STUDY

Cost of non-Schengen: the impact of border controls within Schengen on the Single Market

SCHENGEN AREA

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EXECUTIVE SUMMARY

The Schengen Agreement is an important complement to the Single Market, giving tangible reality to the four fundamental freedoms (goods, services, capital and persons). The four freedoms allow for more efficient allocation of resources within the EU and have a positive impact on economies and labour markets, notably via three channels: (i) higher productivity associated with the relocation of industries from low to high productivity locations; (ii) improvements in factor allocation (labour and capital moving); and (iii) larger market size.

The twin challenges of migration and security have placed the Schengen area under considerable strain in 2015 and 2016, prompting some Member States to **re-introduce temporary internal border controls**.

The study starts with an introduction, including a stocktaking of currently applied measures disrupting the free movement of goods and services within the Schengen zone as well as an assessment of possible future measures and developments causing such disruptions. The basic requirement to drop internal border controls is a Treaty obligation and the scope for derogating from that principle is specifically laid down in the Schengen Borders Code (articles 23 to 26). **All Member States applying temporary internal border checks have done so within this legal framework**. Even where applied, border controls are **not necessarily routine**, **nor in place at all border crossings**. Border controls **beyond six months** are only possible in the case of *"persistent serious deficiencies relating to external border control"*, which *"constitute a serious threat to public policy or internal security within the area without internal border control"* (article 26 of the Schengen Borders Code). It is possible that this mechanism could be triggered from May 2016 should Greece fail to remedy the shortcomings identified in its border control.

Policy options range from a fully functioning **common policy on asylum, immigration and external border control** - **the first choice policy** in addressing migration and security challenges, as well as a precondition for the absence of internal border controls - to the re-introduction of internal border controls, which is **a last-resort policy option** that **may not necessarily solve the identified policy problems and leads to economic and societal costs randomly spread across different actors in the EU, including businesses, consumers and citizens in general.** It is **unclear** to what extent the **necessity, proportionality and impact of the border controls** have been assessed in line both with the requirements of the Schengen Borders Code and the general principles of better regulation.

The study highlights the added value of free movement within the Schengen area on the Single Market and describes the channels through which these benefit are being challenged by the re-introduction of border controls. **Effects of a re-introduction of border controls can be expected in four main areas:**

1. **Commuting workers:** The introduction of border controls will increase queuing times when travelling to and from work. Restricted job mobility could lead to greater heterogeneity of regional job markets and uneven development of property prices.

2. **Travel and tourism within Schengen and from outside**: Due to the loss of time arising from crossing borders, a decline in trips – especially short trips and day visits - is likely. If border controls lead to fragmentation in the EU's common visa policy, the tourism and hospitality industries could face non-trivial losses.

3. **Trade in goods and services:** As waiting times for truck drivers could increase, businesses could be affected by the rise in personnel costs and other costs such as replenishment of their stocks since just-in-time delivery may be limited. The impact might go well beyond the transport sector, affecting the volume and costs of the trade of goods and the efficiency of the European logistics sector, potentially increasing prices. Higher import prices could in turn lead to a general increase in prices, and to a fall in consumption and investment. That could have an effect on the structure and the level of value chains, foreign direct investment, and location decisions of companies, as well as price competitiveness.

4. **Bond yields**: The suspension of the Schengen Agreement in *one or more countries* might be interpreted by the financial markets as a signal that these countries are no longer committed to being part of the EU's

'core'. These countries would face a greater redenomination risk[1]. As a result, the yields for government bonds could increase, having implications for the price of other financial assets, for the interest rates faced by firms and households and, in turn, a negative impact on the real economy.

The study then attempts to quantify the costs of re-establishing border controls within the Schengen area - the cost of non-Schengen. It considers two possible scenarios for the re-introduction of border controls: a suspension limited to two-years (which corresponds to the legal limit of time for reinstating temporary border controls in the context of the current Schengen Agreement), and an indefinite suspension of the Schengen Agreement. For both scenarios, it calculates the costs if either a limited number of Schengen States (7) exit the Agreement or if all the Members do so (four sub-scenarios in total).

- The **one-off costs** relating to the physical re-establishment of border checks amount to **€7.1 billion for Schengen area as whole** (€0.7 billion for 7 Member States)[2]. Their impact is proportionally higher for a shorter suspension period.

- **A two-year suspension of the Schengen Agreement** would cost the European economy (including on-off costs) a total of almost **€5 billion**[3] in the case of a suspension limited to **7 countries** (scenario 1) and up to **€51 billion for the entire Schengen** area (scenario 2).

- **The cost of a permanent suspension of the Schengen Agreement,** calculated over a ten year period and including on-off costs, would represent:

  - up to **€70 billion in GDP** for the **7 countries** suspending Schengen, as well as an **additional €70 to €170 billion** (worst case scenario) **in fiscal costs,** i.e. the additional interest costs that exiting EMU countries would have to pay on their outstanding debts to compensate the creditors for the assumed increase of the default risk.

  - for the **entire Schengen Area, a loss of up to 0.14% of EU-GDP annually, i.e. €230 billion** could be expected.

Specific research on the transportation sector indicates that the total cost of controls that have already happened amounted to an estimated € 320 million in waiting time losses, most of it caused by the full lockdown of France after the 13/11/2015 terrorist attacks. In practice, the value may differ, e.g. due to seasonality of traffic and active avoidance of trips to or crossing France. **The cost of time losses at the border in case the Schengen zone is fully disbanded is estimated at between €2.5 and €5.1 billion euro annually**[4]. The countries expected to incur the highest costs are Germany, France and Belgium. If those countries closed their borders, they would also cause the greatest cost to other countries. In 2013, there were an estimated **285 million road border crossings in the Schengen zone** with an origin and destination inside the zone. Around 80 million of them were heavy duty vehicles carrying freight. Road traffic from outside the Schengen area, even to and from the UK, is limited. If border controls are re-instated, this will create queues and vehicles will lose time waiting at the border. Depending on the intensity of the checks, we estimate the time lost at **10-20 minutes for passenger cars** and **30-60 minutes for heavy duty vehicles such as trucks and buses**[5]. Waiting leads to costs for transport users. The **value of time (VOT)** depends on the motive of the traveller (business, commuting, other) or on the value of the cargo. For transport in a professional context, wage is also an important determinant of the VOT. The value of a car spending an hour waiting at the border is estimated at €30 for business travellers, €12 for commuters and €10 for travellers with a different motive (such as tourism). For buses, the VOT is estimated at €100 per vehicle per hour, while for freight, the cost is set at €50/vehicle/hour.

The last part of the research paper relating to the key challenges linked with the re-introduction of internal border controls indicates that existing estimates of the economic cost of ID checks, vehicle searches, and the resulting delays at Schengen borders **vary widely**. **Most of the variation is due to different assumptions and methodologies for estimating the direct ("ad-valorem") cost of these trade barriers relative to the**

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[1] Redenomination risk is the compensation demanded by market participants for the risk that an asset in currency X is being redenominated into a devalued legacy currency B.

[2] All the figures referred to in chapter 3 are taken from the same study: "The Cost of Non-Schengen: the Impact of Border Controls within Schengen on the Single Market", Research paper by Europe Economics, forthcoming.

[3] Idem.

[4] Findings included in Chapter 4: Tim Breemersch and Filip Vanhove, Impact of border controls within Schengen on the Single Market - road transport sector case study.

[5] Idem.

corresponding value of trade. Some of the large estimates of direct costs result from the inappropriate application of gravity models of bilateral trade.

There are good reasons to believe that these studies **mix up the true (small) effects of Schengen (elimination of ID checks) with the much larger effects of the completion of the Single Market (elimination of customs controls).**

One carefully specified study implies that **ID checks raise trade costs for goods by approximately 0.4% to 0.9% of the value of trade** (depending on the assumed elasticity of trade to trade costs) **at every Schengen border**[6]**.** Slightly higher costs apply to trade in services. For Germany and Austria (two prominent countries with controls at Schengen borders), these direct costs translate into a real income loss of 0.4% or less (depending on trade elasticity) if ID checks are introduced at **all** Schengen borders; in the **realistic case** that **ID checks are limited to major refugee routes**, **real income declines by 0.1% or less**[7]**.**

These **small costs are easily outweighed** by **fiscal cost savings** for those countries that manage to **turn away significant numbers of refugees** that arrive from other EU (i.e. safe) countries. However, such considerable fiscal costs avoided by one Member State are pushed to other Member States. Coordinated response would be the best approach to reduce overall costs. Arguably, the Schengen system will only survive if Member States agree to overarching decision-making **with shared administrative and fiscal responsibility**.

Welfare of consumers is affected by "non-Schengen", as the prices of imports increase relative to domestic goods due to higher trade costs. While consumers may adjust by switching to domestic product varieties, they end up with fewer product varieties to choose from at higher prices. Other "non-Schengen" effects include reduced access to shopping opportunities in other Schengen countries, particularly in border areas.

Beyond these findings, there are also noteworthy indirect costs linked with a reintroduction of border controls. A failure of Schengen would not only reduce the future benefits of the Single Market, but also undermine other aspects of EU integration: Reducing free movement would lead to a decrease in cultural exchanges and cross-border movements, a loss of confidence in the euro, a loss of trust by citizens in much of what Europe has achieved over the past 30 years. The damage to the European project would be serious and the narrative of integration, with Schengen as its most powerful symbol, would be strongly affected.

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[6]   Gabriel Felbermayr, Jasmin Gröschl, Thomas Steinwachs (2016b). The Trade Effects of Border Controls: Evidence from the European Schengen Agreement. Ifo Working Paper 213.

[7]   Idem.

INTRODUCTION

On 25 January and 2 February 2016 the Coordinators of the Committee on the Internal Market and Consumer Protection (IMCO) decided to request a study on 'The Cost of non-Schengen: the Impact of Border Controls within Schengen on the Single Market' for the 21 April 2016 IMCO meeting.

An Interim Study was presented to the IMCO Committee on 23 February 2016. According to the request the study was to be conducted in cooperation between the Policy Department on Economic and Scientific Policies of the DG IPOL (Policy Department A) and the Directorate for Impact Assessment and European Added Value of the DG EPRS (EPRS EAVA Unit). The present study is a compilation of analytical notes prepared by contributing services.

The first chapter, prepared by Policy Departments A and C, provide an introduction, including **stocktaking of currently applied measures** disrupting the free movement of goods and services within the Schengen zone as well as **an assessment of possible future measures and developments causing such disruptions**. It explains the **link between the better regulation agenda and assessing impact on the free movement** of persons in the context of reintroduction of internal border controls within Schengen.

The second chapter, prepared by the EPRS EAVA unit, highlights **the added-value of free movement within the Schengen on the Single Market** and describes the channels through which these benefit are being challenged by the re-introduction of border controls.

