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The Shadow Economy in Europe

Using payment systems to combat the shadow economy

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Dr. Schneider is one of the leading experts on the shadow economy. He has published multiple articles and books on the shadow economy. He is a professor of economics and the chair of the Department of Economics at Johannes Kepler University of Linz in Austria.

A.T. Kearney

A.T. Kearney is a global strategic management consulting firm known for helping clients gain lasting results through a unique combination of strategic insight and collaborative working style. The firm was established in 1926 to provide management advice concerning issues on the CEO's agenda. Today, we serve the largest global clients in all major industries and have specific expertise in cards and payments. A.T. Kearney's offices are located in major business centres in 35 countries, including 24 offices in Europe.

At an estimated €2 trillion, the shadow economy in Europe is significant—ranging from 10 percent of gross domestic product (GDP) in the United Kingdom to almost 40 percent in some Central and Eastern European countries. Governments have formulated clear objectives to reduce this "other" marketplace, but with a range of causes and drivers, finding a solution is a complex task. A new study explores the structure and impact of the shadow economy and evaluates the role electronic payments can play to reduce it.

The "shadow economy"—that blurry area of commerce that includes legal activity hidden deliberately from public authorities—is a part of everyday life almost everywhere. A painter offers his work at half price by doing it outside the official economy and avoiding taxes. A bar owner accepts □5 for a glass of wine, then doesn't report the sale to the authorities. A construction company does not report to the government in order to avoid meeting legal standards, such as minimum wage or safety regulations.

Although the exact size of the shadow economy is difficult to ascertain, in Europe it is believed to be about □1.8 trillion.[1] In Germany and France, this economy is about one-eighth the size of the countries' official GDP. In less developed Eastern European nations such as Bulgaria, Latvia and Estonia, it comes close to 40 percent of GDP.

As the global economy suffers through a recession, more people may be inclined to work outside the normal, legal framework. Therefore, it is important to understand the shadow economy, and its effects—both positive and negative—so that countries may take the right steps toward capturing lost revenues, protecting workers and providing for their citizens.

It is within this context that A.T. Kearney and Friedrich Schneider, Ph.D., professor of economics and chair of the Department of Economics at the Johannes Kepler University of Linz, Austria, conducted a study to explore the structure of the shadow economy in Europe and identify measures to reduce it. Dr. Schneider divided the shadow economy into 17 industry sectors in five European countries *(see sidebar: About the Study on page 2)*. A.T. Kearney analyzed the data, evaluated the range of solutions used in countries around the world, and explored which industry subsectors could benefit most from the use of electronic payment systems to reduce the size and impact of the shadow economy.

This paper highlights the findings.

[1] *Friedrich Schneider. "Shadow Economies and Corruption All Over the World: New Estimates for 145 Countries."* Economics: The Open-Access, Open-Assessment E-Journal, *Vol. 1, 2007-9. The calculation encompasses the 27 countries of the European Union (except for Cyprus, Luxembourg and Malta, for which there is no available shadow economy data) plus Croatia, Norway, Switzerland and Turkey.*

The Size of the Shadow

The shadow economy is the realm of legal business activities that are performed outside the purview of authorities. It does not include illegal activities and crimes, such as drug dealing, smuggling, money laundering, tax evasion or embezzlement, nor does it include household enterprises that, by law, do not need to be registered with the government. Figure 1 shows the extent of the shadow economy in the European Union by size

About the Study

Measuring the shadow economy is a complex science, and explaining all of the approaches would fill a science book. Thus, the following provides a brief overview of the methods used in this study to measure the shadow economies of five countries.

Direct. Publicly available information about the shadow economy, such as information from anonymous surveys, was analysed. Researchers have found survey participants to be surprisingly honest, and they provide important details about the shadow economy.

Indirect. Macroeconomic indicators of the real economy were used to discern the shadow economy's impact. Such approaches, which must rely on macroeconomic figures that are often not dependable or suffer from systematic failures, include discrepancies between national expenditures and income statistics, differences between the official and actual labour force, statistics on transactions and currency demand, and a comparison of electricity consumption with the output of the real economy.

Model or latent estimation. A statistical technique called MIMIC (multiple indicators, multiple causes) was used to create a structural model for the shadow economy and examine the relationships between this economy and several input factors, such as the share of direct taxation or the social security burden. The model consists of observed and unobserved variables and specifies causal relationships among the unobserved variables.

Breakdown by industry segments

The study broke down the shadow economy by industry segments to compare it to the official economy. This was difficult because the European economy has different industry classifications than the questionnaires. As a result, in some cases the researchers were forced to exercise their own judgement in dividing up industries, and some activities, such as entertainment and some household services, could not be placed into official categories.

As there is no official breakdown of the GDP per industry segment, we used gross value added (GVA), which is the value of the goods or services minus the cost of inputs used to produce them. The difference between GVA and GDP is mainly in the treatment of taxes and subsidies on products or services.

The following three-step approach was used to evaluate areas most likely to be helped by electronic payments:

Country analysis. Selected five focus countries with relevant shadow economies (Germany, Italy, Spain, Poland and Turkey) and then divided each shadow economy into 17 sectors, based on our research and questionnaires. The comparison of undeclared work against underreporting is based on our own estimates.

Sector analysis. Selected the three sectors with the highest share of sales underreporting, based on our estimates, and split them into 30 subsectors, based on official categories. As detailed questionnaires were not available for each subcategory, information on industry subsectors and researcher judgement were used to derive an educated estimate.

