

BANCA D'ITALIA

**INNOVATION IN ELECTRONIC PAYMENTS:
ADVANCES AND LAGS IN THE SPREAD OF INFORMATION AND
COMMUNICATIONS TECHNOLOGY**

2004

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Surveys of firms, households and government

2004

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Summary

In the recent years the Bank of Italy has studied and evaluated the factors fostering the spread of new technology with a view to examine the impact on the competitiveness of the Italian economy. Two different approaches have been taken: sectoral econometric analysis and qualitative sample motivation surveys on industry, services, households and local administration. For the non-financial sector, the surveys have also focused on the obstacles to greater use of the new technologies.

This paper provides an overview of the demand for new technology in the various sectors of the Italian economy. The surveys show that despite the considerable growth of recent years the use of the Internet and of information and communications technology (ICT) by households, firms and government remains limited. Firms and households are not fully aware of the advantages of electronic transactions in lowering cost and speeding transfers of money. Government remains hampered by legal and organizational obstacles and lack of training.

The weakness of demand for e-payments in connection with e-commerce stems mainly from a perception of numerous risks, such as fraud, uncertainty of counterparties and network security. Yet this perception does not correspond to the current state of the technology now available to guarantee security or to that of online banking products and services. The level of security in Italy – though variable depending on the mechanisms and the type of payment instruments adopted – is up to international standards. Sender certification, encryption of data and digital signatures make some types of payment, such as electronic credit transfers, definitely more secure as well as more economical than paper-based payments.

Thanks to its achievements in exploiting ICT for internal processes and in online activities, the banking system can make a decisive contribution to triggering a comparable process within the rest of the economy. One reason for this potential is the degree of standardization already achieved in such banking services as payments and collections; a second is the relatively wide diffusion of e-banking thanks to good security; and a third is that banks have already completed the organizational changes required for online services and transactions. Alongside the advantage of security, banks can increase the trust of the parties involved and guarantee counterparties by acting as “third party”.

Government administration continues on a path of innovation affecting structures, procedures and methods, centred on the use of the new technologies. Important advances have been made, but the road ahead is still long. The innovations envisaged by e-government plans can foster online contact between firms and administration. Public infrastructural investment can create the positive externalities needed for development. Investment in information technology and organizational training can narrow the skills gap not just for specialists but also and above all for businessmen and managers. The spread of online administrative services will help small and medium-sized enterprises to take part in innovative projects for network use.

The potential advantages of ICT for payments to and from government agencies are enormous, especially for local units. The local computer payment order, computerized flows of data between agencies and banks, a wider range of remote services – all will also stimulate the spread of ICT among households and firms. Further, greater efforts to introduce ICT in administration in the South of Italy would reduce the geographical disparity in the quality of online services.

As regards firms, our studies found ample access to the Internet in both the manufacturing and the service sectors. Disparities by class size and geographical area are limited, save that small Southern firms are somewhat behind those of the Centre and North. Websites are widespread, two thirds of all firms having one, and are more common among manufacturers. About a third of all firms participate in portals or electronic marketplaces; this practice is much more common among the larger than among the smaller firms.

For the most part, firms use the web to present their products or services; e-commerce is still limited, more commonly found among service than among manufacturing companies. There is a greater propensity for online purchases than sales (19 as against 8 per cent among service companies and 10 as against 5 per cent among manufacturing firms). There are no significant geographical disparities, save a certain backwardness among Southern manufacturers. Even for firms active in e-commerce, the share of online purchases and sales is still very modest (under 10 per cent of the total).

There is still ample room for growth in online banking services; information services are very widely used (checking account balances, checking outcome of collections, etc.), but online collection and payment are less common (63 per cent of manufacturing firms and 50 per cent of service firms) Significant progress is also possible in supplementary payment services (invoice management) and in the integration of financial and non-financial aspects of transactions.

The survey on the service sector found that the main expected benefits of the new technologies are improved efficiency, procurement of new customers and lower marketing costs. The perceived obstacles to e-commerce depend on the characteristics of the goods sold online and the difficulty of verifying the identity and trustworthiness of counterparties. Respondents cited, among other major obstacles, the uncertainty of the laws governing online transactions (for instance, the law on contracts and dispute settlement) and network security. The lack of computer skills, the cost of online services and the size of the investment expenditure are not seen as problems.

The framework

The role of ICT in economic growth and social change has received considerable attention. Numerous micro- and macroeconomic studies have focused on the link between ICT and productivity.¹ Others have examined the opportunities and possible risks of exclusion connected with the use of digital technology in different social groups. This has spread awareness of the importance of digital technology and of knowledge more generally in economic growth and social development. This awareness underlay the e-Europe plan approved by the EU Lisbon Council in March 2000. To monitor progress towards the plan's targets, a series of structural indicators were devised, some concerning the "information society," and Community surveys were initiated to gather specific information and produce homogeneous comparisons among member countries.

Italy's position with respect to the main industrial countries is not especially brilliant either in terms of IT infrastructure or in the use of the new technologies.

In 2001 the OECD countries averaged 101 hosts per thousand inhabitants; the European average was just 53, the highest rates of penetration being in the Nordic countries. Italy was below the OECD average, with a penetration rate slightly higher than in France and Spain but lower than in Germany or Britain and far behind Sweden, Finland, Norway, Canada and the United States. The number of websites per thousand inhabitants is also lower than the European average, which in turn is below the OECD average. If infrastructural endowment is gauged by the number of servers, Italy is certainly not among the leaders, with an endowment comparable to that of Portugal, lower than Spain, France and Germany and far lower than the US, Canada, Australia and the Nordic countries. Less infrastructure is associated with less use of ICT and a smaller volume of online transactions (OECD 2002a, 2002b), as was found by an Italian survey of manufacturing and service firms (Istat 2002).

However, the banking system is not as far behind as the rest of the Italian economy. The automation of internal banking processes and products, which began more than thirty years ago, appears to have facilitated Internet use. At the end of 2000 over three quarters of Italian banks had a website, at least for promotional purposes, and all the leading banks, accounting for 71 per cent of total system assets, had facilities for online customer orders. The new channel distributes standardized products and services, such as checking balances, securities trading and credit transfers.

This report analyzes the utilization of ICT for payment services, in the belief that this is an excellent angle from which to judge the spread of the new technologies among economic agents and that greater use of ICT improves the efficiency of the payment system and lowers transaction costs for the economy. And the spread of online collection and payment can spur greater use of the net for commercial transactions.

First we describe the main online services that banks offer to households and firms and the various types of electronic payment, followed by an account of the findings of

¹ For the OECD countries see OECD, *The Sources of Economic Growth in OECD Countries*, 2003.

sample surveys on the extent to which the main economic agents (households, firms, public administration) use electronic payments and the main reasons why they fail to do so. As at least in principle electronic payment instruments may be correlated with e-commerce (business-to-business and business-to-consumer), this phenomenon too has been studied.

The various studies indicate that electronic transactions, and e-payment instruments in particular, are still of limited importance in Italy, both between firms and households on the one hand and banks on the other and between all three and the public administration. The main obstacles are perceptions of insecurity, fear of fraud, uncertainty over the trustworthiness and the identity of counterparties, and the lack of an established body of law governing online transactions. The report concludes with an account of initiatives already under way and a set of proposals to improve Italy's electronic payment system.

1 Online payments

In Italy as in the rest of the industrial world, automation began with interbank payments and developed through the extension to major corporate clients of the benefits of the interbank network, a dedicated infrastructure with proprietary access and languages. This kind of automation was based on the possibility of separating the financial aspect of transactions (when, how and where the monetary transaction is effected) from the real economic aspect (order, invoicing, account reconciliation and entry).

In the last decade, however, the revolution in information and communications technology made it possible and economical to treat the two aspects (financial and non-financial) at once, thanks to a shared language and network and relatively simple procedures for all the parties involved (intermediaries, corporate customers, consumers, etc.). A good example is the recent introduction of the possibility of electronic transmission of receipts to final customers (e-invoices) or to service providers (electronic bill presentments and payments).² These products promise considerable gains in efficiency both in cutting invoicing and payment handling costs³ and in improving commercial services and opportunities.

The new technologies and the Internet have also facilitated the entry of non-financial institutions (telephone and technology companies, service providers, information intermediaries, etc.) into a market segment usually reserved to banks, financial intermediaries and credit card issuers. While we have no instances of new online payment instruments in which the traditional intermediaries do not play a major role, research and innovation in network technology is generally the work of sectors other than banking and finance. In the banking industry, moreover, the adoption of new technology for payment services is no automatic or straightforward process. The factors impeding it may be the wish to safeguard previous investment, the possible impact on the upstream and downstream organization of the production process, the slowness and difficulty of changing final customers' monetary habits, or the presence of strong network effects in the payment service economy that do not necessarily work to favour innovation.

Online payment services and mechanisms are generally described as e-payments and the dematerialization of paper-based procedures is referred to as "electronification". The set of e-payments covers a vast array of instruments and solutions, ranging from traditional payment instruments (cards, credit transfers, etc.) channeled through the Internet to totally new payment instruments and services (e-money, cyber-cash, and the like), often still experimental. At the same time, banks have introduced new "distance" channels for online access to accounts and payment services. Unlike e-commerce, the various kinds of e-

² In the case of EBPP the provider who centralizes the data and presents them to the customer is generally called the "consolidator". The information on the payments to invoice can be transmitted by the merchant in reduced form ("thin consolidation") or in full detail ("thick consolidation").

³ It has been estimated that electronic invoicing could cut the administrative cost of handling an invoice from €20 to €2.

payments are generally distinguished according to the time when the monetary transfer is made. The distinction is between instruments where the payment comes in advance (prepaid cards), subsequently (credit transfers, credit cards) or simultaneously with the purchase (debit cards): “pay before”, “pay after”, “pay now”.

Despite the variety of the supply, the most widely used online instrument remains the credit card, perfected and modified for security, i.e. to prevent fraud or violation of confidential data. In Italy, fraud in online credit card transactions involves a tiny fraction of all such transactions (0.3 per cent). Yet this has not eliminated the adverse impact on potential users’ perception of the reliability of the network and online payments.

2 Banking services online

The spread of online banking services is the end result of a process of “virtualization” of relations between banks and customers that began, with different technology, more than thirty years ago. For the banking system, the Internet is one of a number of channels for marketing, alongside branches, financial salesmen, ATMs, telephone links, non-Internet electronic links (proprietary networks), and other financial companies. The uncertainty over effective demand for online products and resistance to adaptation of banking products to the new technologies help to explain the relatively scant presence of online payment products designed for European-wide use, other than credit cards, in the few European-scale e-commerce sites in existence.

The main banking products purveyed via Internet are securities trading, online collections and payments and, to a lesser extent, deposits. The statistical reports to the Bank of Italy show a rapid growth in the number of bank customers using virtual channels, both for operational services and simply for information. The number of retail customers contacted via the web rose to over 4 million, for operational services alone, in 2002. The growth of demand is inducing banks and other payment intermediaries to offer online financial products automating the entire payment cycle from customer order to execution and statement of account.

In this context, Italian banks have undertaken some system-wide initiatives in the field of e-banking, notably the creation of a system ensuring consumers and merchants of secure transaction execution via the Internet and an enhancement of the possibilities of the Interbank Corporate Banking service. Collection orders executed via the service have increased significantly and in 2002 accounted for over 44 per cent of total collection orders executed by the banking system. The share of credit transfers is smaller.

The importance of payments via Internet remains modest in Italy. In 2002 online credit card transactions – the most common instrument for the settlement of households’ online transactions – numbered 9 million, or 2.5 per cent of all card transactions. Credit transfers ordered via Internet, mainly by firms, numbered 11 million, or 3 per cent of all credit transfers.

3 Firms' use of the Internet

Network technology can serve as a major tool for company growth in a number of areas. Organizationally, the network can improve internal process efficiency by online performance of many administrative activities relating to commercial transactions (acquisition of information on markets and products, invoicing, electronic account reporting, etc.). As for outside projection, the Internet is a powerful tool for strengthening a firm's market presence by promoting its logo, publicizing its catalogue of products and services, and directly effecting purchase and sales (e-commerce). Finally, the Internet can make for more efficient relations with the banking system through online services whereby firms can check their current accounts, order collections and payments and make financial investments (online trading) automatically and in total security.

The behaviour of firms in the utilization of the new technology in these areas has been studied in two statistical surveys, one for industrial firms and one for service firms. Both examine technological endowment and diffusion of ICT, the type of activities carried out online and the degree of diffusion and utilization of online banking services. For the service firms, the survey also gathered data on the counterparties with whom e-commerce transactions were effected and the products so traded, as well as qualitative indications of the motivations for and obstacles to the launch of online activity.

The differences in the structure of the surveys are reflected in the results, which are analyzed in more summary fashion for the industrial firms and in greater detail for the services. The methodological notes give a summary description of the two samples.

3.1 *The industrial firms*

Here we describe the main findings of survey of use of ICT by firms in industry excluding constructing conducted by the Bank of Italy in the first few months of 2003.⁴ The results are supplemented by information drawn from surveys by the national statistics institute, Istat, which are helpful in evaluating the diffusion of ICT in manufacturing.

Industrial enterprises with 20 or more workers average 39 computers for every 100 employees. The ratio is higher in the Centre (45.1) and the North (40) than in the South (27.8). Differences based on firm size are comparatively small, confirming that the PC is now a mature technology, independent of company size.

PCs are almost always linked in an internal network (95.1 per cent) and to the Internet (97 per cent). In this, there are no appreciable differences in this indicator either by firm size or by geographical area.

⁴ For a description of the survey, see the Methodological Notes.

Industrial firms' use of extranets was examined by specific surveys by Istat,⁵ which found an increase in use of the nets between 2002 and 2003. Extranets may bring more than marginal benefits in organizational efficiency and logistics for firms that are decentralized and are characterized by large, regular flows of information to and from other firms in the production process. The presence of extranets was especially prevalent, in 2002, among the "computerized" manufacturing firms in the chemical industry and to a somewhat lesser extent in engineering (metal and precision mechanics), with percentages above 20 per cent. The use of this type of technology is marginal (between 3 and 7 per cent) in such traditional industries as wood products and tanneries.

Most firms (79.8 per cent) have websites. Here, however, we find differences depending on size and location. The share of industrial firms with websites rises gradually from 77.8 per cent among those with fewer than 20 workers to 90.1 per cent in those with 500 or more. By industry, the differences are modest; those farthest from the average of 79.8 per cent are engineering (84 per cent) and textiles, leather and footwear (70.6 per cent).

According to Istat, 43.8 per cent of all workers used a computer at least once a week; those using an Internet link came to 25 per cent.

For firms with only a few workers, Istat's data, for 2001-2002, confirm the importance of firm size as a factor in the decision to open a website, finding very low percentages. Only 22 per cent of "computerized" firms with fewer than 10 workers had a website in January 2002; and these tiny firms also displayed the slowest growth, with just 2 per cent having created a website during the survey period compared with 13 per cent in the larger size classes. This suggests that there is a business volume threshold below which Internet presence with a website is not economically advantageous.

There is also a close correlation between firm size and e-mail; the share of firms with an e-mail address ranges from 53 per cent of "computerized" firms among micro-enterprises (under 10 workers) to 99 per cent for firms with 250 workers or more.

The network is mainly used to provide services to customers and suppliers. By contrast, online sales and purchases are uncommon, respectively involving just 5.5 and 10.1 per cent of firms. These operations confirm the clear correlation with size, location, and industry. The share of firms making online sales rises gradually from 4.5 per cent in the 20-49-worker class to 17.6 per cent among firms with over 500 workers; for purchases, the range is from 9 to 20 per cent.

