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Claude Grasland, France Guérin-Pace, Marion Le Texier, Bénédicte Garnier

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# Diffusion of foreign euro coins in France, 2002-2012

Authors : Claude Grasland, France Guérin-Pace, Marion Le Texier, Bénédicte Garnier

## Summary :

Since they were brought into circulation in 2002, euro coins have travelled widely across Europe. The country of issue gives an indirect indication of the movements of the individuals who have carried these coins and of the intensity of international relations. The percentage of foreign euro coins in France rose from 5% in March 2002 to 34% in December 2011, and the proportion is greater for coins with a higher face value (50 cents, 1 or 2 euro), which are more mobile. Distance from the national border is a key factor explaining the domination of Spanish coins in the south-west and of German and Belgian coins in the North-East. Alongside cross-border movements, travel between cities for work purposes and movements of tourists also contribute to the mixing process, as shown by the more diffuse spread of Italian coins across France.

The circulation of the European currency provides an indicator of the movements and contacts between the different regions of Europe. A series of surveys have been conducted to track the movement of foreign euro coins in France since they were first brought into circulation ten years ago. Claude Grasland, France Guérin-Pace, Marion Le Texier and Bénédicte Garnier present the main survey findings.

Brought into circulation in 2002, euro coins are carried across Europe by travellers moving around for work, leisure or other purposes. As each coin has a national side specific to the issuing country, their origin can be traced. Have these coins become totally mixed over the last ten years, and are coins from a particular country found in similar proportions across Europe? How has this mixing progressed, and at what speed?

A series of surveys have been conducted to track the diffusion of foreign euro coins in France over the last ten years (see Box). The following question was asked to the 2,000 respondents of each survey: "We are now going to talk about the euro and particularly about the circulation of coins in the euro area. Could you show me if you have any French or foreign euro coins in your purse?". Around three-quarters of respondents agreed to open their purse and show the interviewer the euro coins it contained.

## Observing the diffusion of euro coins

To track the mixing of euro coins, we set up the Euro Spatial Diffusion Observatory (1) (ESDO) in early 2002 to record the contents of French purses on a regular basis. These surveys were conducted initially every three months to track the early diffusion process. They were later spaced more widely apart, becoming yearly and then multi-annual. The most recent survey was conducted in December 2011 to coincide with the euro's tenth anniversary. A total of 16 surveys have been conducted since March 2002, involving more than 20,000 respondents, and the countries of issue and face values of almost 300,000 coins have been recorded.

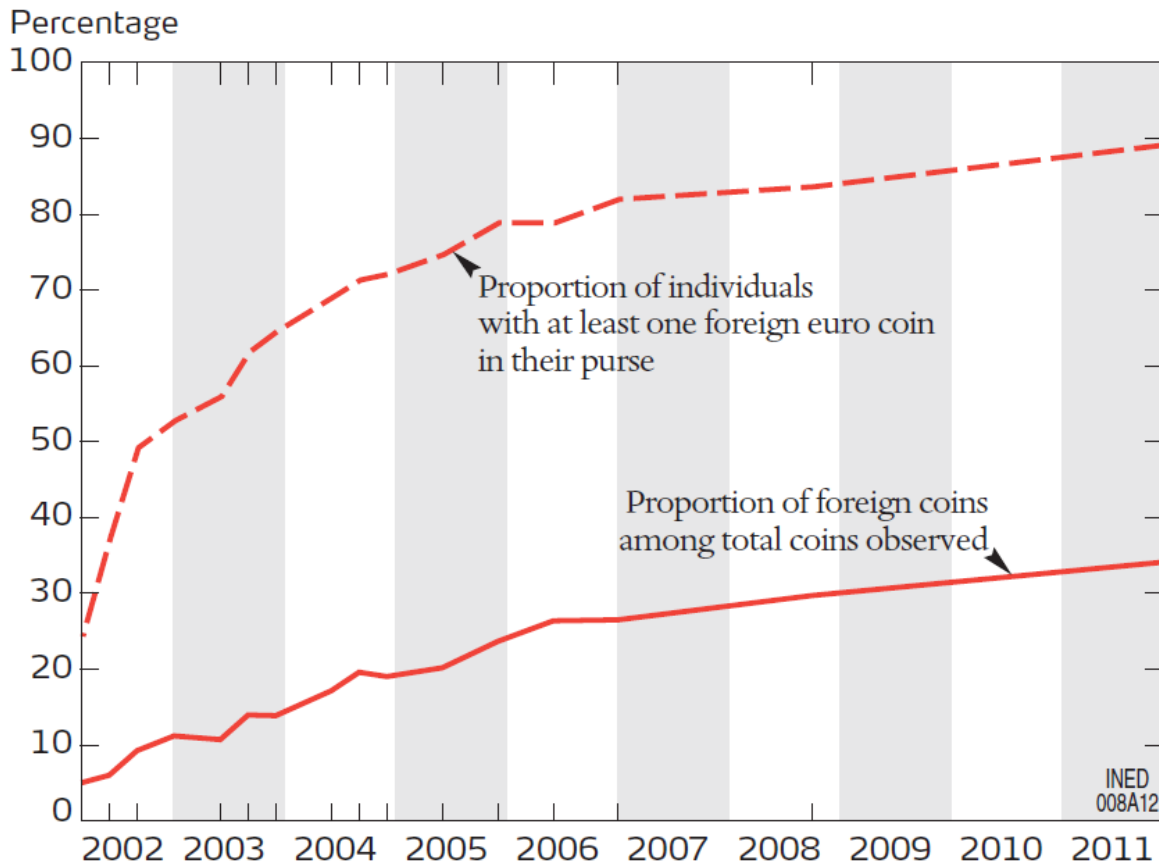
Each of these surveys (2), excluding the first, involved a sample of 2,000 persons representative of the French population. At each survey wave, we examined the contents of around 1,500 purses, and the face value and origin of around 15,000 coins. The average contents of French purses appears to be shrinking slightly over time, falling from around 14 coins in 2002 to slightly more than 12 at present. This reduction is probably due to a decline in the use of small coins, 1 and 2 cent coins especially, which may eventually be withdrawn in France, as is already the case in other eurozone countries (Finland and the Netherlands).