The third chapter, prepared by the EPRS EAVA unit, based on an external study carried out by Europe Economics, **quantifies the costs of re-establishing border controls** within the Schengen area - the cost of non-Schengen-by considering two possible scenarios for the re-introduction of border controls: a suspension limited to two-years and an indefinite suspension of the Schengen Agreement - either in a limited number or in all the Member States.

The fourth chapter, prepared by Policy Department A (contribution by independent experts: Tim Breemersch and Filip Vanhove [Transport & Mobility Leuven]), contains a case study providing an independent and transparent assessment of the expected costs of a de facto disbanding of the Schengen agreement for the road transport sector.

Finally, the fifth chapter, prepared by Policy Department A (contribution by independent expert: Prof. Dr Matthias Luecke [The Kiel Institute for the Work Economy]), analyses **key challenges of the impact of reintroduction of border controls within Schengen**.

Each chapter of the study has separate key findings. Experts applied various models when calculating impacts of reintroduction of internal border controls within Schengen area.

1. SCHENGEN IN PERSPECTIVE AND THE TEMPORARY REINTRODUCTION OF INTERNAL BORDER CONTROLS

KEY FINDINGS

- The twin challenges of migration and security have placed the Schengen area under considerable strain in 2015 and 2016, prompting some Member States to **reintroduce temporary internal border controls**.

- The basic requirement to drop internal border controls is a Treaty obligation and the scope for derogating from that principle is specifically laid down in the Schengen Borders Code (articles 23 to 26). **All Member States applying temporary internal border checks have done so within this legal framework**.

- Even where applied, border controls are **not necessarily routine**, **nor in place at all border crossings**.

- Border controls **beyond six months** are only possible in the case of "persistent serious deficiencies relating to external border control", which "constitute a serious threat to public policy or internal security within the area without internal border control" (article 26 of the Schengen Borders Code). It is possible that this mechanism could be triggered from May 2016 should Greece fail to remedy the shortcomings identified in its border control.

- Policy options range from a fully functioning **common policy on asylum, immigration and external border control** - **the first choice policy** in addressing migration and security challenges, as well as a precondition for the absence of internal border controls - and the reintroduction of internal border controls, which is **a last-resort policy option** that **may not necessarily solve the identified policy problems and leads to economic and societal costs randomly spread across different actors in the EU, including businesses, consumers and citizens in general.**

- It is **unclear** to what extent the **necessity, proportionality and impact of the border controls** have been assessed in line both with the requirements of the Schengen Borders Code and the general principles of better regulation.

2015 was a momentous year for the Schengen area. It was a year in which the internal border-free area celebrated the 30th anniversary of the signing of the Schengen Agreement, the 20th anniversary of the on-the-ground implementation of the Agreement and, of course, the year in which the functioning of the Schengen area was placed under unprecedented strain.

Schengen: a brief history
The original Schengen Agreement was signed on 14 June 1985 by Belgium, France, Germany, Luxembourg and the Netherlands.[1] It was supplemented five years later with the Convention implementing the Schengen Agreement, which was signed on 19 June 1990 and entered into force on 26 March 1995[2]. The Agreements marked **a key milestone in establishing an internal market with the free movement of persons** and, gradually, a number of other EU Member States signed the Agreements[3]. Originally based on intergovernmental cooperation on justice and home affairs, **the Schengen acquis was subsumed into the EU acquis under a protocol to the** Amsterdam Treaty[4]. Today, **under the Lisbon Treaty, Schengen-related measures are subject to parliamentary and judicial scrutiny**. With the Schengen acquis now firmly anchored

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[1] Agreement between the Governments of the States of the Benelux Economic Union, the Federal Republic of Germany and the French Republic on the gradual abolition of checks at their common borders - http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:42000A0922(01)&from=EN.

[2] Convention implementing the Schengen Agreement of 14 June 1985 between the Governments of the States of the Benelux Economic Union, the Federal Republic of Germany and the French Republic on the gradual abolition of checks at their common borders - http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:42000A0922(02):en:HTML.
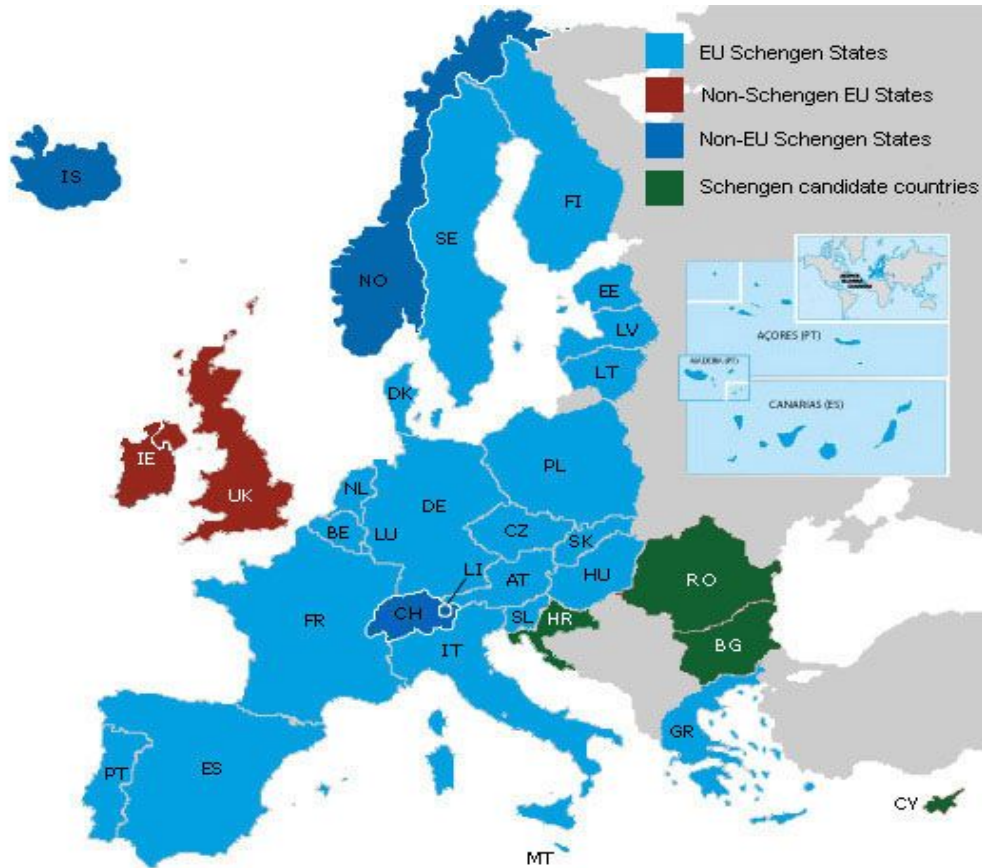
[3] Italy on 27 November 1990, Spain and Portugal on 25 June 1991, Greece on 6 November 1992, Austria on 28 April 1995 and Denmark, Finland and Sweden on 19 December 1996.

[4] Protocol integrating the Schengen acquis into the framework of the European Union.

in EU law, it has no longer been possible, since the EU enlargement of 1 May 2004, for accession countries to 'opt out' of Schengen provisions.

As illustrated in Figure 1 below, there are currently 26 full Schengen members: 22 EU Member States plus Norway, Iceland, Switzerland and Liechtenstein (which have associate status). Ireland and the United Kingdom are not parties to the Convention but can 'opt in' to selected parts of the Schengen body of law. Denmark, while part of Schengen, enjoys an opt-out for any new justice and home affairs measures, including on Schengen, although it is bound by certain measures under the common visa policy. Bulgaria, Romania and Cyprus are due to join, though there are delays for differing reasons. Croatia began the application process to accede to the Schengen area on 1 July 2015.

Figure 1:   The Schengen area – participating Member States

Source: European Commission.

Schengen in crisis: the twin challenges of migration and terrorism

The incorporation of the Schengen acquis into EU law inevitably went hand-in-hand with the Amsterdam Treaty's stated aim of establishing an area of freedom, security and justice. This was backed up by the October 1999 European Council Tampere Conclusions[5], which charted a path "towards a union of freedom, security and justice". In other words, there was a clear recognition that **abolishing internal border controls within the Schengen area required common policies to manage migration, asylum and external borders and to combat serious crime and terrorism**.

This basic premise is articulated in article 67 of the Treaty on the Functioning of the European Union (TFEU), which **links the "absence of internal border controls for persons" with a "common policy on asylum, immigration and external border control" and a "high level of security through measures to prevent and combat crime**". Indeed, since the 1999 Tampere Conclusions, there has been substantial legislative activity in these areas and the creation or expansion of a raft of justice and home affairs agencies. Thus, in the field of border management and asylum, 2004 witnessed the establishment of **Frontex, the European Agency for the**

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[5] See http://www.europarl.europa.eu/summits/tam_en.htm.

Management of Operational Cooperation at the External Borders of the Member States of the European Union, and 2010 the setting-up of the **European Asylum Support Office (EASO)**, while, in the field of police and judicial cooperation in criminal matters, 1999 saw the creation of the **Europol, the European Police Office**, and 2002 the creation of **Eurojust, the European Judicial Cooperation Unit**[6].

As such, the **link between border-free travel and effective border management and law enforcement cooperation is unequivocal**. While the absence of internal border controls has indeed been a central achievement of the Schengen area, Schengen-related measures are in fact considerably wider-ranging. They encompass, inter alia, a common visa policy for short stays and enhanced police and judicial cooperation, notably on terrorism and organised crime. Furthermore, and of particular importance in the context of the migration and refugee crisis, the Schengen system with its absence of internal border controls requires robust and harmonised border control measures at the area's external borders. The rapid evolution in the mandate of Frontex bears testimony to the focus on achieving a common and effective system of border management.

The migration and refugee crisis

As mentioned above, 2015 witnessed an unprecedented influx of refugees and migrants into the EU, a trend that continued apace in the first three months of 2016. As such, whereas arrivals by sea between 2008 and 2013 averaged just under 60,000 annually (with a spike of over 70,000 in 2011 in the wake of the Arab Spring), the figure jumped to **216,054 in 2014** and soared to over **one million in 2015** (see Figure 2 below). In the **first three months of 2016, fully 170,537** people have reached the EU by sea, **a more than sevenfold increase** compared to the first three months of 2015 (see Figure 3 below)[7]. Numbers have, however, tailed off from over 73,000 in January 2016 to just over 36,000 in March 2016.