E-commerce is more common in the North than in the Centre or South. By sector, online sales are more frequent in mechanical engineering, less so in other manufacturing. Online purchases are concentrated in engineering and chemicals, rubber and plastic and least frequent in the residual category of "other industry".

The share of total transactions online is marginal (2 per cent for all industrial firms with at least 20 workers for both sales and purchases). The number of payments settled

⁵ The percentages refer to the total of "computerized" firms, defined as those with at least one PC or a data processing system. The percentage of "computerization" among Italian firms with at least 10 workers, according to Istat, was 94 per cent in 2003; for all firms it was 55 per cent.

online is small as a share of electronic sales and purchases (2.8 per cent for sales and 12.3 per cent for purchases).

Istat's surveys suggest that respondents perceive greater benefits from online purchases than sales. This is particularly clear if we compare the percentage of firms reporting cost reductions (53.8 per cent of those having made online purchases as against 40.5 per cent of those making online sales) and simplification of process phases (69.6 as against 38.8 per cent).

The most frequently cited gains from online purchasing were speed (78.5 per cent of respondents) and product or service availability (83.4 per cent); only a bit more than half of the firms making online sales mentioned benefits of product diversification, improvement of services supplied (56 per cent) or expanding the customer base geographically (51 per cent).

Nearly two thirds of the firms use the Internet for the banking services of collection and payment; 80.3 per cent get current account information online. Use of the web for financial investment is relatively rare (2.4 per cent).

More than half the firms reported that they used current accounts online very often. The percentage rises with firm size (from 51.7 per cent in the 20-49-worker class to 76.3 per cent in the over-500 group). In short, industrial firms use online banking services (collection and payment) more commonly; commercial transactions (sales and purchases) via the Internet are rarer. Where electronic transactions are made, in the great majority of cases payment is not electronic.

3.2 Service firms

3.2.1 Technological endowment and the spread of ICT

The survey conducted in 2002 found that virtually all service firms (99.6 per cent) have information technology work stations (PCs, laptops, etc.). The ratio of IT work stations to workers averages 56 per cent; it is highest in the North-West (61 per cent) and lowest in the South (46 per cent). The number of IT stations per workers is correlated with sales volume.

About 95 per cent of firms have an Internet link, and again the percentage increases with size, but with no significant differences by location or sector of activity. Intranets (38 per cent) and extranets (13 per cent) are less common.

The survey found that 57 per cent of service firms have websites; the percentage rises with sales volume. The highest rates of website operation are for R&D and IT firms (85 per cent). In other sectors, the percentage is above 50 per cent in all parts of the country, save for wholesale and retail trade in the South, where it is lower.

Some 30 per cent of firms participate in portals; the percentage of firms with sales of more than 25 billion lire (about €12.5 million) was higher. The sectors with the highest percentages were R&D and retail trade (46 and 37 per cent respectively). As to how the

portal is configured, half the firms run it themselves or through a member of their group, while 33 per cent participate in an infrastructure operated by others.

3.2.2 Activities on the web

The survey found that the new technologies were used above all to promote the firm's brand and to market its catalogue of products and services. These relatively less complicated activities were performed by 52 and 37 per cent, respectively. The use of online technology for such services as e-commerce and online invoicing, which are more complex and also have significant impact on the company's own organization, is still relatively uncommon, involving 23 and 6 per cent respectively. E-commerce is more common on the purchasing side (almost 20 per cent of the firms surveyed) than on the sales side (8 per cent). Online selling is more common for the larger firms, while firm size does not appear to affect online purchasing.

It emerges that the firms with greater technology endowment (as gauged by number of PCs per worker and portion of PCs linked to the Internet), those with the largest ICT investment and those that have had a website for several years tend to use a broader range of e-services. And the number of services used is also correlated with the size of the firm. For equal size, those firms that have flexible employment arrangements have a greater propensity to use the new technologies.

3.2.3 E-commerce

E-commerce volume remains limited. About 80 per cent of the firms that effect online purchases do so for less than one fifth of their total purchasing; for sales, 85 per cent of firms register online revenues of less than a fifth of total sales revenues. By size, we find that where small and medium-sized firms (up to 100 billion lire of sales) have more e-commerce on the purchasing side, the larger firms show greater volume on the sales side. By sector, online purchasing is fairly substantial among retailers (22 per cent of retailing firms make online purchases accounting for over 60 per cent of total supplies). In R&D and IT firms, online transactions are significant on both the purchase and the sales side.

By channel, most online transactions involved direct interaction with the supplier's website or reception of orders on the seller's site. The use of portals and marketplaces involved 30 and 10 per cent of the firms, respectively. More complicated procedures are still rare; online auctions, for instance, were used by under 5 per cent of firms.

As to the type of products bought and sold online, 76 per cent of purchases and 90 per cent of sales involve non-digital products, i.e. products that are not delivered via the web; transactions involving products that are delivered directly online (software, books, music) are still limited.

As for relations with counterparties, the survey found that 70 per cent of purchases and 60 per cent of sales were effected with habitual suppliers/customers with whom commercial relations had already existed in the past. This suggests that firms tend to use the network as an instrument for interacting with their suppliers and customers that flanks rather than replaces traditional channels.

3.2.4 Settlement modes

Of the firms conducting e-commerce, about 35 per cent have made at least one payment online and 29 per cent have collected at least one. About 66 per cent of the firms settle e-commerce transactions by non-electronic modes.

The payment instruments more commonly used to settle e-commerce transactions are debit and credit cards, which are used by 65 per cent of firms, as a nationwide average. Some 43 per cent of firms use e-banking; above-average figures are found in the North-East (52 per cent) and especially in the South and the island regions (74 per cent). E-money is marginal, used by just 1.5 per cent of all the firms involved in online payments and collections.

The firms that continue to settle e-commerce transactions by off-line means generally resort to credit transfers (66 per cent) and direct debits (33 per cent). Less common are cheques (20 per cent), debit or credit cards (14 per cent) and cash (10 per cent).

3.2.5 Banking services

The survey found widespread use of the more “mature” banking services, such as account information (71 per cent of firms) and collection and payment services (50 per cent). For the latter, most (nearly 60 per cent) used the Interbank Corporate Banking service.

There are no great geographical differences. By sector, the most intensive use is by firms in IT and R&D (84 per cent checking their accounts online and 65 per cent using payment and collection services) and in transport and communications (78 and 55 per cent respectively for the two types of service).

The use of online banking services increases with firm size; 86 per cent of firms with over 100 billion lire in sales use the web to check the current accounts and 56 per cent perform payments and collections (87 per cent of them via Interbank Corporate Banking). The use of these services rises respectively to 87 and 75.6 per cent among the firms that report their “frequent” use.

Online invoice management is less common (7 per cent of firms), as is borrowing and financial investment (involving just 3 and 2 per cent of firms respectively). Again, utilization of these services increases with firm size, especially as regards invoice management. This service is used by 10 per cent of firms with sales of between 25 and 100 billion lire and 12 per cent of those with sales of more than 100 billion.

3.2.6 Obstacles to the growth of online business

One section of the survey sought the opinion of the entire sample on the factors that the responding firms saw as obstacles to the spread of online transactions.

On e-commerce, 70 per cent of the respondents believed that the characteristics of the goods and services offered are a significant obstacle. The strength of this belief is independent of the firm's location and size and is broadly shared also by the firms that are already engaged in e-commerce. By sector, IT firms find this factor less important.

For 66 per cent of the firms responding, an impediment to the launching of e-commerce initiatives is the difficulty of obtaining guarantees on the identity and trustworthiness of counterparties. This concern tends to diminish as firm size (sales volume) increases and is less important, as expected, for IT firms.

For more than 50 per cent, the uncertainty of the law applying to online transactions and the relative lack of guarantees deriving from its use constitute substantial obstacles to the spread of ICT.

By contrast, the availability of human and financial resources and the cost of network use are not an especially serious problem for most respondents, and especially for the larger firms.

As for banking services, the main obstacle for most entrepreneurs (57 per cent) is lack of online security.

In all geographical areas, transaction costs and the complexity of services are "unimportant" problems (for 72 and 66 per cent of the firms respectively). Only a few of those interviewed reported a cost advantage for electronic payment and collection compared with traditional modes.

In general for all types of obstacles, save those involving paper documents, the perception of problems diminishes as firm size increases. The differences between firms in the bottom and in the top class in terms of sales are marked. Transaction cost was cited as a major problem by 32 per cent of the former and 18 per cent of the latter, service complexity by 35 and 24 per cent, and branch contact by 51 and 39 per cent. By sector of economic activity, the IT and R&D sector found all types of obstacles relatively unimportant except for the lack of assistance from banks.

4. Use of the web by households

Let us turn to the responses of households concerning use of ICT as part of the last two waves of the Bank of Italy's Survey of Household Income and Wealth (in 2000 and 2002).⁶ There has been significant growth in possession and use of computers. In 2002 almost 34 per cent of Italian households had a computer, compared with 27 per cent in 2000, 40 per cent had used one (36.5 per cent in 2000), and 30.3 per cent used the Internet (21.3 per cent in 2000). Despite the rapid growth in Internet use (7.1 per cent of households used the web in 1998), just 4.4 per cent made online purchases in 2002 (up from 2.5 per cent in 2000), and 2.8 per cent settled transactions via Internet.

The 2000 survey showed that the scant use of ICT also reflected very modest computer capabilities on the part of the population. Almost 70 per cent of those interviewed (above the age of 6) stated that they had no computer ability whatever; for those older than 50, the percentage was higher still (82 per cent for ages 51-65, 97.5 per cent for the over-65s), as for those with no formal educational degree (85 per cent) or only an elementary school certificate (95 per cent) and pensioners (94 per cent).

The households interviewed in 2002 cited as factors militating against Internet use for purchases the impossibility of actually inspecting the product (42 per cent, down from 45 per cent in 2000) and the fear of fraud (40 per cent, up from 28.5 per cent); for 6 per cent, the main obstacle was the complexity of the operation.

The households with the greatest propensity for the new technology are those headed by someone younger than 50, well-educated, manager or businessman. Internet use rises to 46.4 per cent for households headed by someone aged 41 to 50 (32 per cent in 2000), 72.3 per cent for those headed by university graduates (59 per cent in 2000), 77.3 per cent for managers (62 per cent in 2000) and 66.8 per cent for businessmen (48 per cent in 2000). The highest rates of online purchase are found among households headed by university graduates (13.8 per cent) and managers (17.9 per cent).

As regards payment instruments, the survey found that 93 per cent of payments were by credit card,⁷ 5 per cent via direct current account debit (online credit transfers, for instance), and just 0.2 per cent via e-money.

⁶ For a description of the survey, see the Methodological Notes.

⁷ Although Internet credit card payments are still a tiny fraction of all credit card payments (2.5 per cent), this segment has been growing faster (35 per cent per year in the past three years, compared with 15 per cent growth in "face-to-face" credit card use; Banca d'Italia, Annual Report for 2002 (Rome, 2003).

Table 1

Use and ownership of computers
(percentage of households)

Household characteristics*	Computer use	Computer ownership	Internet use	Purchase via Internet
Sex				
Male	44.2	37.9	33.3	5.1
Female	29.7	23.9	22.9	2.8
Age				
Up to 30	42.0	31.8	31.1	3.7
31-40	51.8	40.6	37.6	6.2
41-50	62.3	53.9	46.4	7.2
51-65	45.7	40.9	37.3	5.4
65+	8.3	7.5	5.8	0.3
Education				
No degree	2.0	1.1	1.0	0.0
Elementary	10.5	9.2	7.1	0.5
Lower second'y	39.2	33.0	26.1	2.8
Upper second'y	68.5	56.5	54.2	8.9
University	80.7	73.0	72.3	13.8
Sector				
Agriculture	23.1	21.5	15.1	2.4
Industry	48.8	40.7	35.3	5.8
Gov't, public services	70.8	59.3	56.2	6.5
Other	62.0	52.6	47.5	8.4
None	15.2	13.3	11.3	1.3
Occupational status				
Employee				
Prod. worker	30.4	25.8	18.9	1.4
Clerical worker	74.6	61.3	57.6	8.0
Executive, manager	85.7	75.2	77.3	17.9
Total	55.4	46.4	41.9	6.1
Self-employed				
Entrep., professional	79.2	66.4	66.8	13.4
Other	50.5	44.2	34.1	4.5
Total	63.1	53.9	48.4	8.3
No occupation				
Retired	15.5	13.8	11.6	1.4
Other	11.3	7.5	8.6	0.9
Total	15.2	13.3	11.3	1.3
No. members				
1	15.6	11.1	11.3	1.9
2	25.2	20.3	19.5	3.4
3	54.6	45.7	41.1	6.1
4	63.3	57.3	49.5	7.0
5+	51.4	44.4	34.7	2.9
No. income earners				
1	26.7	21.8	19.0	2.3
2	51.5	44.9	40.4	6.7
3	51.5	42.1	38.3	4.7
4+	63.1	53.8	49.1	8.2
Size of town				
Up to 20,000	37.0	31.2	26.3	3.8
20,000-40,000	38.3	32.8	29.2	2.7
40,000-500,000	43.8	37.1	33.9	5.4
500,000+	43.8	37.4	37.2	6.4
Geographical area				
North	48.2	40.9	35.7	6.5
Centre	44.5	38.9	35.6	5.2
South	25.7	21.0	19.5	1.2
Total	39.9	33.8	30.2	4.4

*Of the household head, defined as the largest income recipient within the household.

5. ICT use by local government units

The need for modernization through increased use of information and communications technology has intensified in recent years. The implementation of e-government by regional and local authorities is crucial and has special characteristics of its own. The e-government Action Plan assigns regional governments to undertake initiatives to develop infrastructure and ICT services (such as extranet, digital signatures, smart cards, digitalization of document transmission, integration of protocols) for the integrated, electronic provision of services to citizens and businesses.

Total central government spending on ICT rose from 1.7 trillion lire in 1998 to over 2.2 trillion in 2002. This brought an accelerating increase in installed processing capacity (which quintupled) and in computerized work stations (which increased in number from 182,000 to 340,000, linked also in LANs). In 2002 every employee of central government departments had a computerized work station and could thus exploit the growing information and applications assets made available by new technology.

As for local authorities, an important sphere is online services to citizens, whose efficacy is the greater when they make available not only information but interactive, operational functions (e.g. supply of certificates, real estate register reports or payment of fines).

This is the logic underlying the project for remote, computerized payment and collection services. The aim is to create an “integrated payment infrastructure” with a series of essential features: a) security; b) certainty in user identification; c) the greatest possible breadth, coverage and interoperability of access channels (not only via PCs but also via existing dedicated networks such as ATM and POS terminals; d) variety of payment instruments (credit and debit cards, direct debit on bank and postal accounts); e) account statement services for the various government agencies providing the service.

Surveys of central and local government reveal very substantial increases in the services, especially information services, provided online. The demand for online services from businesses with Internet links is also significant and not limited to information services alone. Istat surveys of firms with 10 or more workers find they are also interested in services for bureaucratic procedures (42 per cent of respondents), access to active files (28 per cent) and payments (20 per cent).

5.1 Hardware and its impact on internal organization

To gauge the degree of computerization of local government, their hardware endowment and the impact of ICT on administrative activities were examined in 2000 and

again in 2002. Special attention was paid to the procedures for management and budget and to the use of Internet for internal communications.

5.1.1 Hardware endowment

Local governments had more than 166,000 computerized work stations in 2002, an increase of 26 per cent compared with 2000. Over 162,000 consist in PCs, 81 per cent of which are linked in networks (up from 71 per cent in 2000).

The improvement in hardware quality was comparable in all three categories of unit; the regional governments showed the fastest growth in absolute terms over the two years, with an increase of 31 per cent in the number of workstations as well as the most pronounced shift from “dumb” terminals (which decreased by 78 per cent) to PCs (increase of 40 per cent). Finally, the regions increased the number of network-linked PCs by 68 per cent.