(1) The Euro Spatial Diffusion Observatory (ESDO) was set up in 2002 by C. Grasland and F. Guérin-Pace, in collaboration with research teams from INED (UR12) and CNRS (UMR Géographie-cités and UMS RIATE).

(2) The question on the content of purses was included in "omnibus" surveys conducted by the Lavielle polling company (ISL).

### One-third of euro coins in France are foreign

The proportion of foreign euro coins circulating in France increased considerably between March 2002 and December 2011, from 5% to 34% (Figure 1). In terms of the proportion of individuals whose purse contains at least one foreign euro coin, (rather than the proportion of foreign coins), one respondent in four (24%) already had at least one foreign coin in 2002, versus slightly over half (53%) in January 2003, and almost nine in ten today (89%).



Note: The graduations on the x-axis indicate the survey dates

(C. Grasland et al., *Population and Societies*, no.488, INED, April 2012)

Sources: ESDO surveys.

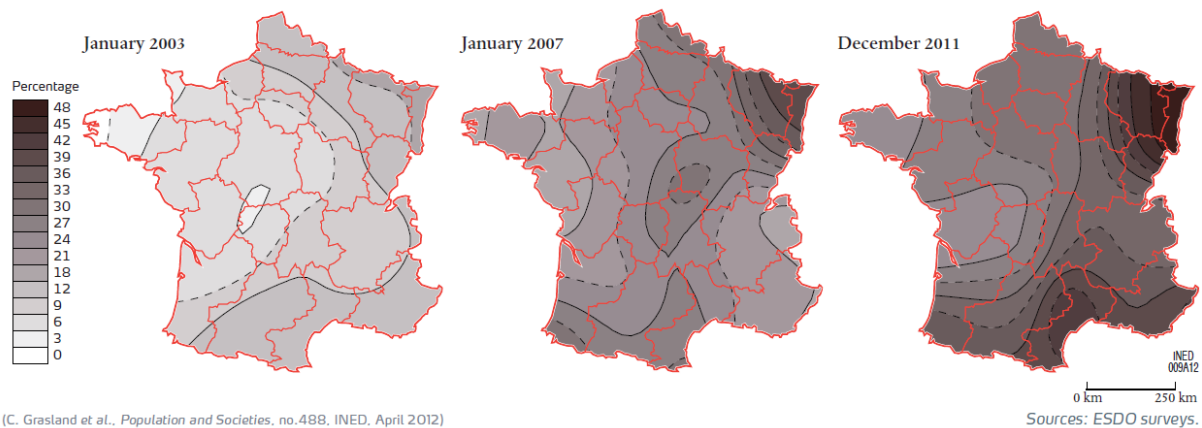
Figure 1: Diffusion of foreign euro coins in France (March 2002 to December 2011)

Over this ten-year period, have we reached or are we nearing a perfect mix, as some predicted in 2002? In reality, this is far from the case, since a perfect mix would signify that foreign coins account for not one-third but more than four-fifths of the coins in respondents' purses (since France minted only one-fifth of all euro coins in circulation). Even excluding the new eurozone countries, it is clear that the mixing process has been slower than predicted by physicists and mathematicians. [1] In any case, given that new coins are regularly minted and put into circulation in the issuing countries, a perfect mix will never be achieved.

