

# The cycle of municipal elections:

## How does it affect public investment, employment and output?

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*Municipal elections in France cover a six-year cycle. Local government bodies (APULs) – which currently account for the majority of public investment – tend to adjust their investment behaviour in part according to the dates of these elections. Using an econometric model, the effect of the electoral cycle can be isolated from other elements that may influence their behaviour (income, activity, long-term factors). It emerges that in the year preceding an election, the pace of annual growth in nominal investment by APULs, all other things being equal, is on average 4 points higher than in previous years, after which there is a backlash effect as it slows in the year of the election and the year after.*

*APULs invest mainly in construction (buildings, civil engineering and specialised construction). In order to support the additional demand in the run-up to the elections, output and employment in the construction branch have to adjust. Using business tendency surveys in the building construction and civil engineering industries, the effect of the electoral cycle can be quantified for these two aggregates. The models selected here suggest that in the year preceding municipal elections, construction output increases by 2 percentage points more than the usual pace, while payroll employment increases on average with 17,000 more jobs than usual.*

*In 2020, in the run-up to the March elections and beyond, investment by APULs, output and payroll employment in the construction sector look set to gradually slow. The overall effect of the electoral cycle on changes in these three aggregates is likely to be zero in Q2 2020. ■*

### The majority of public investment is driven by local government

After almost continuous growth in the 1950s and 1960s, the GDP share of government gross fixed capital formation (GFCF; i.e. investment<sup>1</sup>) experienced a trend decrease and stood at 3.4% of GDP in 2018 (against more than 5% at its peak in 1967; *Figure 1*). Over the same period, the contribution by all of local government (APULs; territorial authorities and various local administration bodies) to the general government (APU) GFCF rose from 30% in 1950 to 57% in 2018. In addition, central government's share was halved (from 64% in 1950 to less than 35% in 2018), illustrating the gradual process of decentralisation towards the APULs. All in all, investment by APULs accounted not only for 8.6% of investment by all institutional sectors and 2% of GDP in 2018 but also for 75% of the variability of the general government GFCF (i.e. about 3% of GDP variability) since the beginning of the 2000s. Understanding and anticipating short-term changes in this aggregate is useful in order to refine the outlook diagnosis.

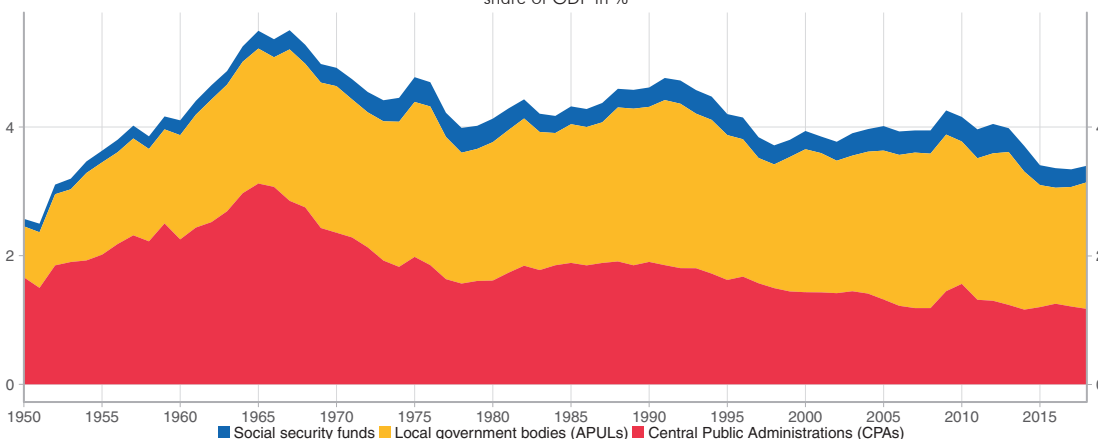
### Breaking down the accounts provides no economic explanation for particularly notable short-term changes in the APUL GFCF

While general government's share of GFCF in the GDP declined, the share of the APULs alone has maintained a stable level from the end of the 1960s until the present, at around 2%. Despite this average stability over a long period there have nevertheless been some large variations in the short term. The annual change in value of the GFCF of APULs can be sizeable, both upwards and downwards. For example, since 2000, annual investment by APULs experienced growth on seven occasions of between 5% and 10%; but there were also decreases, on three occasions, ranging from -5% to -10%.

Breaking down these fluctuations in the accounts does not make them easier to understand. First of all, these variations are not due to irregular price changes: the volume-price distribution of the growth rate of the aggregate does not indicate any particular price distortion and accounts for a change in volume that fluctuates as much as the value of this

1. GFCF consists of acquisitions less disposals of tangible or intangible assets by resident producers. These assets are derived from production processes and used repeatedly or continuously in other production processes for at least one year.

**1 - GDP share of general government GFCF and GFCF of its components since 1950**  
share of GDP in %



Source: National accounts, INSEE

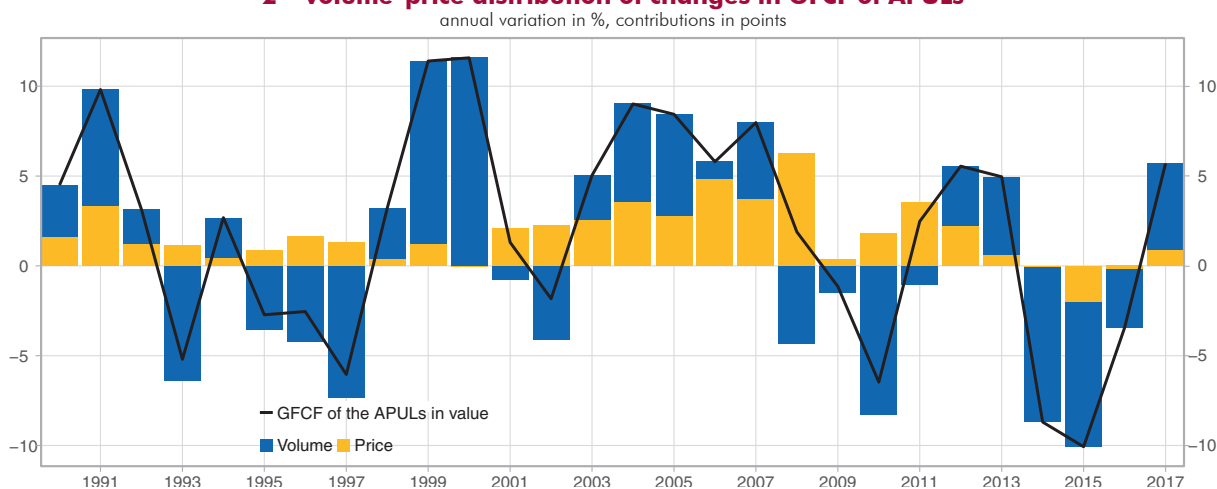
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investment (Figure 2). Nor does the gross disposable income of the APULs fluctuate as sharply as the GFCF.