Figure 2 :   Arrivals by sea into the European Union (2008-2015)
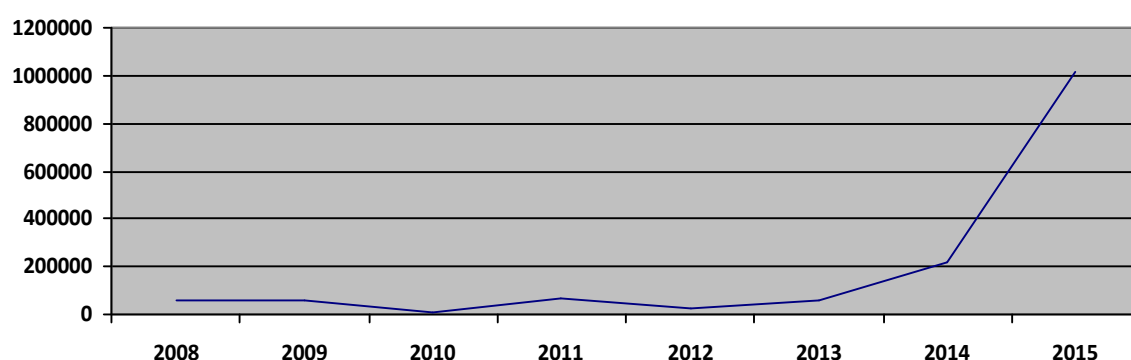
Sourc e: Figures from the Office of the United Nations High Commissioner for Refugees (UNHCR).

Terrorism and the security challenge

In addition to the challenge posed by the unprecedented migration and refugee crisis in 2015, border-free travel has also been called into question by some who see an absence of border checks as an inherent source of instability in the context of a heightened security threat[8]. The **terrorist attacks in Paris on 13 November 2015 and more recently in Brussels on 22 March 2016** have exposed **a lack of intelligence and information sharing and operational cooperation among Member States**. In other words, they have cast doubt on the extent to which the police and judicial cooperation within Schengen is sufficiently robust to deal with the evolving terrorist threat to the EU.

However, in terms of the link to the "Schengen crisis", perhaps the more salient aspect of the terrorist attacks is that some of their perpetrators appear to have entered and moved around within the EU using **fraudulent travel documents**. Others appear to have entered the EU **under cover of the refugee and migrant influx** in

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6   For a good overview of EU justice and home affairs agencies, see http://ec.europa.eu/justice/about/files/jha_agencies_en.pdf.

7   For up-to-date figures on arrivals by sea, see http://data.unhcr.org/mediterranean/regional.php#_ga=1.268639923.391985686.1457969959.

8   For a discussion of the subject, see, for example, "After Paris, drawbridges up?", *The Economist*, 21 November 2015 at http://www.economist.com/news/europe/21678832-schengen-system-open-borders-was-already-under-pressure-latest-terrorist-attacks-may.

the early autumn of 2015, again using fraudulent documents to pose as refugees.[9] It is important to highlight that there is no objective reason to believe that terrorists have been systematically using the refugee crisis to smuggle operatives into the EU (as has been underscored by Europol Director, Rob Wainwright[10]). Nonetheless, the fact remains that **an external border management system** that cannot cope with the number of arrivals, cannot register them, cannot properly detect falsified documents and cannot properly check those arriving against existing databases, like the Schengen Information System (SIS) database[11], poses an **inherent risk to an area without internal border controls**.

As we will see below, while only France has invoked terrorism to justify the temporary reintroduction of border controls, the security dimension is paramount and an important part of the EU policy response.

The reintroduction of internal border controls in 2015 and 2016: the legal framework
The **basic requirement to drop internal border controls is a Treaty obligation** (laid down, for instance in articles 67(2) and 77(1) TFEU). As such, only a Treaty amendment to dispense with this obligation could bring about the formal end of an internal border-free zone.

The provisions governing the extent to which Member States may temporarily derogate from the basic Treaty requirement to ensure an absence of internal border controls are laid down in the Schengen Borders Code[12]. The Code was amended in 2013 as part of a reform of Schengen governance, itself prompted by a smaller-scale migration and refugee crisis in the wake of the 2011 Arab Spring and a dispute between France and Italy over a perceived "wave-through" approach to primarily Tunisian migrants and refugees arriving in Italy but ultimately heading for France[13]. Under the 2013 governance reform, new rules were established governing Schengen evaluation and monitoring in Member States[14] and providing for the temporary reintroduction of internal border controls[15].

It is this set of rules that has underpinned the reintroduction of temporary internal border controls in Member States in 2015 and 2016. Indeed, **any border checks that are not in compliance with the Schengen Borders Code would be illegal and therefore subject to infringements proceedings**. As some commentators have observed, it could be argued that the reintroduction of temporary border controls by Member States has, at least in formal terms, been a paragon of legal compliance[16].

As outlined below, articles 23 to 26 of the amended Schengen Borders Code provide for three central scenarios under which temporary internal border controls may be reintroduced, each with differing arrangements and differing upper limits.

Foreseeable events (Article 23)

Under article 23 of the revised Schengen Borders Code, **"a serious threat to public policy or internal security in a Member State"** justifies the exceptional reintroduction of internal border controls, in principle for **up to 30 days**, but with the possibility to go beyond that if the serious threat is expected to last longer. The maximum period for article 23 temporary internal border controls is **six months** (see Table 1 below).

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[9]   See, for example, "Paris and Brussels bombers' links exposed", *BBC News*, 26 March 2016 at http://www.bbc.com/news/world-europe-35879401 and "Paris attacks: who were the attackers?", *BBC News*, 18 March 2016 at http://www.bbc.com/news/world-europe-34832512.

[10] See, for example, "Europol chief warns of threat of new terror attacks in Europe", *Deutsche Welle*, 19 February 2016 at http://www.dw.com/en/europol-chief-warns-of-threat-of-new-terror-attacks-in-europe/a-19059853.

[11] The SIS database contains alerts on missing or wanted persons as well as objects.

[12] Regulation (EC) No 562/2006 of the European Parliament and of the Council of 15 March 2006 establishing a Community Code on the rules governing the movement of persons across borders (Schengen Borders Code), as subsequently amended.

[13] For a summary of the background to, and content of, the Schengen governance reform, see, for example, "The Schengen Governance Package: the subtle balance between Community method and intergovernmental approach", Pascouau, Y, European Policy Centre, 12 December 2013 at http://www.epc.eu/documents/uploads/pub_4011_schengen_governance_package.pdf.

[14] Council Regulation (EU) No 1053/2013 of 7 October 2013 establishing an evaluation and monitoring mechanism to verify the application of the Schengen acquis and repealing the Decision of the Executive Committee of 16 September 1998 setting up a Standing Committee on the evaluation and implementation of Schengen.

[15] Regulation (EU) No 1051/2013 of the European Parliament and of the Council of 22 October 2013 amending Regulation (EC) No 562/2006 in order to provide for common rules on the temporary reintroduction of border control at internal borders in exceptional circumstances

[16] *What is happening to the Schengen borders?* Guild, E, Brouwer, E, Groenendijk, K, Carrera, S, Centre for European Policy Studies Paper in Liberty and Security in Europe No. 86, 16 December 2015 at https://www.ceps.eu/publications/what-happening-schengen-borders.

Under article 24, while in principle **four weeks' notice** is required, this can be derogated from "where the circumstances giving rise to the need to reintroduce border control at the internal borders become known less than four weeks before the planned reintroduction". Other Member States and the Commission must be notified and the notification must explain the **rationale, the scope of the border controls being reintroduced, authorised crossing points and applicable dates**. The information must also be transmitted to **the Parliament** and **Council**. Under article 23a, any Member State deciding to reintroduce or prolong temporary border checks is required to "assess the extent to which such a measure is likely to adequately remedy the threat to public policy or internal security, and […] assess the proportionality of the measure in relation to the threat", including its "likely impact […] on free movement of persons within the area without internal border controls".

While the Commission or Member States may issue an opinion on the notification, they cannot veto it, leaving the affected Member States with the exclusive prerogative.

Emergency reintroductions (Article 25)

Under article 25, Member States may reintroduce exceptional internal border controls for an initial period of up to **10 days "where a serious threat to public policy or internal security in a Member State requires immediate action to be taken"**. This period may be extended in **20-day** periods up to a **maximum of two months**.

Any Member State triggering this procedure must notify the other Member States and the Commission and the **notification must explain the rationale, the scope of the border controls being reintroduced, authorised crossing points and applicable dates**. While the initial decision (by definition taken in emergency circumstances) does not require any form of impact assessment, the decision to prolong checks must assess necessity and proportionality as per the article 23a criteria outlined above.

Again, **the Commission may issue a non-binding opinion. It did, for example, on the initial reintroduction of border controls in Austria and Germany in the autumn of 2015**[17] and found that both countries had acted in compliance with the Schengen Borders Code and the principles of necessity and proportionality. Interestingly, the Commission made explicit reference to recital 5, but opined that the "sheer number of persons entering the territory of Germany in view of seeking international protection indeed led to a threat of public policy and internal security and thus justified the application of the extraordinary measures available under the Schengen Borders Code". No such opinions on other Member States have been made public.

Longer-term reintroductions (Article 26)

The 2013 reform of the Schengen Borders Code introduced the possibility of longer-term reintroductions of internal border controls where there are "**persistent serious deficiencies relating to external border control**", which "**constitute a serious threat to public policy or internal security within the area without internal border control**". Under article 26, **the Council, acting on a Commission proposal, may recommend that "one or more Member States decide to reintroduce border control at all or specific parts of their internal borders" for an initial period of six months, renewable up to a maximum of two years**.

Which Member States have reintroduced temporary internal border controls?

Germany was the first country to reintroduce temporary internal border controls in September 2015 on the basis of article 25. Since then, a number of countries have reintroduced temporary border controls. Of the Member States that initially reintroduced temporary internal border checks, only Slovenia (17 September – 16 October 2015) and Hungary (17 – 26 October 2015) have since dispensed with the checks. All other Member States – with the sole exception of France – initially invoked article 25 to justify emergency checks before (in most cases) graduating to article 23. Table 1 below details the Member States that currently have internal border controls in place, the period for which they are in place, the border crossings to which they apply, the article of the Schengen Borders Code on which they are based and the reason given.

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[17] Commission Opinion of 23.10.2015 on the necessity and proportionality of the controls at internal borders reintroduced by Germany and Austria pursuant to Article 24(4) of Regulation No 562/2006 (Schengen Borders Code), C(2015) 7100 final, Brussels, 23 October 2015 at http://ec.europa.eu/dgs/home-affairs/e-library/documents/policies/borders-and-visas/general/docs/commission_opinion_necessity_proportionality_controls_internal_borders_germany_austria_en.pdf.

