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CONSUMPTION IN SPAIN DURING THE STATE  
OF ALERT: AN ANALYSIS BASED ON PAYMENT CARD  
SPENDING

José González Mínguez, Alberto Urtasun  
and Miguel Pérez García de Mirasierra

## ABSTRACT

In recent years, information on the usage of cards as a means of payment has been increasingly used as an indicator of private consumption. The advantages of such information include its daily frequency and the short time lag from the moment of spending until it becomes available. This article uses this indicator to analyse Spanish household consumption since the state of alert was declared in mid-March and to explore the corresponding determinants. Indeed, the drop in consumption during the COVID-19 health crisis has been far greater than that suggested by the usual determinants, indicating that other factors could largely explain the developments observed. Included here are the greater uncertainty as to the course of the disease and its economic repercussions, and the restrictions on people's movement and on various economic activities during the state of alert. Card payment data can be used to investigate the importance of social distancing measures when explaining the developments observed in consumption since mid-March. The article identifies that the indicators of payment card usage show a high correlation with the course of the restrictions on movement and activity. The information available also shows how in-person purchases were replaced by online shopping during lockdown.

**Keywords:** private consumption, COVID-19, card payments, restrictions on movement, restrictions on activity, lockdown, social distancing, uncertainty.

**JEL classification:** D10, D12, D31, E21.

## CONSUMPTION IN SPAIN DURING THE STATE OF ALERT: AN ANALYSIS BASED ON PAYMENT CARD SPENDING

The authors of this article are José González Mínguez and Alberto Urtasun, of the Directorate General Economics, Statistics and Research, and Miguel Pérez García de Mirasierra, of the Directorate General Operations, Markets and Payment Systems.

### The determinants of the decline in consumption during the state of alert

In response to the spread of COVID-19, on 14 March the Spanish Government declared a state of alert with a view to containing the spread of the disease. This drastically limited people's movement and introduced restrictions to activity in many productive sectors, with more stringent measures applied to the sectors with greater face-to-face interaction, such as retail trade, recreation, and accommodation and food service activities. As a result, in 2020 Q1 Spanish GDP suffered its largest quarter-on-quarter contraction ever (5.2%), on Quarterly National Accounts estimates for that period. Based on the authors' calculations, the fall in GDP would be notably steeper in Q2, ranging from -16% to -21.8%, depending on whether activity in the quarter has been closer to that described under the early recovery scenario or to that described under the gradual recovery scenario (hereinafter ER and GR, respectively) published recently by the Banco de España.<sup>1</sup>

On the demand side, private spending appears to have experienced very sharp falls across the board in the first half of the year. This is also expected to be the case for private consumption which, having decreased 6.5% quarter-on-quarter in Q1, could see a significantly steeper drop in Q2, like GDP. Indeed, Spanish household spending decisions as regards goods and services are expected to have been very adversely affected by a series of different factors. These factors include, first of all, the usual determinants of consumption. In particular, there have been very substantial job losses since the onset of the crisis, with a negative impact on household income. Specifically, the number of social security registrations fell by more than 4% between mid-March and late June. Moreover, a very large number of people in work have been affected by layoffs or short-time work arrangements (ERTE, by its Spanish acronym), in the case of employees, or have ceased activity, in the case of the self-employed. As a percentage of employment in mid-March, furloughed workers peaked at 23.7% in late April, and still accounted for 17% at end-June. The impact of these developments in employment on household income has, however, been largely mitigated by the different public programmes launched in this regard, together with those already in place, such as unemployment insurance. Second, the high

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<sup>1</sup> See Banco de España (2020a and 2020b).

level of uncertainty surrounding employment and income is holding households back from making spending decisions, leading to greater precautionary saving.