In addition, in 2017 more than 80% of the GFCF of APULs was made up of investment in construction: 40% for specialised construction (construction of parts of buildings and civil engineering work or preparatory work for this type of project: pile driving, building foundations, structural work, concreting, bricklaying, paving, scaffolding, etc.), 33% for the construction of civil engineering projects (motorways, roads, bridges, tunnels, railways, aerodromes, ports and other river and maritime projects, irrigation systems, sanitation systems, industrial installations, electrical conduits and power lines, outdoor sports installations, etc.) and 7% for building construction (dwellings, offices, shops and other public, utility and agricultural buildings, etc.). In the short term, and in general, none of these products, when considered individually, seems to account for the major movements in the aggregate (Figure 3).

The reasons for these considerable annual variations must therefore be sought in macro-economic and political determinants. On the one hand, cyclical fluctuations in activity can affect investment by APULs directly (increase or decrease in demand) or indirectly (fiscal policy may be more or less expansionist, increase or decrease in tax revenue). In the latter case, the ratio of the GFCF of APULs to GDP may deviate in a sustainable fashion from its long-term average, as was the case after the sovereign debt crisis in the early 2010s, a period when government

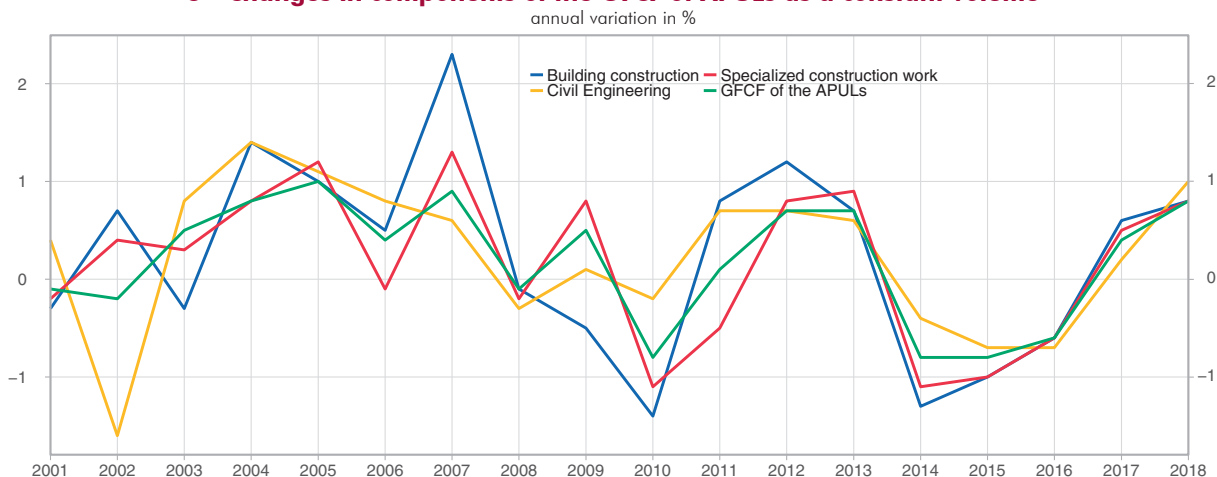
### 2 - Volume-price distribution of changes in GFCF of APULs



Note: volumes are approximated by deflating the GFCF of APULs using the deflator for the general government GFCF

Source: National accounts, INSEE

### 3 - Changes in components of the GFCF of APULs as a constant volume



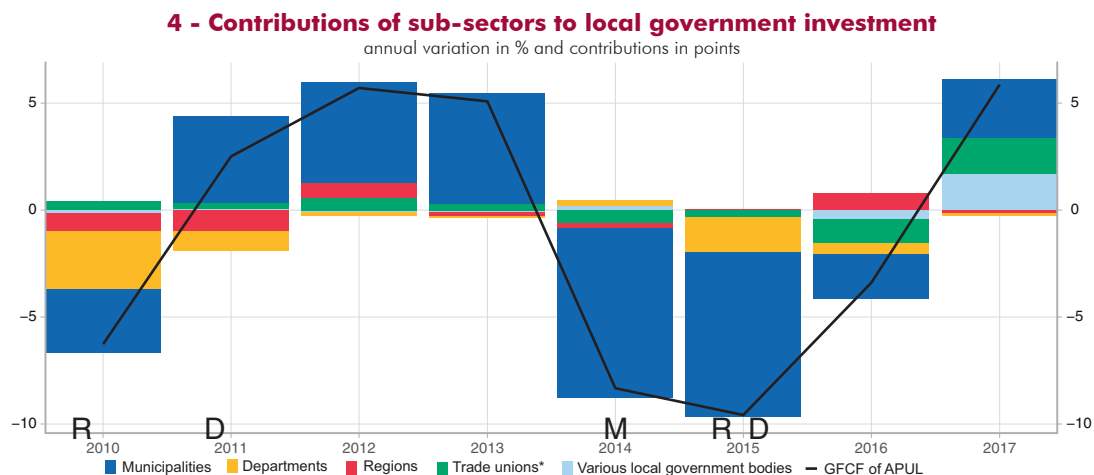
Source: National accounts, INSEE

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revenue was low. On the other hand, independently of fluctuations in activity, the electoral calendar can also influence fiscal policy with regard to public investment.