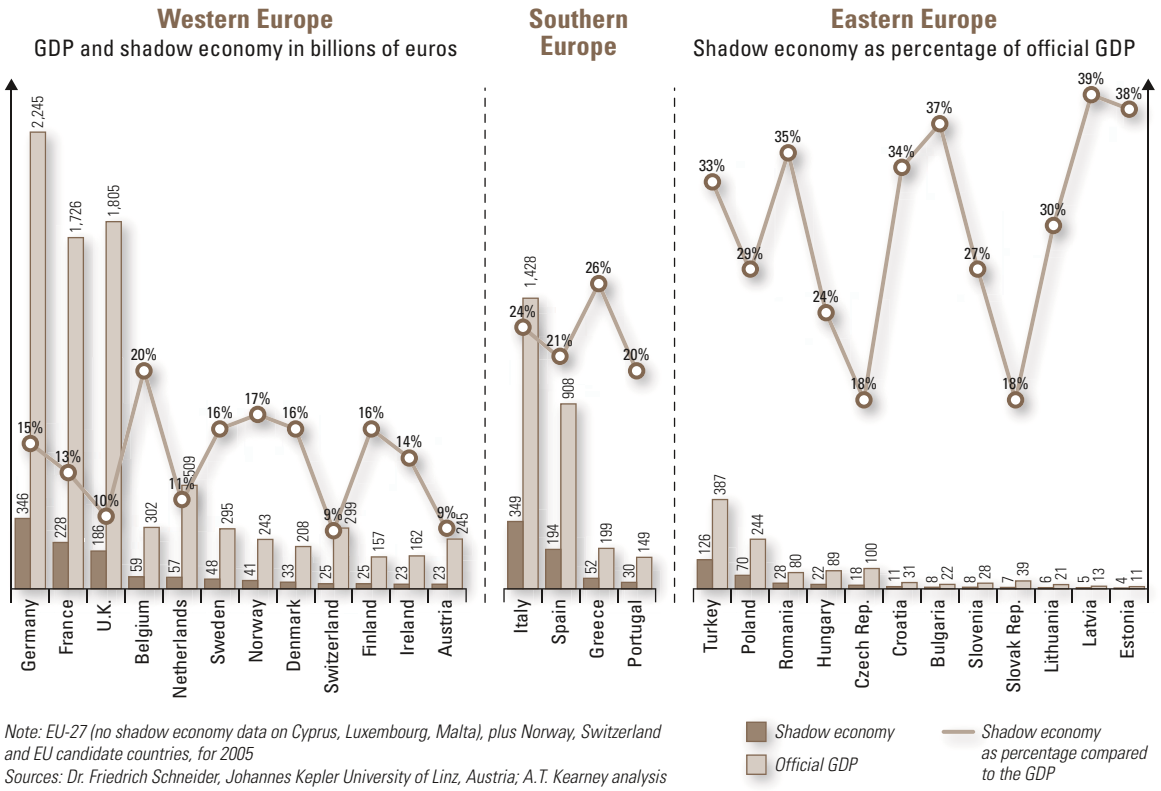
Addressable areas. Identified the most promising subsectors for electronic payments by analyzing the suggested amount of shadow economy concentration (based on the sector analysis), the size of the subsectors and the potential impact of payment systems (derived by the number of low-value payments, current penetration of electronic payments, convenience of electronic payments, profit margins and the share of undeclared work).

and percentage of GDP. Germany, Italy and France account for about half of Europe's shadow economy. In Eastern Europe, with less-developed countries, the shadow economy is much larger in comparison to the official economy than it is in Western Europe. For example, Turkey, with an official GDP of □387 billion, has a shadow economy of about □126 billion.

The research breaks down the structure, scope and effects of the shadow economy in five countries, chosen because of their different cultures and varied stages of development: Germany, Italy, Spain, Poland and Turkey. The research goes beyond existing studies by conducting a scientific analysis of the shadow economy in a wide group of industries. The analysis looks at various solutions proposed and implemented by different countries, and explores the role that electronic payments can play in reducing the shadow economy. Lastly, each industry is divided into subcategories and examined to determine which areas would be most promising for the introduction of electronic payments.

The shadow economy can be divided into two parts. The study estimates that about two-thirds is undeclared work—where workers and businesses do not declare their wages to the government to avoid taxes or documentation.

Figure 1
The shadow economy in relation to total GDP



Note: EU-27 (no shadow economy data on Cyprus, Luxembourg, Malta), plus Norway, Switzerland and EU candidate countries, for 2005
Sources: Dr. Friedrich Schneider, Johannes Kepler University of Linz, Austria; A.T. Kearney analysis

The other one-third comes from underreporting. Most underreporting occurs in cash-based businesses, such as small shops, bars and taxicabs, that only report part of their income in order to avoid some of the tax burden.

The exact division between undeclared work and underreporting is just an estimate, as the data does not exist to come to a scientific conclusion. *Undeclared work* is very common throughout Europe. For instance, in Bulgaria, a recent study found that 48 percent of the workforce receives a portion of their wages in cash, unofficially, to avoid taxation. This costs the country billions of euros a year. The second part, *underreporting*, is common in cash-based businesses with little documentation, such as a bar owner taking money for a drink and not documenting it.

What Lurks in the Shadows

When considering the factors that drive the shadow economy, it is important to understand exactly who benefits from such transactions.

What Drives the Shadow Economy?

There are four main factors that influence the size and scope of the shadow economy in any given location.

