

Unemployment insurance: A mirror of labor market segmentation

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Unemployment insurance was originally designed to limit income losses in the event of unemployment, not to correct unequal pay in the labor market. Thus, unemployment benefits are proportional to past wages, and the length of time that unemployment benefits are paid depends on the length of time spent in employment. In this policy brief, we consider how closely unemployment insurance adheres to this definition in practice. In particular, we show that beyond its insurance role, it has gradually become an instrument of redistribution, breaking with the idea of proportionality between contributions and the entitlements they create, and transferring resources between income levels. This change comes from the increasing segmentation of the labor market in which part of the active population alternates between short jobs and compensated unemployment.

- A large part of unemployment insurance system's resources (27%) is devoted to redistribution between income categories.
- Redistribution between income deciles is significant but transfers are concentrated on a limited share of the working population, and these workers persistently remain beneficiaries.
- Alternation between short jobs and compensated unemployment accounts for the majority of transfers.
- The possibility of combining benefits and earned income increases transfers and therefore needs to be better regulated.



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What is unemployment insurance for?

Unemployment insurance was designed to limit the loss of income in the event of unemployment, not to correct unequal pay in the labor market. Thus, unemployment benefits are proportional to past wages, and the length of time that benefits are paid depends on the length of time spent in employment. This means that a jobseeker with a low wage and a short contract will be eligible for low benefits for a limited period of time. Unemployment insurance is therefore backed by assistance schemes that take over once unemployment entitlements are exhausted in order to guarantee a minimum income. These are redistributive and are financed by taxpayers.

Insurance works largely on the idea of pooling risk: people who are currently employed finance the benefits of people who are currently unemployed, if they are eligible because of their past work and contributions. In terms of financing, unemployment insurance in many countries derives a significant part of its resources from employee contributions. In France, it was long financed exclusively by contributions proportional to wages, until the supply of a third of resources was switched to the CSG tax (*Contribution sociale généralisée*) in 2018. As a result of this change, unemployment insurance is now financed from all earned income, not just salaries¹. Nevertheless, entitlements remain determined by past salaries and working hours, and contributions are largely proportional to earned income.

In this policy brief, we consider how closely unemployment insurance adheres to this definition in practice. In particular, we show that beyond its insurance role, it has gradually become an instrument of redistribution, breaking with the idea of proportionality between contributions and the rights they create, and transferring resources between income levels. Where appropriate, we try to explain the developments that have taken place. The problems raised by such a change are multiple. This raises questions about unemployment insurance in terms of its interaction with other redistributive tools, the way it is financed (how much should be funded by taxpayers?), and the role of the State in relation to its social partners. More immediately, by moving away from the logic of proportionality and balance² between past contributions and

acquired rights, unemployment insurance becomes more difficult to manage financially.

Data used and the concept of individual balance

To study this issue, we use the FH-DADS administrative database. This allows us to track at the individual level, between 2003 and 2012, the contributions paid in employment and the benefits received when unemployed (cf. Box 1). For each year and for each individual, we calculate the difference between the benefits and the contributions (cf. Box 2). We take into account both employee and employer contributions, and focus on contribution-based benefits, such as the ARE (*Aide au retour à l'emploi*) allowance.

To measure the inter-individual redistribution, we compare individual balances to the average balance over our entire sample. By calculating the deviations from the average of the balances, we simply show the transfers that take place, regardless of any consideration of the financial equilibrium of the system, which is not the subject of this policy brief.³

Importance of transfers

In the French system, a jobseeker's unemployment benefit is determined according to their reference daily wage (RDW). This is calculated as the ratio between their income from work and the number of days worked, multiplied by 1.4, over the previous 12 months. It is an indicator of past earnings and therefore of the contributions that generated entitlements to unemployment benefits. In a system in which there is a strong proportionality between past contributions and acquired rights, and therefore in which the logic of insurance takes precedence over that of redistribution, no RDW level is particularly favored. At each level, contributions and entitlements actually used are balanced on average, i.e. over the entire active population who have (for the employed) or have had (for the

¹Bonuses, miscellaneous allowances or benefits in kind are therefore now taxed.