Third, the time path of the trend in private consumption since mid-March also appears to have been greatly shaped by an idiosyncratic factor very specific to this crisis: the ongoing changes in the intensity of the restrictions on movement and activity in force at each point in time. This has affected the possibilities of spending on various goods and services, giving rise to forced saving.<sup>2</sup> The impact of this shock is expected to be concentrated during the period of the state of alert (14 March to 21 June), although its magnitude appears to have been diminishing since lockdown began to be loosened in May. In the immediate future, spending on items such as recreation and travel can be expected to remain weighed down by the greater degree of persistence of the restrictions on these activities, contributing to limiting the recovery in consumption. This article primarily investigates the role played by this type of idiosyncratic factor, linked to the restrictions on movement and activity, in the changes in consumption during the state of alert. To this end, it analyses, in particular, the information arising from that consumer expenditure where payment cards were used since the outbreak of the pandemic.

Indeed, COVID-19 has brought about an extraordinarily unusual and purely exogenous shock; given the characteristics of the shock, the trend observed in private consumption since the state of alert was declared can only be imperfectly explained using the usual determinants. Chart 1.1 shows the contributions of these determinants to the drop observed in private consumption in Q1 and to that expected in Q2 under the ER and GR scenarios; the contributions presented were obtained from the equation for private consumption of the Quarterly Macroeconometric Model of the Banco de España (MTBE, by its Spanish abbreviation).<sup>3</sup> As can be seen, the contribution to the fall-off in consumption from the usual determinants (such as household income and wealth, the unemployment rate and interest rates), which appears to be relatively modest in Q1, is expected to be much greater in Q2 (of around -2.3 pp and -3.4 pp under the ER and GR scenarios, respectively).<sup>4</sup> Nevertheless, the proportion of the drop in private consumption that cannot be explained by the equation (i.e. the residual of the equation) is very high in both quarters; this could be interpreted as the decline in this variable being attributable to the increase in uncertainty and to the idiosyncratic shocks of COVID-19 (such as the closure of retailers and the restrictions on movement) rather than to the aforementioned usual determinants.

One characteristic of this crisis is that the usual pattern of volatility being lower in consumption than in income has not been seen. This usual pattern is explained by

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2 See Wren-Lewis, S. (2020).

3 See Arencibia et al. (2017). The MTBE is the macroeconometric model usually used by the Banco de España to prepare projections for the Spanish economy and to develop simulations under different scenarios.

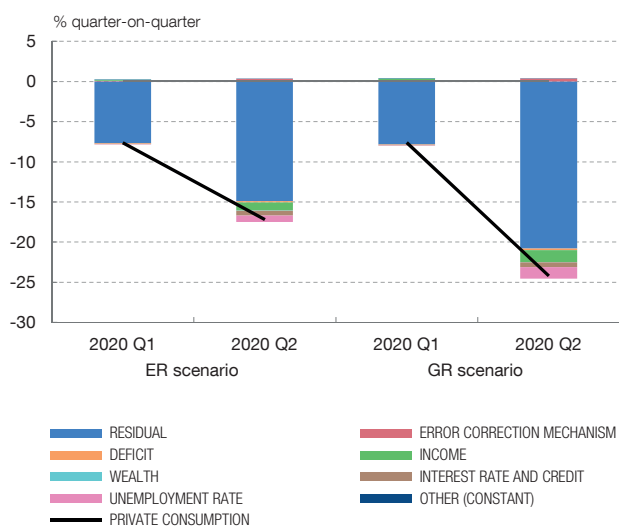
4 The magnitude of these contributions is also large in comparison with what tends to be observed in the time series (and, in particular, is greater than in the global financial crisis).