Table 1: **Temporary internal border controls in the Schengen area (situation on 12 April 2016)**

Schengen Member State	Dates applicable	Border crossings covered	Article of the Schengen Borders Code	Reason
Belgium	23 February – **12 April 2016**	Border between the Province of West-Vlaanderen and France	**25 -** emergency reintroduction (maximum 2 months)	Expected influx of people seeking to reach the port area of Zeebrugge following the closure of migrant camps in Calais
Denmark	4 March **- 3 May 2016** (initially 4 January to 3 March 2016)	All, especially sea and land borders with Germany	**23 -** foreseeable events (up to six months)	Big influx of persons seeking international protection
Norway	15 January - **13 April 2016** (initially 26 November 2015 to 15 January 2016)	All, especially ports and ferry connections	**23** – foreseeable events (up to six months)	Continuous big influx of persons seeking international protection
Sweden	10 January – **8 May 2016** (initially 12 November 2015 to 9 January 2016)	All, especially southern and western harbours and Öresund bridge between Denmark and Sweden	**23** – foreseeable events (up to six months)	Continuous big influx of persons seeking international protection
Austria	16 November - **15 May 2016** (initially 16 September to 15 November 2015)	All, especially Slovenia-Austria border, Hungary-Austria border and Italy-Austria border; only specific crossing points may be used	**23** – foreseeable events (up to six months)	Continuous big influx of persons seeking international protection
Germany	14 November 2015 – **13 May 2016** (initially 13 September to 13 November 2015)	All, especially Austria-Germany border	**23** – foreseeable events (up to six months)	Continuous big influx of persons seeking international protection
France	14 December 2015 – **26 April 2016** (initially 13 November – 13 December 2015)	Internal land borders and air borders	**23** – foreseeable events (up to six months)	State of emergency following the 13 November 2015 terrorist attacks

Source: European Commission, DG HOME[18].

As the table illustrates, **the fact that a Member State has decided to reintroduce temporary internal border controls does not mean that all borders are subject to such controls or that all persons crossing the border are necessarily checked** as anyone who has driven into France from Belgium recently can testify. Rather, by triggering the mechanisms available in the Schengen Borders Code, Member States have availed themselves of the possibility to carry out such checks. In practice, the checks are focused. While Germany may well be carrying out rigorous border controls at its border with Austria owing to the large influx of migrants and refugees using that route, no such checks will be routinely conducted at, say, Germany's border with the Netherlands.

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[18] Up-to-date information on the reintroduction of border controls under the Schengen Borders Code can be found at http://ec.europa.eu/dgs/home-affairs/what-we-do/policies/borders-and-visas/schengen/reintroduction-border-control/docs/ms_notifications_-_reintroduction_of_border_control_en.pdf.

The variable intensity of checks is also specifically referenced in the notifications sent by those Member States that have reintroduced temporary border controls. Austria, for instance, in its 16 March 2016 notification[19] states that "the intensity of border controls shall continue to be limited to the extent necessary for maintaining public order and internal security", a sentiment echoed in the notifications from Denmark (23 February 2016)[20], Norway (15 January 2016)[21] and Sweden (8 March 2016)[22]. In its 12 February 2016 notification, Germany goes a step further by highlighting cooperation with the Austrian authorities and insisting that efforts are focused on "keeping the impact on cross-border transport of persons and goods in regional and long-distance trains, lorries, buses and cars to the minimum required for security reasons"[23].

The other important point to underscore is that Germany has already notified the Commission and other Member States that it will be applying temporary internal border controls for the maximum period permitted under article 23 of the Schengen Borders Code, i.e. six months. 13 May 2016 thus marks an important milestone since Germany cannot legally continue internal border controls beyond that point without the article 26 mechanism being triggered. In its February 2016 notification, Germany stated that application of the article 26 mechanism is now being examined[24].

The road to article 26 of the Schengen Borders Code: a time-out for Schengen?

In its March 2016 roadmap charting a return to the proper functioning of the Schengen area, the European Commission leaves no doubt as to its determination to see the border-free Schengen area restored: "Restoring the Schengen area, without controls at internal borders, is […] of paramount importance for the European Union as a whole"[25].

While the commitment to return to "normal Schengen" is very real, the notion of providing a European framework for border controls might be viewed as an indication that the Commission envisages the triggering of article 26 of the Schengen Borders Code in May 2016. As detailed above, article 26 makes provision for internal border controls to be reintroduced for up to two years where there are "persistent serious deficiencies relating to external border control", which "constitute a serious threat to public policy or internal security within the area without internal border control".

Any such "serious deficiencies" are detected by the Schengen Evaluation and Monitoring Mechanism and the Commission may, under article 19a(1) of the Schengen Borders Code, recommend that the Member State presenting serious deficiencies take remedial action. The Schengen Evaluation Report for Greece, adopted by the Commission on 2 February 2016[26], found just such serious deficiencies. On 12 February 2016, the Council then issued 50 recommendations to Greece to remedy the deficiencies[27]. Greece has three months to take action. Should the Commission then find that the serious deficiencies persist, it may trigger the article 26 procedure, thus paving the way for Member States to reintroduce internal border controls for an initial six months and for a total of two years.

Given the timing of the Council's recommendations – issued on 12 February, a fraction over the three months remaining for Germany to retain article 23 border controls – it is clear that the ground has been prepared for just such a decision. While the Commission roadmap makes clear that the aim is to return to the pre-2015 Schengen

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[19]   Council document 7136/16.

[20]   Council document 6440/16.

[21]   Council document 5294/16.

[22]   Council document 6886/16.

[23]   Council document 6048/16.

[24]   *Ibid.*

[25]   Communication from the Commission to the European Parliament, the European Council and the Council, *Back to Schengen – A Roadmap*, 4 March 2016 at http://ec.europa.eu/dgs/home-affairs/what-we-do/policies/borders-and-visas/schengen/docs/communication-back-to-schengen-roadmap_en.pdf.

[26]   "Commission adopts Schengen Evaluation Report on Greece and proposes recommendations to address deficiencies in external border management", Commission Press Release, 2 February 2016 at http://europa.eu/rapid/press-release_IP-16-211_en.htm.

[27]   Council Implementing Decision setting out a Recommendation on addressing the serious deficiencies identified in the 2015 evaluation of the application of the Schengen acquis in the field of management of the external borders by Greece, Council of the European Union, 5876/1/16 REV 1, 12 February 2016 at http://data.consilium.europa.eu/doc/document/ST-5985-2016-INIT/en/pdf.

reality by the end of the year, in the short term it seems distinctly possible that temporary border controls will remain in place, though this time under article 26.

It is worth highlighting in this regard that the extent of border controls beyond May 2016 is difficult to predict with any certainty. Under article 26 of the Schengen Borders Code, "the Council may, as a last resort and as a measure to protect the common interests within the area without internal border control, […] recommend that one or more Member States decide to reintroduce border control at all or at specific parts of their internal borders". While the Council's recommendation must be based on a Commission proposal, "the Member States may request the Commission to submit such a proposal". As such, it seems quite conceivable that at least those Member States currently applying temporary internal border controls will continue some form of border checks beyond May 2016, although some commentators have questioned the legality of reintroducing border controls where the Member State in question has no common internal border with Greece (and no Schengen Member State shares a land border with Greece)[28].

The better regulation agenda and assessing impact on the free movement of persons
A fully functioning **common policy on asylum, immigration and external border control** is **the first choice policy** in addressing the challenges of migration and security, as well as a precondition for the absence of internal border controls. By contrast, the reintroduction of internal border controls is **the last-resort policy option** that **may not necessarily solve the identified policy problems and leads to economic and societal costs randomly spread across different actors in the EU, including businesses, consumers and citizens in general**.

The fact that the reintroduction of internal border controls should be the policy of last resort is explicitly stressed in the 2013 legislation amending the Schengen Borders Code[29]. Recital 2 of Regulation no 1051/2013 thus refers to **the free movement of persons as "a key Union achievement"** and the reintroduction of internal border controls as **"a measure of last resort"** to be taken "based on specific objective criteria and on an assessment of its necessity". As detailed above, this requirement for Member States to ensure that measures are necessary and proportionate and to assess the likely impact on the free movement of persons is also explicitly laid down in article 23a and applies to all foreseeable events (article 23) and all prolongations of border controls in emergency situations (article 25).

The notion of ensuring that measures are both necessary and proportionate and that their likely impact is properly assessed is **a central pillar of the better regulation agenda**, to which all EU institutions are committed. Indeed, careful and rigorous impact assessment is part of the existing Inter-Institutional Agreement on better law-making[30] and even more so of its recently finalised successor agreement on better regulation[31]. Research commissioned by the **IMCO Committee** advocates **proactive policy-making based on clear prioritisation of objectives, an optimal mix of synergic measures and systematic re-evaluation of efficiency and effectiveness of applied policies**[32].

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[28] For further discussion of the content of article 26 and the legality of reintroducing border controls, see, for example, "Can Schengen be suspended because of Greece? Should it be?", Peers, S, EU Law Analysis, 2 December 2015 at http://eulawanalysis.blogspot.be/2015/12/can-schengen-be-suspended-because-of.html or "Control and Closure of Internal Borders in the Schengen Area", Piçarra, N, in *Searching for Solidarity in EU Asylum and Border Policies,* Odysseus Network, February 2016 at http://odysseus-network.eu/wp-content/uploads/2015/09/Searching-for-Solidarity-Short-Papers.pdf. .

[29] Regulation (EU) No 1051/2013 of the European Parliament and of the Council of 22 October 2013 amending Regulation (EC) No 562/2006 in order to provide for common rules on the temporary reintroduction of border control at internal borders in exceptional circumstances.

[30] See http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=URISERV:l10116&from=EN.

[31] See http://ec.europa.eu/smart-regulation/better_regulation/documents/20151215_iia_on_better_law_making_en.pdf.

[32] *Performance-based full policy-cycle for the Digital Single Market*, Report for the European Parliament's Committee on Internal Market and Consumer Protection. Available at: http://www.europarl.europa.eu/RegData/etudes/etudes/join/2013/507457/IPOL-IMCO_ET(2013)507457_EN.pdf, *Smart Single Market Regulation*. Study for the European Parliament's Committee on Internal market and Consumer Protection Available at: http://www.europarl.europa.eu/RegData/etudes/STUD/2015/563442/IPOL_STUD(2015)563442_EN.pdf, [Accessed 25 September 2015], *Reducing Costs and Barriers for Businesses in the Single Market*, Report for the European Parliament's Committee on Internal Market and Consumer Protection, upcoming, and Report of 1 October 2015 "Towards improved single market regulation", (2015/2089(INI)), http://www.europarl.europa.eu/sides/getDoc.do?type=REPORT&mode=XML&reference=A8-2015-0278&language=EN.

The tools developed for better regulation allow for **early synchronisation of conflicting policy objectives** - in this case **security, immigration and asylum policy objectives with economic interests and free movements within the single market** - as well as a **more efficient deployment of resources** and **legitimate distribution of costs**. Measures not meeting better regulation standards risk:

- randomly burdening the single market in general, as well as businesses and consumers,
- leading to massive and unfocused re-deployment of resources,
- overlooking problems at their source and applying blanket solutions instead.

As outlined above, the notifications sent by Members States insisted that necessity and proportionality were key factors in the application of border controls and Germany specifically mentioned efforts to limit impact. However, **neither the notifications nor answers to questionnaires sent by the European Parliament to Member States described whether detailed impact assessments were conducted** or whether the efficiency and effectiveness of the measures were being measured. The European Commission confirmed that it had received no such impact assessments.