In previous articles, we predicted that the mixing would be slower, based on our initial survey findings that revealed two types of diffusion process in France, one rapid, but over short distances and limited to border regions, and the other slower, and more long-distance. [2, 3] Mixing in border regions is intense but ineffective: a large share of the local population is involved, but the coins tend to move backwards and forwards across the national border, progressing only slowly, from person to person, towards the centre of the country. Long-

distance movements for work or leisure are more effective, but as they tend to concern the social elites, they are less numerous and involve fewer exchanges of coins.

The importance of the distance from national borders is illustrated by the fact that in January 2003, after one year of circulation, more than 15% of euro coins were foreign in areas close to the German border, compared with less than 5% in Brittany (Figure 2). After a decade (December 2011), there is still a sharp contrast between the north-eastern border regions where more than half of all coins are foreign, and the western regions where three-quarters are still French.



(C. Grasland et al., *Population and Societies*, no.488, INED, April 2012)

Sources: ESDO surveys.

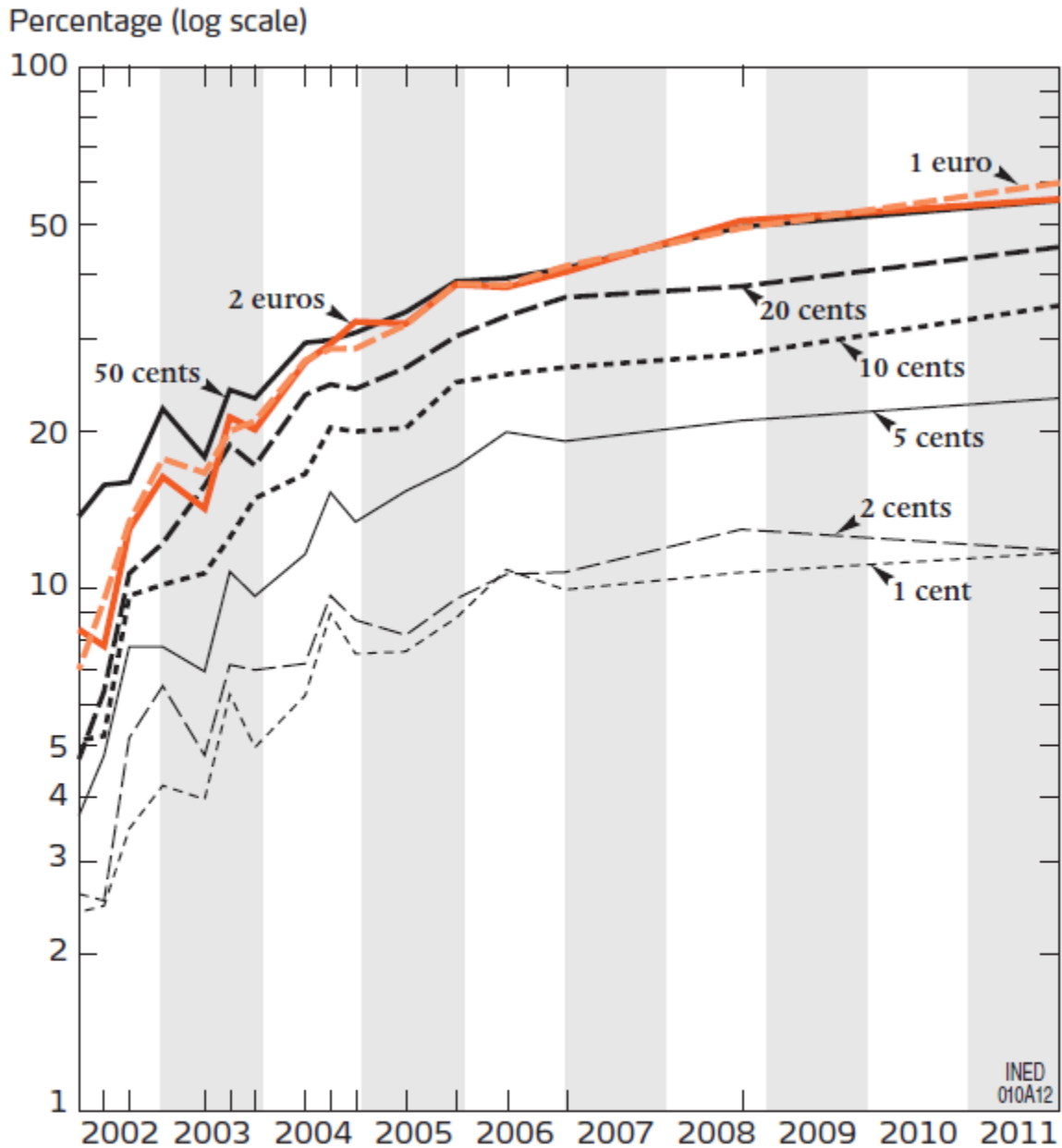
**Figure 2: Diffusion of foreign euro coins in France (proportion of foreign coins in respondents' purses)**