As to IT architecture, the 2002 survey confirmed the prevalence of PC networks the percentage was 88 per cent (up from 83 per cent in 2000). The share of agencies using non-networked PCs fell from 55 to 45 per cent. In smaller units, the PCs are generally linked in an LAN; in the larger units, through departmental mini-processors (especially common in the Centre). As for types of processor, the use of intermediate units (including departmental mini-processors) is widespread, while the number of agencies using mainframe computers declined (from 25 to 21 per cent).

5.1.2 Technological indicators

In 2002, with a view to further quantitative analysis, the grid of indicators used in the 2000 survey was applied again. For comparison of details (type of agency, location), the sample was reclassified, using only data for units that responded in both surveys.

The table compares three “technology” indices: the first two, which are complementary, indicate the degree of adequacy of hardware endowment (ratio of PCs to total workstations; ratio of terminals to workstations); the third (the ratio of network-linked PCs to workstations) shows the degree of interlinking of the information system. In addition there are two “organizational” indicators of the physical coverage of the information system (ratio of computerized workstations to total staff of the unit) and capacity for integration of work processes (ratio of network-linked PCs to total staff). All in all, the survey found that a good degree of technological adequacy had been maintained (the ratio of PCs to workstations rising from 0.90 to 0.98) and a high index of physical coverage, with computerized workstations increasing from 96,110 to 117,567 over the two years while the total staff rose from 121,539 to 126,385); the ratio thus improved from 0.79 to 0.93.

Though there is room for improvement, the capacity for integration of work processes is also relatively good, the ratio having risen from 0.54 to 0.75. The index of technological adequacy (PCs/workstations) is good in all areas and for all types of government unit, with

ratios ranging from 0.94 in the municipalities of the South to 1.00 in the regions and provinces of the Centre. As to interlinking of the information system (networked PCs/workstations), there is confirmation that the South lags slightly behind, the average index being below 0.5 for regional governments and slight above 0.5 for municipalities.

The organizational indicators, finally, are near 1.00 and sometimes above it. Only the regions of the Centre and the municipalities of the South show insufficiency (0.22 for municipalities in the South).

5.1.3 Impact on internal organization. Computerized activities

The 2002 survey basically confirmed the very high computerization rates of 2000 in civic registers, tax management, and budget. In the building and urban planning area, the rate of computerization rose from 68 to 75 per cent. Budget management continued to be the most computerized (in 99 per cent of the sample), followed by taxes (82 per cent). In the area of financial management the survey confirmed the percentages registered in 2000 (86 per cent of the governments had fully automated operations and 13 per cent partially automated; for the latter, the percentage of automation averages around 70 per cent). Just 1 per cent of the sample authorities (almost all of them municipalities) continue with paper-based procedures.

5.1.4 Collection and payment

Dealings between local authorities and their treasury managers (banks) are still based on paper and are thus inconsistent with the level of development of ICT. However, there is a definite tendency toward the computerization of procedures. The proportion of authorities using exclusively paper is 55 per cent (down from 66 per cent in 2000), compared with 23 per cent (16 per cent in 2000) using online computer links and 22 per cent (up from 18 per cent) using IT supports.

There is a significant different in degree of ICT use by regional governments and local governments. Links are generally via “dedicated networks” through which the treasurer (by file transfer or terminal emulation) accesses accounting data and collection and payment orders. However, experiments are under way with more advanced ICT links. In most cases the process also covers electronic reporting of transactions effected.

5.1.5 Internet and telecommunications networks

In the 2000 survey, 91 per cent of the governments surveyed had access to the Internet (all the regions, 99 per cent of the provinces and 87 per cent of the municipalities). Yet only 63 per cent had a website. The 2002 survey found that 154 administrations, 33 per cent of the sample, used a “portal” for relations with users, i.e. an ICT infrastructure consisting of an

active website with the capability of effecting transactions with web clients and ensuring high service quality and security. The information available on the sites concerns: contracts and competitive bids (87 per cent); services provided (75 per cent); cultural and social initiatives (47 per cent); the “one-stop office” for businesses (40 per cent); online certificates and other documents (27 per cent); and procedures for online payment of taxes (12 per cent).

There has been an increase in online links between local governments (about a third of the sample: 11 regions, 51 provinces, 74 municipalities) and between them and central government departments; this corresponds to the increasing need for coordination among governments that have an impact on the territory and with other government agencies.

As for the possibilities of computerized treasury management, the survey found a large number of governments already linked into the Single Public Administration Network either through their own networks or through regional networks.

6. Initiatives to improve payment services

The surveys have found that the main obstacles to broader use of the Internet for electronic transactions are:

1. a perception of lack of security, hence fear of fraud especially in payments;
2. difficulty in properly identifying counterparties;
3. lack of an established body of rules for electronic transactions, and of internationally agreed controls and dispute settlement procedures;
4. difficulty in properly identifying the good being purchased in terms of quality and quantity.

Security of online payments is the main concern, even though the security requirements for e-payments are comparable if not superior to those for paper-based transactions, and online credit card fraud is very rare in Italy. The problem is that the security that matters, in making online payments more widespread, is the security “effectively perceived” by final users, not the security technically embodied in individual instruments or described by precise, analytical evaluation of their risks.

The security of e-payments and online transactions should be assessed on the basis of the presence or lack of the components necessary to any electronic scheme or instrument, namely:

- availability: the capability for rapid and efficient response in terms of capacity and performance and prompt resumption after disruptions;
- authenticity and authorization: adequate devices to authenticate the client’s identity and authorization to use the service and guarantee the legitimacy of transactions;
- integrity: mechanisms protecting the integrity of data in online transactions, i.e. guaranteeing that the data transmitted or retained cannot be altered or destroyed without authorization;
- non-repudiation: authentication methods that foster “non-repudiation” and the full traceability of the transaction and payment, so as to prove that a message has actually been sent and received; this is essential to safeguard the receiver and the sender against possible forgery and fraud;
- confidentiality: provisions to ensure that relevant data cannot be seen by unauthorized persons.

Satisfactory control of the security requirements for e-payments is generally attained by a combination of techniques. Most commonly there is a mix of cryptography and special organizational measures. But to ensure technical security, one must have not only technology suited to the sector but above all a business model that is accepted by consumers and not too costly, favoring appropriate division and definition of responsibilities for prudent management between the consumer, the merchant and the payment service provider.

Setting international security standards, promoting transparency and traceability and assigning ratings on the degree of protection provided by different sites where the final user can effect transactions and payments could contribute to more conscious use of e-payments.

The perception of risk in e-transactions could be reduced by more widespread of digital certificates issued by a certification authority. Today the digital signature is no longer an obstacle to telematic payment systems; in terms of technology, security and regulation, digital signatures are now mature, and for broad utilization all they need is applications.

Equally important to increase users' confidence would be the dissemination of information on the European legal framework for online financial activities. There is now a consistent set of directives (including those on e-commerce, on electronic signatures, on distance sales and on e-money) and recommendations expressly designed to determine responsibilities and roles of the various agents involved in online transactions and above all protect consumers.⁸

In the public sector, technological endowment is not an obstacle to plans for e-government or a government model making information and transaction services available to businesses and citizens online. Broader use of ICT and Internet in government work processes may also spur the use of those same technologies by the businesses and households that interact with public structures.⁹

⁸ European initiatives are summarized on the website of the European Commission, DG Internal Market, in a section on payment systems. In 2002 the DG initiated a ranging discussion on a proposal for regulations (European Commission, 2003a) to complete the single payment market, including electronic payments (e.g., instituting a single European telephone number to report payment card irregularities).

⁹ The formation of the Public Interlink System (a further evolution of the Single Public Administration Network) will institute an online link between central government departments and local governments for a variety of services; specially important here are public payments online, whose activation by the Bank of Italy together with the Ministry of the Economy has already produced the computerized payment order for central government expenditures. The plan for e-government also calls for actions to speed innovation, assigning a key role to local and regional government. The administrative system is being redesigned, using new technology and telematics to introduce cooperative management and integration of information systems and services to citizens and businesses.

7. Results and lines for action

Technological innovation has become decisive to economic competition domestically and internationally, inducing far-reaching changes in the production process, in business location decisions, in the ability to attract foreign investment and the creation and transfer of knowledge.

The changes produced by the new technology and electronic networks affect everyone - firms, citizens, public institutions - involved in economic, cultural and social processes. The issue is central to economic policy discussion, in view of the relationship that has arisen both in the United States and in the countries of the European Union between ICT investment and labour productivity growth. It can be dealt with from various angles, but it is sure that broader and more pervasive use of new technology is crucial to triggering a new phase of economic growth.

The surveys, plus contacts with firms and business associations, suggest the following summary observations:

- Use of the Internet can not only cut production time and make the production process traceable but also improve product and service quality, market knowledge of the collection and payment system, relations with banks, logistics, and resource management. These advantages also accrue even where the network is used in only some phases of the transaction.
- The use of electronic networks to give and get information is common among large and mid-sized firms and requires no major organizational change. The advantages of putting the firm online are greatest when the rest of the product chain (suppliers and clients) are also online.
- By contrast, going from traditional computerization to a situation in which company functions are performed online demands substantial reorganization; the resistance to change varies with firm size and product sector. It also depends on the uncertainty of the market's response to innovations. One cannot be online regardless of whether others are, and this applies both to technology, organization and information and to commercial matters.
- The effectiveness of ICT development policy depends crucially on cultural factors. Development of ICT depends above all on economies of scale, network and scope and, to a lesser extent, on reducing plant and utilization costs.
- Economies of scale explain the greater diffusion of ICT among large firms, but the shift to a web economy does not give increasing returns to scale as size increases; instead, for large firms the organizational costs are significant, but they are offset by a reduction in the cost of low-productivity personnel, the aggregation of functions and outsourcing of activities not involved in the core business. For a firm on the web, the key economies are those of scale (the number of users) and especially scope (the number of services available online). But these economies do not increase with size but with skills and the

diffusion of know-how, and they are thus accessible to small and medium-sized firms, as long as the use of the networks is widespread.

- Economies in transaction costs may be obtained if competition increases, but there is resistance on this point among firms for fear of losing clients and having their bargaining weakened by transparency.
- The most common objection to the transformation is that the firm's product or service is not suitable to online organization; there is also market resistance to change, as well as the risk of losing contact with traditional customers and forfeiting knowledge of one's customers and their trust.
- One important spur to use of the network to cut costs is online payment and collection; here, firms get real time data on their financial situation, lower administrative costs and savings in the management of circulating capital. As the costs of information management are high, administration and finance are usually computerized and generally operated in networks, often internal but sometimes external. These functions are therefore a natural vehicle for innovation, because SMEs too can access technologies and organizational procedures guaranteeing security.
- The decision to reorganize in order to work in a network has to be weighed in relation to the processes generating value added (production and sales), the state of the market, the attitudes of clients and suppliers. In any case, the benefits increase if the entire product chain (from production to marketing) is online; however, the chain can be segmented by prevailing technology or by transaction phase (information, orders, payments).
- Banks can play a significant role by supplying services that strengthen the guarantees for online transactions. For one thing, they can promote specific network infrastructures, integrated with the payment system, ensuring greater security in settlement (such as portals).
- In the field of payment systems, positive experiences have involved collections and payments between firms and government bodies (central and local), with significant cost savings for all parties.
- The software for online transactions is available and can be integrated internally with the administrative and financial functions and externally with banks. However, there is still a relative paucity of "open" IT procedures that can facilitate the access of a firm's information system to network services without requiring massive adaptation of its inherited systems. The costs can be significant for SMEs, but if these applications become common the costs will be reduced and competition between suppliers will arise.
- Italian and Community law and regulation are adequate to the development of these initiatives (digital signatures, electronic documents, dematerialization of documentation, registration and filing of electronic documents, etc.); true, some additions, simplifications and numerous clarifications will be required, but Italy unquestionably enjoys leadership in this field.
- The development of electronic commerce will require stronger security safeguards (both certainty of execution and trustworthiness of counterparties). This is crucial in the case of

open networks such as the Internet, less of an issue for internal networks, which provide better guarantees and are thus more common.

- There is a good deal of room for improvement in e-commerce that could be exploited by joint public-private projects. In particular, initiatives coordinated at local level (in industrial districts, for instance) between industrial organizations, government, banks and chambers of commerce could be most useful. The aim would be to enhance the project design capacity of the institutions involved and develop strategies to stimulate ICT use.
- Public demand must be used to foster the creation of ICT service enterprises (especially in the South and in the industrial districts) and to avoid the present situation of concentration in just a few areas. Tax and financial incentives are needed for firms that undertake the organizational and marketing transformation required to go online.
- The realization of e-government projects is essential (quickly completing the Public Interlink System, which would also carry sensitive data on persons and economic rights, such as ID cards and payments). Making more government services available online would spur firms to use the network in order to take advantage of the services (as in e-procurement).
- Government agencies should implement the projects set out in the e-government plan in such a way as to increase economies of scope and thus foster access to public services online, the development of technological infrastructure, training and research in the field of ICT as supports to the effort to expand online transactions.

Methodological notes

1. Survey of industrial firms

A stratified sample of 3,051 industrial (non-construction) firms was surveyed, 1,855 with 50 or more workers and 1,196 with 20-49 workers. The interviews were conducted from January to April 2003 by officials of the Bank of Italy. The overall participation rate was 83.2 per cent. The theoretical sample size for each stratum was determined by applying, for class size and geographical area, the optimum allocation to strata method, which minimizes standard error for sample means by oversampling the strata with greatest variance. Here, the oversampling bore on larger firms and those located in the South. This method of assignment aims to minimize the variance of the estimators of trends in investment, employment and sales. Extrapolation of sample data to the entire population is done by attributing to each firm a weighting coefficient to take account of the relation between number of units surveyed and number of units in the reference universe for each class size, geographical area and sector of economic activity. Geographical location is defined as the location of the administrative headquarters. Bear in mind that owing to sample variability the estimates must be interpreted with caution, especially those for the more restricted domains (e.g., class size by number of workers, sector of activity, and geographical area).

2. Survey of service firms

The reference population here consists of the more than 30,000 joint-stock service companies reporting more than 5 billion lire in sales in 1999. Firms in monetary and financial intermediation were excluded, as were those in public administration, education and health care and those in social and domestic services and extraterritorial entities. Stratification took account of three variables: economic sector (wholesale trade, retail trade, hotels and restaurants, transport and communications, R&D and information technology, other); sales (seven classes); and geographic area (North, Centre, South).

The sample counted 4,205 joint-stock companies. The survey consisted of a telephone screening followed by a CATI survey (preliminary transmission of a questionnaire to the firms extracted and subsequent acquisition of answers by CATI technology on the company's situation at 31 December 2001). Of the 30,000 relevant firms, about 10,500 were contacted during the screening phase (4,200 with sales of more than 12.5 billion lire and 6,300 with sales under that figure), drawn at random from the reference population. Of these, more than 3,500 firms failed to provide valid answers, producing a dropout rate of between 30 and 40 per cent in the various strata. The sample for the subsequent CATI survey consisted of about 6,950 firms, of which 4,205 returned a properly filled-out questionnaire. The sample design

called for more than proportional representation of larger firms in recognition of their greater importance and greater heterogeneousness. By geographical area, nearly 70 per cent were located in the North and the other 30 per cent evenly divided between Centre and South. By economic sector, those in wholesale and retail trade plus restaurants and hotels account for two thirds of the total, transport and communications for 15 per cent, R&D and IT for 6 per cent, and others for 13 per cent. The variability of the dropout rate between strata suggested that in extrapolating to the universe the sample should again be stratified, modifying the original design. In particular, hotel and restaurant firms were aggregated with those in retail trade, and the number of sales classes was reduced. The estimates were based on weighting coefficients obtained as the ratio, for each stratum, of the number of firms interviewed to those in the universe. Sample variability demands the usual caution in interpreting the results, especially for the smaller domains.