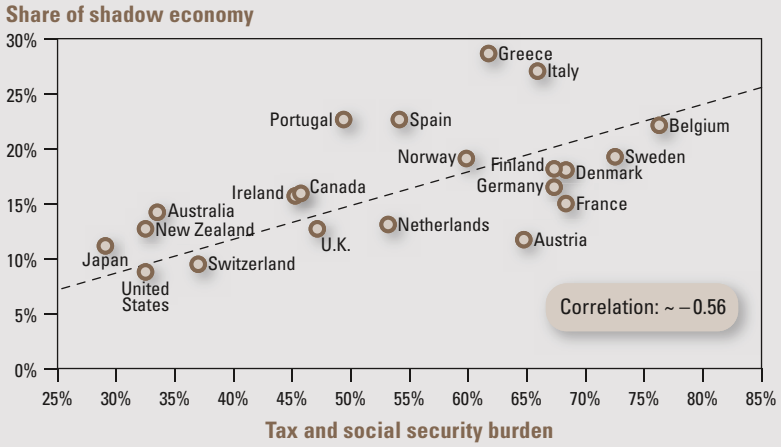
Savings. By working outside the active economy, participants can avoid taxes and social security payments, circumvent tax and labour regulations and sidestep paperwork. The figure illustrates the strong correlation between a country's tax rate and the size of its shadow economy. Saving money draws people into this other economy, especially during an economic downturn.

Lack of a "guilty conscience." The shadow economy is perceived as a normal part of society. This attitude is prevalent in places where the perceived quality of state institutions and benefits is low, and in some Eastern European countries where there is little confidence in the state. Also, the benefits of the shadow economy are immediate, while state benefits are usually indirect, collective or deferred.

Ease of participation. Paying with cash makes it easier to not declare work. As cash payments cannot be traced, they are used for both undeclared work and underreporting. And with more free time these days, Europeans can do additional undeclared work on the side.

Low risk of detection. Participating in the shadow economy is not legal, but the less chance of getting caught, and the lower the penalties, the more people will consider the risk worthwhile.

Figure: The higher tax and social secuirty burden in a country, the larger the shadow economy



Note: Size of the shadow economy, calculated with the MIMIC and currency demand method. Total tax and social security burden of single average wage income earner (including social security payments from the employer) + value added tax. Sources: OECD, Paris, 2003; Schneider, 2003; and Enste (2003) with own calculations; Dr. Friedrich Schneider, Johannes Kepler University of Linz, Austria; A.T. Kearney analysis

In some cases, the benefits are shared between the payee and payer *(see sidebar: What Drives the Shadow Economy?)*. A typical example is the tradesman who offers a 50 percent discount to a customer—the customer saves money on the work, the tradesman saves money on the taxes. Undeclared work is difficult to quantify, as it is in the best interests of both sides to remain hidden. In other instances, the benefits are realised by only one side, usually the one receiving payment. The bar owner who does not declare a beer sale may still charge full price for the beer.

Part of the difficulty in reducing the shadow economy stems from its ambiguous role in society. There are certainly negative effects. For example, governments lose revenues from income tax and social security contributions, and their safety rules and other regulations cannot be enforced outside the official economy. Additionally, this other economy promotes behaviours that have a negative impact on society: inequality of competition, where shadow services are significantly cheaper than those from the official economy, and a "free-rider" attitude, where citizens take official benefits without paying for them.

Some of these negatives are offset by other, more positive factors, at least in terms of unreported work. For example, much of the money ends up benefiting the economy as a whole. The study estimates that about two-thirds of shadow-economy income is spent in the official economy, which boosts national economic growth and amasses value-added tax, which makes up for at least part of the lost revenues. Additionally, many of the services offered in the shadow economy would likely vanish if forced to exist in the official economy. Indeed, in Germany, more than two-thirds of services offered in the shadow economy would go away or would be performed by customers themselves, according to a recent study.[2]

Because of these positive factors, it is difficult to quantify the exact toll the shadow economy takes on a country's official economy. In any case, the shadow economy is large and cannot be ignored by any government—particularly in times of economic crisis. Changing the environment to make people less inclined to participate in the shadow economy is important—and achievable.

The Search for Solutions

For this study, we interviewed more than 20 public authorities in Europe, including ministers of finance, tax authorities and association leaders to determine the measures taken to limit the shadow economy.[3] We built a broad database of measures—75 in total, including 51 from Europe.[4]

The findings show that most leaders are focused foremost on curbing undeclared work, and on creating credible laws and penalties. A large number of other measures focused on tax fraud, a crime that we do not consider part of the shadow economy but is certainly related. The broad spectrum of enforcement measures fall under two umbrellas—negative and positive.[5]

Negative measures. New regulations, controls and penalties to limit the shadow economy by the force of law are all considered negative measures. They include identification cards for construction workers, the forced use of electronic payments, onsite visits by public authorities or tax audits by

[2] *Friedrich Schneider. "Shadow Economies Around the World: What Do We Really Know?"* European Journal of Political Economy, *Vol. 21/3, September 2005, pp. 598-642.*

[3] *The interviews were conducted in September 2008 by telephone and in person.*

[4] *The database included a record of measures collected by European Foundation for the Improvement of Living and Working Conditions (Eurofound: http://www.eurofound.europa.eu/areas/labourmarket/tackling/search.php) and the European Industrial Relations Observatory, and from studies by the European Commission, including "Undeclared Work in an Enlarged Union" in 2004.*

[5] *Eurofound, 2008.* Tackling Undeclared Work in the European Union. *Dublin: European Foundation for the Improvement of Living and Working Conditions.*