### Of all the local ballots, the municipal elections are likely to have the greatest effect on investment by APULs

Within local government, investment by municipalities, departments and regions is likely to be affected by the corresponding local elections (municipal, departmental and regional, respectively). Nevertheless, there are two elements that prompt a closer look at the municipal electoral cycle for an understanding of the short-term movements in investment by APULs. First, investment by municipalities predominates in the APULs: the majority of APUL investment is by municipalities (62% in 2017), whereas the contribution of the departments and the regions is smaller (14% and 8% respectively in 2017). The remaining APUL investment is split between miscellaneous local administrative bodies (ODAL, 7%) and intermunicipal syndicates with their own tax system (9%). Second, it appears that, in the years for which data are available, investment by municipalities was more sensitive to the presence of local elections (Figure 4). It is therefore likely that municipal elections have a major effect on local government investment, unlike other elections. Therefore only these polls will be studied, and the potential effects of the other local elections disregarded.



Note: the letters M, D and R indicate the dates of municipal (M), departmental (D) and regional (R) elections. In 2011, departmental elections were still cantonal elections.

\* Trade unions represent intermunicipal trade unions with their own taxation.

Source: National accounts, INSEE

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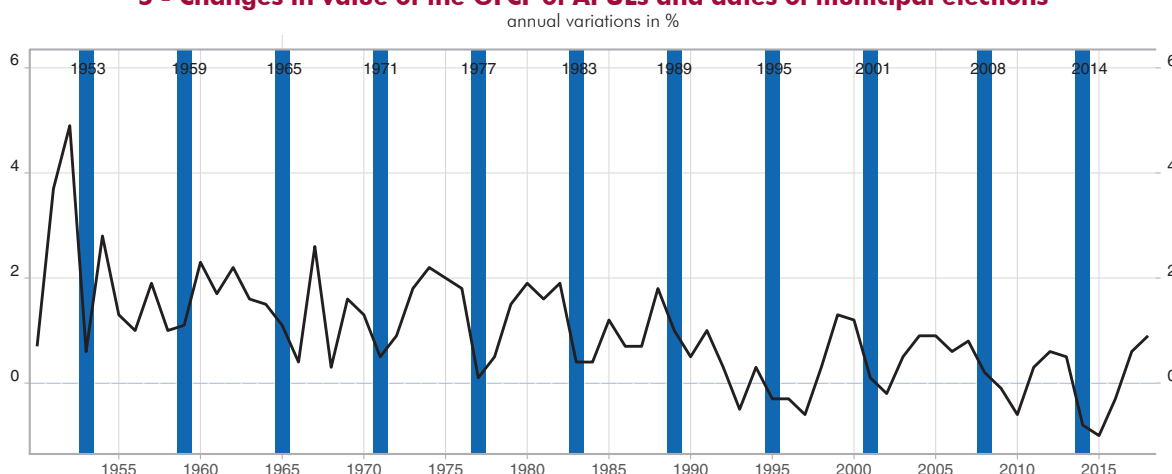
**On average, local government investment spending increases with the approach of municipal elections and decreases afterwards**

The dates of municipal elections cover a six-year cycle (exceptionally seven years after the 2007 elections were shifted to 2008) which may affect local government investment decisions (Figure 5). To identify this effect, an econometric model was used to isolate short-term deviations in the GFCF of APULs from its trend change<sup>2</sup> which did not result in the cyclical fluctuations in activity described previously (Annexe 1).

It would seem that the presence of an election has a considerable effect on investment by APULs (Figure 6). In the years preceding an election, the GFCF of APULs shows a vigour that is not explained by cyclical

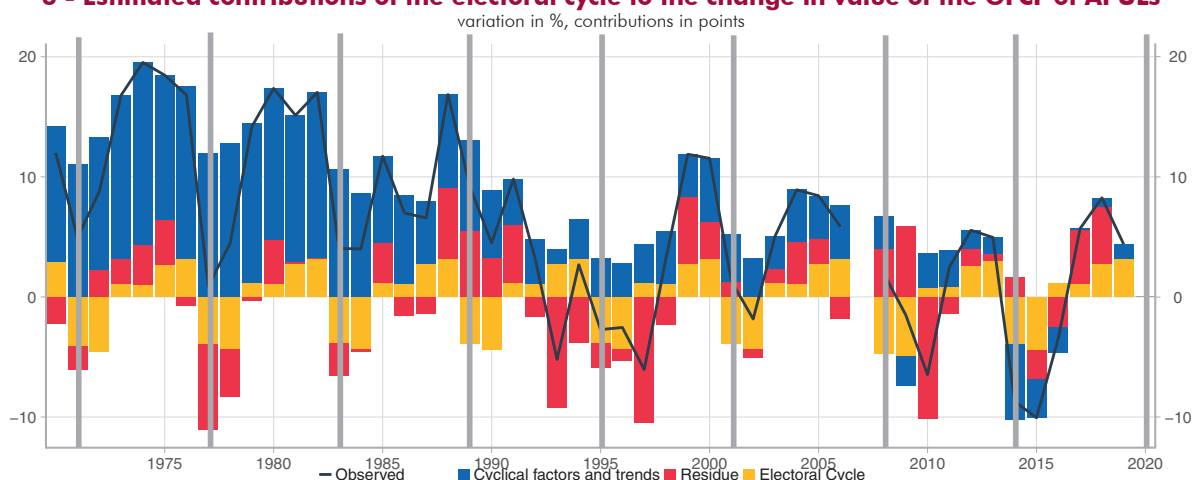
2. Variations that are neither explained by the electoral cycle nor by economic effects and therefore not measured by the model could result, among other things, from exceptional events (large-scale investment, reconstruction after a natural disaster, etc.), from phenomena of catching up on periods of under-investment or over-investment, from investment decisions not decided at a local level or from the effects of other local elections (departmental and regional).