Yet, the free movement of goods, services, capital and citizens within the EU single market has the **potential to contribute up to a 14% increase in EU GDP over the period 2011-2020. These economic benefits should not be overlooked** when considering such measures as the reintroduction of internal border controls.[33] The Schengen Agreement, with its 26 EU and European Free Trade Association (EFTA) Member States is an important complement to the single market, making the four freedoms outlined in Article 26 of the TFEU a tangible reality. **The border-free Schengen Area guarantees free movement to more than 400 million EU citizens, as well as many non-EU nationals, businessmen, tourists or other persons legally present on the EU territory**. Schengen provisions enhance the good functioning of the internal market, as an area without internal frontiers. The disappearance of long queues at border checkpoints has lowered transportation costs drastically and boosted intra-European trade. Eurobarometer data show, most citizens in the EU-28 mention free movement, when asked what the EU means to them personally. In addition, **free movement is named as the most positive result of the EU integration process**[34].

Further chapters provide evaluations of the externalities and costs incurred by European businesses and consumers due to the reintroduction of internal border controls. Such an analysis has its intrinsic challenges. For instance, at this stage, it may be too early to make an assessment of the impact on consumers and consumer prices. Price formation depends on several factors: the intrinsic specificities of transported goods (e.g. storability, perishability, seasonality), the market structure (e.g. intensity of competition at each step of the chain, number of intermediaries in the chain) as well as existing public policies. The assessment of price transmission typically aims at addressing the following issues:

- the magnitude of the price adjustment, i.e. how much of the price change linked to the changes to Schengen and slower cross-border traffic is transmitted to the downwards step;

- the speed of the price adjustment, i.e. the pace at which changes in prices at one level of the supply chain are transmitted to the other levels (e.g. are price changes transmitted instantaneously or distributed over time?);

However, this analysis requires relevant and reliable price data. The situation tends to be problematic at the level of food processors and retailers, hampering any complete measurement of the degree of price transmission. Moreover, data on wholesale prices are virtually non-existent, meaning that the impact of the distribution sector is aggregated purely into the consumer price indicator. It is thus not possible to distinguish between the effects of the transport, wholesale and retail sectors in the price transmission analysis linked to changes to the Schengen agreement, and the introduction of ID checks at various internal borders.

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[33] Alleweldt, F., Kara, S., McSpedden-Brown, N., Fielder, A., Zuleeg, F. Osinski, A., (2014). `Contribution of the Internal Market and Consumer Protection to Growth', European Parliament Study, Policy Department A: Scientific and Economic Policy, IP/A/IMCO/2014-04.

[34] Eurobarometer: http://ec.europa.eu/public_opinion/archives/eb/eb83/eb83_first_en.pdf

2. RE-ESTABLISHMENT OF BORDER CONTROLS

KEY FINDINGS

Effects of a reintroduction of borders controls in four main areas

- **Commuting workers:** the introduction of border controls will increase queuing times when travelling to and from work. Restricted job mobility could lead to greater heterogeneity of regional job markets and uneven development of property prices.

- **Travel and tourism within Schengen and from outside**: Due to the loss of time arising from crossing borders, a decline in trips – especially short trips and day visits is likely. If border controls lead to fragmentation in the EU's common visa policy, the tourism and hospitality industries could face non-trivial losses.

- **Movements of goods and services:** as waiting times for truck drivers could increase, businesses could be affected by the rise in personnel costs and other costs such as replenishment of their stocks since just-in-time delivery may be limited. The impact might go well beyond the transport sector, affecting the volume and costs of the trade of goods and the efficiency of the European logistics sector, potentially increasing prices. Higher import prices could in turn lead to a general increase in prices, and to a fall in consumption and investment. That could have an effect on the structure and the level of value chains, foreign direct investment, and location decisions of companies, as well as price competitiveness.

- **Bond yields**: The suspension of the Schengen Agreement in *one or more countries* might be interpreted by the financial markets as a signal that these countries are no longer committed to being part of the EU's 'core'. These countries would face a greater redenomination risk[1]. As a result, the yields for government bonds could increase, having implications for the price of other financial assets, for the interest rates faced by firms and households and, in turn, a negative impact on the real economy.

Assessing the costs of re-establishing border controls, or the 'costs of non-Schengen', requires first an assessment of how a single market without borders creates value. That is followed by an analysis of the economic mechanisms by which restrictions to the Schengen area might create economic costs.

Borderless Single Markets

The single market is the cornerstone of European integration. Article 26.2 TFEU describes the four freedoms (goods, services, capital and persons) as elements of the internal market. In order to assess the economic effect of temporary or permanent limitation of any of the above four freedoms, the starting point must be the economic added value of the single market. According to an EPRS study[2], the integration of the Single Market has added value to the EU in seven main areas.

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[1]   Redenomination risk is the compensation demanded by market participants for the risk that an asset in currency X is being redenominated into a devalued legacy currency B.

[2]   European Parliamentary Research Service, A strategy for completing the Single Market: the trillion euro bonus Report of the High-Level Panel of Experts to the IMCO Committee, 2016.

Benefits of the Single Market – Recent empirical evidence

GDP: Single Market has increased EU GDP by 4.8% to 5.7% since 1987. (EC 2010)

FDI: Intra-EU FDI increased from EUR 64 billion in 1992 to EUR 260 billion in 2010 (and reached EUR 730 billion before the crisis in 2007) (Eurostat, 2010)

MOBILITY: For the EU-28, the share of citizens working in a different Member State has doubled from 1990-2011, from 1.5% to about 3%. (Eurostat 2012)

CONSUMERS: 12% of the EU's population order cross-border in 2013, a raise from 8% in 2009. (Eurostat: isoc_ec_ibuy)

TRADE: Single Market has large positive impact on trade (OECD 2015). It contributed extra 9% of intra-EU trade. This trade effect translates into a growth effect of rough 2% to EU GDP (Kommerskollegium 2015).

For example, UK-EU trade is 55%higher than what economic size, exchange rates, distance and cultural factors would predict (CER 2014).

JOBS: EU employment supported by extra-EU exports between 2000 and 2007 grew from 22 to 25 million jobs, out of which 9 million jobs (in 2007) were due to spill over and feedback effects associated with the single market (Rueda-Cantuche 2013)

SMEs: EU encourages and financial supports innovative Singe Market where SMEs place a central role. For example, In 2016-2017 EU Horizon 2020 budget on research and innovation, £1.5 billion out of a total of £12 billion will be available to SMEs.

Source: European Parliament, European Added Value Unit.

The four fundamental freedoms allow for more efficient allocation of resources within the EU. Free movement of EU citizens fosters economic growth by enabling people to travel, study and work in another Member State and by allowing employers to recruit from a larger pool. For the EU-15, GDP is estimated to have increased by almost 1% in the long term as a result of post-enlargement mobility (2004-2009). More specifically, free movement of workers has also had a positive impact on economies and labour markets.

Moving from a situation of autarky (or self-sufficiency – no trade in goods or in factors of production among countries) to a situation of complete integration (no barriers to trade in goods and factors of production) leads to substantial economic benefits in terms of income per capita, both in levels, and potentially also, in growth rates. Improvements are achieved via three channels, namely (i) higher productivity associated with relocation of industries from low to high productivity locations; (ii) improvements in factor allocation (labour and capital moving); and (iii) larger market size.

The Schengen Agreement, with its 26 EU and EFTA member states, is an important complement to the Single Market, giving tangible reality to the four freedoms. Therefore, the main question is: '**what would be the impact of re-establishment of border controls within the Schengen area**?'

The response is three-fold: a) border controls within Schengen generate direct, immediate costs, b) they undermine the benefits achieved over the last 20 years, and c) endanger future benefits of EU integration. An EPRS study[3] estimates that there still exists €615 billion in untapped potential which could be achieved by completing the Single Market. This future potential would also then be in danger.

The Digital Single Market, where future untapped potential is estimated to be €415 billion would also be affected, but to a lesser degree.

A reintroduction of border controls could jeopardise the benefits of the Single Market. Border controls would not only limit mobility within the Single Market, but more generally have spill-over effects on all the other indicators and actors having been positively influenced by an open Single Market, namely trade, foreign direct investment and growth, as well as consumers, SMEs and job creation.

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[3]   European Parliamentary Research Service, The Cost of Non-Europe in the Single Market 'Cecchini Revisited'. An overview of the potential economic gains from further completion of the European Single Market, 2014.

Furthermore, reintroducing border controls could not only deprive people of the benefits of free movement across borders, but could also give rise to non-trivial economic costs for citizens and businesses, undermining the Single Market in respect of all four key freedoms. Four impact areas that have been identified are described in the sections below.

In addition, there are administrative costs associated with erecting permanent borders and border controls:

- one-off costs i.e. the infrastructure costs of setting up borders e.g. building fences; and

- on-going costs, in particular the costs of increased personnel to maintain the borders and implement and enforce border controls.

Effects of reintroducing borders

Intra-Schengen travel for commuters

Commuters that travel across Member State borders might be particularly affected by the introduction of non-Schengen, as their place of work and place of residence are in different countries. The direct impact of introducing border controls is that it could increase commuting times, as border controls are likely to increase queuing times when travelling to and from work.

Consequential impacts could include restricted job mobility, greater heterogeneity of regional job markets and uneven development of property prices. Border controls could also further intensify difficulties associated with working in other Member States arising from 'non-Europe' in social security systems, direct taxation, and social services.

Travel and tourism within Schengen and from outside the Schengen area

There are also potential consequences for intra-Schengen tourists as a result of reintroduction of border controls. The direct impacts are the loss of time arising from crossing borders which is also likely to result in a decline in trips – especially short trips and day visits for leisure and shopping. These losses could be particularly apparent for tourist areas that are close to one or more borders.

If border controls lead to fragmentation in the EU's common visa policy, which currently involves uniform issuing of visas and mutual recognition within Schengen, the tourism and hospitality industries could face non-trivial losses.

Currently, citizens from outside the Schengen area who have obtained a visa from one country to travel to the Schengen area are allowed to visit all other Schengen countries within a certain period of time. Removing such agreements could require applications to be processed at national level – increasing the burden for third-country tourists who would like to visit more than one country. The administrative burden could increase for both governments and travellers. Ultimately, this could potentially lead to a decline in foreign visitors to the EU.

Movements of goods and services

Reintroducing border controls could directly impact movements of goods and services as waiting times for truck drivers (and commuters) could increase. Especially relevant are the costs for freight as lorries and trucks are in circulation in Europe entering countries via toll roads.

Businesses could be affected indirectly by the rise in personnel costs and other costs such as replenishment of their stocks since just-in-time delivery may be limited. Therefore, reintroducing border controls could lead to a rise in transport costs for cross-border trade in the European Union. The impact might go well beyond the transport sector, affecting the volume and costs of the trade of goods and the efficiency of the European logistics sector, potentially increasing prices.

Higher import prices could in turn lead to a general increase in prices as households' and businesses' real incomes fall; and therefore also consumption and investment. That might tend to drive demands for nominal wage rises to compensate – leading to a further rise in prices; this would raise unit costs and diminishing international competitiveness, while increasing interest rates as a policy response to higher inflation. That could have an effect on the structure and the level of value chains, foreign direct investment, and location decisions of companies, as well as price competitiveness.