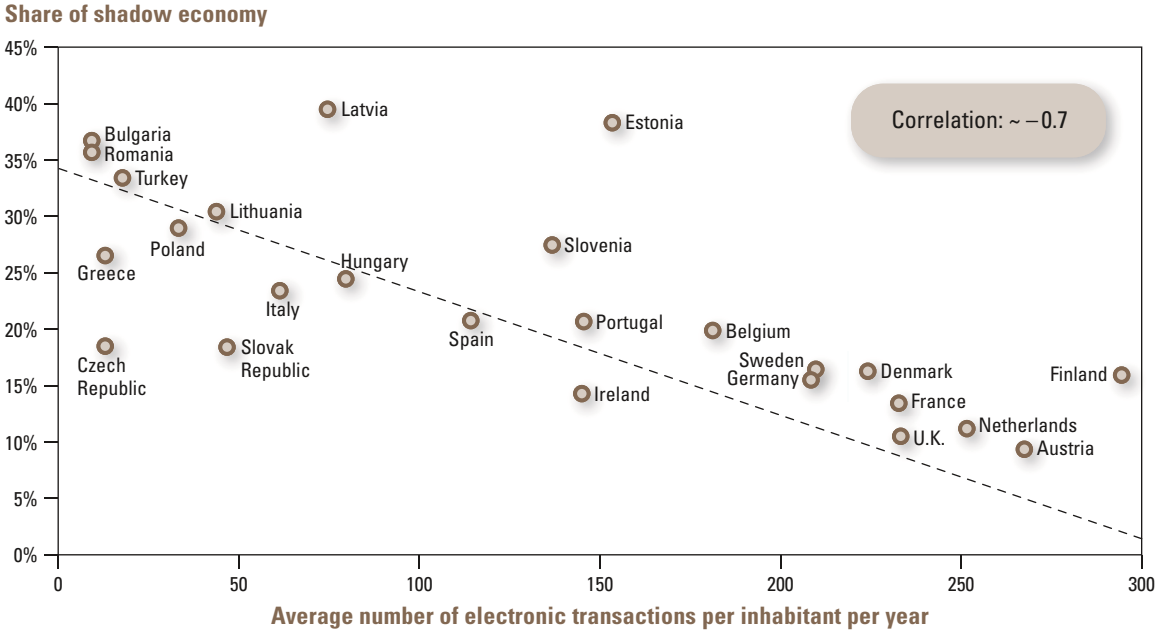
inspectors. These measures, by their nature, tend to be unpopular, but their success is dependent on reliable enforcement and solid penalties.

The Decreto Bersani, a sweeping law passed in Italy in 2006, which imposed strict penalties on shadow economy activities, is an example of a powerful enforcement technique. Under this law, a retailer that fails to issue a sales receipt three times in a five-year period can be closed by the government. Construction sites can be shut down if employment irregularities are found by government inspectors. The use of cash to pay for professional services of more than □100 is illegal. The enforcement of receipts at retailers, coupled with other measures, brought in □7.8 billion in additional revenues for the government in 2007.

More common measures include monetary penalties and the loss of benefits for shadow economy participants. For example, in Sweden, unemployed people who are caught doing undeclared work lose their state benefits.

Positive measures (indirect and direct). Some of the most powerful measures to curtail the shadow economy are considered indirect—mainly, revamping the tax and social security systems to make them simpler and, in some cases, cheaper. In Germany, for example, the government introduced "mini-jobs" reform, simplifying the red tape and taxes to encourage lower-wage workers, such as household servants, to join the official economy. Spain reduced the tax rate and social security contributions to discourage tax

Figure 2
The more electronic payments in a country, the smaller the shadow economy



Note: EU-27 (no data available for Cyprus, Luxembourg, Malta) plus Turkey
Sources: Dr. Friedrich Schneider, Johannes Kepler University of Linz, Austria; A.T. Kearney analysis

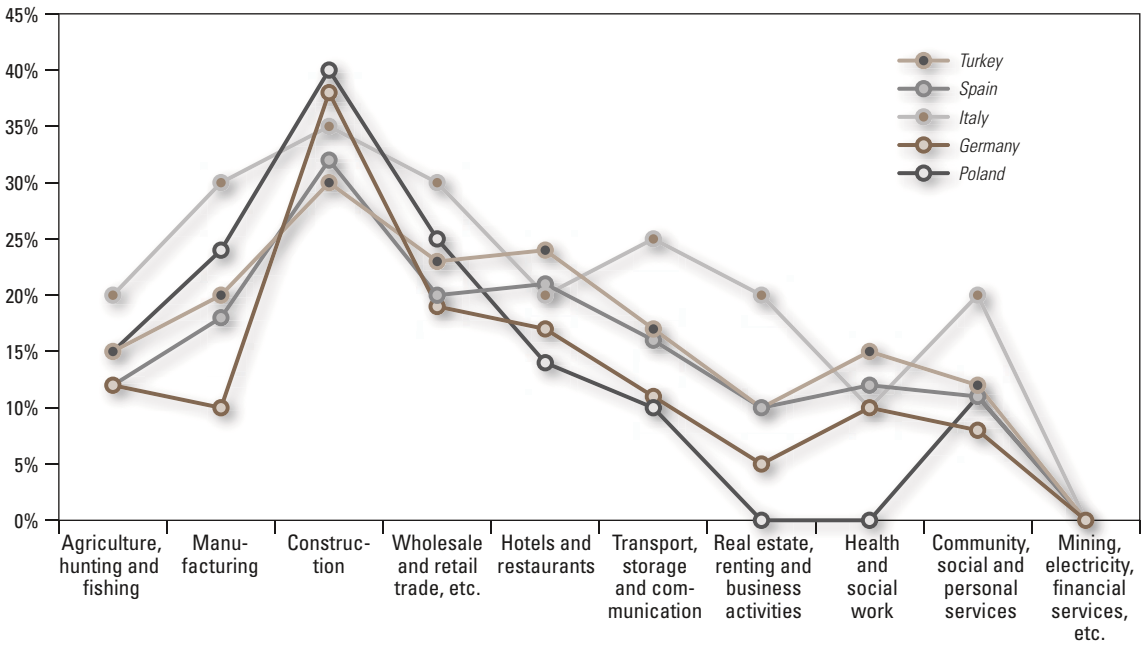
evaders. Some countries use direct incentives to encourage participation in the official economy, such as Belgium's system of vouchers offered to workers in household jobs, or the reduction of value-added-tax rates for card users.