### Mixing varies by face value

Surprisingly, coins move at different speeds, depending on their face value<sup>1</sup> (Figure 3).

- 50 cents, 1 euro and 2 euro coins have mixed the fastest, with foreign coins representing 55%, 60% and 56% of the total, respectively, a level close to perfect mixing.
- 5, 10 and 20 cent coins are much less mixed, with lower proportions of foreign coins: 23%, 34% and 45%, respectively. The process should continue, however, up to around a fifty-fifty mix of French and foreign coins.
- 1 and 2 cent coins are the least mixed, with only 12% of foreign coins for both in 2012. Extrapolation of the trend curves suggests that the proportion of foreign coins will never increase beyond one-quarter to one-third.

<sup>1</sup> This partly explains why some of our colleagues who conducted similar studies in other countries obtained results that were different from ours. They did not anticipate this phenomenon, and to simplify data collection, only looked at 1 euro coins.  
[www.mathe.tu-freiberg.de/Stoyan/euro](http://www.mathe.tu-freiberg.de/Stoyan/euro)



Note: The graduations on the x-axis indicate the survey dates

(C. Grasland et al., *Population and Societies*, no.488, INED, April 2012)

Sources: *ESDO surveys*.

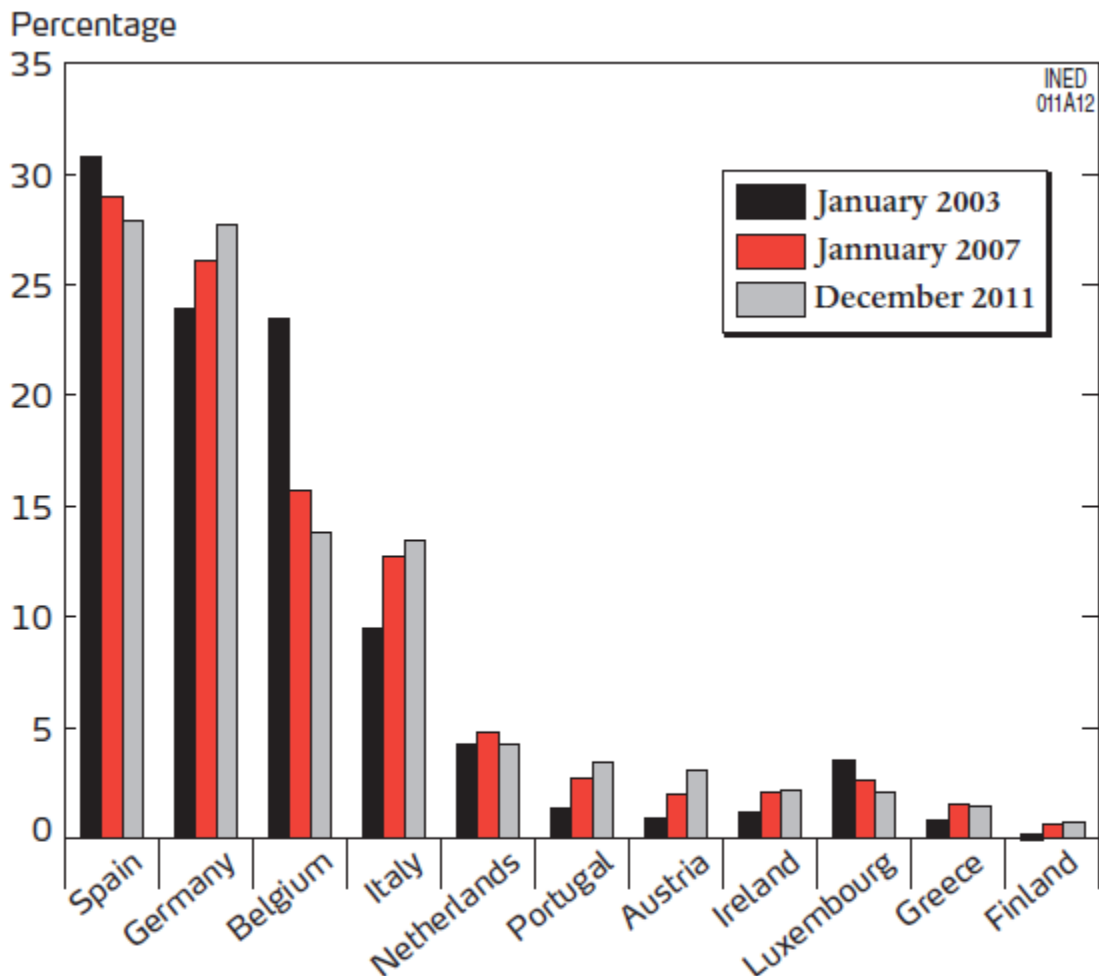
Figure 3: Diffusion of foreign euro coins in France by face value (March 2002 to December 2011)

