepsilon_{cycle\_l,t}$

$\varepsilon_{\Pi,t}$, $\varepsilon_{trend\_c,t}$, $\varepsilon_{cycle\_c,t}$, $\varepsilon_{trend\_l,t}$ e $\varepsilon_{cycle\_l,t}$ are shocks with normal distribution, with $var(\varepsilon_{cycle\_c,t})/var(\varepsilon_{trend\_c,t}) = var(\varepsilon_{cycle\_l,t})/var(\varepsilon_{trend\_l,t})$.

10/ Market IPCA prices and the cores EX2 and EX3 of the IPCA. For further details on the inflation cores, see box "New Core Inflation Measures", published in the June 2018 Inflation Report.

11/ The short and long-terms PNADC unemployment rates were retroacted between 2011Q4 and 2002Q2 using the PME's seasonally adjusted unemployment series, according to the following expression: $U_t = U_{t+1} + (U_{PME,t} - U_{PME,t+1})$. Despite the chaining, the resulting series are still quite short for this type of estimation. In addition, there are methodological and comprehensiveness differences between the two series.

12/ Additional exercises corroborate the greater sensitivity to the economic cycle of the average entry wage of the short-term unemployed group.

13/ Estimates by Llaudes (2005) suggest that the weight of the short-term unemployment rate (α) is greater than 0.5 for all OECD countries. For the United States, Krueger, Kramer and Cho (2014) find that the workers unemployed for longer time are less connected to the labor market; Ball and Mazumder (2019) highlight the relevance of the short-term unemployment rate to explain core inflation behavior; and Watson (2014) shows that the NAIRU estimates (unemployment rate that does not accelerate inflation) are more stable if calculated with short-term unemployment. In addition, the European Commission (Hristov et al., 2017), when assessing the plausibility of its output gap estimates, compares this variable to short-term unemployment, among others, because it considers that there is a consensus that it is strongly correlated with the economic cycle.

Journal of Money Credit and Banking, 51(1), pp.111-137.

Farber, Henry. 1999. "Mobility and Stability: The Dynamics of Job Change in Labor Markets." In Handbook of Labor Economics, vol. 3, ed. Ashenfelter, O. e Card, D., capítulo 37, 2439-2483, Elsevier Science.

Hristov, A., Raciborski, R. e Vandermeulen, V., 2017. Assessment of the plausibility of the output gap estimates. European Commission Economic Brief 023.

Krueger, A., Cramer, J. and Cho, D, 2014. "Are the long-term unemployed on the margins of the labor market?", Brookings Papers on Economic Activity, pp. 229-280.

Llaudes, R., 2005. "The Phillips curve and long-term unemployment", Working Paper Series 441, European Central Bank.

Watson, M., 2014. "Inflation Persistence, the NAIRU, and the Great Recession."American Economic Review, 104 (5): 31-36.