### 5 - Changes in value of the GFCF of APULs and dates of municipal elections



Source: National accounts, INSEE

### 6 - Estimated contributions of the electoral cycle to the change in value of the GFCF of APULs



Notes :

(1) The shifting of the 2007 municipal elections to 2008 resulted in a break in the electoral cycle series. So as not to disrupt the model, 2007 was not taken into account.

(2) The analysis was carried out with the series of GFCF of APULs by value as no deflator corresponded to the aggregate. In order to ensure that prices did not influence the interpretation of the results, a similar econometric analysis was carried out by deflating the GFCF of the APULs by that of the GFCF of general government. The results and the scale of effect of the electoral cycle on changes in the GFCF of the APULs were of the same order of magnitude as those presented here.

Source: National accounts, INSEE

factors alone and this effect is heightened as the year of the election approaches: an average of 9% growth in the year preceding elections for the last five elections. On average and according to the model, 4.1 points of growth in investment by APULs in the year preceding municipal elections are attributable to the electoral cycle.

Conversely, the years following these elections suffer a backlash and are years of sluggish or negative growth in the GFCF of APULs: -2% on average over the last five elections; 4 points on average appear to be deducted from the growth of the aggregate because of the electoral cycle, according to the model. Election years also experience low or negative growth in investment. This can be explained by the dates of the polls being too early in the year (usually in March but exceptionally in June for the 1995 elections) to compensate for the decline in local government investment after polling. On average, the presence of municipal elections appears to reduce growth in the GFCF of APULs by 3 points in those years.

In recent years, it is likely that the approach of the 2020 municipal elections has contributed in the same way to the buoyancy of the GFCF of APULs. In 2018, the nominal GFCF of the APULs grew by 8.6%, of which almost 6 percentage points can be attributed in equal measure to the electoral cycle and the buoyancy in activity, according to the model. In 2019, the GFCF of the APULs looks set to grow by 6.0% in value, of which 4.1 points could be linked with the elections in the next year, or two thirds of the aggregate's pace of growth.

The estimated effect of the electoral cycle is an average effect since 1960. It may nevertheless show variations over time. On the one hand, skills transfer could increase the volume of investment by APULs and hence the scope of the electoral cycle. On the other hand, changes in local taxation and allocations by the State may increase or reduce the municipalities' financial autonomy and ultimately affect their investment decisions (OFCE, 2019). Lastly, the drop in interest rates may also change the investment behaviour of the APULs. Such a change does not seem to be identifiable, according to the model selected here (*Annexe 1*)

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### **Business tendency surveys in the building construction industry and in civil engineering are used to measure the effects of the electoral cycle on payroll employment and output**

This cycle of APUL investment may influence other macroeconomic variables, as output adjusts to satisfy this internal demand, and employment changes according to variations in activity. To determine the influence of the municipal electoral cycle on these respective variables, business leaders' responses to business tendency surveys in the civil engineering and building construction industries were used. These two surveys cover virtually the entire construction branch (composed of public works – civil engineering and specialised construction – and building construction) and this activity itself accounts for almost all investment by APULs (see above). Balances of opinions were used to estimate econometrically the effect of the electoral cycle on employment and output in the construction sector by doing away with the statistical constraints that such an operation would require if it were done on these series directly (see *Annexe 2*). To do this, we first estimate the effect of the electoral cycle on the balances of opinion of business leaders. Then we identify a calibration relationship linking these balances to the target variables (employment and output in construction). By transitivity, the effect of the electoral cycle on these

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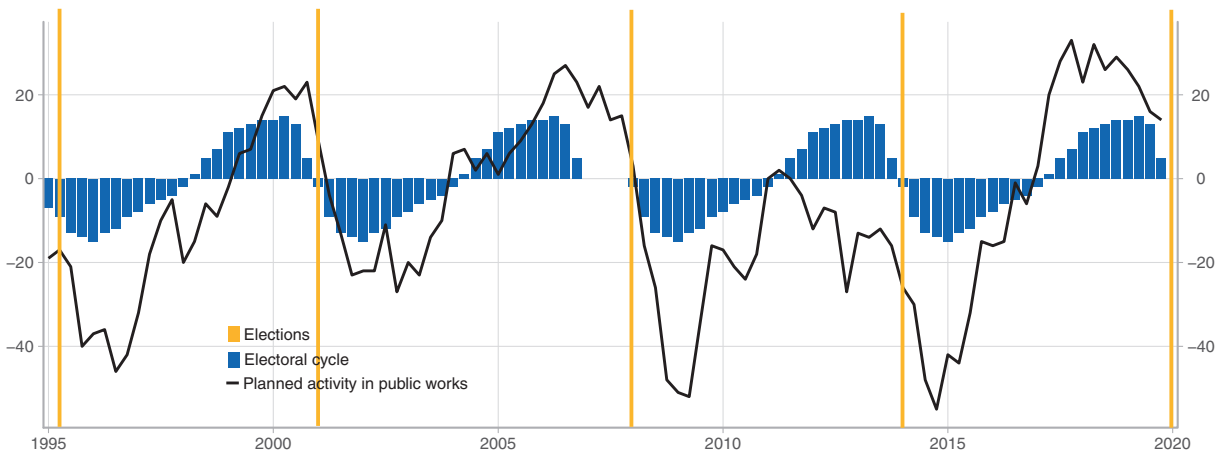
variables can therefore be measured indirectly from the business leaders' responses to business tendency surveys.

Among the questions asked in the business tendency surveys, the one on expected activity reflects the opinion of industrialists on their prospects for activity in the next three months. The balance of opinion (difference between the number of respondents answering "up" and those answering "down" to this question) has a significantly quarterly profile, especially as the dates of the municipal elections draw near, both in civil engineering (Figure 7) and the building construction industry (Figure 8).