In some countries, improving the lines of communication between citizens and governments can help. In Denmark, for example, a government-sponsored marketing campaign aimed to illustrate the costs of the shadow economy to citizens. It asked, "What if everyone worked undeclared?" and showed the harm caused by lost tax payments, which seemed to reach the younger population. Such campaigns may have less effect in countries where the shadow economy is an entrenched part of doing business.

Of the leaders interviewed, most understood that enforcement was contingent not only on measuring the shadow economy but also on measuring the success of initiatives to curtail such economies. Yet measurement can be elusive. Tangible results could be discerned in just 10 percent of government actions—either because the government action was too recent, or because it was one of many variables in play.

Our research also reveals that underreporting has not been broadly addressed in Europe. In fact, in evaluating 66 measures countries in Europe used to curtail the shadow economy, just 15 percent focused on sales underreporting, and fewer still considered the increased use of electronic payments.[6]

Figure 3
Shadow economy concentration, by industry



Sources: Dr. Friedrich Schneider, Johannes Kepler University of Linz, Austria; A.T. Kearney analysis

[6] *European Commission, Directorate-General for Employment and Social Affairs, 2004. Undeclared Work in an Enlarged Union.*

A World of Electronic Payments

Cash is perhaps the most important enabler of the shadow economy because of ease of use and difficulty in tracing it. For example, bar owners or taxi drivers who deal primarily in cash can easily hide part of their earnings from the government. Thus, the use of electronic payment systems makes it more difficult to participate in the shadow economy, as it produces documentation of the transactions.

In fact, as shown in figure 2 on page 6, there appears to be a strong correlation between the prevalence of electronic payments in a country and its shadow economy. Countries with high levels of electronic payment usage, such as the United Kingdom and the Netherlands, have smaller shadow economies than those with minimal levels of electronic payments, such as Bulgaria and Romania.

In reviewing the measures used by countries across the world to curb shadow transactions, the study found that electronic payments have proven to be an effective technique for producing tangible results. For example, the Mexican government established a fund to subsidise the cost of electronic payment terminals at small shops. Colombia and Argentina instituted a sales-tax discount for retail purchases made using electronic payment cards. Several countries, including Russia, the United Kingdom and Singapore, have begun sending government payments electronically.

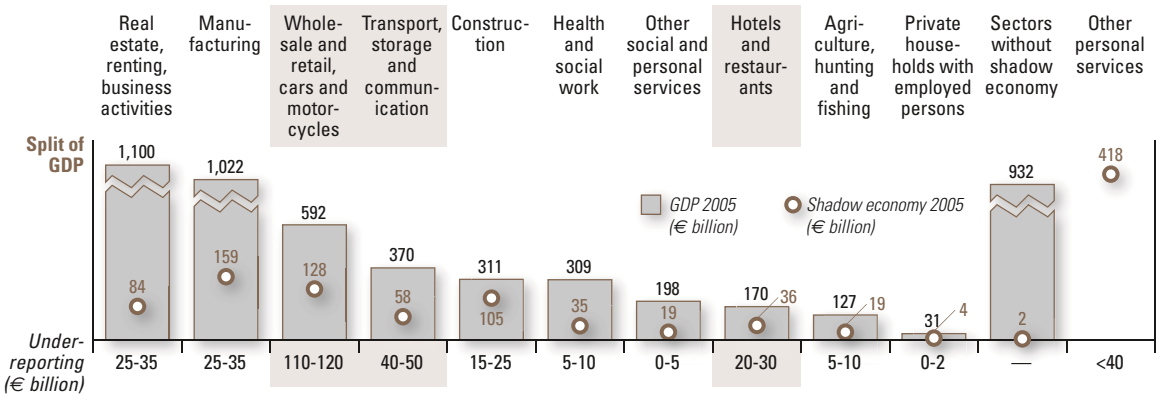
Meanwhile, other than in Italy where the Decreto Bersani law forced widespread electronic payments, most other European countries have not yet employed similar solutions.

The Most Vulnerable Industries

The study suggests that the same industries either tend to stay out of the shadow economy or are particularly prone to being part of it *(see figure 3 on page 7)*. In the five countries examined closely in the study, four industries—real estate, electricity, health care and financial

Figure 4

The shadow economy of the five focus countries, divided by sector



Note: Shadow economy which cannot be attributed to a certain sector: entertainment, massage, prostitution, household services and other. Material costs account for ~30 percent of segment, they include new and second-hand goods and materials and may partly be reported both in the official and unofficial GDP.
Sources: Dr. Friedrich Schneider, Johannes Kepler University of Linz, Austria; A.T. Kearney analysis

services—have the most limited shadow economies. That's because they are either highly regulated and overseen by governments, or rely on regular contracts with customers.

In contrast, construction has the most prevalent shadow economy of any sector, making up at least 30 percent of all work in each of the five countries, followed by manufacturing, retail, hotels and restaurants *(see figure 4)*.

A few factors drive the shadow economy in these businesses. One is a traditionally high level of underreporting, particularly in construction, where there is often a cultural habit for the practice, especially when dealing with subcontractors. Another is the large number of small, cash-based transactions—a cheap taxi ride, one night at a hotel, a quick meal at a sandwich shop. In each case, small businesses can rather easily evade taxes by trading largely in cash.

For a more detailed analysis, three industries were selected: wholesale and retail, automotive and motorcycle sales and maintenance; transportation, storage and communications; and hotels and restaurants. These represent an estimated 20 to 25 percent of the shadow economy, and they were selected because underreporting—both in business-to-business and business-to-consumer sales—comprised a large share *(see figure 5)*.