3. Survey of households' income and wealth

The results are drawn from a bi-annual survey of Italian households; the survey covering 2000 was conducted between February and July 2001, that covering 2002 between February and September 2003. The 2002 survey covered 8,011 households comprising 21,148 individuals, 13,536 of whom were income recipients. The average household thus had 2.69 members and 1.67 income recipients. Given this average household size and Istat's figure for the Italian population, the total number of households can be estimated at 21.2 million at the end of 2002. In our sample, 6.5 per cent of households are headed by someone under 30 and 27.7 per cent by someone over 65. By education, 35.2 per cent of heads had lower secondary degrees, 6.9 per cent no formal educational degree and 8.4 per cent university training. By occupational status, 44.6 per cent were employees, 14.2 per cent self-employed and 41.2 per cent non-labour-force (including 38 per cent pensioners). By residence, 46.6 per cent were in the North of Italy, 19.9 per cent in Centre and 33.5 per cent in the South. By city size, 46.5 per cent lived in towns with fewer than 20,000 inhabitants, 13.2 per cent in towns with 20,000 to 40,000, and the remaining 40.3 per cent in larger cities; 13.9 per cent of the households lived in the six Italian cities with populations of more than half a million.

4. Survey of local government computerization

The survey was carried out in the first half of 2002, covering a sample of 396 governments (19 regions, 99 provinces and 278 municipalities), 191 were in the North, 81 in the Centre and 124 in the South. The 278 municipalities were divided into four size classes under 5,000 inhabitants (115 municipalities); 5,000-60,000 (78 municipalities); 60,000-500,000 (79 municipalities); and over 500,000 (6 cities); 97 per cent of the governments contacted responded.

STATISTICAL APPENDIX

SECTION I
SURVEY OF INDUSTRIAL FIRMS

Table 1

Computers per 100 workers
(percentage of firms)

	Firms with 50+ workers	Firms with 20-49 workers	Total firms with 20+ workers
Geographical area			
North-West	37.2	41.8	38.2
North-East	37.8	46.1	40.3
Center	49.9	35.2	45.1
South (incl. Sicily and Sardinia)	28.7	26.9	27.8
Number of workers			
20 - 49	-	39.8	39.8
50 - 199	34.4	-	34.4
200 - 499	38.5	-	38.5
500 +	43.3	-	43.3
Sector			
Textiles, clothing, leather, footwear	27.1	31.6	28.9
Chemicals, rubber, plastic	49.9	42.1	48.4
Metal and engineering	37.5	47.2	40.0
Other manufacturing	33.2	35.1	33.8
Other non-construction industry	..	..	62.8
Total industrial firms	38.7	39.8	39.0

Table 2

Network links of computers
(percentage of firms)

	Firms with 50+ workers			Firms with 20-49 workers			Total firms with 20+ workers		
	Internal network	Internet	Website	Internal network	Internet	Website	Internal network	Internet	Website
Geographical area									
North-West	97.5	98.7	86.1	92.7	96.6	78.4	94.4	97.3	81.0
North-East	99.7	98.4	85.7	97.4	96.1	81.3	98.1	96.8	82.6
Center	97.1	99.0	84.3	93.9	97.9	79.0	94.8	98.2	80.4
South (incl. Sicily and Sardinia)	95.3	98.1	74.1	88.5	93.9	67.2	90.1	95.0	68.8
Number of workers									
20 - 49	-	-	-	93.8	96.3	77.8	93.8	96.3	77.8
50 - 199	97.8	98.6	83.3	-	-	-	97.8	98.6	83.3
200 - 499	98.2	99.0	89.5	-	-	-	98.2	99.0	89.5
500 +	99.1	97.8	90.1	-	-	-	99.1	97.8	90.1
Sector									
Textiles, clothing, leather, footwear	96.6	99.4	71.2	89.5	93.7	70.4	91.4	95.2	70.6
Chemicals, rubber, plastic	98.1	98.9	88.1	94.5	93.7	77.7	95.9	95.7	81.6
Metal and engineering	98.8	97.8	87.8	95.8	98.0	82.2	96.7	98.0	84.0
Other manufacturing	97.3	99.4	86.3	94.4	96.8	76.5	95.3	97.5	79.3
Other non-construction industry	..	..	..	..	..	..	89.0	91.7	77.3
Total industrial firms	97.9	98.6	84.4	93.8	96.3	77.8	95.1	97.0	79.8

Fig. 1

Firms with website
(percentage of firms, cumulative)

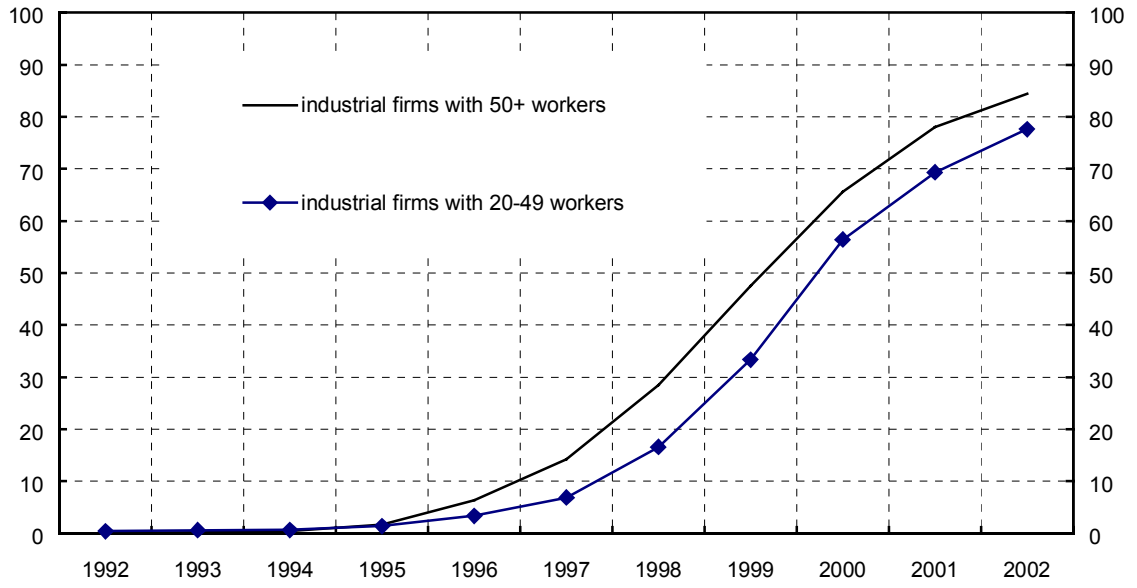


Table 3

Activities performed via telematic network
(percentage of firms)

	Firms with 50+ workers			Firms with 20-49 workers			Total firms with 20+ workers		
	Sales	Purchases	Services to clients and suppliers	Sales	Purchases	Services to clients and suppliers	Sales	Purchases	Services to clients and suppliers
Geographical area									
North-West	9.7	14.6	36.0	7.3	9.8	20.7	8.1	11.4	25.9
North-East	7.4	13.7	31.3	2.3	9.9	22.8	3.8	11.0	25.4
Center	5.5	9.8	31.0	3.8	7.8	25.4	4.3	8.3	26.9
South (incl. Sicily and Sardinia)	6.0	7.3	27.3	3.5	6.5	24.2	4.1	6.7	24.9
Number of workers									
20 - 49	-	-	-	4.5	9.0	22.8	4.5	9.0	22.8
50 - 199	6.8	11.9	31.7	-	-	-	6.8	11.9	31.7
200 - 499	11.8	16.0	35.3	-	-	-	11.8	16.0	35.3
500 +	17.6	20.0	45.0	-	-	-	17.6	20.0	45.0
Sector									
Textiles, clothing, leather, footwear	7.6	5.3	26.0	3.5	5.1	23.8	4.6	5.1	24.4
Chemicals, rubber, plastic	5.4	14.6	21.3	3.8	10.1	20.8	4.4	11.8	21.0
Metal and engineering	8.7	14.9	36.6	6.2	13.7	24.6	6.9	14.1	28.3
Other manufacturing	8.0	13.5	35.8	3.3	4.8	20.8	4.6	7.2	25.1
Other non-construction industry	..	..	..	..	..	..	2.0	4.4	15.7
Total industrial firms	7.9	12.8	32.8	4.5	9.0	22.8	5.5	10.1	25.8

Table 4

Share of sales and purchases made online
(percentages)

	Firms with 50+ workers		Firms with 20-49 workers		Total firms with 20+ workers	
	Sales	Purchases	Sales	Purchases	Sales	Purchases
Geographical area						
North-West	2.4	2.2	0.5	0.8	2.0	1.9
North-East	2.6	2.4	0.1	0.3	1.8	1.8
Center	1.7	3.8	0.5	0.4	1.4	3.1
South (incl. Sicily and Sardinia)	1.0	0.9	0.5	0.6	0.7	0.8
Number of workers						
20 - 49	-	-	0.3	0.5	0.3	0.5
50 - 199	1.2	1.0	-	-	1.2	1.0
200 - 499	2.3	2.0	-	-	2.3	2.0
500 +	3.1	3.9	-	-	3.1	3.9
Sector						
Textiles, clothing, leather, footwear	0.7	0.3	0.2	0.2	0.5	0.3
Chemicals, rubber, plastic	2.2	3.3	0.6	1.0	1.9	3.0
Metal and engineering	3.5	2.5	0.5	0.9	2.7	2.1
Other manufacturing	0.8	0.6	0.2	0.1	0.6	0.4
Other non-construction industry	..	..	..	..	1.8	5.7
Total industrial firms	2.2	2.6	0.3	0.5	1.7	2.1

Table 5

Network banking services used
(percentage of firms)

	Firms with 50+ workers			Firms with 20-49 workers			Total firms with 20+ workers		
	Current account info.	Finan. Investments	Payments / collections	Current account info.	Finan. Investments	Payments / collections	Current account info.	Finan. Investments	Payments / collections
Geographical area									
North-West	85.4	2.4	62.7	83.1	2.1	66.7	83.9	2.2	65.3
North-East	87.2	1.2	70.8	79.6	2.9	68.8	82.0	2.4	69.5
Center	82.5	2.8	62.0	75.1	2.8	53.7	77.1	2.8	56.0
South (incl. Sicily and Sardinia)	76.0	1.6	54.1	69.0	2.7	52.0	70.7	2.4	52.5
Number of workers									
20 - 49	-	-	-	78.3	2.6	62.7	78.3	2.6	62.7
50 - 199	84.0	1.8	63.7	-	-	-	84.0	1.8	63.7
200 - 499	85.8	2.1	66.0	-	-	-	85.8	2.1	66.0
500 +	89.9	5.1	72.4	-	-	-	89.9	5.1	72.4
Sector									
Textiles, clothing, leather, footwear	86.9	2.3	68.2	74.3	2.3	55.5	77.7	2.3	58.9
Chemicals, rubber, plastic	85.6	0.6	69.9	87.9	5.7	68.1	87.0	3.7	68.8
Metal and engineering	81.0	1.6	59.6	77.4	2.9	62.5	78.6	2.4	61.6
Other manufacturing	88.6	3.0	67.5	80.8	1.5	67.7	83.1	2.0	67.6
Other non-construction industry	..	..	..	..	..	..	71.1	1.7	54.6
Total industrial firms	84.5	2.0	64.3	78.3	2.6	62.7	80.3	2.4	63.2

Table 6

Frequency of online current account use
(percentage of firms)

	Firms with 50+ workers				Firms with 20-49 workers				Total firms with 20+ workers			
	None	Rare	Fairly often	Very often	None	Rare	Fairly often	Very often	None	Rare	Fairly often	Very Often
Geographical area												
North-West	15.4	2.1	15.0	67.6	18.4	6.4	20.4	54.8	17.3	4.8	18.4	59.4
North-East	13.0	0.6	12.5	73.9	20.6	2.5	21.5	55.3	18.2	1.9	18.6	61.3
Center	17.9	2.4	14.0	65.7	25.6	6.7	21.0	46.7	23.4	5.5	19.1	52.1
South (incl. Sicily and Sardinia)	25.3	3.3	20.0	51.4	32.2	3.3	21.3	43.2	30.5	3.3	21.0	45.2
Number of workers												
20 - 49	-	-	-	-	22.6	4.7	21.0	51.7	22.6	4.7	21.0	51.7
50 - 199	16.5	1.7	14.8	66.9	-	-	-	-	16.5	1.7	14.8	66.9
200 - 499	14.7	2.4	13.3	69.6	-	-	-	-	14.7	2.4	13.3	69.6
500 +	10.7	1.0	11.9	76.3	-	-	-	-	10.7	1.0	11.9	76.3
Sector												
Textiles. clothing. leather. footwear	13.4	1.0	14.4	71.2	27.7	5.0	20.4	46.9	23.7	3.9	18.7	53.7
Chemicals. rubber. plastic	14.7	3.9	18.5	63.0	12.3	6.0	19.0	62.7	13.2	5.2	18.8	62.8
Metal and engineering	19.8	1.3	13.3	65.6	23.4	5.2	20.3	51.1	22.2	3.9	18.0	55.9
Other manufacturing	11.8	1.9	15.0	71.3	19.9	3.3	23.3	53.5	17.5	2.9	20.8	58.8
Other non-construction industry	..	..	..	..	..	..	..	..	29.2	5.3	17.9	47.5
Total industrial firms	16.0	1.8	14.5	67.7	22.6	4.7	21.0	51.7	20.5	3.8	19.0	56.8

Table 7

Frequency of online purchases and sales of securities
(percentage of firms)

	Firms with 50+ workers				Firms with 20-49 workers				Total firms with 20+ workers			
	None	Rare	Fairly often	Very Often	None	Rare	Fairly often	Very Often	None	Rare	Fairly often	Very Often
Geographical area												
North-West	97.6	0.9	0.8	0.7	97.9	0.7	0.5	0.9	97.8	0.8	0.6	0.8
North-East	98.8	0.7	0.0	0.5	97.1	2.9	0.0	0.0	97.6	2.2	0.0	0.2
Center	97.7	1.8	0.6	0.0	97.7	1.8	0.0	0.6	97.7	1.8	0.2	0.4
South (incl. Sicily and Sardinia)	98.4	1.0	0.4	0.3	97.3	1.7	0.3	0.7	97.6	1.5	0.3	0.6
Number of workers												
20 - 49	-	-	-	-	97.5	1.8	0.2	0.5	97.5	1.8	0.2	0.5
50 - 199	98.3	1.0	0.4	0.4	-	-	-	-	98.3	1.0	0.4	0.4
200 - 499	97.9	0.7	0.7	0.8	-	-	-	-	97.9	0.7	0.7	0.8
500 +	95.2	2.1	0.7	2.1	-	-	-	-	95.2	2.1	0.7	2.1
Sector												
Textiles, clothing, leather, footwear	98.1	0.8	0.2	0.9	97.7	0.6	0.2	1.6	97.8	0.6	0.2	1.4
Chemicals, rubber, plastic	99.4	0.2	0.0	0.3	94.3	3.3	2.1	0.3	96.3	2.1	1.3	0.3
Metal and engineering	98.5	0.9	0.2	0.4	97.3	2.7	0.0	0.0	97.7	2.1	0.1	0.1
Other manufacturing	97.0	1.4	1.1	0.5	98.5	1.0	0.1	0.5	98.0	1.1	0.4	0.5
Other non-construction industry	..	..	..	..	..	..	..	..	98.2	1.0	0.7	0.0
Total industrial firms	98.1	1.0	0.4	0.5	97.5	1.8	0.2	0.5	97.7	1.5	0.3	0.5