Bond yields and currencies

Financial markets might interpret a permanent withdrawal from the Schengen area by one or more countries as a signal that these countries are no longer committed to being part of the EU's 'core', which could in turn be interpreted by the financial markets as having implications for that country's membership of the euro (either as a current member or as a future member of EMU). This could for example mean that in a period of fiscal crisis, markets believe it less likely that other countries would provide emergency loans and/or that there would be a greater redenomination risk[4].

Such risks might lead to higher yields for government bonds. This could have implications for the price of other financial assets, for the interest rates faced by firms and households and, potentially, a negative impact on the real economy. For example, higher interest rates mean that consumers do not have as much disposable income and must cut back on spending, whilst corporates find investment projects more expensive to service, and consequently may reduce investment.

Fragmentation in the risk expectations of investing in different countries can lead to fragmentation in real interest rates among the states in the monetary union and outside. Changes in interest rates across nations could also affect the exchange rates between the euro and the local currencies of the countries that are not members of the monetary union, which in turn could affect import and export prices and have a negative impact on the real economy. Segmentation of the single capital market can thus lead to decreased cross-border demand and increased cost of capital to issuers.

Several recent studies have demonstrated negative effects of the re-introduction of borders. A summary of those studies can be found in annex 1.

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[4] Redenomination risk is the compensation demanded by market participants for the risk that an asset in currency X is being redenominated into a devalued legacy currency B.

3. RESULTS – THE IMPACT OF REINSTATING BORDER CONTROLS

KEY FINDINGS

The study has looked at two possible scenarios as to the length of the re-establishment of border controls: first, the impact of **a two--year suspension** of the Agreement (which corresponds to the legal limit of time for reinstating temporary border controls in the context of the current Schengen Agreement) by a limited (7) number of Member States (scenario 1) and by all the Schengen members (scenario 2). Second, it has quantified the economic impact of an **indefinite suspension of Schengen**, in a limited number of Schengen states (scenario 3) as well as for all the Schengen countries (scenario 4).

- The **one -off costs** relating to the physical reestablishment of border checks amount to **€7.1 billion for Schengen area as whole** (€0.7 billion for 7 Member states). Their impact is proportionally higher for a shorter suspension period.

- **A two-year suspension of the Schengen Agreement** (chapter 3) would cost the European economy (including on-off costs) a total of almost **€5 billion** in the case of a suspension limited to **7 countries** (scenario 1) and up to **€51 billion for the entire Schengen** area (scenario 2).

- **The cost of a permanent suspension of the Schengen Agreement,** calculated over a ten year period and including on-off costs, would represent:

  - up to **€70 billion in GDP** for the **7 countries** suspending Schengen, as well as an **additional €70 to €170 billion** (worst case scenario) **in fiscal costs,** i.e. the additional interest costs that exiting EMU countries would have to pay on their outstanding debts to compensate the creditors for their increased default risk.

  - for the **entire Schengen Area, a loss of up to 0.14% of EU-GDP annually, i.e. up to €230 billion** could be expected.

Scenarios for Schengen suspension	One-off costs (€billion)	Total costs* (€billion)
1) **Two-year suspension (6+1 countries)**	0.7	2.4-4.6
2) **All countries two years suspension**	7.1	26-51
3) **Indefinite suspension (6+1 countries)**	0.7	55-70 + 70-170
4) **All indefinite suspension**	7.1	100-230

*"Totals" in the third and fourth cases above are totals over ten years.

1. Scenarios

In order to assess the cost of re-establishment of Schengen borders, four different scenarios were used.

Table 1:   Scenarios

	Impact of a 2 year suspension	Indefinite suspension of Schengen
6 countries (+ 1)	**Scenario 1** **Economic impact of the controls at borders** in some (six) **Nordic and eastern European Schengen members**, which have recently reintroduced such measures, including Austria, Slovenia, Hungary, Sweden[1], Norway and Denmark[2]. Conceptually, Greece is also included in this scenario (6 + 1)[3].	**Scenario 3** **Economic impact** if **seven Schengen members** (**6 + 1** listed in scenario 1) leave the Schengen area permanently.
All Schengen members	**Scenario 2** **Economic impact** of the reintroduction of border controls between **all Schengen members.**	**Scenario 4** **Economic impact** of an **indefinite suspension** of Schengen between **all the members** of the area.

2. Immediate one-off costs

Key findings: one-off costs

Scenario for Schengen suspension	One-off costs (€ billion)
Limited two-year	**0.7**
All countries two-year	**7.1**

To form a land border, it would cost €16.90 per capita on average for each Member State.

If Schengen membership ceases to exist, one of the immediate costs would be establishing land borders with neighbouring Schengen Member States. Each Schengen country already has border controls in place in seaports and international airports for passengers travelling from outside the Schengen area. With the suspension of the Schengen area, this would extend to intra-Schengen flights and sea routes. It is likely that additional controls to monitor passenger flows at airports and sea routes will not incur significant costs where borders are already established. Thus, in this report, only the border costs associated with establishing additional land borders and monitoring road and rail traffic are estimated.

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[1]   Migrant crisis: Sweden border checks come into force, BBC News, 4 January 2016.
[2]   The analysis has been restricted to these six Scandinavian countries that have introduced controls and countries along the route many migrants have taken.
[3]   There is no associated cost in quantification because there is no land border between Greece and any other Schengen Member State.

The costs of establishing a land border are estimated by analysing costs incurred by existing Member States in constructing new border infrastructure and upgrading existing borders to join the Schengen area.

For countries that acceded to the EU in 2004, the European Commission had established a fund called the 'Schengen Facility' to help new Member States finance border infrastructure enhancements ahead of their entry into the Schengen area in December 2007. Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia could access the fund to compensate for eligible expenses incurred in upgrading border infrastructure and processes. Costs covered under the Schengen Facility related notably to 'border checks; border surveillance; visa management; IT systems training; and management of the Schengen Facility'.

The table below shows the expenditure by different Member States on establishing Schengen compliant borders.

Table 2: **Expenditure under the Schengen Facility on upgrading border infrastructure and processes**

Country	Amount funded by Schengen facility(€ m)	Amount funded nationally (€m)	Total cost of border upgrade (€ m)	Population (2005)
Estonia	77	5	82	**1,330,000**
Hungary	154	39	192	**10,098,000**
Latvia	79	13	92	**2,307,000**
Lithuania	150	26	176	**3,431,000**
Poland	283	5	289	**38,530,000**
Slovakia	54	10	64	**5,401,000**
Slovenia	114	59	173	**1,967,000**
Total	**910**	**157**	**1,068**	**63,064,000**

Notes: *'Programme amount available' is the total amount a country could have spent under the programme; 'final eligible costs' is the amount spent on qualified expenses under the programme; final eligible costs greater than the programme amount are available for Poland due to exchange rate movements between the euro and the złoty; costs not adjusted for inflation.
Source: European Commission; United Nations; Europe Economics' calculations.

Based on a total cost across the countries of €1 068 million and their total population of 63 million, the **average land border costs €16.90 per capita** for these countries[4].

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[4] This crude average does not capture the variation between situations in individual countries. In a study with a longer timescale it might have been considered to attempt to attribute costs from borders in a more fine-grained way, taking account of the similarities between existing borders (and their costs) and the new borders that would need to be erected and maintained.

3.   Total costs of two year Schengen suspension

Key findings: Two-year suspension (scenarios 1 & 2)

Total costs of two year Schengen suspension

Scenarios for Schengen suspension	One-off costs (€ billion)	Cost to commuters (annual)	Cost to tourists (annual)	Cost to road freight (annual)	Total cost (two years)*
		(€ billion)	(€ billion)	(€ billion)	(€ billion)
Limited two-year	**0.7**	0.168-0.606	0.005-0.018	0.7-1.3	**2.5-5**
All countries two years	**7.1**	1.7-6.1	0.018-0.049	6.5-13	**26-51**

Note: *2 year costs projected over next two years GDP.

Costs to commuters:
- *Scenario 1*: The costs vary between countries from approximately €1 million to €280 million per annum (€2 million to €560 million for two years).
- *Scenario 2*: The total costs range from €1.7 billion to €6.1 billion per annum (€3.4 billion to €12.2 billion for two years for all Schengen states).

Costs to tourists:
- *Scenario 1:* The costs vary between countries from €0.1 million to €4.8 million per annum (€0.2 million to €9.6 million for two years).
- *Scenario 2:* The costs range from €18 million to €49 million per annum (€36 million to €98 million for two years).

Time delay costs of road freight
- *Scenario 1*: The costs vary between countries from €52 million and €200 million for exported goods per annum and from €34 million and €190 million for imported goods per annum.
- *Scenario 2*: The costs vary between countries from €7.1 billion for exported goods and €5.9 billion

Scenario 1: Impact a two-year suspension of the Agreement in a limited number of Schengen States

This scenario describes the impact of border controls recently introduced by some Nordic and Eastern European Schengen Member States (6 + 1). Apart from the immediate one-off costs associated with forming a land border with neighbouring countries, a suspension of the Schengen area is likely to create costs for commuting workers, intra-EU tourists and road freight. Most of these costs will stem from the delays and inconvenience caused at the border check posts. However, border controls could also have an impact on tourists from third countries.

a)   Impact on commuters

There are approximately 350 000 cross-border commuters that could be affected by the introduction of border controls in terms of time delays, which costs them leisure time or consumption (in the event that they would work instead of bearing greater travel time). For instance, a direct train journey from Sweden to Copenhagen is no longer possible and would add a further 30 minutes commute time.[5] The wages of workers has been taken as the marginal cost of such delays.

In addition it is plausible that the increased time of commuting would reduce cross-border job opportunities for those nations that are non-Schengen. Not only could this cause economic losses in terms of unemployment, but also in terms of efficiency of labour skill distribution. Decrease in labour flows would reduce benefits from inflows of skills that are not available in the domestic economy (non-Schengen) that could suffer in the long-

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[5]   Migrant crisis: Sweden border checks come into force, BBC News, 4 January 2016.

term. Thus, in addition to losing on global markets, non-Schengen countries could lose in terms of competitiveness in European markets as a result of lower labour productivity and human capital compared to the countries still in the Schengen Agreement. This effect would not be prevalent in the second scenario where all countries exit the agreement.

Time delay cost to commuters

To estimate the time value cost to commuters, we use commuting data from the European Commission report on cross border mobility[6]. The data used is for 2006. It measures the number of commuting workers commuting to and from each Member State to EU-15 and in some instances EU-12 countries. It is likely that cross-border commuting has increased between the Member States over the years, and hence, the estimates of the costs are possibly conservative.