Chart 1

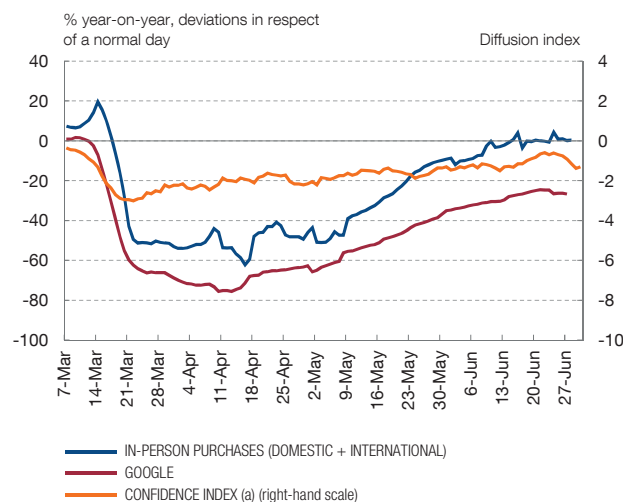
## DETERMINANTS OF THE FALL-OFF IN CONSUMPTION DURING THE STATE OF ALERT

COVID-19 has brought about an extraordinarily unusual and purely exogenous shock; given the characteristics of the shock, the trend observed in private consumption since the state of alert was declared can only be imperfectly explained using the usual determinants. The trend in private consumption since mid-March appears to have been greatly shaped by the ongoing changes in the intensity of the restrictions on movement.

1 CONSUMPTION GROWTH AND CONTRIBUTIONS



2 CARD SPENDING AND DETERMINANTS



SOURCES: INE, Google, Sistema de Tarjetas y Medios de Pago and Banco de España.

a Constructed on the basis of press articles. See Aguilar et al. (2020).

various factors, including the time lag between changes in income and adjustments to spending, and, in particular, because households try to maintain a smooth consumption pattern over time, such that fluctuations in income are softened by changes in their saving. In contrast to what is usually the case, consumption has contracted far more than income during the current crisis, leading to a very sharp rise in the saving rate. Specifically, the saving rate rose by close to 3 pp in Q1, to 11.2% of disposable income. This could in part be attributable to the increase in uncertainty. However, the large scale of the rise suggests the likely important role played by the public programmes to protect household income, and the most purely idiosyncratic factor of this crisis: the fact that a significant part of the shock has been due to the impossibility of consuming certain goods and services.<sup>5</sup>

## Card spending as an indicator of the trend in consumption since the start of the state of alert

Given the speed with which events have progressed, it is worth using high-frequency (ideally daily) indicators, as the monthly indicators normally used would mask intra-month changes whose magnitude could potentially be high.

5 Muellbauer, J. (2020) also lists the fall in asset prices and tighter credit availability as determinants.

A daily indicator that could be particularly useful in this setting is the information available on households' usage of their cards as a means of paying for consumer goods and services during this period. As explained in detail in the annex, the daily information available on such payments allows a series of indicators to be constructed with the capacity to proxy the daily behaviour of private consumption. As with any other indicator, however, the mapping to the macroeconomic aggregate under analysis is not perfect and, as mentioned in the annex, the results need to be interpreted with due caution.

The significant role that appears to have been played by the uncertainty and the restrictions on movement when explaining the recent trend in household expenditure is endorsed by the close relationship between the high-frequency indicator used for approximating this latter variable (the portion of spending using cards) and a confidence index and mobility indicator, as can be seen in Chart 1.2.<sup>6</sup> In any event, the chart suggests that, after the first week of lockdown, the subsequent persistence in the weakness of consumption is related more closely to the mobility indicator than to the confidence index. The closer correlation with the former indicator is also observed in the subsequent recovery in consumption. Indeed, since the entry into force of the state of alert, the values observed for the year-on-year rate of card-based spending barely differ from those estimated through a simple regression of that variable on the basis of the year-on-year change in the mobility indicator (see Chart 2.1). This seems to imply that the intensity of the restrictions on movement and on certain productive activities could have been the main determinant of private consumption in Spain since the start of the pandemic.<sup>7</sup>

It might be thought that these restrictions have been a key factor when explaining the large fall-off in private consumption in Q1, even though they only affected the last two weeks. The negative impact of the restrictions under the state of alert on purchases of consumer goods and services appears to have reached its peak at the start of Q2, coinciding with the suspension of non-essential activities from 30 March to 9 April. These restrictions on movement and on activity were already being progressively lifted in May, in step with the implementation of the plan for easing lockdown, enabling household spending to gradually gain greater momentum towards the end of Q2.