Table 8

Frequency of online collection and payment
(percentage of firms)

	Firms with 50+ workers				Firms with 20-49 workers				Total firms with 20+ workers			
	None	Rare	Fairly often	Very Often	None	Rare	Fairly often	Very Often	None	Rare	Fairly often	Very Often
Geographical area												
North-West	38.3	1.9	14.5	45.4	35.7	2.7	17.8	43.8	36.6	2.4	16.6	44.4
North-East	29.6	2.3	14.7	53.4	31.5	2.4	21.0	45.1	30.9	2.4	19.0	47.8
Center	38.8	3.6	16.0	41.6	47.6	5.2	19.8	27.4	45.1	4.8	18.7	31.4
South (incl. Sicily and Sardinia)	46.6	3.0	18.9	31.5	48.9	5.9	19.4	25.9	48.3	5.2	19.3	27.2
Number of workers												
20 - 49	-	-	-	-	38.6	3.5	19.5	38.4	38.6	3.5	19.5	38.4
50 - 199	37.1	2.5	15.2	45.3	-	-	-	-	37.1	2.5	15.2	45.3
200 - 499	34.7	2.6	16.5	46.3	-	-	-	-	34.7	2.6	16.5	46.3
500 +	27.9	1.4	12.9	57.8	-	-	-	-	27.9	1.4	12.9	57.8
Sector												
Textiles, clothing, leather, footwear	32.3	1.6	15.4	50.7	47.8	3.0	15.5	33.6	43.5	2.6	15.5	38.4
Chemicals, rubber, plastic	30.5	2.6	18.0	48.9	34.2	0.3	16.2	49.3	32.7	1.2	16.9	49.1
Metal and engineering	41.1	2.8	13.8	42.2	38.1	2.5	21.2	38.2	39.1	2.6	18.8	39.5
Other manufacturing	33.3	1.9	16.7	48.2	33.1	6.1	20.9	40.0	33.2	4.8	19.6	42.4
Other non-construction industry	..	..	..	..	..	..	..	..	45.8	8.2	16.2	29.8
Total industrial firms	36.4	2.4	15.3	46.0	38.6	3.5	19.5	38.4	37.9	3.2	18.1	40.8

Table 9

Online purchasing
(percentage of firms)

	Firms with 50+ workers				Firms with 20-49 workers				Total firms with 20+ workers			
	Raw materials	Semi-fin. or final prod.	ICT prod.	Other services	Raw materials	Semi-fin. or final prod.	ICT prod.	Other services	Raw materials	Semi-fin. or final prod.	ICT prod.	Other services
Geographical area												
North-West	23.4	30.6	18.3	27.7	33.6	41.9	9.4	15.1	24.4	31.7	17.4	26.5
North-East	43.1	39.8	13.9	3.3	48.3	23.5	19.6	8.6	43.3	39.0	14.1	3.5
Center	4.3	21.4	14.5	59.8	23.6	46.6	21.3	8.4	4.7	21.9	14.6	58.8
South (incl. Sicily and Sardinia)	49.7	15.1	21.5	13.6	33.6	40.4	18.4	7.6	43.2	25.3	20.3	11.2
Number of workers												
20 - 49	-	-	-	-	35.0	39.2	13.4	12.5	35.0	39.2	13.4	12.5
50 - 199	50.2	11.3	24.7	13.8	-	-	-	-	50.2	11.3	24.7	13.8
200 - 499	48.2	36.1	9.7	5.9	-	-	-	-	48.2	36.1	9.7	5.9
500 +	11.9	31.3	15.6	41.2	-	-	-	-	11.9	31.3	15.6	41.2
Sector												
Textiles, clothing, leather, footwear	27.5	16.6	39.3	16.7	14.6	48.0	22.8	14.7	23.0	27.4	33.6	16.0
Chemicals, rubber, plastic	10.7	38.8	2.0	48.5	83.3	1.8	13.8	1.2	14.9	36.7	2.7	45.8
Metal and engineering	44.8	33.2	15.7	6.3	22.2	50.2	11.4	16.1	42.0	35.4	15.1	7.5
Other manufacturing	39.9	16.1	30.9	13.1	22.8	48.8	18.2	10.2	39.1	17.8	30.2	13.0
Other non-construction industry	..	..	..	..	..	..	..	..	6.3	21.6	23.4	48.7
Total industrial firms	22.0	29.5	15.9	32.6	35.0	39.2	13.4	12.5	22.8	30.1	15.8	31.3

Table 10

Firms having completing purchases or sales via online payment
(percentage of firms)

	Firms with 50+ workers	Firms with 20-49 workers	Total firms with 20+ workers
Geographical area			
North-West	17.5	15.5	16.2
North-East	18.7	13.5	14.9
Center	10.6	13.5	12.7
South (incl. Sicily and Sardinia)	9.8	10.2	10.1
Number of workers			
20 - 49	-	13.6	13.6
50 - 199	17.2	-	17.2
200 - 499	10.8	-	10.8
500 +	16.7	-	16.7
Sector			
Textiles, clothing, leather, footwear	18.7	7.6	9.8
Chemicals, rubber, plastic	12.9	15.7	14.5
Metal and engineering	15.8	18.6	17.8
Other manufacturing	17.7	7.1	10.8
Other non-construction industry	..	..	3.9
Total industrial firms	16.2	13.6	14.4

Table 11

Online payments as share of total online sales
(percentages)

	Firms with 50+ workers	Firms with 20-49 workers	Total firms with 20+ workers
Geographical area			
North-West	2.8	0.0	2.6
North-East	1.0	15.9	1.1
Center	0.1	0.0	0.1
South (incl. Sicily and Sardinia)	23.9	52.9	31.7
Number of workers			
20 - 49	-	9.3	9.3
50 - 199	4.3	-	4.3
200 - 499	0.4	-	0.4
500 +	2.6	-	2.6
Sector			
Textiles, clothing, leather, footwear	2.7	50.7	12.5
Chemicals, rubber, plastic	0.0	0.0	0.0
Metal and engineering	1.1	4.6	1.3
Other manufacturing	9.4	0.8	8.7
Other non-construction industry	..	..	10.0
Total industrial firms	2.4	9.3	2.8

Table 12

Online payments as share of total online purchases
(percentages)

	Firms with 50+ workers	Firms with 20-49 workers	Total firms with 20+ workers
Geographical area			
North-West	2.2	17.0	3.9
North-East	40.1	31.7	39.7
Center	0.6	18.3	1.1
South (incl. Sicily and Sardinia)	22.5	34.9	27.4
Number of workers			
20 - 49	-	21.9	21.9
50 - 199	8.9	-	8.9
200 - 499	1.3	-	1.3
500 +	14.2	-	14.2
Sector			
Textiles, clothing, leather, footwear	14.0	31.6	19.7
Chemicals, rubber, plastic	43.5	21.4	41.6
Metal and engineering	7.6	22.1	9.4
Other manufacturing	11.8	11.9	11.8
Other non-construction industry	..	..	0.4
Total industrial firms	11.6	21.9	12.3

SECTION II
SURVEY OF SERVICE FIRMS

Table 1

Composition of the sample and the reference population
(numbers, percentages)

	Firms interviewed		Population	
	Number	Percentage	Number	Percentage
Geographical area				
North-West	1,664	39.6	11,912	39.4
North-East	1,153	27.4	7,633	25.2
Centre	679	16.1	6,114	20.2
South (incl. Sicily and Sardinia)	709	16.9	4,582	15.2
Sales				
Under 10 billion lire	1,344	32.0	14,534	48.1
10-25 billion lire	1,132	26.9	10,021	33.1
25-100 billion lire	1,148	27.3	4,554	15.1
100 billion +	304	7.2	1,132	3.7
No answer	277	6.6	...	...
Number of workers				
up to 19	1,812	43.1	15,769	52.1
20 – 49	1,177	28.0	7,919	26.2
50 –199	914	21.7	4,973	16.4
200 +	279	6.6	1,437	4.8
No answer	23	0.5	142	0.5
Economic sector				
Wholesale trade	1,747	41.5	13,188	43.6
Retail trade	1,071	25.5	8,612	28.5
Transport & communications	620	14.7	3,423	11.3
IT and R&D	239	5.7	1,113	3.7
Other	528	12.6	3,905	12.9
Group membership				
Yes	1,313	31.2	...	...
No	2,885	68.6	...	...
No answer	8	0.2	...	...
Total	4,205	100.0	30,241	100.0

⁽¹⁾ Source: CERVED for data referring to population. The break-down of population by staff size has been estimated according to weighing coefficients.

Table 2

Technological endowment
(percentage of all firms)

	IT workstations	Internet	Intranet	Extranet	Network	Website	Portal	Website planned for 2002
Geographical area								
North-West	99.5	95.6	42.7	15.2	95.7	60.2	31.9	11.8
North-East	99.4	95.0	36.5	10.7	95.1	59.5	29.0	11.0
Centre	99.5	94.0	37.4	12.7	94.3	56.2	29.7	11.2
South (incl. Sicily and Sardinia)	100.0	93.8	32.0	12.2	95.2	47.1	29.7	17.1
Sales								
Under 10 billion lire	99.1	92.3	27.4	9.9	92.2	49.3	30.5	14.7
10-25 billion lire	99.9	96.9	41.0	13.2	97.5	61.0	27.7	10.8
25-100 billion lire	99.9	97.9	56.8	19.8	98.9	68.5	33.6	11.3
100 billion +	100.0	98.6	72.0	28.4	98.9	78.6	34.6	7.7
No. Workers								
up to 19	99.4	93.2	27.4	9.3	93.4	48.7	26.5	13.2
20 - 49	99.7	94.7	44.9	14.4	95.6	61.1	33.5	13.0
50 -199	99.8	99.1	54.8	19.9	99.3	73.2	32.4	8.9
200 +	100.0	99.7	65.6	23.8	100.0	75.9	37.9	10.4
Economic sector								
Wholesale trade	99.7	94.5	33.1	9.7	94.4	56.0	26.4	11.9
Retail trade	99.6	92.4	38.3	16.8	94.3	54.4	36.7	13.2
Transport & communications	99.5	98.7	39.0	11.7	98.7	59.7	24.2	14.0
IT and R&D	100.0	99.6	80.2	30.2	99.6	85.6	45.9	3.4
Other	98.7	96.8	44.2	12.4	95.4	57.2	30.0	12.3
Total	99.6	94.8	38.4	13.1	95.2	57.2	30.4	12.3

Figure 1

Firms with website
(percentages, cumulative)

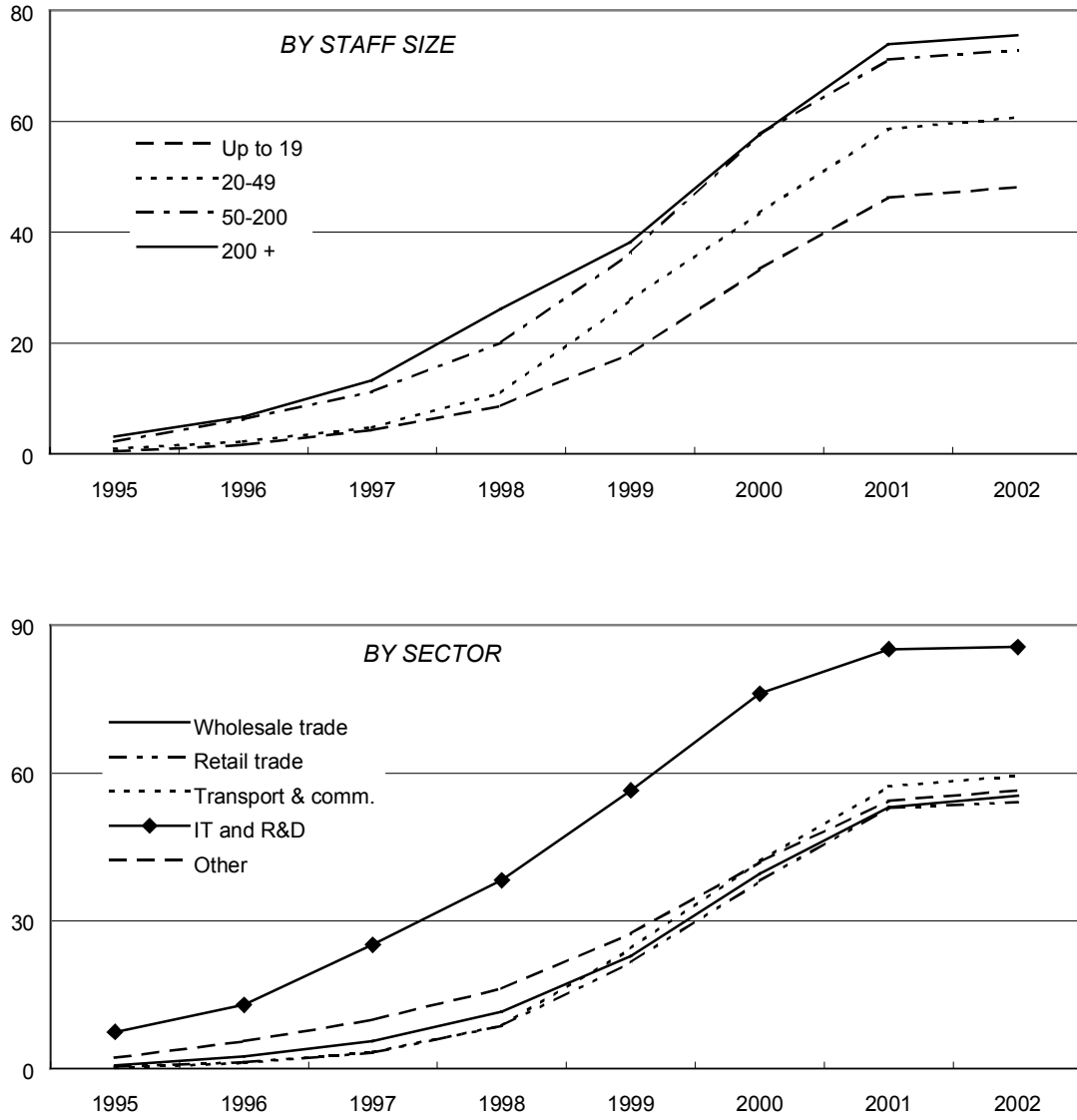


Table 3

Firms with portal
(percentage of firms)*

	Direct	Via Group firms	Via other firm	Bank	Business assoc.	Other
Geographical area						
North-West	37.4	15.4	28.2	2.3	11.7	4.9
North-East	36.4	13.0	36.4	0.6	11.1	2.7
Centre	26.9	18.4	36.0	0.0	9.2	9.6
South (incl. Sicily and Sardinia)	22.8	23.7	38.3	1.6	10.5	3.2
Sales						
under 10 billion lire	32.9	15.3	31.5	2.2	12.9	5.2
10-25 billion lire	29.4	17.5	34.8	0.5	13.9	3.9
25-100 billion lire	30.6	18.3	35.6	1.6	6.0	7.8
100 billion +	49.0	19.0	25.9	0.0	3.9	2.2
No. Workers						
up to 19	29.2	14.8	32.4	2.6	14.8	6.1
20 – 49	31.1	15.9	39.8	0.2	7.1	5.8
50 –199	36.2	20.3	29.5	0.7	9.7	3.6
200 +	54.3	18.1	21.5	1.1	5.0	0.0
Economic sector						
Wholesale trade	34.3	16.1	28.2	2.7	11.4	7.2
Retail trade	23.3	17.4	44.0	0.4	8.7	6.2
Transport & communications	32.8	8.3	48.7	0.8	9.3	0.0
IT and R&D	62.4	20.1	11.9	0.0	5.6	0.0
Other	38.0	20.5	19.2	1.1	19.1	2.2
Total	32.9	16.6	33.2	1.3	10.9	5.1

(*)Percentage with reference just to firms belonging to a portal.