The time taken for each border crossing is assumed to be between 13 and 47 minutes. The values have been derived from the Stefan Batory Foundation's study of the EU's eastern external land borders in 2007[7]. The study examined crossing points in Bulgaria, Estonia, Finland, Hungary, Poland, Romania and Slovakia, and their respective non-EU neighbouring countries. Since crossings between EU Member States should be more straightforward and faster than those between non-EU and Schengen area states, data for a non-Schengen state closest to achieving EU accession, Serbia, and the time for crossings between this country and Romania (13 minutes) and Hungary (47 minutes) was used. These were also the two lowest figures from the study.

The monetary time value assigned to the delay is the average hourly wage in the countries concerned. As only six Schengen Member States have closed their borders in this scenario, the workers commuting into the country are likely to face more delays than those commuting out to countries (other than those commuting out to the Nordic countries Denmark, Norway and Sweden which are part of the EU-15)[8].

The table below shows both the costs linked to time delays for in-commuting and out-commuting workers. However, to avoid double-counting only the in-commuting costs have been taken into account. They vary between €1 600 in Slovenia to €600 000 in Austria, per day, per country.

Table 3:   Time delay cost to commuters per day per country

Country	Average hourly wage, €	Range time delay, minutes	Range cost to in-commuters, € thousand	Range cost to out-commuters, € thousand
Austria	15.9	13 - 47	166 - 601	91 – 329
Denmark	18.9	13 - 47	63 – 227	5.2 – 19
Hungary	3.7	13 - 47	11 – 40	13 – 48
Norway	26.4	13 - 47	91 – 330	11 – 41
Slovenia	6.8	13 - 47	1.6 – 5.9	20 – 71
Sweden	19.4	13 - 47	27 - 97	0.13 – 0.47

Source: Eurostat, Europe Economics calculations.

It is assumed that commuters make two crossings per day and commute 233 times per year. For in-commuters the resulting costs on an annual basis appear in the table below.

After a two-year period of Schengen controls, this cost will be **between approximately €2 million in the low-cost scenario for Slovenia to €560 million in the high-cost scenario for Austria**. Austria bears the highest total costs, even though its average wages are lower than, for example, Norway, because Austria is the country with the largest number of workers commuting to and from other Member States.

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[6]   European Commission (2009) 'Scientific Report on the Mobility of Cross-Border Workers within the EU-27/EEA/EFTA Countries' Final Report commissioned by DG Employment and Social Affairs presented by MKW Wirtschaftsforschung GmbH.

[7]   The Stefan Batory Foundation (2008) 'Gateways to Europe – checkpoints on the EU external land border'

[8]   The EU-15 Member States are: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom. The EU-12 Member States are: Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain and the United Kingdom.

Table 4:   **Time delay cost to in-commuters per annum**

Country	Range cost to in-commuters, €m
Austria	77-280
Denmark	29-106
Hungary	5-19
Norway	42-154
Slovenia	1-3
Sweden	13-45
Total	**168-606**

Source: Eurostat, Europe Economics calculations.

b) Impact on intra- and extra Schengen tourism

The reintroduction of border controls has also potential consequences on intra- and extra-Schengen tourism. These are linked to the loss of time arising from crossing borders which could also result in a decline in trips – especially short trips and day visits within Schengen. Thus, in scenario 1, the countries that leave Schengen could face losses in their hospitality and tourist industries, which could lead to substantial economic consequences if these industries are particularly important for the country concerned, e.g. Greece. The repercussions could in turn affect the competitiveness of the non-Schengen countries compared to the Schengen members.

Time delay costs for tourists

Time delays at borders will cause inconvenience to tourists. Such costs will vary according to the monetary time value for each tourist and the time taken to cross the border.[9] Using average hourly wages as a proxy for the monetary value of time and approximate time delays of between 13 and 47 minutes at the border, it was assumed that the average tourist had a monetary time value of one twenty-fourth of the average wage in a country visited. The table below shows estimates on the minimum and maximum cost of border crossing delays for tourists staying at least one night in the Member State.

The cost to tourism varies **between €0.1 million in Hungary to €4.8 million in Norway per year**. After a two-year year period of reintroduced controls within Schengen, the cost will reach between €**0.2 million in Hungary and €9.6 million in Norway**.

Table 5:   **Time delay cost to tourists per annum**

	Number of tourists from EU-28 excluding domestic tourists, m	Time value of money, €/hour	Range of cost to tourists, € million
Austria	9 052 873	16/24	**1.3 – 4.7**
Denmark	6 469 365	19/24	**1.1 – 4.0**
Hungary	3 927 825	4/24	**0.13 – 0.5**
Norway	5 520 434	26/24	**1.3 – 4.8**
Slovenia	2 264 179	7/24	**0.14 – 0.5**
Sweden	5 520 434*	19/24	**1.0 – 3.5**

Note: *Approximated with the Norwegian figure as direct data is not available for Sweden.
Source: Eurostat, Europe Economics calculations.

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9   The monetary time value for tourists depends on their average wage and not that of the destination country. Also, tourists may include a number of non-wage-earners (e.g. children, pensioners). Tourists may also be less time-sensitive than workers (travel may be part of the experience). It was assumed that tourists have a monetary time value of one twenty-fourth that of domestic workers in the country visited.

c) *Impact on freight transport and movement of goods*

With the closing of borders in six Member States, road freight will have to go through security and clearance checks before entering and leaving the six countries in scenario 1. Freight transport and movements of goods and service are likely to face extra time when exported in one and imported into another Schengen country. There are several plausible indirect effects of such time delays. In particular, fragmenting impacts on labour and input costs between the Schengen and non-Schengen countries are possible; these would stem from the increase in time for those that have to travel into a controlled border. This could lead to reduction in intra-European trade, leading to a reversal of some benefits of the Single Market (e.g. product specialisation, economies of scale and institutional competition).

Time delay costs for road freight

The *France Stratégie* report on the economic cost of rolling back Schengen assumed two scenarios: one in which border controls cause 30 minutes delay on average, and the second in which controls lead to an hour's delay (i.e. double the costs of a half an hour delay)[10]. In this section, estimates are provided for both these cases.

The value of time in goods is estimated to be €0.6 per hour per tonne for France. Assuming the value of goods is likely to differ by Member States according to their purchasing power parity, we scaled the French estimate to calculate the value of time in goods for each of the six Schengen States. The value for hauliers is €37 per hour for France. It is assumed this is similar across the six Member States.

With a delay of **half an hour**, the estimated freight delay costs vary **between €26 million and €100 million for goods exported from Denmark and Austria respectively** on an annual basis. For **delay of one hour**, this value will double i.e. freight delay costs will vary between €52 million and €200 million for goods exported from Denmark and Austria respectively.

Table 6: **Time delay cost of exported goods with a delay of half an hour**

	Volume of goods (million tonnes)	Lorry crossings (million/ year)	Value of time in goods (€/h/ tonne)	Value of time for haulier, (€/h/ lorry)	Delay at the border (hour)	Cost in goods (€ million)	Cost for hauler (€ million)	Total cost (€ million)
Austria	10.8	5.2	0.61	37	0.50	3.3	97	**100**
Denmark	2.7	1.3	0.75	37	0.50	1.0	25	**26**
Hungary	10.6	5.2	0.30	37	0.50	1.6	96	**98**
Norway	3.2	1.6	0.79	37	0.50	1.3	29	**30**
Slovenia	8.1	4.0	0.44	37	0.50	1.8	73	**75**
Sweden	3.2	1.5	0.70	37	0.50	1.1	28	**29**

The total cost across the six countries for this case (total of the final column) is €358 million.

For **imported goods,** the freight delay costs in case of a **half an hour of delay** vary **between €17 million in Norway and €95 million in Austria per year.** For an **hour of delay**, the value will double – €34 million and €190 million for goods imported to Norway and Austria respectively.

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[10] http://www.strategie.gouv.fr/publications/economic-cost-rolling-back-schengen.

Table 7:   **Time delay cost of imported goods with a delay of half an hour**

	Volume of goods (million tonnes)	Lorry crossings (million/ year)	Value of time in goods (€/h/ tonne)	Value of time for hauler, (€/h/lorry)	Delay at the border (hour)	Cost in goods (€ million)	Cost for haulier (€ million)	Total cost (€ million)
Austria	10.2	4.9	0.61	37	0.50	3.1	92	**95**
Denmark	2.0	1.0	0.75	37	0.50	0.7	18	**19**
Hungary	10.6	5.2	0.30	37	0.50	1.6	95	**97**
Norway	1.8	0.9	0.79	37	0.50	0.7	16	**17**
Slovenia	6.7	3.2	0.44	37	0.50	1.5	60	**62**
Sweden	2.3	1.1	0.70	37	0.50	0.8	20	**21**

The **total cost across the six countries** for this case (total of the final column) is **€311 million.**

d)   Total costs related to scenario 1

Table 8:   **Total cost ranges of the scenarios**

Scenario for Schengen suspension	One-off costs (€ billion)	Ongoing annual costs		Total cost (two years)
		% of GDP of six effected countries	% of EU GDP	(€ billion)
Limited two-year	0.7	0.13-0.30%	0.006-0.014%	**2.4-4.6**

These figures are calculated as follows:
- **One-off costs of €16.9 per capita**, over the 41 million citizens of the six states that introduce new land borders (noting that Greece has no land border with another Schengen member) produces a one-off cost of creating a border of €0.7 billion.

- **Ongoing annual costs**, across the six affected countries, are obtained by adding the totals for commuters, tourists, imported freight and exported freight. For the **minimum cost scenario** this equals **€842 million** and for the **maximum cost scenario** the sum is **€1,982 million**. These in turn constitute 0.13-0.3% of the GDP of the six affected Member States, or 0.006-0.14% of EU GDP.

- **Over a two year period,** the total of these figures **is €2.4 billion-€4.6 billion**, for example, €0.7 billion + €1.96 billion x 2 = €4.6 billion for the upper end of the range.

Scenario 2: Impact of a two-year suspension of the Agreement in all the Schengen countries

In this scenario, borders controls are introduced between *all* Schengen Member States, and the impact is calculated after two years.

a)   Impact on commuters

To estimate the time value cost to commuters, this study used commuting data from the European Commission report on cross border mobility.[11] The data used is for 2006. As indicated previously, cross border commuting has increased over the years, and the estimates of the costs are likely to be conservative. However, at the same time,

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[11] European Commission (2009) ' Scientific Report on the Mobility of Cross-Border Workers within the EU-27/EEA/EFTA Countries' Final Report commissioned by DG Employment and Social Affairs presented by MKW Wirtschaftsforschung GmbH.

modern technology and modern working practices have increased the scope for remote and online working, as well as outsourcing of certain activities, which could also render the impact of border controls more relative.

When calculating the cost to in-commuters, the lost time (13/60) is multiplied by the respective country's hourly wage and multiplied by the number of daily in-commuters for that country. This is then summed for all the Schengen states.

If Schengen Member States established borders, then the primary cost to those crossing the border would be the time spent in crossing. There is no need to make any assumption about the mode of transport. For instance, delays for passport control could be directly at the border (in the case of cars) or within the departure country well before actually crossing the border (as with trains, such as the passport control system used with Eurostar cross-Channel trains). The same delays have been used in each case.