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6 Specifically, the mobility indicator, prepared by Google, reflects the trend of the number of visits by people to their place of work, in respect of a reference day that represents a normal value on that day of the week. A confidence index constructed on the basis of press articles is used as an uncertainty indicator (for a description, see Aguilar et al. (2020)). Lastly, the card spending indicator used considers the rate of change in the value of card payments made in person in respect of the equivalent day in the previous year, in which the only purchases considered are those where the issuer of the card of the person who makes payment, at the physical point of sale, is a resident entity (see the annex). Further, card spending is a good approximation of the portion of consumption for which this instrument is used as a means of payment because, although it also includes payments not related to household spending, such as transactions between firms, these are also quantitatively much less significant.

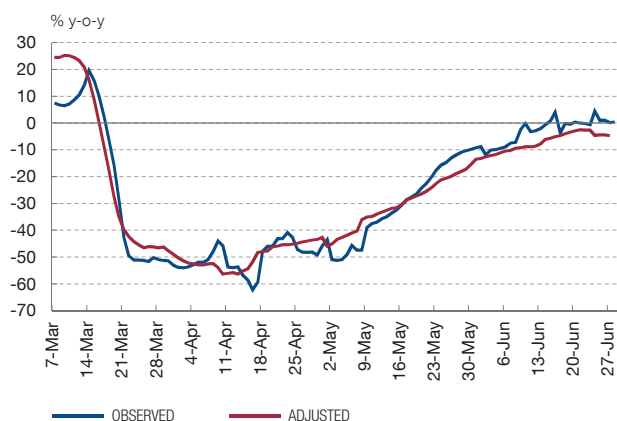
7 However, the decline in mobility may not only be determined by the restrictions introduced, but also by the uncertainty.

Chart 2

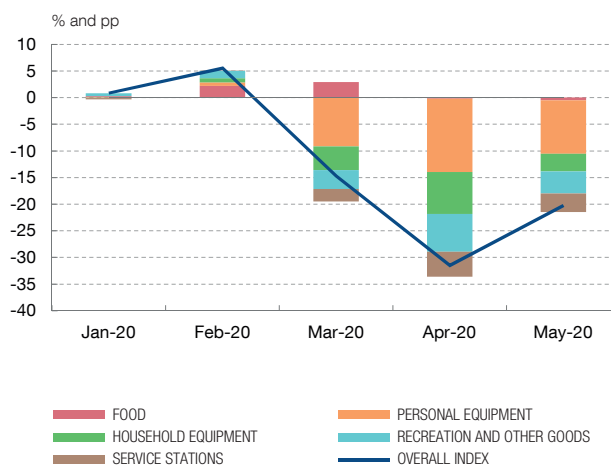
**THE EFFECT OF THE LOCKDOWN ON SPENDING**

Payment card spending has quite closely reflected the time path of the lockdown. The retail trade indicator ICM mirrored the behaviour of consumption, with spending on food showing a positive rate at the start of the state of alert.

1 CARD SPENDING, OBSERVED (a) AND ADJUSTED (b)



2 RETAIL TRADE  
Y-o-y growth and contributions



SOURCES: INE, Sistema de Tarjetas y Medios de Pago and Banco de España.

- a Rate of change in the seven-day moving average in respect of the equivalent period in the previous year.
- b Adjusted values of the regression of the growth in in-person card spending based on travel to workplaces.

Payment card spending (a daily indicator) has quite closely reflected the time path described (see the blue line in Chart 2.1). In the days running up to lockdown, spending through this means of payment posted a notable upsurge, to 20% year-on-year, as a result of the dynamism of purchases of consumer staples, probably because households stocked up on them, anticipating that it would be more difficult to buy them at a later date. This behaviour was reflected in the trend of the retail trade indicator (ICM, by its Spanish abbreviation) in March. Of the components of this monthly indicator, only spending on food showed a positive rate for the month as a whole (see Chart 2.2).