Table 4

Supply of ICT services
(percentage of firms)*

	Operational management	Systems assistance	Security	Maintenance & Dev't	Web housing/hosting	Portals or marketplace services	Call center	Issue and management of e-signature certificates
Geographical area								
North-West	59.7	62.3	47.2	68.5	31.9	30.9	45.1	9.2
North-East	75.0	74.8	55.1	77.5	50.9	33.8	64.3	12.6
Centre	61.3	70.1	41.5	73.1	45.6	32.7	47.7	17.0
South (incl. Sicily and Sardinia)	66.1	73.9	50.5	66.1	36.9	23.4	52.5	7.8
Sales								
Under 10 billion lire	59.8	61.4	37.6	68.7	38.8	22.7	39.6	9.2
10-25 billion lire	59.5	68.3	45.5	65.7	33.4	35.0	53.9	10.1
25-100 billion lire	81.0	79.5	68.4	81.8	53.0	32.6	61.9	14.7
100 billion +	81.9	91.0	91.0	91.0	61.3	61.3	89.7	37.3
No. Workers								
Up to 19	53.7	57.8	33.9	43.7	34.8	29.1	32.2	0
20 – 49	57.6	60.3	40.0	68.7	35.7	22.7	40.5	16.0
50 –199	61.5	68.4	43.9	75.6	39.5	32.4	55.6	9.5
200 +	93.5	90.9	84.4	93.3	56.6	46.5	75.9	23.9
Total	64.4	68.2	48.1	71.7	40.4	31.5	51.2	11.9

(*) Only firms in IT and R&D sector.

Table 5

Activities performed via telematic network
(percentage of firms)

	Presentation of firm	Presentation of catalogue	Invoicing, account report	Procurement	Sales	Procurement and/or sales	Procurement and/or sales planned for 2002
Geographical area							
North-West	55.9	40.2	6.0	19.8	8.6	24.2	17.6
North-East	54.0	38.6	5.2	18.5	8.8	22.0	17.1
Centre	51.2	34.7	5.6	20.0	8.1	23.0	17.4
South (incl. Sicily and Sardinia)	42.0	30.0	7.5	18.6	7.1	22.6	16.2
Sales							
under 10 billion lire	44.7	30.5	5.4	18.0	7.1	21.4	16.2
10-25 billion lire	55.7	40.6	6.0	21.7	9.1	25.0	16.8
25-100 billion lire	64.4	45.0	7.4	21.2	9.7	25.9	19.6
100 billion +	72.1	56.1	8.4	20.0	12.9	26.4	24.6
No. workers							
up to 19	43.3	30.2	4.7	16.5	6.3	18.9	14.3
20 - 49	56.7	41.9	6.2	21.4	9.2	26.5	20.2
50 -199	69.0	48.0	8.3	24.3	12.4	30.3	19.5
200 +	71.1	51.0	10.0	21.6	12.4	27.2	24.3
Economic sector							
Wholesale trade	50.0	34.0	4.5	15.1	6.2	17.8	18.4
Retail trade	50.4	39.0	7.1	23.7	11.6	30.1	17.2
Transport & communications	56.1	34.8	7.2	18.2	8.3	21.8	16.4
IT and R&D	82.1	63.0	11.5	45.7	16.3	47.7	16.1
Other	52.7	37.8	5.6	17.4	6.0	20.0	14.2
Total	52.3	37.1	6.0	19.3	8.4	23.1	17.2

Table 6

Purchases and sales online
(percentage of firms)*

	Purchases				Sales			
	Up to 10%	11-20%	21-60%	>60%	Up to 10%	11-20%	21-60%	>60%
Geographical area								
North-West	73.8	7.9	8.7	9.6	78.8	8.1	10.8	2.2
North-East	70.1	4.5	13.6	11.8	79.3	6.8	11.0	2.9
Centre	77.1	3.6	8.6	10.7	83.3	0.0	13.4	3.4
South (incl. Sicily and Sardinia)	70.2	7.3	8.7	13.8	72.0	14.9	7.8	5.3
Sales								
under 10 billion lire	75.0	5.7	11.4	7.9	78.5	9.5	10.6	1.4
10-25 billion lire	71.7	6.2	10.3	11.8	76.6	7.0	15.1	1.4
25-100 billion lire	69.0	6.2	7.0	17.8	87.8	5.2	3.2	3.8
100 billion +	79.1	5.5	10.9	4.5	63.2	7.4	15.4	14.0
No. workers								
up to 19	68.8	8.0	12.1	11.2	85.9	6.9	6.8	0.5
20 - 49	69.2	5.2	10.8	14.8	74.9	2.1	16.9	6.1
50 -199	80.2	4.3	6.5	9.0	73.1	10.7	12.2	4.0
200 +	88.6	6.1	5.3	0.0	83.5	14.6	1.9	0.0
Economic sector								
Wholesale trade	73.0	7.0	11.2	8.8	75.7	5.0	14.7	4.6
Retail trade	60.4	6.2	11.9	21.5	79.3	8.0	11.2	1.5
Transport & communications	91.8	5.3	3.0	0.0	81.8	10.5	5.9	1.9
IT and R&D	66.7	4.7	16.9	11.7	78.6	0.1	7.0	11.5
Other	92.3	4.8	2.9	0.0	85.3	9.5	5.2	0.0
Total	73.0	6.1	9.9	11.0	78.9	7.1	11.0	3.0

(*)Percentage of all firms having effected some purchases or sales online.

Table 7

Channels for online procurement
(percentage of firms)*

	Digital market place	Portal	On-line auctions	Virtual mall	On supplier's website	Other
Geographical area						
North-West	11.6	29.8	1.9	7.3	88.2	3.7
North-East	14.3	26.3	2.3	4.4	92.2	4.6
Centre	13.4	31.4	7.5	11.1	85.8	4.6
South (incl. Sicily and Sardinia)	15.2	30.8	1.8	3.9	93.5	3.7
Sales						
under 10 billion lire	15.4	31.7	3.3	9.7	89.0	3.5
10-25 billion lire	9.6	29.1	4.3	8.0	92.7	1.9
25-100 billion lire	14.1	22.7	2.2	2.3	86.9	6.4
100 billion +	14.9	36.1	0.0	3.7	82.7	12.0
No. Workers						
up to 19	9.9	28.1	3.9	5.9	88.7	4.7
20 – 49	15.7	28.4	2.6	8.1	91.1	3.2
50 –199	13.3	31.1	3.0	7.3	89.7	4.1
200 +	17.9	38.5	1.3	4.5	85.3	5.8
Economic sector						
Wholesale trade	13.8	25.7	3.8	6.6	88.4	3.0
Retail trade	9.8	25.3	2.4	6.2	85.6	8.0
Transport & communications	11.1	32.0	3.3	4.8	94.1	0.0
IT and R&D	23.0	42.2	5.0	7.1	95.2	1.3
Other	14.9	38.2	1.5	10.2	94.5	2.9
Total	13.2	29.4	3.1	6.8	89.6	4.1

(*)Percentage of all firms having effected some purchases online.

Table 8

Channels for online sales
(percentage of firms)*

	Digital market place	Portal	On-line auctions	Virtual mall	On supplier's website	Other
Geographical area						
North-West	13.9	25.3	5.0	3.0	83.7	3.8
North-East	8.1	16.0	3.2	1.3	86.8	2.1
Centre	1.1	31.8	0.9	6.3	85.8	0.0
South (incl. Sicily and Sardinia)	8.0	15.8	2.4	0.0	94.7	3.7
Sales						
under 10 billion lire	10.2	21.7	3.9	1.9	87.0	3.5
10-25 billion lire	6.4	20.7	1.7	2.9	87.9	1.4
25-100 billion lire	10.0	25.2	4.7	4.5	86.3	4.6
100 billion +	0.0	21.4	4.8	2.1	83.1	0.0
No. workers						
up to 19	8.5	19.2	5.3	4.5	83.6	3.0
20 - 49	13.2	21.2	2.4	1.4	84.6	4.3
50 -199	6.0	25.4	1.2	2.0	93.6	1.2
200 +	9.3	31.5	6.6	2.2	81.4	0.0
Economic sector						
Wholesale trade	11.7	21.0	6.1	5.8	79.2	4.4
Retail trade	7.8	18.9	2.1	1.0	92.4	0.5
Transport & communications	9.5	30.1	1.9	0.0	83.8	5.2
Informatica e R&S	10.2	30.9	5.2	2.8	87.7	6.5
Other	4.9	30.1	0.0	2.7	87.4	0.0
Total	9.2	22.6	3.4	2.7	86.4	2.6

(*) Percentage of all firms having effected some sales online.

Table 9

Distribution of online purchases and sales by market
(average percentage values)*

	Purchases			Sales		
	Italy	EU countries	Other	Italy	EU countries	Other
Geographical area						
North-West	75.7	14.0	10.3	83.0	9.3	7.7
North-East	84.9	10.2	4.9	80.0	12.5	7.5
Centre	74.9	14.2	10.9	73.0	17.1	9.9
South (incl. Sicily and Sardinia)	81.7	15.3	3.0	78.2	13.6	8.2
Sales						
under 10 billion lire	78.3	13.4	8.3	69.6	18.0	12.4
10-25 billion lire	82.7	11.2	6.1	83.5	7.8	8.7
25-100 billion lire	78.5	14.7	6.8	84.1	11.7	4.2
100 billion +	63.7	19.3	17.0	91.7	6.6	1.7
No. workers						
up to 19	81.8	13.5	4.7	84.9	8.5	6.6
20 - 49	76.3	14.4	9.3	79.5	11.6	8.9
50 -199	79.8	10.9	9.3	71.8	17.9	10.3
200 +	69.2	15.0	15.8	47.4	45.6	7.0
Economic sector						
Wholesale trade	76.6	15.7	7.7	92.1	5.4	2.5
Retail trade	85.7	9.9	4.4	68.0	16.6	15.4
Transport & communications	76.8	17.0	6.2	73.9	21.2	4.9
IT and R&D	72.9	11.8	15.3	95.6	4.4	0.0
Other	72.9	13.0	14.1	81.9	12.0	6.1
Total	78.9	13.2	7.9	80.0	12.1	7.9

(*)Percentage of all firms having effected some purchases or sales online.

Table 10

Distribution of online purchases and sales by counterparty
(average percentage values)*

	Purchases		Sales			
	Group firms	Other firms	Group firms	Other firms	Consumers	Gov't
Geographical area						
North-West	20.2	79.8	11.0	57.2	30.4	1.4
North-East	20.7	79.3	20.8	53.3	24.3	1.6
Centre	19.4	80.6	10.6	40.5	48.4	0.5
South (incl. Sicily and Sardinia)	37.5	62.5	18.3	10.3	71.4	0.0
Sales						
under 10 billion lire	32.9	67.1	13.8	57.5	26.6	2.1
10-25 billion lire	15.4	84.6	25.9	24.2	49.8	0.1
25-100 billion lire	20.8	79.2	3.9	56.7	37.3	2.1
100 billion +	12.2	87.8	7.7	66.2	26.0	0.1
No. workers						
up to 19	25.1	74.9	9.0	35.9	54	1.1
20 - 49	19.2	80.8	24.3	42.5	32.8	0.4
50 -199	28.7	71.3	17.2	55.9	25.9	1
200 +	9.5	90.5	3.9	56.5	37.7	1.9
Economic sector						
Wholesale trade	18.4	81.6	27.9	51.6	20.4	0.1
Retail trade	49.4	50.6	0.0	23.4	76.2	0.4
Transport & communications	18.6	81.4	8.7	50.4	40.9	0
IT and R&D	7.7	92.3	15.3	55.9	22.4	6.4
Other	5.2	94.8	8.4	72.3	19.2	0.1
Total	22.3	77.3	13.9	49.3	35.7	1.2

(*) Percentage of firms belonging to groups.

Table 11

Distribution of online sales
(average percentage values)*

	Sales		
	Firms	Consumers	Gov't
Geographical area			
North-West	54.4	41.4	4.2
North-East	53.6	43.8	2.6
Centre	38.1	61.5	0.4
South (incl. Sicily and Sardinia)	42.0	57.7	0.3
Sales			
under 10 billion lire	47.9	47.4	4.7
10-25 billion lire	50.0	47.6	2.4
25-100 billion lire	45.6	53.4	1.0
100 billion +	70.8	29.2	0.0
No. workers			
up to 19	56.0	40.7	3.3
20 - 49	39.2	58.5	2.3
50 -199	48.4	49.2	2.4
200 +	64.5	34.3	1.2
Economic sector			
Wholesale trade	66.4	31.5	2.1
Retail trade	25.1	73.3	1.6
Transport & communications	60.4	39.4	0.2
IT and R&D	67.9	24.7	7.4
Other	65.7	26.3	8.0
Total	50.1	47.3	2.6

(*) Percentage of all firms having effected some sales online.

Table 12

Distribution of online purchases and sales by product
(average percentage values)*

	Purchases		Sales	
	Traditional	Digital	Traditional	Digital
Geographical area				
North-West	74.8	25.2	92.2	7.8
North-East	76.1	23.9	88.5	11.5
Centre	71.1	28.9	91.6	8.4
South (incl. Sicily and Sardinia)	87.2	12.8	94.4	5.6
Sales				
under 10 billion lire	80.7	19.3	92.1	7.9
10-25 billion lire	75.6	24.4	90.8	9.2
25-100 billion lire	76.3	23.7	89.0	11.0
100 billion +	68.2	31.8	92.9	7.1
No. workers				
up to 19	84.1	15.9	95.1	4.9
20 - 49	78.1	21.9	86.8	13.2
50 -199	67.7	32.3	91.6	8.4
200 +	54.5	45.5	89.6	10.4
Economic sector				
Wholesale trade	78.5	21.5	89.5	10.5
Retail trade	87.7	12.3	97.9	2.1
Transport & communications	76.5	23.5	92.9	7.1
IT and R&D	56.7	43.3	63.2	36.8
Other	55.9	44.1	87.1	12.9
Total	76.4	23.6	91.3	8.7

(*) Percentage of all firms having effected some purchases or sales online.

Table 13

Distribution of online purchases and sales by type of supplier/customer
(average percentage values)*

	Purchases		Sales	
	Regular	Not regular	Regular	Not regular
Geographical area				
North-West	70.1	29.9	67.4	32.6
North-East	70.4	29.6	54.7	45.3
Centre	69.8	30.2	49.7	50.3
South (incl. Sicily and Sardinia)	83.0	17.0	66.0	34.0
Sales				
under 10 billion lire	70.7	29.3	59.1	40.9
10-25 billion lire	71.4	28.6	63.7	36.3
25-100 billion lire	75.9	24.1	56.3	43.7
100 billion +	71.2	28.8	76.1	23.9
No. workers				
up to 19	76.3	23.7	64.7	35.3
20 - 49	70.4	29.6	52.9	47.1
50 -199	69.2	30.8	60.4	39.6
200 +	64.2	35.8	69.7	30.3
Economic sector				
Wholesale trade	73.9	26.1	78.1	21.9
Retail trade	78.7	21.3	41.1	58.9
Transport & communications	66.5	33.5	64.3	35.7
IT and R&D	68.2	31.8	74.6	25.4
Other	58.7	41.3	63.3	36.7
Total	72.1	27.9	60.7	39.3

(*) Percentage of all firms having effected some purchases or sales online.