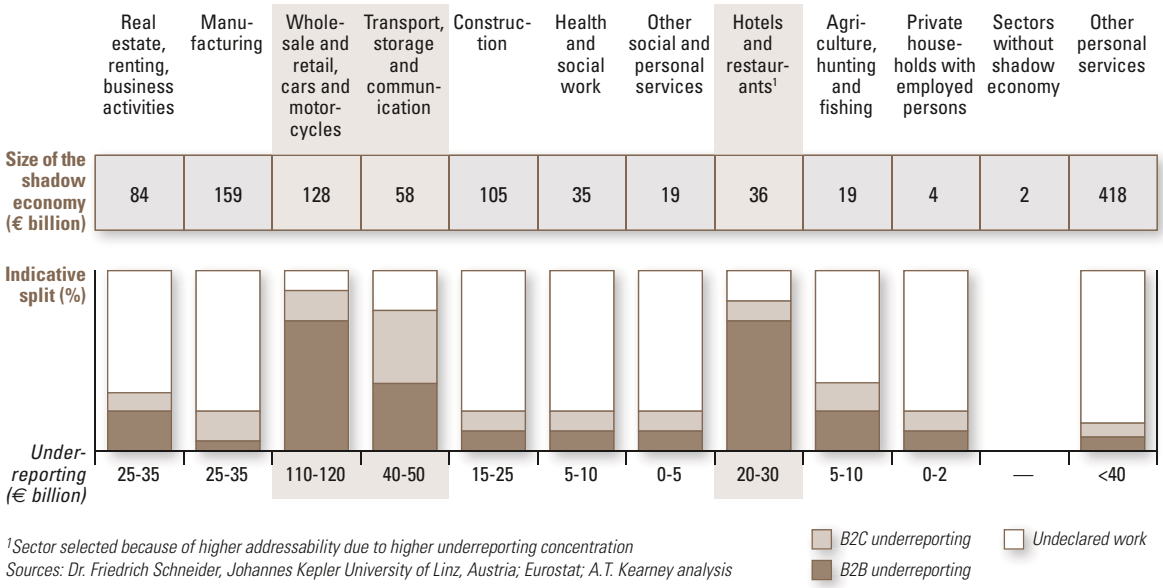
Additionally, these industries are wide-ranging. For example, the transportation, storage and communications industry includes mail, telecom and air travel (all highly regulated with a miniscule shadow economy) and taxi services (unregulated and largely cash based).

The Benefits of Electronic Payments

The analysis zoomed in on all three industries, determining which sectors could benefit most

Figure 5

Estimation of the share of underreporting in the shadow economy, divided by sector



[1]Sector selected because of higher addressability due to higher underreporting concentration

Sources: Dr. Friedrich Schneider, Johannes Kepler University of Linz, Austria; Eurostat; A.T. Kearney analysis

from electronic payments. Two factors were compared: the size of the shadow economy in that industry, and the potential for introducing electronic payment systems. For the latter we took into account the current prevalence of payment systems and the convenience of using them, among other factors.

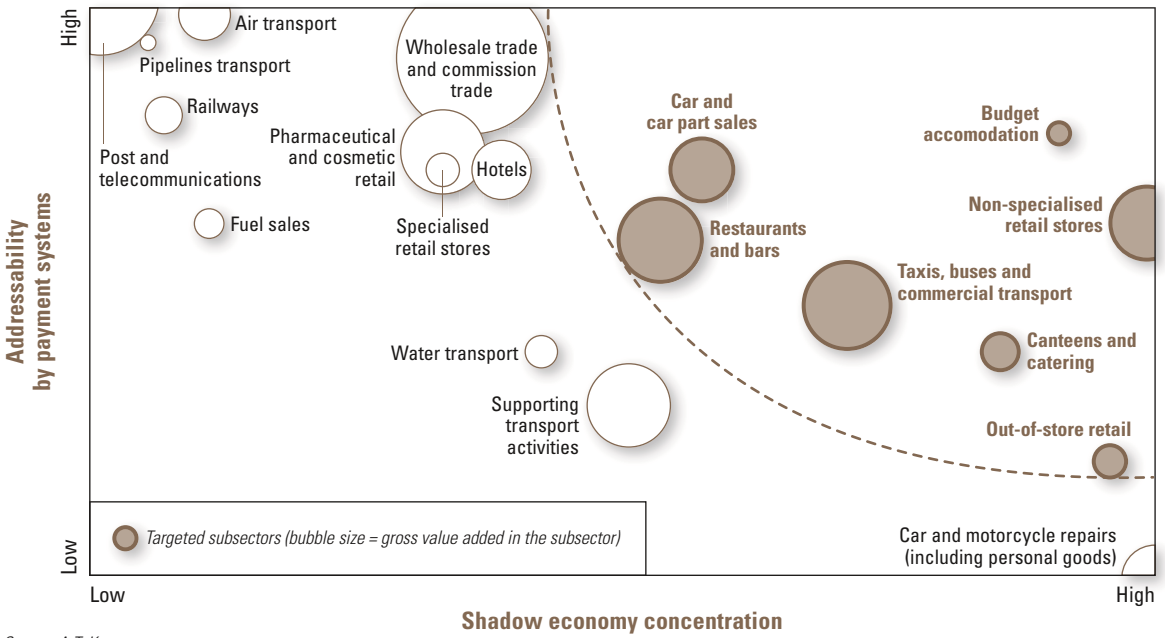
Based on these criteria, the research identified sectors where electronic payments would be of the most help *(see figure 6)*. These sectors (in all five countries) included cars and car parts, non-specialised retail stores, restaurants and bars, catering, and transportation (such as taxis and buses). We found a few others specific to an individual country: in Poland, pharmaceutical retail; in Turkey, fuel sales; and in Italy and Spain, budget hotels. By targeting these sectors, governments could address 50 percent of the shadow economy in the three main industries.

There are ample reasons for implementing electronic payment technology, even in small businesses. Electronic payment technology is already strong throughout much of society, with credit cards, debit cards and direct deposits representing widespread and accepted forms of payment. Portable card readers offer instant online transactions. Computer-chip technology allows fast completion of card payments. Online and mobile banking offer access to up-to-date information about transactions, account balances and payment receipts as well as speedy payments.