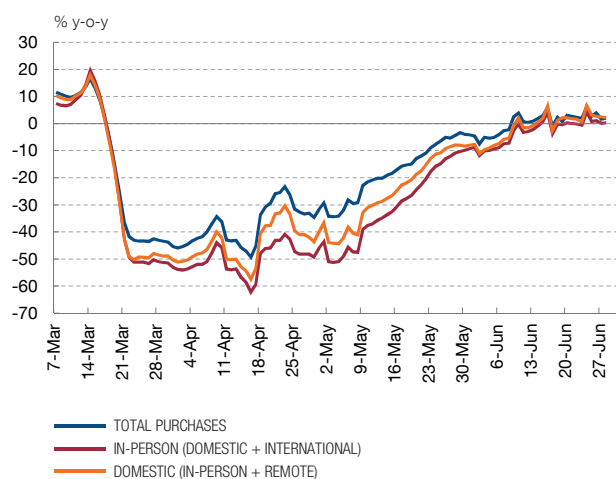
Immediately after the state of alert was declared, private consumption, proxied by the indicator of card spending, saw a drastic drop, equal to or more than 50% year-on-year, for the period covering approximately the last 10 days of March and first 20 days of April (encompassing the period in which non-essential activities were suspended). On information from the ICM covering the period from March to May, the contributions to the fall-off in the consumption of goods were sharper in all non-food categories, which could in part reflect the worsening in the macroeconomic outlook and the increase in uncertainty. However it was also the result of the fewer possibilities for purchasing such goods (personal equipment, household equipment, and recreation and other goods) and the fact that, although some goods could be acquired, their consumption was prevented by the restrictions on movement (spending at service stations).

Chart 3

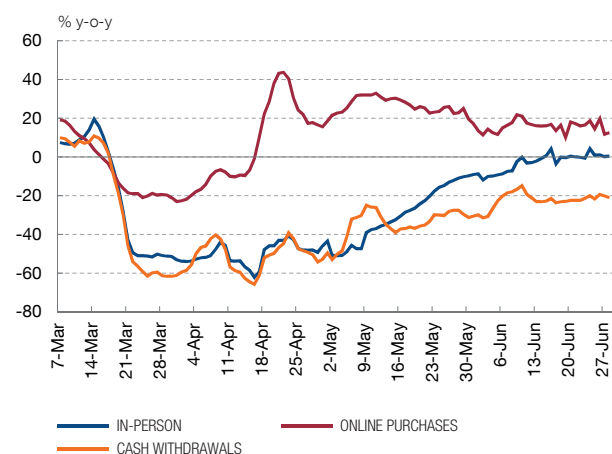
**RESTRICTIONS ON MOVEMENT AND DISTRIBUTION CHANNELS**

Online purchases have grown robustly since mid-April. Conversely, cash withdrawals at ATMs have continued to show very steep year-on-year declines.

1 CARD SPENDING (a)



2 CARD USAGE BY CHANNEL (a)



SOURCES: INE and Sistema de Tarjetas y Medios de Pago.

a Rate of change in the seven-day moving average in respect of the equivalent period in the previous year.

The decreases in the value of card-based transactions began to ease from late April onwards; this trend gradually intensified throughout May and June with the implementation of the process of easing lockdown. The lifting of lockdown, which was heterogeneous across activities and regions, enabled a gradual expansion of households' spending possibilities, by allowing various retail trade establishments that had been closed during confinement to reopen, and a greater number of journeys to be made. As a result, from mid-June onwards card spending has drawn closer to the levels posted a year earlier.