²This balance must be understood "in expectation", that is to say it may not be true for all individuals at all times, but individuals who have contributed a certain amount must "on average" receive benefits that correspond to this amount. This balance must hold true for all levels of contributions.

³As the unemployment insurance system is very heavily in deficit over the period we are studying, many individual balances may end up in negative territory. On the other hand, in this exercise, only the benefits are directly taken into account and not the overall cost of the employee's unemployment insurance coverage — to give an idea, 10% of benefits received are currently paid to Pôle Emploi, the French employment agency, for supporting jobseekers. Thus, positive balances are not a guarantee of a balanced system.

Box 1: Data and sample

Data. The data used are from the FH-DADS panel, a pairing of two databases. One is the historical file of jobseekers registered at Pôle Emploi (the French job centre), which records periods of unemployment, payment dates of benefits, amount and types of benefits paid. The other is the annual declaration of social data which shows the periods of employment of individuals with the dates of the employment contract, wages received and some information on the type of work and the employer.

Defining the population. The scope of the analysis corresponds to a 1/12th sample of the French working population for the period 2003-2012 with retrospective information for private salaried jobs on employment periods going back to 1976. The data cover *in fine* all types of workers with the exception of extraterritorial activity, or, before 2009, employees of sole proprietors.

Sample. We exclude from the scope of this study all public-sector jobs for which there are no unemployment insurance contributions (mainly civil servants). In turn, periods of unemployment following public-sector employment are omitted in order to avoid artificially negative balances. Employees of sole proprietors are also excluded, since they are only observed from 2009 onwards. Finally, we distinguish between benefits financed by unemployment contributions, such as the ARE (*Aide au retour à l'emploi*) or AREF (*Aide au retour à l'emploi formation*), and other schemes that are not part of the insurance system, such as the ASS (*Allocation de solidarité spécifique*). Our final sample comprises 16,396,751 observations distributed among 3,052,399 individuals.

Box 2: Calculation of annual contributions and benefits

Contributions. Annual contributions for employers and employees are calculated according to the pay period, gross daily salary, social security ceiling, the job, and the employer. The pay period coupled with the gross salary, up to the social security ceiling, is used to calculate the contributions paid by the individual in a given year. The employer's legal category allows for the exclusion of individuals who do not contribute to the unemployment insurance scheme, such as civil servants. The job category makes it possible to take into account special cases such as intermittent workers in arts and entertainment. By applying the contribution rates (employer + employee), and taking into account their variation during the period, we obtain the theoretical contributions paid per year and per individual. They are then adjusted to be presented in 2012 constant euros.

Benefits. Gross annual unemployment benefits are calculated based on the amount received over the compensation period(s) of the year before being adjusted to 2012 constant euros.

Annual balance. The annual balance corresponds, for each individual in our database, to the difference between their contributions paid and benefits received.

unemployed) the same level of labor income, but not necessarily for a given individual.

In order to compare individuals year after year, according to a similar concept, we calculate for each of them an average daily wage (ADW). When an individual is continuously unemployed over a year, the ADW for that year is equal to the RDW wage reported in our data. If, on the other hand, periods of employment are observed over the course of a year, we take into account the earnings from work in relation to the number of days worked (multiplied by 1.4): this is equivalent to calculating an RDW wage on December 31. Grouping individuals by ADW class, we then order them by income, contributions, and benefits.

We can thus simply show the level of redistribution produced by unemployment insurance: on average, a system without redistribution balances contributions and benefits, and the individual balances of each ADW class are close to the average over the sample as a whole.