Thus according to the model used, the balance of opinion on expected activity in civil engineering in the three quarters before an election date was, on average, 15 points higher than for the other quarters. In other words, 15% more than usual of the businesses questioned replied that their expected activity would go up rather than the reverse. As the election date approached, this share decreased gradually but remained positive nevertheless. For example, this balance was, on average, 12 points higher than usual two quarters before the elections, then 7 points higher in the quarter before. In the quarter of the election, the balance was 3 points lower than usual. In a symmetrical fashion, it remained negative for a few quarters after the elections before increasing once again. In

### 7 - Estimated contributions of the electoral cycle to the balance of opinion on expected activity in civil engineering

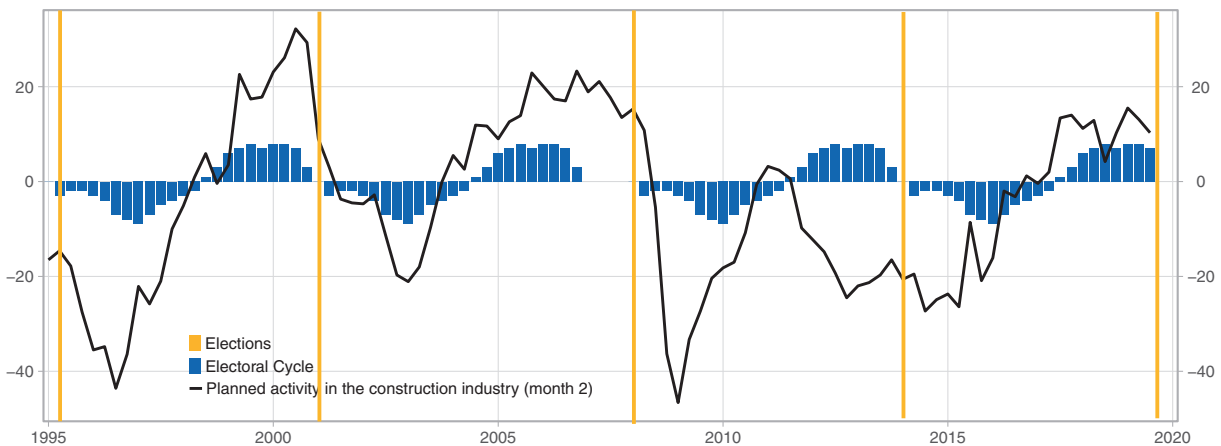
balances of opinion in %, SA



Source: Fédération nationale des travaux publics (FNTP), INSEE: monthly business survey in the public works industry

### 8 - Estimated contributions of the electoral cycle to the balance of opinion on expected activity in the building industry

balances of opinion in %, SA



Source: Fédération nationale des travaux publics (FNTP), INSEE: monthly business survey in the public works industry

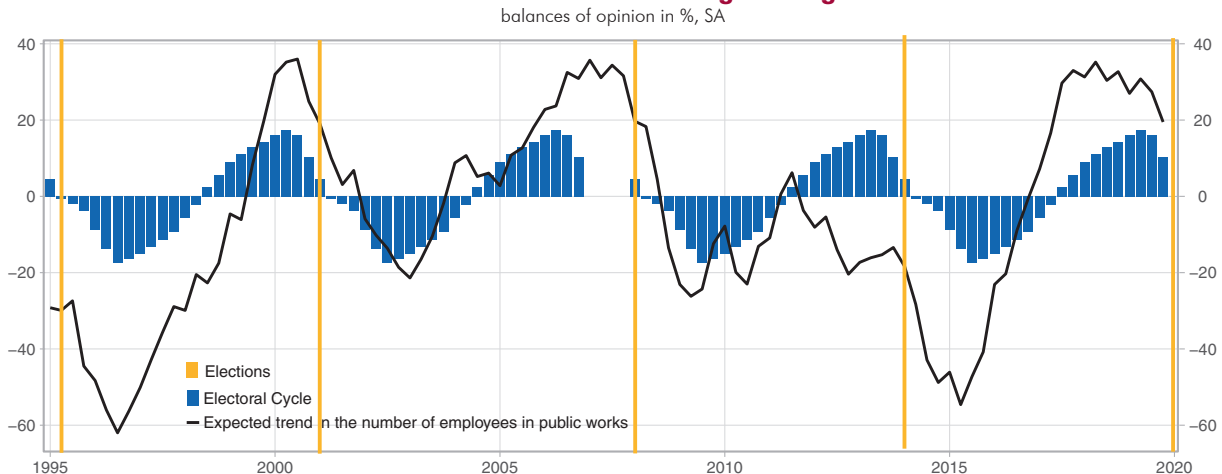
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the quarter after the elections, the balance of opinion was, on average, 9 points lower than usual, reaching a minimum four quarters later (15 points fewer than usual).

Before the municipal election dates, the balance of opinion on expected activity in the building construction industry was also higher than usual, on average, and after these dates it was lower than usual (Figure 8). However, it remained at a high level for longer, 7 points more than usual on average, in the two years before an election. This gap decreased during the quarter that preceded the election (4 points more) and disappeared in the quarter when polling took place. It fell back after the elections, but more gradually. This relatively high inertia compared with the level in civil engineering, both before and after the elections, could be due to the specific features of construction activity in the building sector.