Table 14

E-commerce payments and collections
(percentage of firms)

	Firms making at least 1 online payment (1)	Online purchases paid online				Firms making at least 1 online collection (1)	Online sales with online collection			
		<=10%	11%-40%	41%-60%	>60%		<=10%	11%-40%	41%-60%	>60%
Geographical area										
North-West	36.1	30.9	10.1	7.8	51.2	27.6	44.3	15.5	1.7	38.5
North-East	30.7	37.6	8.3	6.8	47.4	29.5	37.5	14.0	8.5	40.0
Centre	41.6	38.0	15.3	10.1	36.7	34.1	46.9	0.0	13.4	39.7
South (incl. Sicily and Sardinia)	27.2	39.1	20.6	3.6	36.8	20.9	75.3	24.7	0.0	0.0
Sales										
under 10 billion lire	33.0	32.2	14.9	7.4	45.5	31.8	33.1	9.1	10.3	47.5
10-25 billion lire	37.1	37.1	12.8	8.8	41.3	27.5	47.3	18.8	0.0	34.0
25-100 billion lire	30.8	40.0	8.2	3.8	48.1	26.8	62.2	14.3	10.1	13.4
100 billion +	33.1	23.4	18.4	19.7	38.4	25.0	62.1	9.7	0.0	28.2
No. workers										
up to 19	30.7	32.7	16.0	6.0	45.3	31.4	45.0	13.8	10.0	31.2
20 - 49	33.6	31.0	8.1	6.7	54.3	26.9	41.7	5.2	2.5	50.6
50 -199	39.0	43.8	11.6	7.0	37.6	24.7	60.8	5.3	2.8	31.1
200 +	42.3	32.1	4.4	21.9	41.7	38.4	21.8	51.2	7.7	19.2
Economic sector										
Wholesale trade	26.5	49.6	14.2	2.6	33.6	25.4	47.2	3.9	0.0	48.9
Retail trade	25.0	30.2	8.1	10.3	51.3	30.6	44.5	20.9	11.2	23.4
Transport & communications	36.2	37.8	5.2	6.4	50.7	29.0	60.1	7.5	11.2	21.2
Informatica e R&S	56.0	24.2	21.1	7.9	46.8	45.0	38.2	15.7	0.0	46.1
Other	62.7	29.9	11.9	10.9	47.9	18.8	38.3	0.0	0.0	61.7
Total	34.5	35.0	12.2	7.6	45.2	28.5	45.9	12.7	6.0	35.5

(1) Percentage refers to firms having effected some purchases or sales online.

Table 15

E-commerce transactions with online payment/collection
(percentage of firms)*

	Instrument used		
	E-banking	Debit and credit cards	E-money
Geographical area			
North-West	34.7	72.9	2.3
North-East	51.9	57.8	0.0
Centre	31.2	75.6	0.0
South (incl. Sicily and Sardinia)	74.2	29.3	4.0
Sales			
under 10 billion lire	45.8	59.4	1.5
10-25 billion lire	47.8	63.1	1.3
25-100 billion lire	38.0	35.4	2.5
100 billion +	25.4	84.7	0.0
No. workers			
up to 19	52.7	50.8	1.5
20 - 49	41.9	70.9	1.6
50 -199	33.3	77.4	0.0
200 +	31.2	63.5	5.4
Economic sector			
Wholesale trade	50.9	55.1	0.0
Retail trade	49.6	58.3	0.0
Transport & communications	47.4	61.2	0.0
IT and R&D	30.3	79.6	3.8
Other	26.5	80.1	4.8
Total	42.6	64.8	1.5

(*)Percentage refers to firms having effected online payments or collections.

Table 16

E-commerce transactions with traditional payment/collection
(percentage of firms)*

	Instrument used				
	Cash	Cheque	Bank debit	Credit transfer	Debit and credit cards
Geographical area					
North-West	10.6	20.2	30.0	68.8	15.4
North-East	9.6	21.6	42.4	67.3	12.2
Centre	9.1	17.6	28.7	49.8	18.5
South (incl. Sicily and Sardinia)	12.2	20.4	30.9	73.8	8.5
Sales					
under 10 billion lire	8.1	19.1	32.3	63.5	12.7
10-25 billion lire	10.2	20.5	35.2	64.3	17.3
25-100 billion lire	11.6	18.7	34.2	68.6	11.1
100 billion +	10.2	21.0	30.5	76.8	13.6
No. workers					
up to 19	8.7	24.9	40.0	58.4	9.2
20 - 49	10.7	18.5	32.3	71.7	13.0
50 -199	12.9	15.0	27.9	64.7	21.9
200 +	9.0	17.8	19.4	81.6	17.6
Economic sector					
Wholesale trade	7.0	19.3	36.7	65.4	9.8
Retail trade	15.0	22.5	36.8	59.1	14.9
Transport & communications	11.0	20.9	25.7	80.3	14.2
IT and R&D	3.2	14.4	31.6	82.2	22.1
Other	8.6	17.5	16.9	63.6	19.1
Total	10.3	20.1	33.1	65.7	14.0

(*)Percentage refers to firms having effected online purchases or sales.

Table 17

Online banking services
(percentage of firms)

	Current account info.	Collection/payment		Lending	Financial investment	Invoice management
			<i>Of which corporate banking</i>			
Geographical area						
North-West	69.8	48.9	77.2	3.3	1.6	6.4
North-East	71.9	52.3	74.8	3.0	1.3	6.4
Centre	73.6	49.7	68.9	1.8	1.6	7.6
South (incl. Sicily and Sardinia)	68.7	46.6	67.1	4.8	2.2	7.8
Sales						
under 10 billion lire	65.4	47.1	68.9	1.9	1.0	5.5
10-25 billion lire	75.3	50.9	74.2	4.0	1.7	6.2
25-100 billion lire	79.7	58.7	79.1	6.0	2.3	10.2
100 billion +	86.3	55.9	86.6	1.9	1.8	12.3
No. workers						
up to 19	65.7	45.8	71.5	2.2	1.0	4.5
20 - 49	72.9	51.8	74.0	4.8	1.7	8.5
50 -199	81.0	57.4	77.1	4.0	2.9	9.8
200 +	83.0	54.4	76.2	1.7	2.8	12.0
Economic sector						
Wholesale trade	71.6	50.3	76.0	2.5	1.4	6.0
Retail trade	65.7	45.6	69.5	5.5	1.6	8.1
Transport & communications	77.5	54.5	76.5	1.9	1.2	6.4
IT and R&D	84.2	65.2	68.6	3.9	5.8	12.2
Other	70.9	47.6	71.5	1.0	1.4	6.0
Total	71.0	49.6	73.4	3.2	1.6	6.9

Table 18

Frequency of use of online banking services
(percentage of firms)*

	Current account info.			Collection/payment			Interbank corporate banking		
	Often	Fairly often	Rarely	Often	Fairly often	Rarely	Often	Fairly often	Rarely
Geographical area									
North-West	74.8	21.6	3.5	59.6	31.1	9.3	71.6	25.5	2.9
North-East	73.7	21.9	4.3	61.1	32.7	6.2	64.2	33.6	2.2
Centre	69.0	27.8	3.2	51.9	35.2	12.9	66.0	27.8	6.2
South (incl. Sicily and Sardinia)	65.9	27.4	6.7	48.3	36.0	15.8	58.9	35.4	5.7
Sales									
under 10 billion lire	68.9	26.2	4.8	51.4	37.5	11.1	66.3	28.8	4.8
10-25 billion lire	72.1	23.8	4.1	58.9	29.8	11.2	66.2	30.4	3.3
25-100 billion lire	77.9	19.8	2.3	61.7	31.8	6.5	67.2	29.4	3.4
100 billion +	87.1	10.9	2.0	75.6	20.3	4.0	76.2	22.4	1.3
No. workers									
up to 19	69.0	25.9	5.1	53.8	35.8	10.4	64.4	30.7	5.0
20 - 49	72.3	24.2	3.5	58.1	30.9	11.0	68.4	30.2	1.4
50 -199	77.1	20.1	2.8	61.2	29.4	9.4	68.7	26.9	4.5
200 +	79.8	17.3	2.8	64.0	32.1	3.8	73.4	24.5	2.0
Economic sector									
Wholesale trade	74.1	22.4	3.6	58.7	31.1	10.2	69.6	26.6	3.8
Retail trade	66.2	27.2	6.6	48.8	37.9	13.3	58.9	37.3	3.8
Transport & communications	72.4	24.8	2.8	60.8	32.5	6.7	65.1	32.0	3.0
Informatica e R&S	79.4	19.6	0.9	66.9	27.8	5.3	67.4	26.1	6.5
Other	74.1	22.6	3.4	59.4	32.2	8.3	74.2	22.9	2.9
Total	72.0	23.9	4.1	56.9	33.0	10.1	66.8	29.5	3.7

(*) Percentages refer to firms having used the service at least once.

Table 19

Online banking services planned for first use in 2002
(percentage of firms)

	Current account info.	Collection/payment	Interbank corporate banking	Lending	Financial investment	Invoice management
Geographical area						
North-West	10.3	11.4	6.4	3.9	2.1	6.4
North-East	8.0	10.9	5.2	4.1	1.7	6.3
Centre	8.3	10.5	5.2	3.5	2.0	6.7
South (incl. Sicily and Sardinia)	7.9	10.5	7.0	5.4	2.9	8.2
Sales						
under 10 billion lire	11.0	10.7	6.1	3.6	1.8	6.7
10-25 billion lire	8.2	12.3	5.9	5.2	2.9	6.4
25-100 billion lire	7.5	9.4	6.4	3.7	1.8	8.4
100 billion +	2.3	11.5	4.6	3.1	1.6	10.0
No. workers						
up to 19	10.2	10.9	5.9	4.2	2.3	6.3
20 - 49	9.8	12.2	6.5	4.4	1.9	7.8
50 -199	5.0	9.1	5.0	3.6	2.2	5.7
200 +	3.8	11.0	6.9	2.8	1.1	9.4
Economic sector						
Wholesale trade	9.1	10.8	5.8	4.4	2.2	6.3
Retail trade	10.6	11.2	5.6	4.2	1.8	6.2
Transport & communications	6.7	11.5	6.3	3.4	1.4	9.5
Informatica e R&S	3.8	8.5	7.0	2.1	2.3	9.3
Other	8.1	11.0	6.4	4.0	2.7	5.8
Total	8.9	10.9	5.9	4.1	2.1	6.7

Table 20a

Obstacles to use of online banking services
(percentage of firms)

	Cost of transactions		Lack of assistance from banks		Complexity of services	
	Important	Unimportant	Important	Unimportant	Important	Unimportant
Geographical area						
North-West	27.3	72.7	44.4	55.6	33.4	66.0
North-East	26.4	73.6	41.4	58.6	32.4	67.6
Centre	26.9	73.1	40.9	59.1	34.0	66.0
South (incl. Sicily and Sardinia)	33.9	66.1	50.2	49.8	36.7	63.3
Sales						
under 10 billion lire	31.5	68.5	44.8	55.2	35.4	64.6
10-25 billion lire	25.3	74.7	44.5	55.5	34.8	65.2
25-100 billion lire	24.0	76.0	40.6	59.4	31.4	68.6
100 billion +	17.6	82.4	41.5	58.5	24.1	75.9
No. workers						
up to 19	29.0	71.0	44.1	55.8	35.7	64.3
20 - 49	27.2	72.7	41.9	58.1	31.8	68.1
50 -199	27.1	72.9	45.3	54.7	34.2	65.8
200 +	25.9	74.1	43.3	56.7	27.7	72.3
Economic sector						
Wholesale trade	25.7	74.3	43.2	56.8	34.7	65.3
Retail trade	33.9	66.1	44.7	55.3	34.1	65.9
Transport & communications	27.0	73.0	44.2	55.8	34.2	65.8
Informatica e R&S	21.9	78.1	46.5	53.5	31.4	68.6
Other	25.2	74.8	42.2	57.8	32.0	68.0
Total	28.0	72.0	43.7	56.3	33.9	66.1

Table 20b

Obstacles to use of online banking services
(percentage of firms)

	Necessity to go to branch		Use of paper documents		Network security	
	Important	Unimportant	Important	Unimportant	Important	Unimportant
Geographical area						
North-West	45.1	55.0	49.1	50.8	58.4	41.6
North-East	48.9	51.1	49.0	51.0	52.3	47.7
Centre	47.5	52.5	48.1	51.9	55.2	44.8
South (incl. Sicily and Sardinia)	52.7	47.3	52.2	47.8	62.5	37.5
Sales						
under 10 billion lire	50.5	49.5	49.5	50.5	58.1	41.9
10-25 billion lire	46.6	53.4	49.1	50.9	55.9	44.1
25-100 billion lire	44.2	55.8	48.7	51.3	56.0	44.0
100 billion +	39.1	60.9	53.2	46.7	54.1	45.8
No. workers						
up to 19	49.9	50.1	49.9	50.1	58.4	41.5
20 - 49	47.5	52.4	49.5	50.5	54.9	45.1
50 -199	43.4	56.6	48.0	52.0	55.1	44.9
200 +	42.1	57.9	49.3	50.7	55.2	44.8
Economic sector						
Wholesale trade	47.1	52.9	49.3	50.7	56.1	43.9
Retail trade	50.1	49.9	49.0	51.0	58.0	42.0
Transport & communications	47.0	52.9	52.4	47.6	57.6	42.4
Informatica e R&S	36.3	63.7	40.9	59.1	53.6	46.4
Other	48.4	51.6	50.1	49.9	56.6	43.4
Total	47.7	52.3	49.4	50.6	56.8	43.2

Table 21a

Reasons for undertaking e-commerce initiative
(percentage of firms)*

	Lower purchase/sales costs		Lower administrative costs		Reach new customers	
	Important	Unimportant	Important	Unimportant	Important	Unimportant
Geographical area						
North-West	56.3	43.7	44.3	55.7	62.9	37.1
North-East	61.4	38.6	51.8	48.2	63.2	36.8
Centre	59.7	40.3	57.5	42.5	62.0	38.0
South (incl. Sicily and Sardinia)	55.7	44.3	44.2	55.8	61.4	38.6
Sales						
under 10 billion lire	58.7	41.3	53.4	46.6	68.8	31.2
10-25 billion lire	57.0	43.0	45.2	54.8	61.8	38.2
25-100 billion lire	54.8	45.2	45.2	54.8	53.9	46.1
100 billion +	66.6	33.4	52.6	47.4	56.5	43.5
No. workers						
up to 19	57.1	42.9	52.0	48.0	64.8	35.2
20 - 49	58.7	41.3	47.7	52.3	61.2	38.8
50 -199	58.1	41.9	45.2	54.8	61.4	38.6
200 +	62.9	37.1	48.7	51.3	62.5	37.5
Economic sector						
Wholesale trade	58.3	41.7	47.0	53.0	61.3	38.7
Retail trade	57.3	42.7	49.2	50.8	62.9	37.1
Transport & communications	55.9	44.1	50.4	49.6	61.8	38.2
Informatica e R&S	59.5	40.5	46.7	53.3	62.3	37.7
Other	61.2	38.8	51.4	48.6	66.0	34.0
Total	58.1	41.9	48.7	51.3	62.6	37.4

(*)Percentages refer to firms that have effected some online purchases or sales.