Figure 1 presents the distribution of individual balances (contributions-benefits) in 2012 constant euros per decile of ADW. As we can see, this is far from being a neutral system in terms of redistribution, and the most negative balances are observed for the lowest income levels (defined by the ADW). These correspond to the lowest paid jobs with the highest risk of unemployment, both in terms of frequency and duration. There are many deciles with neg-

Box 3: Calculation of cumulative balances

Cumulative balance. The cumulative balance is the sum of the individual balances over time. It is assumed that when an individual enters the labor market, he or she has a balance of zero, to which is then added the difference between contributions (c_s) and benefits (a_s) for each age s . Since a surplus or deficit does not have the same meaning at age 30 or 60, a discount rate r can be applied; the cumulative balance of an individual i at age s is then written as:

$$b_{i,s} = (1 + r)b_{i,s-1} + c_{i,s} - a_{i,s}$$

In this policy brief, we present our results for $r = 0$ (no discount). Results are virtually unchanged for $r = 1\%$ (available on request).

Estimation. One of the difficulties of this approach is that we do not observe individuals at all ages in the labor market. In order to have a balance over the whole lifetime, we estimate the following model:

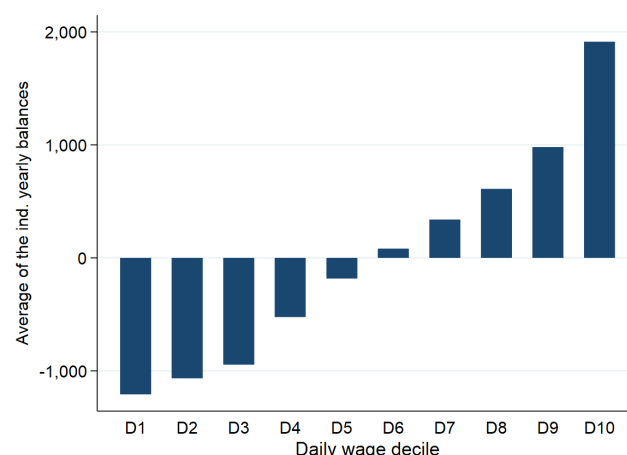
$$b_{i,t} = \alpha_i + \beta X_{i,s(t)} + \epsilon_{i,t}$$

with, for an individual i , $\beta X_{i,s(t)}$ as a third-order polynomial for age (denoted $s(t)$ at year t), $\epsilon_{i,t}$ as an error term that can be autocorrelated, and α_i as a fixed effect (or alternatively a random effect for similar results). *In fine*, for each individual we have an estimate of their balance at each age and can calculate the cumulative balances at the individual level. Note that the age polynomial will reflect — albeit in a very simple way — the way in which balances are impacted by career changes, mobility and the evolution of risks with age.

ative average balances because of the existence, in each of these deciles, of very negative balances for people who receive benefits continuously over the course of a year. Nevertheless, the fact that this chart shows significant deviations from the average for many ADW deciles confirms the magnitude of the transfers that take place within the unemployment insurance system (*régime d'assurance chômage*, RAC).

To better quantify this redistribution, we compare these transfers to the resources available to the system. To do so, we compare the sum of transfers received by deciles with negative average balances⁴ to the total sum of contributions that constitute the resources of the RAC. As such, we see that just over a quarter of RAC resources (27%) are used for reasons other than simple insurance purposes.

Figure 1: Average of relative individual balances per decile of average daily wage (ADW)



Source: FH-DADS 2003-2012.

Notes: Individual balances calculated, for a given year, as the difference between contributions paid and allowances received (in 2012 constant euros). The balances are normalized with respect to the average balance over the entire sample. A balance at zero therefore corresponds to a balance equal to the average balance. The average for D X corresponds to the average of the balances for which the ADW belongs to the X th decile.