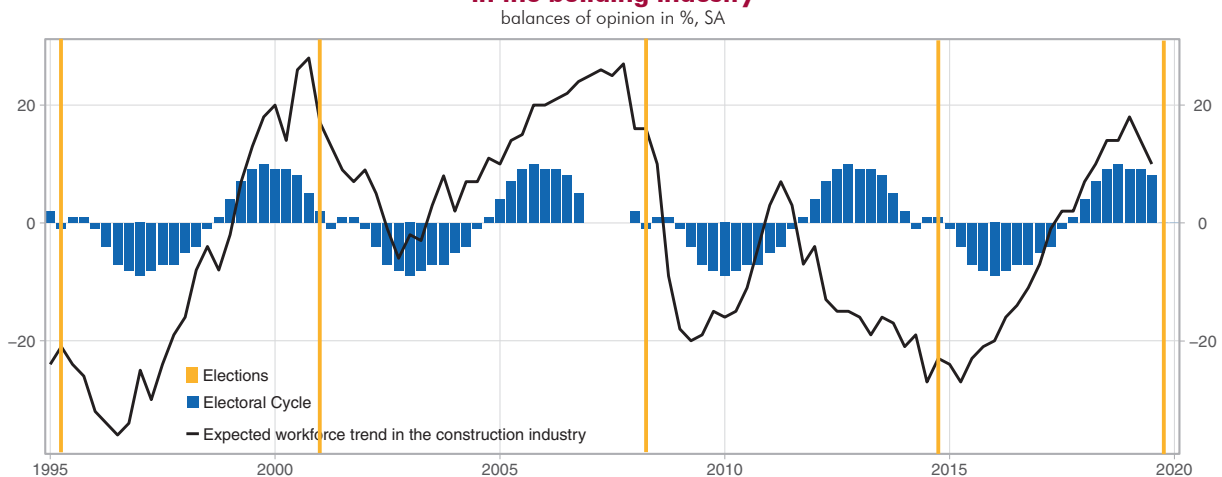
Similarly, the responses of business leaders to the question on expected changes in workforce size also appeared to be affected by the electoral cycle. The maximum effect was different for the two branches: in civil engineering, it was as much as 17 points higher three quarters before the election, against 10 points higher five quarters before the elections in the building industry (Figures 9 and 10). In the quarter of the elections, this balance of opinion was also higher than usual, though to a lesser

### 9 - Estimated contributions of the electoral cycle to the balance of opinion on the expected trend in workforce size in civil engineering



Source: Fédération nationale des travaux publics (FNTP), INSEE: monthly business survey in the public works industry

### 10 - Estimated contributions of the electoral cycle to the balance of opinion on the expected trend in the building industry



Source: Fédération nationale des travaux publics (FNTP), INSEE: monthly business survey in the public works industry



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extent, in civil engineering (+4 points), but not in the building industry (zero contribution).

### The electoral cycle seems to affect both public and private customers of the businesses surveyed

The questionnaire in the two surveys also differentiates the type of project: public (State and territorial authorities) or private (all businesses including those whose capital is controlled by the State). In responses on expected activity, the influence of the electoral cycle appeared to be significant for public-sector customers in civil engineering and also in the building construction industry (Table). However, it was also positive for private-sector customers, contrary to what one would intuitively expect. This could be explained by the fact that businesses use subcontractors for public-sector projects or sometimes carry out additional work on public projects originally carried out by private companies.

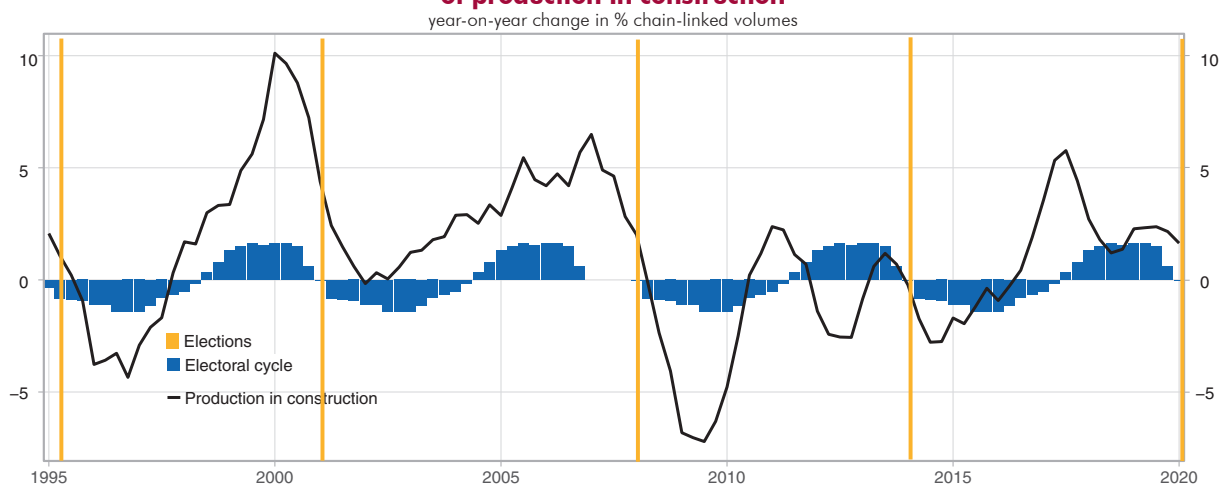
#### Estimated contribution of the electoral cycle to balances of opinion before, during and after the municipal elections

	Q-2	Q-1	Voting quarter Q	Q+1	Q+2
<b>Civil engineering</b>					
Expected workforce trend	16	10	5	-1	-2
Expected activity	13	5	-2	-9	-13
of which public customers	14	7	-3	-12	-16
of which private customers	10	4	0	-4	-7
Opinions on order books	29	22	13	1	-4
of which public customers	30	21	9	-4	-9
of which private customers	24	17	11	6	3
<b>Building industry</b>					
Expected workforce trend in the construction industry	8	5	2	-1	1
Expected activity in the building construction industry (month 2)	7	3	0	-3	-2
Expected activity in the building construction industry (month 1)	8	3	1	-3	-2
of which public customers (month 1)	6	3	1	-2	-1
of which private customers (month 1)	7	2	-1	-6	-3
Opinions on order books	13	9	5	2	5

How to read it: In the quarter of the election, the balance of opinion on expected activity in the building industry is 3 points (or 1 point) higher than usual for the survey in the second (or first) month of the quarter under consideration. In the previous quarter, it was 7 points (or 3 points) higher.