The mobility of a coin reflects the payment strategies of its users.[4] For example, a senior executive on a short trip to a foreign city is unlikely to make purchases with very small coins, while a cross-border manual worker who buys small items (bread, cigarettes, snacks) at his place of work will do so more frequently.

#### Four leading countries in December 2011

At the end of 2011, the foreign coins found most frequently in French purses came from four countries: Spain, Germany, Belgium and Italy (Figure 4). Spain and Germany hold the joint lead, each representing around a quarter of the foreign euro coins circulating in France. Next come Belgium and Italy, who are neck-and-neck with around 13-14% each. These four large neighbours account for 80% of the foreign coins found in France. The other eurozone countries

trail well behind. They are, in decreasing order: the Netherlands, Portugal, Austria, Ireland, Luxembourg, Greece, Finland, etc.



(C. Grasland et al., *Population and Societies*, no.488, INED, April 2012)  
Sources: ESDO surveys.

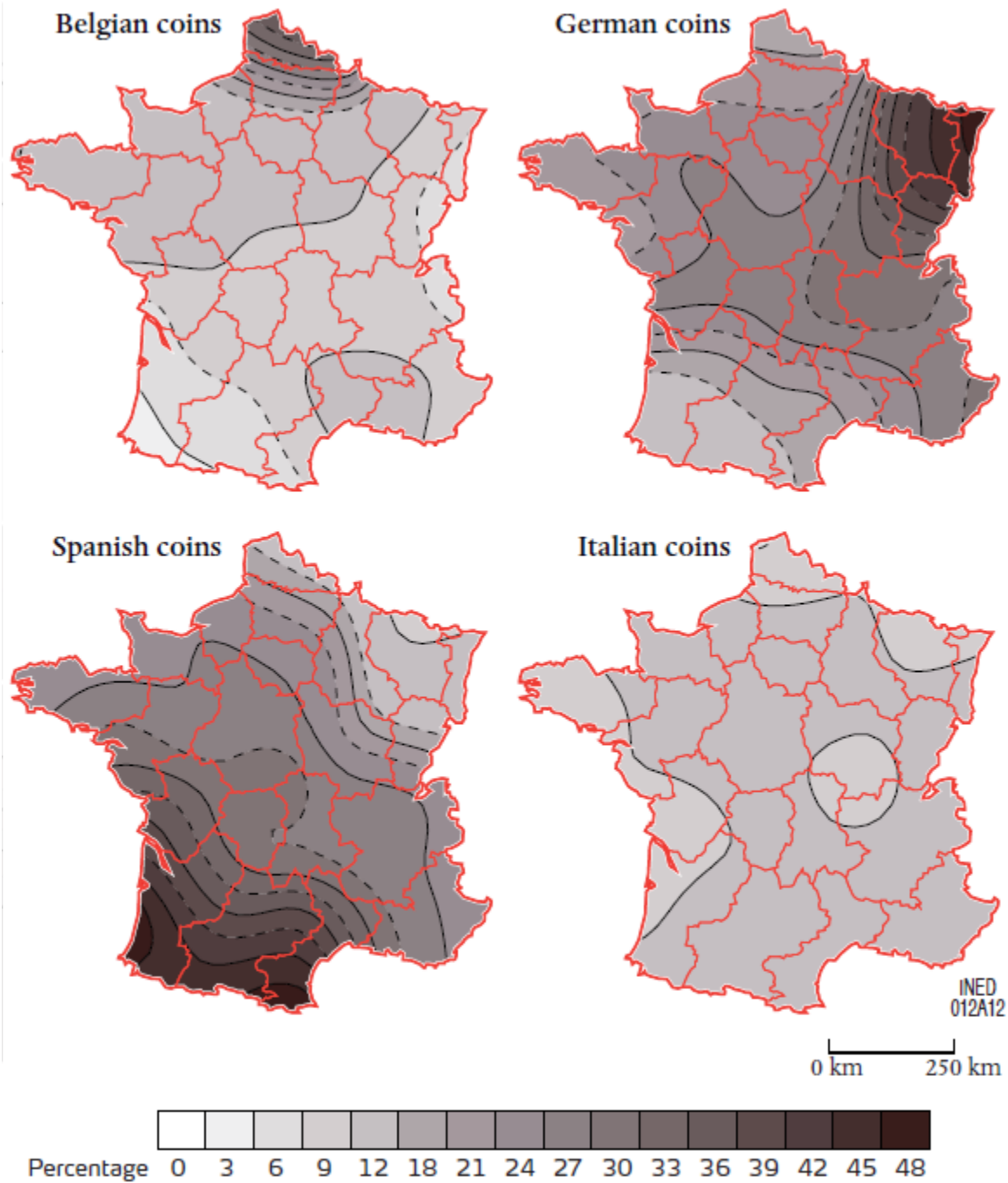
**Figure 4: Change in share of foreign euro coins in France by country of issue**