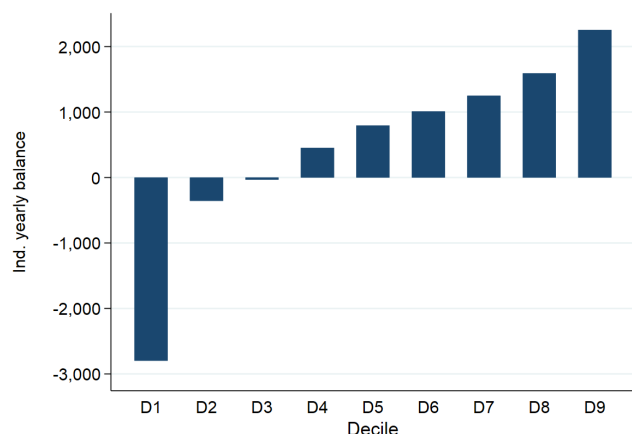
Interpretation: On average, the balances of individuals belonging to the first ADW decile (D1) are 1,207 euros below the average balance.

Highly concentrated transfers

While the average differences between ADW deciles are instructive, they conceal important differences within

⁴Since we normalize to the average, the sum of the transfers received by the deciles in deficit are equal to the sum of the transfers of the deciles in credit.

Figure 2: Deciles of relative individual balances



Source: FH-DADS 2003-2012.

Notes: Individual balances calculated, for a given year, as the difference between contributions paid and benefits received (in 2012 constant euros). The balances are normalized with respect to the average balance over the entire sample. A balance at zero therefore corresponds to a balance equal to the average balance. D.X corresponds to the value such that $(X * 10)\%$ of the balances are less than or equal to this value.

Interpretation: 10% of the relative individual balances are less than -2,824 euros.

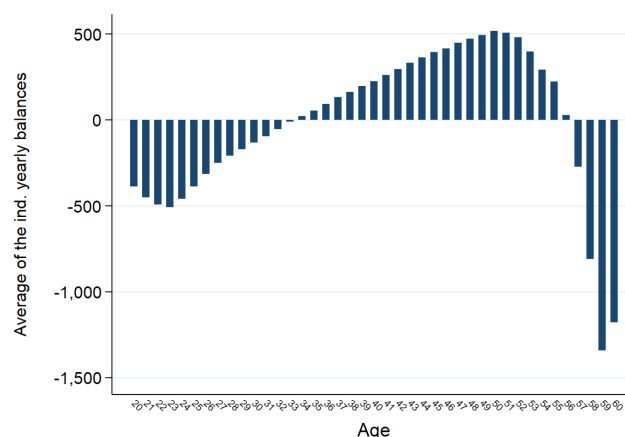
each category.⁵ Figure 2 thus completes our first analysis by presenting the distribution of the individual balances. This time we work from the deciles of the distribution of the balances, independently of the ADW level, i.e. taking as a reference the amount below which we find 10% (D1), 20% (D2), 30% (D3) of the balances. The aim is to understand the extent to which transfers are evenly spread or highly concentrated. As can be seen in this graph, while 31% of the individual annual balances between 2003-2012 are below the average balance, most of the deficits concern only a small number. Indeed, we calculate that 10% of the lowest balances concentrate 88% of the total deficits.

Persistent transfers over the course of working life

To what extent are these temporary deficits? After all, it is possible for the same individual to compensate for one-time deficits during their career and thus balance *in fine* contributions paid and entitlements received. However,

⁵This is true for every classification. For example, an analysis by socio-professional category (SPC) shows that even among cadres (a French classification for managers and other professionals), 99% of the deficits are concentrated among the 10% with the lowest balances; even if, overall, cadres contribute the most to inter-SPC redistribution, there are much larger deficits among cadres than among other SPCs (blue-collar workers, white-collar workers and intermediate professions, etc.).

Figure 3: Individual relative balances between contributions and benefits according to age



Source: FH-DADS 2003-2012.

Notes: Individual balances calculated, for a given year/age, as the difference between contributions paid and allowances received. The balances are normalized to the average balance over the entire sample. A balance at zero corresponds to a balance equal to the average balance.