Source: INSEE, business surveys

### 11 - Estimated contributions of the electoral cycle or year-on-year shift of production in construction



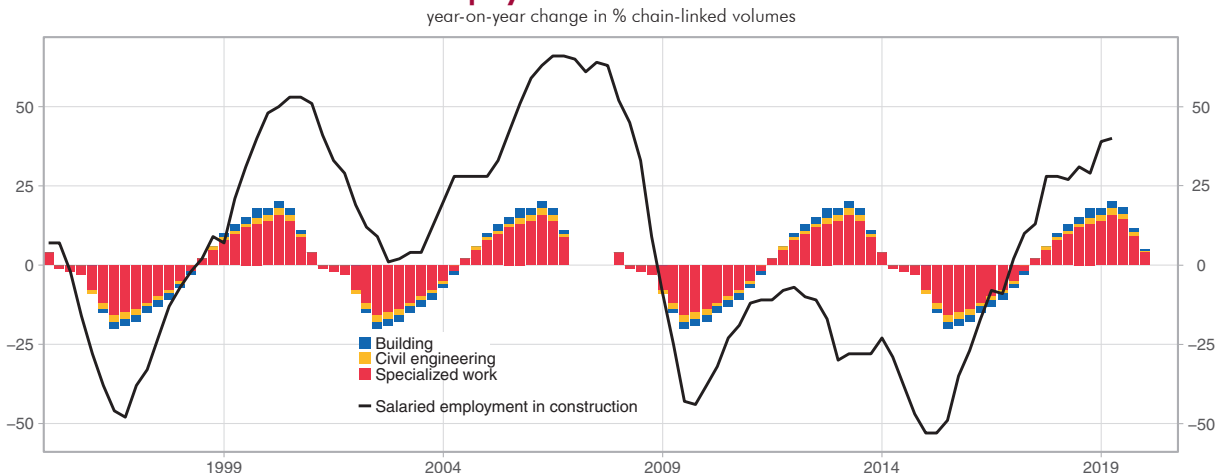
### In the year preceding municipal elections, growth in output in the construction sector appears to receive a boost

As a result of this sensitivity of business leaders' responses to the electoral calendar, the effect of the municipal electoral cycle on construction output can be estimated. On average, between one year and one and a half years before the election, the electoral cycle contributes up to 2 percentage points to year-on-year output in the construction sector (*Figure 11*). As the elections draw nearer, this contribution gradually decreases, and becomes negative one quarter after the election date. A year and a half afterwards, the electoral cycle reduces the year-on-year output in the construction sector by about 1.5 points on average. At first glance, these estimates represent a lowering of the effect on total output, since the electoral cycle can also affect other branches of the economy.

### On average, as many as 20,000 jobs would appear to be created in construction in the year leading up to municipal elections

From these estimates it is also possible to estimate the contribution of the electoral cycle to year-on-year payroll employment in the three sub-branches of the construction sector: building construction, civil engineering and specialised construction. On average, the effect of the electoral cycle is at its maximum three quarters before the election date: payroll employment in construction appears to gain around 20,000 additional jobs over a year (*Figure 12*). The effect of the electoral cycle on employment in the specialised construction branch, which in 2018 represented almost 80% of total payroll employment in construction, appears to make the largest contribution to this movement (+16,000 jobs). Following this, with equal shares, are employment in civil engineering and in building construction (+2,000 jobs in each branch). In the quarter of the election, the effect of the electoral cycle on year-on-

**12 - Estimated contributions of the electoral cycle to the year-on-year change of salaried employment in the construction branches**



Source: INSEE

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year payroll employment in construction appears to be neutral. After this, the electoral cycle is likely to hamper employment during the quarters that come after the election.

The estimate proposed here is probably only a lower bound of the potential effects of the electoral cycle on employment. First of all, as in the case of output, it is likely that it contributed to job creation in other branches. In addition, self-employment, which is not measured here, may also be affected by the municipal cycle.

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### The effects of the March elections are likely to fade gradually over 2020

The 2020 municipal elections will take place on 15 and 22 March. According to the models used here, investment by APULs would appear to have grown twice as quickly in 2019 compared to a period without elections. On average in 2019, sustained by this demand, the annual pace of output in the construction sector appears to have increased by 2.3% of which 1.4 points could probably be attributed to the electoral cycle, or 0.1 points of the average annual pace of growth in total production of the French economy. However, over the forecasting period, i.e. to mid-2020, the contribution of the electoral cycle is likely to become gradually neutral. At the start of 2020, output in the construction sector looks set to slow and will probably be +1.2% year-on-year in Q2, with the municipal cycle no longer contributing to growth in this aggregate. Finally, on average, payroll employment in construction should increase by 31,000 jobs at the annual pace of 2019 of which 17,000 will probably be attributable to the upcoming elections. In Q1 2020, there are likely to be an extra 5,000 net job creations in construction compared with the same quarter in the previous year, as a result of the electoral cycle. However, this effect is unlikely to last into Q2 2020. ■

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## Annexe 1: modelling local government investment

An error correction model was used to describe changes in APUL investment in value. In the long term, the GDP share of the GFCF of APULs was considered as stable, hence the presence of a unit coefficient of GDP in the long-term equation. This stability was challenged in the 2010s, with the result that a dummy is now included. This break could be explained by, among other things, a decrease in operating allowances (National Audit Office, 2015 and 2017). In the short term, changes explained by cyclical factors are measured through variations in GDP, while the effects of the electoral cycle are identified by the Buys-Ballot method: six dummies are included, one for each year separating two election dates. The sum of the dummies equals 1 at each date.

The delaying of the 2007 municipal elections until 2008 resulted in a break in the periodicity of the electoral cycle. To avoid disrupting the estimate, the model was estimated in two stages.

First, the following long-term equation was estimated over the period 1960-2017:

$$\ln(APUL_t GFCF) = -3,8_{(-6,0)} + \ln(GDP_t) - 0,1_{(-3,1)} dummy(t \geq 2014) + \hat{\lambda}_t$$

where  $\hat{\lambda}_t$  is the estimated residual.