The country ranking has remained very stable over time. However, among the countries whose coins spread into France at an early stage, such as Belgium and Spain, the proportion is gradually decreasing relative to Italy and Germany, which are still exporting an ever growing number of coins into the country. We can assume that the first waves of incoming coins were linked to cross-border activities or tourism. This would explain the rapid spread of Spanish and Belgian coins in France. But over the longer term, the greater economic and demographic weight of Germany and Italy will play an increasing role as the mixing process progresses. Even though distance is still a determining factor, we can expect the ranking of foreign coins in years to come to reflect the population size of the issuing countries, i.e. in decreasing order: Germany, Italy, Spain and Belgium.

The geographical distribution of coins within France<sup>2</sup> brings to light the importance of border effects but also of networks that determine the movement of foreign euro coins into France. To examine this distribution, we calculated the share of coins from each of France's four

<sup>2</sup> The 9 survey sampling regions (corresponding to the NUTS 1 level), representing the geographical scale at which the ESDO survey data are representative, were used for this purpose.

neighbours in the total quantity of foreign coins present in France in December 2011 and plotted their smoothed distribution on a series of maps (Figure 5).



(C. Grasland et al., *Population and Societies*, no.488, INED, April 2012)

Sources: ESDO surveys.

Figure 5: Euros from neighbouring countries in December 2011 (relative share of total foreign euro coins)

In terms of the foreign coins found most frequently in French purses, the country is divided more-or-less into two halves: north-eastern France where German coins are most common (followed by Belgium and Luxembourg), and south-western France where Spanish coins

dominate. Italian coins, on the other hand, are quite evenly distributed, independently of the distance from the Italian border, suggesting that there is less routine daily movement across the Franco-Italian border. Italian coins are spread more through tourist networks and communications between major cities, which generate a more diffuse mixing pattern.

### **General geography of mixing in the euro area**

Similar studies in other eurozone countries<sup>3</sup> have shown that mixing spreads slowly from the demographic heart of the euro area (Benelux) towards the more outer regions, along the major north-south traffic corridors linking Belgium to Spain via France, or Germany to Italy via Austria. France is close to the most intense mixing zone. For comparison, three-quarters of coins in purses examined in the Netherlands in December 2011 were foreign, indicating much more advanced mixing than in France. And German coins were even more common than Dutch ones, with each representing about one quarter of the total. The other most frequently found coins were Belgian, French, Spanish and Italian, in decreasing order.

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<sup>3</sup> [www.eurodiffusie.nl](http://www.eurodiffusie.nl)