Interpretation: At the age of 30, an individual's balance is on average 131 euros below the average balance.

we only observe a maximum of 10 years per individual.⁶ At the same time, it is possible that the deficits will disappear in the long term, as the risks on the labor market evolve with age.⁷

Age has a significant effect on individual balances (Figure 3). Due to a more difficult career path at the beginning of working life with lower wages and, for some, frequent back and forth between employment and unemployment, the annual balances of the working population between 20 and 30 years of age are below the average balance. They then enter into surplus, deteriorating as they approach the age of 50, and falling below the average annual balance from the age of 55 onwards. In this way, an individual will accumulate surpluses over a period of about 20 years and use some of them at the end of their career⁸. Is this sufficient to gradually reduce the deficits observed in part of the working population?

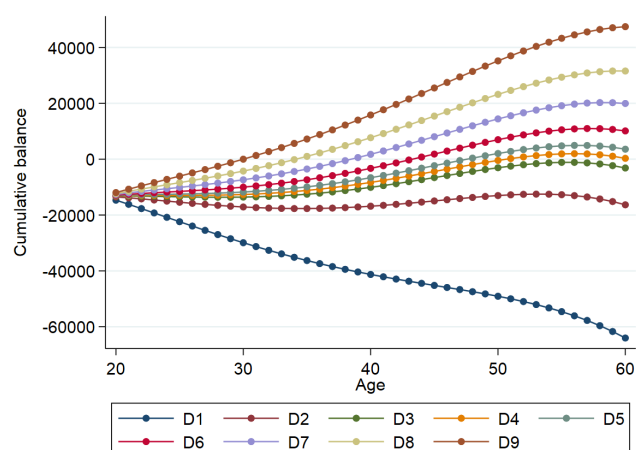
We attempt to answer this question by using the fact that individuals are observed at different ages and by modeling the relationship between balance and age. We can then

⁶A first response is to construct cumulative balances by balancing deficits or surpluses for each individual year after year. We then observe considerable persistence since the correlation over several years between the balances of the same individual is very high (0.98 at year one and 0.75 at year five), which means that contributions take a very long time to compensate for social security costs.

⁷Unemployment insurance can also be seen as a means of redistributing resources between different periods of a worker's life.

⁸It should be remembered that we only consider benefits financed by social security contributions, thus excluding ASS (*Allocation de solidarité spécifique*), for which the oldest recipients are over-represented.

Figure 4: Relative cumulative balances between the ages of 20 and 60



Source: FH-DADS 2003-2012.

Notes: These cumulative balances correspond to the sum of the balances for each age (not discounted). The latter are modeled as a function of age and an individual fixed effect (cf. methodology in Box 3). A cumulative balance at zero corresponds to a balance equal to the cumulative average balance at age 60. D.X describes the trajectory of the individual whose cumulative balance at age 60 corresponds to the Xth decile of the distribution of these balances.

Interpretation: At the age of 60, 10% of the cumulative balances are less than or equal to -64,022 euros, the average cumulative balance being normalized to zero.

reconstruct cumulative balances over an entire working life (cf. Box 3 which details our methodology). This makes it possible to take into account career changes, the evolution of risks, and the fact that each individual can systematically differ from others in his or her use of unemployment insurance, which we are able to identify by tracking individuals over time. Our results are presented in Figure 4. The reference point is now the average cumulative balance at age 60: an individual below this balance has benefited from a positive transfer during his or her career, whereas an individual above this balance is a net creditor.

Thus, we estimate that about one third of the cumulative balances are in deficit at age 60, i.e. lower than the average cumulative balance at age 60. It should be noted that for the 10% of the balances with the highest deficit at age 60 (D1), age does not seem to modify the slope of the trajectory. This means that career changes with age do not compensate for their very high level of risk. Similarly, the balances with the highest surpluses follow a very stable trajectory and correspond to individuals who, at any age, generate systematic surpluses. For D2 and D3, the cumulative balances remain broadly stable: for these individuals, the mid-point of their careers makes it possible to compensate for a relatively high risk of unemployment and, even if this is insufficient to return to the level of the average balance, it avoids a deepening of deficits during their working life.