Areas for Action

To increase the use of electronic payments, two action areas emerged: banking inclusion and cash displacement. For customers without bank

Figure 6
Sectors where electronic payments can pay off



Source: A.T. Kearney

accounts or credit cards, cash is the only form of payment. Thus, providing new options independent of bank accounts, such as prepaid cards, is a good short-term action to reduce the use of cash. The second area, cash displacement, is more complex and therefore will require coordinated action by all stakeholders. Governments can lead the way by driving more payments, such as benefits, onto cards. Credit and debit cards need to become more widespread in different sectors, particularly in sectors such as bars and taxis, where cards are not traditionally used. Small payments, of □10 or less, mostly dominated by cash today, have been slow to move to electronic payments. The advent of faster, contactless payments will play a role in accelerating the use of low-value cards. Indeed, in the long run, electronic payments will expand for use in person-to-person transactions.

Figure 7 illustrates measures that encourage electronic payments and reduce the use of cash in mature and developing economies. South Korea, for example, is now expanding its electronic payments programme by offering incentives and by sending all government payments electronically. Between 1998 and 2002, use of electronic payments helped South Korea increase its tax revenues from $46 billion to $76 billion. This spurred other electronic payment programmes, including programmes to manage R&D spending, provide fuel and tax discounts to disabled citizens, distribute fringe benefits to government workers, and disseminate subsidies to truck drivers.

Figure 7
Proposed government measures to encourage electronic payments

Measure	Countries employing the measure	Relevant for…	
		Developing countries	Developed countries
Provide value-added-tax reductions for card payments	• Colombia, Argentina, South Korea	Possibly	No
Fund and support new electronic payment terminals	• Mexico, Italy (for tabacchi), South Korea	Yes	No
Limit cash payments in certain segments	• Italy (planning stage)	Yes	Yes
Offer incentives for using cards	• South Korea, Mexico, Italy	No	Yes
Support low-value payment (LVP) and contactless technology — a "war on cash"	• Netherlands (LVP initiative), Italy (cash)	Possibly	Yes
Push for prepaid cards to enhance banking inclusion	• Potential still to be realised	Yes	No
Send government payments electronically or by cards	• Russia (purchasing cards), Italy (social prepaid cards)	Yes	Yes

Source: A.T. Kearney

Additionally, as the programme became more efficient, costs fell by 90 percent, translating to savings of $23 million.

In Albania, electronic payments are changing a country where cash has long been the basis for a large shadow economy. The country's central bank and ministries of economy and finance joined forces to increase the use of electronic payments, including paying state payrolls directly to bank accounts, and debiting utility payments directly from bank accounts. Today, the country has more banking networks, ATMs and point-of-sale payment systems.[7] In 2006, the year of the programme's implementation, the amount of cash in circulation dropped 7 percent while the Albanian GDP grew 5 percent.

Lining Up for Action

Governments are not powerless in recouping revenues lost to shadow economies. Public mandates to increase the use of electronic payments are proven ways to reduce the size and scope of a shadow economy. Banks and payment system companies can do their part by exploring commercially viable uses for electronic payments, identifying opportunities for using prepaid cards instead of cash, encouraging small merchants and public officials to use payment systems, and continuing to improve the systems' technology. Electronic payments can help countries increase revenues and reduce cash, the shadow economy's key enabler. Reducing the shadow economy is an achievable task.

[7] *Fatos Ibrahimi, deputy governor of the Bank of Albania, "The Reduction of Cash in the Context of Reducing the Informal Economy" (speech at the European Finance Convention, Tirana, Albania, Oct. 2006).*

Appendix 1

The shadow economy in Europe

Abbreviation	Country	GDP (millions of euros, 2005)	Share of shadow economy	Shadow economy (millions of euros, 2005)
at	Austria	244,453	9.3%	22,734
be	Belgium	301,966	19.6%	59,185
bg	Bulgaria	21,882	36.5%	7,987
cy	Cyprus	13,659	N/A	N/A
cz	Czech Republic	100,190	18.3%	18,335
dk	Denmark	207,756	16.1%	33,449
ee	Estonia	11,210	38.2%	4,282
fi	Finland	157,335	15.8%	24,859
fr	France	1,726,068	13.2%	227,841
de	Germany	2,244,600	15.4%	345,669
gr	Greece	198,609	26.3%	52,234
hu	Hungary	88,863	24.3%	21,594
ie	Ireland	161,498	14.1%	22,771
it	Italy	1,428,376	24.4%	348,522
lv	Latvia	13,012	39.4%	5,127
lt	Lithuania	20,673	30.2%	6,243
lu	Luxembourg (Grand-Duché)	30,032	N/A	N/A
mt	Malta	4,764	N/A	N/A
nl	Netherlands	508,964	11.1%	56,495
pl	Poland	244,420	28.7%	70,148
pt	Portugal	149,123	20.4%	30,421
ro	Romania	79,587	35.4%	28,174
sk	Slovakia	38,480	18.2%	7,003
si	Slovenia	28,252	27.3%	7,713
es	Spain	908,449	21.3%	193,502
se	Sweden	294,674	16.3%	48,032
uk	United Kingdom	1,804,586	10.3%	185,872
	Subtotal (EU-27)	**11,031,482**	**16.6%**	**1,828,192**
hr	Croatia	31,260	34.1%	10,660
no	Norway	242,935	16.8%	40,813
ch	Switzerland	299,127	8.5%	25,426
tr	Turkey	386,937	32.5%	125,754
	Total	**11,991,741**	**16.9%**	**2,030,845**

Sources: Dr. Friedrich Schneider, Johannes Kepler University of Linz, Austria; A.T. Kearney analysis