In addition, interesting conclusions about consumer habits during the period analysed can be drawn from the data relating to card payments. Specifically, restrictions on household mobility not only led to sharp falls in spending by these agents via cards, but they also seem to have affected the distribution channel chosen. Chart 3.1 shows the series of changes to date in the portion of card spending in person at points of sale (in Spain or abroad); therefore, it excludes remote spending.<sup>8</sup> The chart also shows two other series. The first series, called "domestic spending", differs from the in-person indicators in two ways: first, it excludes spending at foreign points of sale;

<sup>8</sup> Remote commerce mainly relates to e-commerce, but also includes mail order/telephone order (MOTO) transactions, which are made via e-mail or over the telephone and are quantitatively much less significant (see the annex).



second, it includes online spending in resident establishments. In comparison with in-person spending, the last series represented, called “total spending”, includes online spending in both resident and non-resident establishments.<sup>9</sup>

As shown in the chart, the decline in total spending during April and May was significantly less pronounced than in the other two cases. Tentatively, this difference would be consistent with quick learning by consumers, who understood early on that purchases via digital platforms, where the seller is a non-resident establishment in more than 60% of cases, could replace in-person purchases. The domestic spending series took somewhat longer to display a less unfavourable behaviour than the in-person spending series. This could be explained by a second learning process at resident establishments (which took slightly longer to occur than the consumer learning process described above) consisting of tapping the possibility of replacing in-person selling with the online channel. Subsequently, since the easing of lockdown began, in-person spending has performed more favourably. This appears to reflect that physical purchases at establishments have once again become an option for consumers.

In addition to seemingly forcing a significant change in the pattern of household consumption as regards the distribution channel chosen, the confinement measures also appear to have impacted the payment means used. Chart 3.2 shows the changes in card use for in-person and online purchases and for cash withdrawals. The restrictions on movement coincided with falls in the three series. However, the decline was much less in the case of online purchases. In May the positive effect of starting to ease lockdown arose only in payments at point of sale (POS) terminals, while cash withdrawals at ATMs continued to post very steep year-on-year declines. This behaviour, which could be due to uncertainty about a hypothetical perceived risk of contagion associated with handling cash, suggests that a possible calibration of the fall in consumption in Q2 based solely on the use of cards at POS might lead to overestimating the improvement in this spending component.<sup>10</sup>

## Outlook for 2020 Q3

With a view to Q3, once most of the activities that had been suspended resume and people can move without restrictions, it can be expected that consumption will

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9 These definitions are actually approximations of a somewhat more complex reality. Basically, as described in greater detail in the annex, the domestic indicator only includes spending where the payment service provider for the establishment at which the purchase is made (i.e. the entity, usually a bank, that has a contractual relationship with the business for accepting and processing card payment transactions giving rise to a transfer of funds to the business) is a resident. Thus, the domestic indicator does not include cases where large retail trade companies operating in Spain and with a foreign parent have a payment service provider that is also non-resident. This is relatively frequent (more so in online commerce than in in-person commerce) and, accordingly, the volume of these operations within total spending might not be quantitatively negligible. Conversely, the in-person and total indicators do also include spending where the payment service provider is non-resident.

10 In any event, it should be noted that the evidence available suggests that the possibility of infection associated with handling cash is very limited. See, for example, Panetta (2020).

reflect the, undoubtedly severe, impact that the crisis may have on the usual determinants (except as regards the establishment of capacity restrictions for certain activities). In this connection, a crucial element regarding the outlook for this spending item is that the proportion of jobs that can be saved by means of furlough schemes is as high as possible. Also, measures to protect income and assist the most vulnerable households will constitute elements supporting consumption, given the high marginal propensity to spend of population groups benefiting from these measures.<sup>11</sup> One last factor to bear in mind is the possibility that consumption decisions were put on hold during the months in lockdown, as is common during crises. This pent-up demand, which is usually associated with durable goods, will likely contribute to an increase in household consumption from the summer onwards.

21.7.2020.

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11 For the case of the United States, see Cox et al. (2020).

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## Annex 1

### Considerations on the use of payment card system data

This annex aims to describe, in simple terms, what a payment card system is, which actors are involved and what the relevant considerations are when using the related data as an indicator for monitoring private consumption.

One of the main components of a card system is the set of functions, procedures, arrangements, rules and devices that enable a holder of a card to effect a payment to a third party or to withdraw cash from an ATM. Various models may be used for card systems, although one of the most common models, which is also used in Spain,<sup>1</sup> is the so-called “four-party scheme”, presented in Figure A.1.