The revolving door of work and unemployment

This mirrors the segmentation of the French labor market: a small fraction of the labor market carries a disproportionate risk of unemployment. It is true that the mid-points of careers generally correspond to times when employees are "creditors" vis-à-vis the unemployment insurance system. However, a not insignificant proportion of the insured find themselves in deficit throughout their career, locked into an alternation of precarious contracts interspersed with periods of unemployment. Eligibility rules and the existence of minimum benefit levels mean that this alternation of precarious contracts will generate disproportionate entitlements in relation to contributions.

From this point of view, it is interesting to ask whether it is the rules for calculating benefits or the possibility of frequently returning to compensated unemployment that explain the majority of transfers. In particular, the existence of a floor and a ceiling⁹ means that the replacement ratio – the ratio of benefits to previous income – varies with the RDW and increases for wage levels close to the minimum wage. This heterogeneity in the replacement ratio could explain some of the transfers.

To verify this, we recalculate the unemployment benefits that we observe in our data by removing the floor and the ceiling and assuming that all jobseekers have the same replacement ratio. We choose this ratio in such a way that the level of RAC resources remains constant under the assumption of unchanged behavior. We then recalculate, under this new assumption, the transfers between ADW deciles, as we did previously for Figure 1 with the replacement ratios actually observed. We find that a homogeneous rate would reduce transfers by only 5.5%, since they would fall from 27% to 25.5% of RAC resources.¹⁰

As a result, it is the alternation between employment and unemployment and the way in which short episodes of employment can generate disproportionate entitlements that accounts for most of the transfers. This is particularly apparent when we construct for each individual the ratio between the number of days of compensation and the number of days worked over all the years and focus on those who have been recipients of transfers (i.e. their

⁹The rules have varied over the observation period and we take this into account.

¹⁰Similarly, the removal of just the floor or the degressivity of the highest benefits would have a very limited impact. It should be remembered that we are only looking at the impact on transfers and not the impact on the finances of the system.

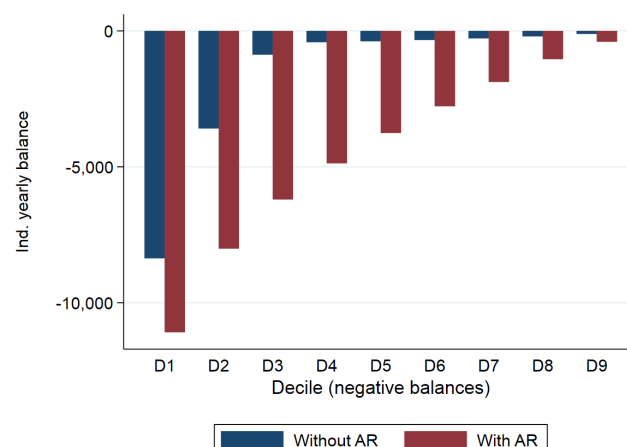
average balances are negative). In this sample, 25% of individuals have a ratio greater than 0.7, i.e. for every day worked, they receive at least 0.7 days of compensation.¹¹ In addition, these individuals account for 47% of transfers.

This difficulty was clearly identified during discussions of the recent unemployment insurance reform. Below, we show that certain mechanisms, which are an integral part of the RAC and financed with its resources, can increase the imbalances observed. This is particularly the case for "Reduced Activity".