Appendix 2

Shadow economy per industry sector in the five focus countries

		GERMANY			SPAIN		
		GDP (millions of euros, 2005)	Share of shadow economy	Shadow economy (millions of euros, 2005)	GDP (millions of euros, 2005)	Share of shadow economy	Shadow economy (millions of euros, 2005)
Section A	Agriculture, hunting and forestry	19,462	12%	2,335	27,134	12%	3,256
Section B	Fishing	255	5%	13	1,766	10%	177
Section C	Mining and quarrying	4,420	0%	-	2,649	0%	-
Section D	Manufacturing	504,027	10%	50,403	146,870	18%	26,437
Section E	Electricity, gas and water supply	53,102	0%	-	17,912	0%	-
Section F	Construction	88,448	38%	33,610	105,027	32%	33,609
Section G	Wholesale and retail trade; repair of motor vehicles; personal and household goods	232,125	19%	44,104	97,304	20%	19,461
Section H	Hotels and restaurants	36,310	17%	6,173	67,756	21%	14,229
Section I	Transport, storage and communication	128,081	11%	14,089	62,511	16%	10,002
Section J	Financial intermediation	112,208	0%	-	41,977	0%	-
Section K	Real estate, renting and business activities	553,961	5%	27,698	147,712	10%	14,771
Section L	Public administration and defence; compulsory social security	134,627	0%	-	54,142	0%	-
Section M	Education	101,408	0%	-	43,435	0%	-
Section N	Health and social work	162,042	10%	16,204	50,190	12%	6,023
Section O	Other community, social and personal service activities	106,636	8%	8,531	34,151	10%	3,415
Section P	Private households with employed persons	7,488	12%	899	7,913	14%	1,108
Section Q	Extra-territorial organisations and bodies	-	5%	-	-	6%	-
	Total	**2,244,600**		**204,059**	**908,449**		**132,488**
	Entertainment, massage, prostitution, household services, and other			*141,610*			*61,014*
	Total shadow economy		**15.4%**	**345,669**		**21.3%**	**193,502**

Sources: Dr. Friedrich Schneider, Johannes Kepler University of Linz, Austria; A.T. Kearney analysis

Appendix 2

Shadow economy per industry sector in the five focus countries

		ITALY			POLAND		
		GDP (millions of euros, 2005)	Share of shadow economy	Shadow economy (millions of euros, 2005)	GDP (millions of euros, 2005)	Share of shadow economy	Shadow economy (millions of euros, 2005)
Section A	Agriculture, hunting and forestry	29,657	15%	4,449	11,018	15%	1,653
Section B	Fishing	1,691	9%	152	52	0%	-
Section C	Mining and quarrying	5,733	0%	-	6,196	0%	-
Section D	Manufacturing	260,147	20%	52,029	45,247	24%	10,859
Section E	Electricity, gas and water supply	28,487	0%	-	8,888	0%	-
Section F	Construction	85,707	30%	25,712	14,729	40%	5,892
Section G	Wholesale and retail trade; repair of motor vehicles; personal and household goods	169,359	23%	38,953	46,313	25%	11,578
Section H	Hotels and restaurants	54,113	24%	12,987	3,016	14%	422
Section I	Transport, storage and communication	109,603	17%	18,632	17,690	10%	1,769
Section J	Financial intermediation	67,532	0%	-	10,645	0%	-
Section K	Real estate, renting and business activities	316,233	10%	31,623	33,593	0%	-
Section L	Public administration and defence; compulsory social security	93,875	0%	-	15,044	0%	-
Section M	Education	69,614	0%	-	12,497	0%	-
Section N	Health and social work	81,853	15%	12,278	8,915	0%	-
Section O	Other community, social and personal service activities	41,411	11%	4,555	9,152	10%	915
Section P	Private households with employed persons	13,361	14%	1,870	1,425	15%	214
Section Q	Extra-territorial organisations and bodies	-	6%	-		8%	-
	Total	**1,428,376**		**203,240**	**244,420**		**33,302**
	Entertainment, massage, prostitution, household services, and other			*145,282*			*36,846*
	Total shadow economy		**24.4%**	**348,522**		**28.7%**	**70,148**

Sources: Dr. Friedrich Schneider, Johannes Kepler University of Linz, Austria; A.T. Kearney analysis

Appendix 2

Shadow economy per industry sector in the five focus countries

		TURKEY		
		GDP (millions of euros, 2005)	Share of shadow economy	Shadow economy (millions of euros, 2005)
Section A	Agriculture, hunting and forestry	39,950	20%	7,990
Section B	Fishing	1,142	10%	114
Section C	Mining and quarrying	5,163	0%	-
Section D	Manufacturing	75,837	30%	22,751
Section E	Electricity, gas and water supply	8,092	0%	-
Section F	Construction	19,420	35%	6,797
Section G	Wholesale and retail trade; repair of motor vehicles; personal and household goods	54,287	30%	16,286
Section H	Hotels and restaurants	9,833	20%	1,967
Section I	Transport, storage and communication	60,294	25%	15,074
Section J	Financial intermediation	12,381	0%	-
Section K	Real estate, renting and business activities	55,995	20%	11,199
Section L	Public administration and defence; compulsory social security	17,609	15%	2,641
Section M	Education	12,029	0%	-
Section N	Health and social work	6,998	10%	700
Section O	Other community, social and personal service activities	7,233	20%	1,447
Section P	Private households with employed persons	674	20%	135
Section Q	Extra-territorial organisations and bodies		25%	-
	Total	**386,937**		**87,100**
	Entertainment, massage, prostitution, household services, and other			*38,654*
	Total shadow economy		**32.5%**	**125,754**

Sources: Dr. Friedrich Schneider, Johannes Kepler University of Linz, Austria; A.T. Kearney analysis

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