Second, in the short term, observations for 2007 were withdrawn from the series used. The estimated equation is as follows:

$$\begin{aligned} \Delta \ln(APUL_t GFCF) = & -0,3_{(-3,8)} \hat{\lambda}_{t-1} + 1,0_{(7,4)} \Delta \ln(GDP_t) \\ & - 0,03_{(-1,5)} election_t - 0,04_{(-2,2)} elections_{t-1} + 0,01_{(0,4)} elections_{t-2} \\ & + 0,01_{(0,5)} elections_{t-3} + 0,03_{(1,8)} elections_{t-4} + 0,04_{(2,1)} elections_{t-5} + \epsilon_t \end{aligned}$$

$R^2 = 0.73$ . Student statistics are given in brackets.

In the absence of a constant, a Buys-Ballot type of model can be estimated where the sum of the coefficients associated with the dummies is zero, reflecting the idea of a periodical cycle (Gourieroux and Monfort, 1995). The estimate from the model reflects a significant restoring force equal to  $-0.3$ . In other words, any deviation in the APULs' GFCF from its trend change is largely absorbed after three years. In the year before a municipal election, the annual change in value of the GFCF of the APULs is 4 percentage points higher than in other years, all other things being equal (coefficient associated with the term  $election_{t-5}$ ).

Lastly, the investment behaviour of APULs as a result of the electoral cycle may change over time. In particular, the scale of the effect of the elections may vary. In order to take this into account, the coefficients  $t \rightarrow \beta_i + \gamma_i t$  associated with the election dummies  $i$  are transformed into linear functions of time: thus making it possible to measure the deformation of the effects of the electoral cycle over time. According to this model, the electoral cycle does not seem to affect APUL investment any more today than in the past. ■

### Annexe 2: using business tendency surveys to estimate the effects of the electoral cycle

#### Presentation of data

Two surveys were used to estimate the effect of the electoral cycle on output and payroll employment in the construction sector: the quarterly business tendency survey of civil engineering (French national federation of public works - FNTP and INSEE) and the monthly business tendency survey of the building industry (INSEE). Around 1,800 businesses representing the civil engineering branch in the first survey and 2,500 in the second, were surveyed every month or quarter on their expected activity in the future, the expected trend of their workforce size, etc. For the monthly survey of the building industry, only the second month of each quarter was retained.

#### Estimate of the effect of the electoral cycle on employment and output in construction

To quantify the effect of the municipal elections on employment and output, a two-step approach was used.

Step one: the effect of the electoral cycle on the balance of opinion relating to expected activity and the trend forecast for workforce size in the building industry and in civil engineering was estimated using the Buys-Ballot method (see *Annexe 1* for a description of the method). To isolate the effect of the electoral cycle, the business climate of the French economy was incorporated into the linear regression in order not to disrupt the estimate of the cycle by variations in activity. Thus, for a balance of opinion, the following equation was estimated:

$$s_t = \beta t + \Gamma' E_t + \lambda \text{climate}_t + \epsilon_t$$

where  $t$  is a linear trend,  $\text{climate}_t$  is the second month of the business climate and  $E_t$  is a vector with 24 dummies, one for each quarter of an electoral cycle. These models were estimated between 1995 and 2018. The estimated coefficients were all significant and the  $R^2$  varied between 60 and 85%.

Step two: a calibration relationship was estimated between output or employment and the chosen balances of opinion. The selected estimates were as follows:

$$\text{production construction}_t = 2,2_{(11,5)} + 0,05_{(2,8)} \text{ActivityTP}_t + 0,12_{(6,2)} \text{ActivityBuilding}_t$$

$R^2 = 80\%$ , période d'estimation : 1995–2018

where  $\text{production construction}_t$  is year-on-year output in construction at a chained volume,  $\text{ActivityTP}_t$  is the balance of opinion on expected activity in civil engineering and  $\text{ActivityBuilding}_t$  the balance of opinion on expected activity in the building industry.

$$\text{Build jobs}_t = 3,4_{(7,8)} + 0,3_{(10,5)} \text{PayrollBuild}_t$$

$R^2 = 55\%$ , estimation period: 1995–2018

$$\text{Civil engineering jobs}_t = 1,3_{(7,7)} + 0,1_{(16,9)} \text{StaffTP}_t$$

$R^2 = 76\%$ , estimation period: 1995–2018

$$\text{specialized works jobs}_t = 8,2_{(6,2)} + 0,9_{(17,9)} \text{StaffTP}_t$$

$R^2 = 78\%$ , estimation period: 1995–2018.

where  $\text{emploi } x_t$  is the annual increase in payroll employment in branch  $x$  in quarter  $t$  in thousands of jobs, and  $\text{staff } x_t$  is the expected trend in workforce size in civil engineering ("TP") or building ("Bat"). The contribution of the electoral cycle to employment and output can now be measured by the indirect effect of the electoral cycle on the balance of opinion. Lastly, contributions are smoothed with a moving centered average of order 3, weighting the central quarter more heavily (50% weighting) than the previous and following quarters (both 25% weighting). For example, 8 percentage points of the balance of opinion on the expected trend in workforce size in the building industry can be explained by the electoral cycle, on average, the year before a municipal election (step one). The effect on employment in the building industry is obtained by multiplying this 8-point average by the coefficient associated with the corresponding balance of opinion in step two (0.3), with the result that about two thousand additional jobs appear to result from the electoral cycle in the year before the election.

When using balances of opinion from the surveys, a two-step approach may be preferable to an approach where the electoral cycle is estimated on employment and output directly.

When predicting employment in the construction sector, a model of labour productivity in construction is required, which is beyond the scope of this analysis. Concerning output, modelling it with a macroeconomic model is difficult. In addition, when using a macroeconomic model, the effect of the electoral cycle on the model's explanatory variables needs to be isolated beforehand: for example, to model employment, the effect of the electoral cycle must first have been eliminated from activity in the construction sector. ■