Reduced activity

"Reduced Activity" (*Activité réduite*, AR) is an important benefit for the insured. It allows them to combine, under certain conditions, part of their benefits with an income from work. It also allows them to defer the end of their entitlement to compensation, extending the period during which they can receive benefits. The idea is to allow them to keep a temporary job, even if it is poorly paid, in order to maintain their employability. The scheme was created during the years covered by our sample and has continued to evolve since 2012.¹² In itself, it is not clear whether it increases or decreases unemployment insurance transfers. First, because new contributions are generated during Reduced Activity; second, because it could reduce long-term unemployment by promoting a return to work. Conversely, there is a risk of encouraging people to alternate between compensated unemployment and precarious employment. Numerous academic studies have shown the limits of this system, which seems to generate strong "lock-in effects" in France¹³.

Figure 5: Distribution of individual balances for individuals benefiting from a transfer (negative relative balances)



Source: FH-DADS 2003-2012.

Notes: This graph shows the nine deciles of the distribution of negative individual balances. D_X corresponds to the value such that $(X \times 10)\%$ of the balances are less than or equal to this value, among the negative relative balances.

Interpretation: Among the negative balances of the users of Reduced Activity (AR), 10% of the relative individual balances are less than -11,087 euros; for non-users, this figure is -8,364 euros.

The first lesson from our data is that this device is widely used among benefit recipients who account for a significant proportion of transfers. If we consider those who benefit from a transfer (i.e. their relative annual balance is negative), those with at least one hour of AR over the year represent 43% of transfers¹⁴ whereas they only represent about 27% of the individuals in this sub-sample. Figure 5 shows that individuals who have used AR have much more negative balances and therefore benefit from much larger transfers than the others. This suggests that AR increases the disproportion between benefits and contributions.

Finally, while those using AR account for a large share of transfers, a minority benefits disproportionately. In our data, 56% of the transfers received by people using AR are concentrated among just 20% of them. This shows that these transfers are highly concentrated, as already suggested by the fact that a small number of AR workers make substantial use of them¹⁵: as this device increases transfers, its accumulation among certain users increases the concentration of transfers.

By accentuating the disproportion between contributions and benefits, AR thus increases transfers, consumes resources and moves the RAC further away from its simple insurance role. This raises the issue of improved scrutiny of the design of this system, especially since its perfor-

¹¹This calculation is only an approximation since some individuals are observed already unemployed while others enter continuous work immediately. We limit this problem in part by not taking into account individuals who are only observed to be unemployed during the period.

¹²Since 2014, in particular, it allows for the accumulation of new rights.

¹³For France, see Cahuc and Prost (*Notes du CAE* n° 24, 2015), Fremigacci and Terracol (*Travail et Emploi*, 2014) or the Unédic study (*Etudes et Eclairages* n° 6, 2013).

¹⁴That is, the sum of relative deficits, or relative surpluses.

¹⁵Unédic, *Etudes et Eclairages* n° 6, 2013

mance in terms of employment is still subject to debate¹⁶. If one wishes to bring unemployment insurance a little more into line with its insurance role, one possibility is to limit the number of AR days and to limit the extensions to entitlements that it allows.

Conclusion

Unemployment insurance reflects the segmentation of the French labor market. It generates significant transfers, but these are highly concentrated among a part of the working population and among certain companies. More than the rules that determine the amount of benefits, it is the rotation of part of the population between short-term jobs and compensated unemployment that explains most of these transfers, their persistence, and their concentration. From this point of view, AR acts as an amplifier and it would therefore be useful to constrain it, in particular by placing greater limits on the combination of work with unemployment benefits, both in terms of duration and the possibility of extending entitlements. However, this is unlikely to be sufficient without changing employers' practices. This issue is dealt with by our previous IPP Policy Brief, in which we address the issue of a bonus-malus system for unemployment insurance.

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IPP Policy Brief n°57 is also available to read on the IPP website::

F. Fontaine et B. Vidalenc, **Should employer contributions to unemployment insurance be adjusted?**, IPP Policy Brief n°57, 2020.

<https://www.ipp.eu/publications/notes-ipp/>

¹⁶See the references cited above.