Table 21b

Reasons for undertaking e-commerce initiative
(percentage of firms)*

	More efficient internal processes		Defend market share		Transactions with government	
	Important	Unimportant	Important	Unimportant	Important	Unimportant
Geographical area						
North-West	78.9	21.1	41.5	58.5	26.4	73.6
North-East	78.7	21.3	47.4	52.6	31.3	68.7
Centre	78.1	21.9	42.6	57.4	31.3	68.7
South (incl. Sicily and Sardinia)	81.9	18.1	50.5	49.5	28.5	71.5
Sales						
under 10 billion lire	83.7	16.3	52.3	47.7	32.4	67.6
10-25 billion lire	77.0	23.0	40.0	60.0	28.8	71.2
25-100 billion lire	75.0	25.0	39.6	60.4	24.8	75.2
100 billion +	83.6	16.4	42.5	57.5	18.8	81.2
No. workers						
up to 19	80.8	19.2	45.1	54.9	30.6	69.4
20 - 49	78.0	22.0	43.5	56.5	29.5	70.5
50 -199	78.7	21.3	46.6	53.4	26.2	73.8
200 +	76.8	23.2	41.0	59.0	27.8	72.2
Economic sector						
Wholesale trade	81.5	18.5	42.6	57.4	25.2	74.8
Retail trade	79.5	20.5	49.0	51.0	30.9	69.1
Transport & communications	78.7	21.3	47.6	52.4	26.4	73.6
Informatica e R&S	81.3	18.7	39.3	60.7	26.2	73.8
Other	70.9	29.1	37.1	62.9	37.0	63.0
Total	79.1	20.9	44.6	55.4	28.9	71.1

(*)Percentages refer to firms that have effected some online purchases or sales.

Table 22a

Benefits obtained from e-commerce
(percentage of firms)*

	Lower purchase/sales costs		Lower administrative costs		Reach new customers	
	Yes	No	Yes	No	Yes	No
Geographical area						
North-West	58.7	41.3	53.7	46.3	61.5	38.5
North-East	65.5	34.5	55.1	44.9	61.5	38.5
Centre	61.6	38.4	51.2	48.8	52.6	47.4
South (incl. Sicily and Sardinia)	58.0	42.0	52.3	47.7	59.9	40.1
Sales						
under 10 billion lire	59.6	40.4	53.9	46.1	63.6	36.4
10-25 billion lire	62.0	38.0	52.7	47.3	59.3	40.7
25-100 billion lire	58.6	41.4	50.0	50.0	53.6	46.4
100 billion +	68.6	31.4	65.9	34.1	54.0	46.0
No. workers						
up to 19	62.5	37.5	52.9	47.1	57.7	42.3
20 - 49	58.9	41.1	51.5	48.5	59.5	40.5
50 -199	60.1	39.9	54.2	45.8	61.3	38.7
200 +	64.5	35.5	60.6	39.4	65.2	34.8
Economic sector						
Wholesale trade	66.1	33.9	55.4	44.6	55.9	44.1
Retail trade	54.1	45.9	48.9	51.1	61.0	39.0
Transport & communications	60.2	39.8	55.8	44.2	66.2	33.8
Informatica e R&S	72.3	27.7	57.7	42.3	57.8	42.2
Other	59.8	40.2	55.4	44.6	60.2	39.8
Total	60.9	39.1	53.3	46.7	59.5	40.5

(*)Percentages refer to firms that have effected some online purchases or sales.

Table 22b

Benefits obtained from e-commerce
(percentage of firms)*

	More efficient internal processes		Defend market share		Transactions with government	
	Yes	No	Yes	No	Yes	No
Geographical area						
North-West	78.3	21.7	42.4	57.6	24.8	75.2
North-East	79.9	20.1	47.2	52.8	31.4	68.6
Centre	72.0	28.0	40.4	59.6	30.1	69.9
South (incl. Sicily and Sardinia)	82.1	17.9	49.6	50.4	27.5	72.5
Sales						
under 10 billion lire	77.9	22.1	48.2	51.8	27.4	72.6
10-25 billion lire	80.7	19.3	46.0	54.0	29.7	70.3
25-100 billion lire	76.7	23.3	35.2	64.8	27.0	73.0
100 billion +	78.9	21.1	43.8	56.2	19.4	80.6
No. workers						
up to 19	79.0	21.0	44.4	55.6	26.1	73.9
20 - 49	79.7	20.3	45.9	54.1	31.0	69.0
50 -199	75.9	24.1	43.1	56.9	25.9	74.1
200 +	76.2	23.8	42.6	57.4	32.0	68.0
Economic sector						
Wholesale trade	79.6	20.4	45.7	54.3	26.0	74.0
Retail trade	77.5	22.5	46.8	53.2	26.0	74.0
Transport & communications	75.4	24.6	43.4	56.6	29.1	70.9
Informatica e R&S	84.2	15.7	36.7	63.3	29.6	70.4
Other	73.9	26.1	38.7	61.3	36.3	63.7
Total	78.1	21.9	44.3	55.7	27.9	72.1

(*)Percentages refer to firms that have effected some online purchases or sales.

Table 23a

Obstacles to development of e-commerce
(percentage of firms)

	Product characteristics		Poor network security		Uncertainty over applicable laws		Uncertainty on identity and trustworthiness of counterparty	
	Important	Unimportant	Important	Unimportant	Important	Unimportant	Important	Unimportant
Geographical area								
North-West	71.8	28.2	56.6	43.4	56.2	43.8	63.8	36.2
North-East	72.3	27.7	53.6	46.4	54.2	45.8	63.5	36.5
Centre	67.4	32.6	53.5	46.5	58.1	41.9	65.7	34.3
South (incl. Sicily and Sardinia)	69.3	30.7	60.0	40.0	60.9	39.1	69.4	30.6
Sales								
under 10 billion lire	72.0	28.0	55.9	44.1	57.3	42.7	68.2	31.8
10-25 billion lire	70.4	29.6	55.3	44.7	56.6	43.4	63.9	36.1
25-100 billion lire	70.2	29.8	53.4	46.6	54.9	45.1	60.1	39.9
100 billion +	75.7	24.3	49.1	50.9	47.3	52.7	51.7	48.3
No. workers								
up to 19	70.7	29.3	54.7	45.3	56.8	43.2	67.2	32.8
20 - 49	69.7	30.3	58.5	41.5	57.2	42.8	65.4	34.6
50 -199	71.7	28.3	55.2	44.8	56.1	43.9	58.2	41.8
200 +	72.1	27.9	53.0	47.0	55.2	44.8	61.3	38.7
Economic sector								
Wholesale trade	71.0	29.0	52.1	47.9	54.3	45.7	65.2	34.8
Retail trade	68.7	31.3	60.3	39.7	60.7	39.3	67.9	32.1
Transport & communications	68.8	31.2	60.0	40.0	59.5	40.5	66.4	33.6
Informatica e R&S	66.7	33.3	55.4	44.6	51.7	48.3	56.6	43.4
Other	76.7	23.3	53.9	46.1	55.7	44.3	58.5	41.5
Total	70.7	29.3	55.7	44.3	56.7	43.2	64.9	35.1

Table 23b

Obstacles to development of e-commerce
(percentage of firms)

	Lack of qualified personnel		Cost of network use		Lack of financing for new technology	
	Important	Unimportant	Important	Unimportant	Important	Unimportant
Geographical area						
North-West	45.2	54.8	30.2	69.8	32.9	67.1
North-East	44.0	56.0	26.1	73.9	30.1	69.9
Centre	43.8	56.2	28.2	71.8	32.5	67.5
South (incl. Sicily and Sardinia)	48.0	52.0	31.9	68.1	34.9	65.1
Sales						
under 10 billion lire	47.5	52.5	31.4	68.6	36.0	64.0
10-25 billion lire	45.2	54.8	28.2	71.8	32.3	67.7
25-100 billion lire	41.8	58.2	25.1	74.9	24.7	75.3
100 billion +	37.8	62.2	18.9	81.1	21.1	78.9
No. workers						
up to 19	44.2	55.8	30.2	69.8	32.4	67.6
20 - 49	48.6	51.4	28.8	71.2	34.7	65.3
50 -199	43.2	56.8	26.7	73.3	30.0	70.0
200 +	38.2	61.8	25.6	74.4	27.5	72.5
Economic sector						
Wholesale trade	45.8	54.2	30.4	69.6	32.2	67.8
Retail trade	49.3	50.7	30.5	69.5	34.2	65.8
Transport & communications	44.5	55.5	29.4	70.6	34.6	65.4
Informatica e R&S	30.9	69.1	19.2	80.8	23.1	76.9
Other	37.1	62.9	23.3	76.7	29.9	70.1
Total	45.0	55.0	29.0	71.0	32.4	67.6

SECTION III
SURVEY OF LOCAL GOVERNMENT COMPUTERIZATION

Table 1

Local government hardware endowment
(numbers and percentage changes)

	Regions			Provinces			Municipalities		
	2000	2002	% change	2000	2002	% change	2000	2002	% change
Workstations	24,699	32,290	31	34,334	40,974	19	73,336	92,949	26
Terminals	1,984	438	-78	3,875	1,223	-68	5,701	2,546	-55
PCs	22,715	31,852	40	30,459	39,751	31	67,635	90,403	34
<i>of which: networked</i>	<i>14,764</i>	<i>24,845</i>	<i>68</i>	<i>24,672</i>	<i>34,981</i>	<i>42</i>	<i>45,992</i>	<i>72,322</i>	<i>57</i>

Table 2

Degree of IT development

	PCs per workstation		Terminals per workstation		Networked PCs per workstation		Workstations per admin. employee		Networked PCs per admin. employee	
	2000	2002	2000	2002	2000	2002	2000	2002	2000	2002
Regions	0.9	1.0	0.1	0.0	0.7	0.7	0.8	1.0	0.5	0.7
North	0.9	1.0	0.1	0.0	0.8	0.9	1.1	1.3	0.9	1.1
North-West	1.0	1.0	-	-	0.8	1.0	0.8	0.9	0.6	0.9
North-East	0.9	1.0	0.1	0.0	0.8	0.8	1.5	1.7	1.2	1.3
Centre	1.0	1.0	0.0	-	0.6	1.0	0.4	0.6	0.3	0.6
South (incl. Sicily and Sardinia)	0.8	1.0	0.2	0.0	0.5	0.3	0.8	1.2	0.4	0.4
Provinces	0.9	1.0	0.1	0.0	0.7	0.9	0.9	1.0	0.6	0.9
North	0.8	1.0	0.2	0.0	0.7	0.9	0.9	1.0	0.7	0.9
North-West	1.0	1.0	0.1	0.0	0.8	0.8	1.0	1.4	0.8	1.2
North-East	0.8	1.0	0.2	0.0	0.7	0.9	0.9	0.9	0.7	0.8
Centre	1.0	1.0	0.0	-	0.7	0.9	0.9	1.0	0.6	0.9
South (incl. Sicily and Sardinia)	1.0	1.0	0.0	0.0	0.6	0.8	0.6	1.0	0.4	0.7
Municipalities	0.9	1.0	0.1	0.0	0.6	0.8	0.8	0.9	0.5	0.7
North	1.0	1.0	0.1	0.0	0.7	0.8	1.3	1.5	0.9	1.2
North-West	0.9	1.0	0.1	0.0	0.5	0.8	1.5	1.2	0.8	1.0
North-East	1.0	1.0	0.0	0.0	0.8	0.8	1.2	1.9	0.9	1.4
Centre	0.9	1.0	0.1	0.1	0.6	0.9	0.8	0.9	0.5	0.7
South (incl. Sicily and Sardinia)	0.9	0.9	0.1	0.1	0.5	0.6	0.3	0.4	0.1	0.2

Table 3

Financial management of local government
(percentages)

	Automated		Partly automated		Paper-based	
	2000	2002	2000	2002	2000	2002
Regions						
North	75	88	25	13	-	-
North-West	75	100	25	-	-	-
North-East	75	75	25	25	-	-
Centre	67	67	33	33	-	-
South (incl. Sicily and Sardinia)	100	100	-	-	-	-
Provinces						
North	88	88	12	12	-	-
North-West	91	91	9	9	-	-
North-East	91	92	9	8	-	-
Centre	91	92	9	8	-	-
South (incl. Sicily and Sardinia)	83	86	14	11	3	3
Municipalities						
North	86	88	14	12	-	-
North-West	90	90	10	10	-	-
North-East	80	84	20	16	-	-
Centre	90	90	10	10	-	-
South (incl. Sicily and Sardinia)	83	85	14	12	3	3

Table 4

Local government payments and collections, connection with treasury service
(percentages)

	Telematic link		IT support	
	2000	2002	2000	2002
Regions⁽¹⁾	43	36	43	57
North	50	75	38	13
North-West	75	75	-	-
North-East	25	75	75	25
Centre	-	-	100	100
South (incl. Sicily and Sardinia)	40	20	40	80
Provinces	28	44	40	32
North	38	54	41	32
North-West	28	39	44	44
North-East	47	68	37	21
Centre	14	29	57	43
South (incl. Sicily and Sardinia)	8	23	31	23
Municipalities	26	29	34	29
North	33	39	28	24
North-West	37	26	23	31
North-East	30	50	33	18
Centre	21	26	53	48
South (incl. Sicily and Sardinia) ⁽²⁾	10	7	39	29

(1) The figures reflect the response of one region which in 2000 said it had a telematic link with its treasury service and in 2002 said it used IT supports.

(2) The figures reflect the responses of two municipalities which in 2000 said they had a telematic link and in 2002 paper-based supports, and another three which said in 2000 that they used IT supports and in 2002 paper-based supports.

Table 5

Computerized payment mandate
(percentages)

	Telematic link	
	Operating	Planned for 2003
Regions		
North	20	20
North-West	-	50
North-East	33	-
Centre	-	75
South (incl. Sicily and Sardinia)	-	83
Provinces		
North	32	48
North-West	17	58
North-East	46	38
Centre	27	45
South (incl. Sicily and Sardinia)	-	28
Municipalities		
North	21	40
North-West	12	44
North-East	31	35
Centre	30	40
South (incl. Sicily and Sardinia)	12	50

Table 6

Treasury service's account reporting
(percentages)

	Telematic link		IT support	
	2000	2002	2000	2002
Regions⁽¹⁾	59	35	12	53
North	75	50	-	38
North-West	75	50	-	25
North-East	75	50	-	50
Centre	-	33	33	33
South (incl. Sicily and Sardinia)	67	17	17	83
Provinces	16	21	19	21
North	30	30	26	23
North-West	18	18	23	18
North-East	43	42	29	29
Centre	9	13	13	30
South (incl. Sicily and Sardinia)	-	14	14	11
Municipalities	9	13	10	11
North	12	19	9	10
North-West	10	9	6	11
North-East	16	35	12	12
Centre	10	14	12	12
South (incl. Sicily and Sardinia)	1	3	11	12

¹⁾ The figures reflect the response of one region which in 2000 said it had a telematic link with its treasury service and in 2002 said it used IT supports.

Table 7

Services offered by portal
(percentages)

	Services	Activities	Culture	Certificates	Taxes	One-stop office for businesses
Regions						
North	67	67	83	17	-	50
North-West	100	67	100	-	-	67
North-East	33	67	67	33	-	33
Centre	100	100	100	-	-	33
South (incl. Sicily and Sardinia)	100	100	100	-	50	50
Provinces						
North	71	93	50	36	4	21
North-West	64	93	36	29	-	14
North-East	79	93	64	43	7	29
Centre	86	100	71	29	-	7
South (incl. Sicily and Sardinia)	89	100	56	17	-	17
Municipalities						
North	64	77	32	32	11	59
North-West	58	75	42	29	8	58
North-East	70	80	20	35	15	60
Centre	81	87	38	25	75	75
South (incl. Sicily and Sardinia)	74	83	39	22	-	35

Table 8

Network links with regional bodies, Single Public Administration Network and other government bodies
(percentages)

	Link with regional bodies or Single P.A. Network	Link with other government bodies
Regions		
North	75	88
North-West	100	100
North-East	50	75
Centre	50	100
South (incl. Sicily and Sardinia)	43	71
Provinces		
North	76	27
North-West	65	17
North-East	86	36
Centre	52	20
South (incl. Sicily and Sardinia)	14	17
Municipalities		
North	31	27
North-West	29	27
North-East	34	26
Centre	35	38
South (incl. Sicily and Sardinia)	16	36