The four main actors in this model are the cardholder, the merchant where the transaction is carried out and the two payment service providers (PSPs) adhered to the scheme, which have a contractual relationship with the cardholder (in the case of the issuer) and with the merchant (in the case of the acquirer). Further, the more technical functions (authorisation, clearing and settlement) are performed by “processors”, which establish a bilateral relationship with each financial institution in order to perform this function, and central processors, which undertake transaction authorisation, clearing and settlement functions.

According to Figure A.1, statistical information can be obtained from two different perspectives: that of issuers, and that of acquirers, which would coincide in aggregate terms in a closed system with no relationships with any other system. The national card system provides support for most domestic transactions, but other processing systems, such as those of Visa and Mastercard, also participate in cross-border transactions. Although they are a minority, mention should also be made of some Spanish merchants and some issuing and acquiring PSPs providing payment services in Spain, either from that country or remotely (through European passporting arrangements), which opt to process all their transactions, including domestic ones, through international systems.

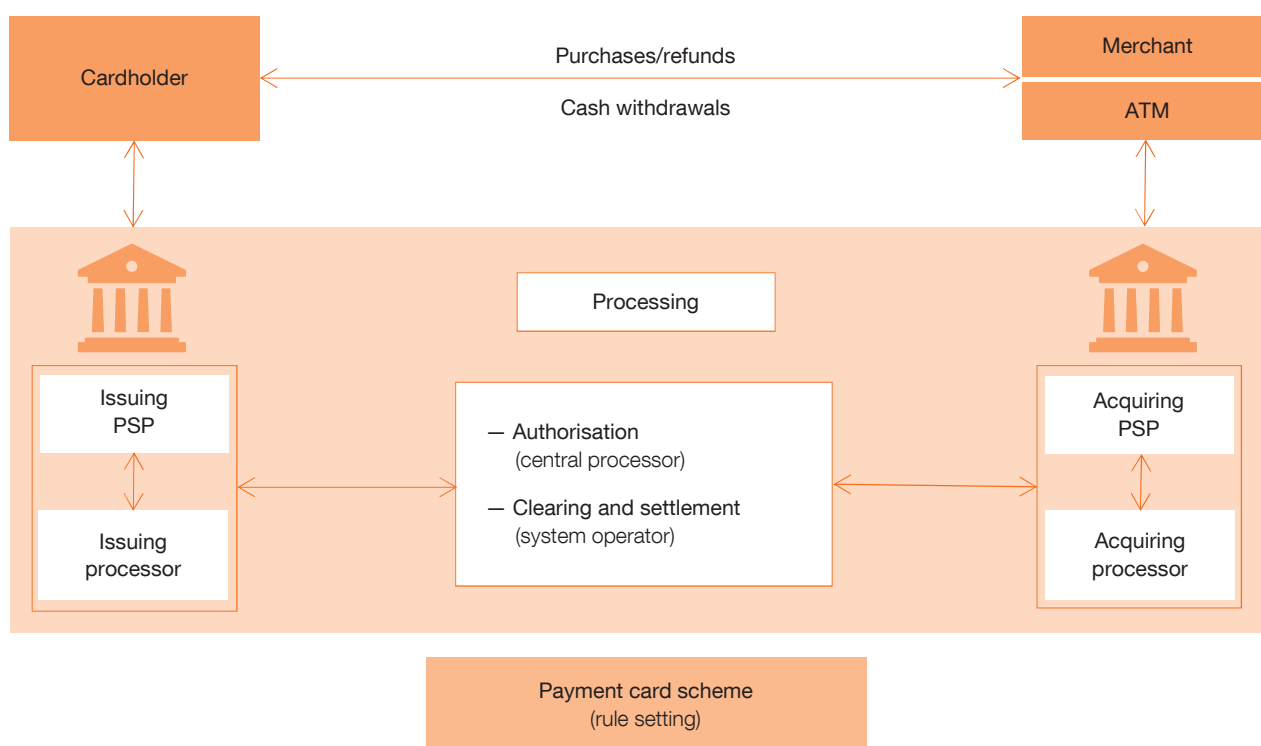
The daily data obtained for this analysis are from the perspective of the issuer, specifically from that of a central processor of the national system. As a result, the sample of data obtained does not encompass all card-based transactions in Spain. In simple terms, transactions processed by another central processor and those in which issuer and the acquirer are one and the same (“on-us” transactions, in payment systems terminology) are not included. This means that the sample represents approximately nearly two-thirds of purchases and somewhat more than 10% of domestic cash withdrawals from ATMs. The low representativeness of the latter figure is because, unlike in purchase transactions, in cash withdrawals cardholders

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<sup>1</sup> Sistema de Tarjetas y Medios de Pago (STMP), resulting from the merger of ServiRed, Sistema 4B and EURO 6000.

Figure A.1

**SIMPLIFIED MODEL OF A FOUR-PARTY CARD SCHEME**



SOURCE: devised by authors.

mostly use their bank’s ATMs to avoid charges, i.e. they are “on-us” transactions that do not involve the central processor.

It is important to highlight the distinction between domestic and cross-border transactions under the current statistical framework of card-based transactions. Under this framework, a transaction is considered as domestic if both the issuer, which provides the card to the holder, and the acquirer, which operates on behalf of the merchant, belong to the same country. Cross-border transactions are deemed to be those where the issuer or acquirer are subject to different jurisdictions. This way of classifying transactions is highly important from the standpoint of payments and has significant implications when using the daily data from the card scheme as an indicator of private consumption. The reason is that the nationality of the cardholder and the location of the payment terminal are not unequivocal criteria for classifying a transaction as domestic or cross-border. For instance, a payment between a Spanish cardholder and a merchant located in Spain would be classified as a cross-border transaction if the acquirer is not Spanish. Such circumstances, which are not so uncommon, can arise at physical merchants established in Spain that have a very close link to another country (for example, if the parent undertaking

Table A.1

**COVERAGE OF CARD TRANSACTIONS BASED ON THE INDICATOR USED**

	In-person, domestic	In-person, cross-border (POS terminal outside of Spain)	In-person, cross-border (Spanish merchant, foreign acquirer)	Remote, domestic	Remote, cross-border (foreign acquirer)
Indicator of domestic spending	✓	✗	✗	✓	✗
Indicator of in-person spending	✓	✓	✓	✗	✗
Indicator of remote spending	✗	✗	✗	✓	✓
Indicator of total spending	✓	✓	✓	✓	✓

**SOURCE:** devised by authors.

is located abroad). This situation is even more common in the case of e-commerce transactions carried out through large online platforms.

In the light of these considerations, all the available series relating to card-based payments offer very valuable information for estimating changes in private consumption, although none is a perfect proxy for the macroeconomic aggregate in question. The main notes of caution affecting the indicators analysed in the article are discussed below.

In-person spending using Spanish cards at domestic and cross-border points of sale does not include remote consumption (see Table A.1).<sup>2</sup> This, in turn, comprises online transactions and so-called MOTO (mail order/telephone order) transactions, in which the originator begins the transaction by e-mail, on the basis of a catalogue, or by telephone. Remote consumption has had a larger than usual weight during the crisis.

Domestic spending using Spanish cards at points of sale of Spanish banks does not include transactions carried out using devices of foreign acquirers, which may be especially significant for online transactions where, as indicated, it is more likely that, in the case of large online stores, the acquirer is not resident.

Lastly, total spending both in Spain and abroad using cards issued in Spain includes online shopping, whether carried out in Spain (with the participation of a Spanish or foreign acquirer) or abroad. Given that in-person consumption outside of Spain has fallen by more than 80% during the crisis, an estimate of domestic consumption by residents based on this indicator could be tilted downwards.

<sup>2</sup> As previously indicated, cross-border transactions do not necessarily have to be purchases carried out at a POS terminal abroad: they could also be a purchase carried out at a POS terminal located in Spain in which the acquirer is not Spanish.