In the table below, we estimate the total cost to commuters (both commuting to and from the country) which represents between €5.9 million and €21.5 million per day.

Since in-commuters in one Member State could be out-commuters for another Member State, as previously we only use data on in-commuting to estimate the time delay cost to commuters in the absence of the Schengen agreement. This ranges from **€3.6 million to €13.1 million per day**.

Table 9:   Cost to commuters per day, € million

	Estimates
● Time delay, minutes	● 13 - 47
● Total number of in-commuters per day	● 777 537
● Total number of out-commuters per day	● 767 852
● Cost to in-commuters, € million	● 3.6 – 13.1
● Cost to out-commuters, € million	● 2.3 – 8.4

Note: In-commuters and out-commuters data is for 2006 for Schengen countries to the EU-15 or EU-12. For missing country values, averages were used. Wages used are for each country.

Table 10:   Cost to in-commuters on a yearly basis, € billion

	Estimates
● Time delay, minutes	● 13 - 47
● Total number of in-commuters per day	● 777 537
● **Cost to in-commuters per annum, € billion**	● **1.7 – 6.1**
● **Cost to in-commuters over a two-year period, € billion**	● **3.4 -12.2**

Note: In-commuters data is for 2006 for Schengen countries to the EU-15 or EU-12. For missing country values, averages were used. Wages used are for each country.

With **two year Schengen controls**, this cost will be between **approximately €3.4 billion in the low-cost scenario and €12.2 billion in the high-cost scenario.**

b) Costs in the tourism field

Whilst in scenario type 1, where only a small number of Schengen members reintroduce border controls and thus bear a relatively greater loss in their tourist industries, in scenario 2, plausible losses are spread throughout all the Member States.

In 2014, the number of outbound trips to EU-28 countries from Schengen Member States, excluding domestic trips, was around 143.5 million. With border controls, the time taken for each journey is likely to increase by

between approximately 13 minutes and a maximum of 47 minutes[12]. Assuming the monetary time value is equal to the average hourly wage, and that the average hourly wage of a tourist is one twenty-fourth that of a worker in countries visited[13], the estimated cost to tourists due to time delays at the border is a total of between €18 and €49 million per year. For the **two-year period of Schengen controls**, this amounts to between **€36 million to €98 million.**

Table 11: **Cost to tourists, € million**

• Number of tourists from EU-28 excluding domestic tourists, € million (2**014**)	• 143.5
• Monetary time value, €/hour	• 13/24
• **Cost for tourism per annum, € million**	• **18.3 - 48.9**
• **Cost for tourism over a two-year period**	• **36 - 98**

c) Costs to road freight and for the movement of goods

At present, road freight can move freely between Schengen Member States without any security clearance or customs duty checks. With border controls, the time needed for road freight to reach its destination country is likely to increase. As in the case of scenario 1, the study estimates the time delay costs to freight transport in two cases: a 30 minute delay and an hour's delay.

The value of time in goods is estimated to be €0.6 per hour per tonne for France. Assuming the value of goods is likely to differ by Member States according to their purchasing power parity, this study scaled the French estimate to calculate the value of time in goods for each Schengen state. The table below shows an average value of €0.5 per hour per tonne across the Schengen area. The value for hauliers is €37 per hour for France. It is assumed this is similar across the Schengen area.

In the case of a **half hour of delay**, the estimated freight delay costs are **€3.6 billion for exported goods** from one Member State **and €3 billion for imported goods** to another a Member State on an annual basis. **For two year Schengen control**, this cost will double, amounting **to €7.2 billion for exported goods** and **€6 billion for imported goods**.

Table 12: **Cost to road freight transport of a half an hour delay, € million**

	Exported goods	Imported goods
• Volume of goods, million tonnes	• 385	• 321
• Number of lorry crossings in a year, million[14]	• 187	• 156
• Value of time in goods,[15] €/hour/tonne	• 0.53	• 0.53
• Value of time for hauler,[16] €/hour/lorry	• 37	• 37
• Additional delay at the border, hour	• 0.5	• 0.5
• Cost in goods, € million	• 96	• 80
• Cost for hauler, € million	• 3 464	• 2 886
• **Total cost per annum, € million**	• **3 560**	• **2 966**
• **Total cost over a two-year period, € million**	• **7 .120**	• **5 932**

Notes: The cost in goods is derived from a calculation based on volumes in each country and the value of time in goods in each country. The values reported here are averages, meaning that there will be small differences obtained by calculating the total from the values in this table — e.g. 385 million x €0.53 x 0.5 hours = €102 million, not €96 million, the value obtained by the sum across the separate calculations for each country.

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[12] Estimate taken from earlier study conducted by Europe Economics on the costs of Scotland leaving the UK and becoming part of the Schengen agreement, http://europeanreform.org/files/New_Direction_-_EU-Related_Impacts_of_Scotland_Leaving_the_UK.pdf.

[13] See footnote 15 on average wage.

[14] The number of lorry crossings is estimated based on the total volume of goods traded and average lorry capacity. Average lorry capacity is estimated using the data on lorry size and number of lorries from Eurostat. We have constructed an estimate of 2.1 tonnes for the average lorry's capacity.

[15] The value of time in goods was €0.6/hour/tonne for France (taken from France Strategie http://blog.en.strategie.gouv.fr/wp-content/uploads/2016/02/FS_-NA39_Schengen-english.pdf). For the rest of the Schengen member states, this value was adjusted using the purchasing power parity index from IMF.

[16] The value of time for hauliers was €37 per hour per lorry, taken from http://blog.en.strategie.gouv.fr/wp-content/uploads/2016/02/FS_-NA39_Schengen-english.pdf.

In the second case of an hour's delay, the estimated freight delay costs are €7.1 billion for exported goods and **€5.9 billion for imported goods** on an annual basis.
Over two years, the cost will double; €**14.2 billion for exported goods and €11.8 billion for imported goods.**

d) Total cost in scenario 2

Drawing upon the figures above, in this scenario, one-off costs, annual costs and the cost over the full two-year period under consideration, for all the Schengen Member States are as follows.

Table 13:   **Total cost ranges of the scenario**

Scenario for Schengen suspension	One-off costs (€ billion)	Ongoing annual costs		Total cost (two years)
		% of GDP of 26 affected countries	% of EU GDP	(€ billion)
All countries two-year	7.1	0.07-0.16%	0.06-0.14%	**26-51**

These figures are calculated as follows:

One-off costs of €16.9 per capita, for the 420 million citizens of the Schengen states that introduce new land borders, produces a one-off cost of creating a border of €7.1 billion.

Ongoing annual costs, across the Schengen countries, are obtained by the sum of the totals for commuters, tourists, imported freight and exported freight. For the minimum cost scenario this equals 0.07-0.16% of the GDP of the Schengen Member States, or 0.06-0.14% of EU GDP.

Over a two year period the total of these figures is **€26 billion-€51 billion.** For example, €7.1 billion + 0.07 per cent x Schengen GDP in 2016, €13.0 trillion (€9.4 billion) + 0.07 per cent x Schengen GDP in 2017, €13.3 trillion (€9.6 billion) = €26 billion for the lower end of the range.[17]

4.   Impacts of a complete suspension of the Schengen Agreement

This chapter looks at the effects of an indefinite suspension of the Schengen Agreement. Scenario 3 describes the impact of **indefinite** departure from the Schengen system of **a subset of current Member States,** whilst scenario 4 describes the impact if **all the Member States were to suspend the agreement**.

Scenario 3: Impact of an indefinite suspension in a limited number of Member States

If a subset of current Member States, (the six Member States discussed in the previous section, Austria, Denmark, Hungary, Slovenia, Norway and Sweden, as well as Greece) were to exit the Schengen area indefinitely, then there would be a risk that these Member States might no longer be seen as central to the EU project. This could possibly affect their bond yields and exchange rate volatility, as well as their growth levels.

a) Redenomination risk and bond yields

If some member countries leave the Schengen system, this might be perceived by the financial markets as a negative signal. First, the exit would have implications on the assessment of their status in other aspects of the EU project. For instance, if they are not present at the core of the EU, they may also not be essential members of the euro area. This could lead to a perceived risk that, under stress, these countries might either choose to leave the euro or be invited to do so by more core EU Members. As a result, this perception could lead to increased risk premiums on euro-denominated assets in those countries, since their assets might now carry redenomination risk.

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[17] Source for Schengen GDP forecasts for 2016 and 2017: Europe Economics projections based upon Eurostat 2014 data.

KEY FINDINGS

Indefinite suspension (scenarios 2 & 3)

Total costs of indefinite Schengen suspension

Scenarios for Schengen suspension	One-off costs (€ billion)	Cost to commuters (annual)	Cost to tourists (annual)	Cost to road freight (annual)	Macro cost (annual)	Fiscal cost of elevated yields (annual)	Total cost (10 years)*
		(€ billion)	(€ billion)	(€ billion)	(€ billion)	(€ billion)	(€ billion)
Limited permanent	0.7	0.168-0.606	0.005-0.018	0.7-1.3	2.2	12.1-30.2	**55-70 growth + 70-170 fiscal**
All countries permanent	7.1	1.7-6.1	0.018-0.049	6.5-13	-	-	**100-230**

Note: *10 year costs projected over next two years GDP.

- Estimated range of 110-275 basis points for sovereign bond yield spreads as the impact of ceasing to be seen as core to the euro project, in the event of an indefinite exclusion from Schengen.

- The excess payments the countries will have to pay on their outstanding debts to compensate the creditors for their increased default risk are likely to vary between €331 million for Slovenia and €8.7 billion for Greece.

Additionally, one could imagine a perceived enhanced risk that, in a period of fiscal distress, an EU sovereign that was not part of the core EU, might be less likely to receive emergency support from the EU. That could have implications for bond yields, over and above the implications associated with redenomination risk. Indeed, it might even apply to countries that are not members of the euro.

Lastly, one could imagine that countries that have committed to joining the euro but have not as yet joined, might be seen as less likely to join ultimately, with implications for the stability of the exchange rate of their existing currency versus the euro.

As a result, this could imply that, in periods of fiscal crisis, these countries would be perceived as less likely to be provided with emergency loans by other countries and/or will face an increased redenomination risk.

Historic evidence suggests that redenomination risk leads to higher yields for government bonds. According to the European Central Bank (ECB), during the 2011-2012 crisis, even certain long-established euro area countries (Italy, Spain and France) experienced higher bond yields, part of which could be attributed to redenomination risk[18]. The key results from the ECB study were as follows:

- The impact of redenomination risk was relatively large, reaching a peak for sovereign yield spreads at 200 basis points for Italy, 275 basis points for Spain and 35 basis points for France, implying that during the first quarter of 2012 about 30%, 40% and 50% of the respective French, Italian and Spanish sovereign credit spreads could be explained by redenomination risk shocks.

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[18] Roberto A. De Santis, A measure of redenomination risk, ECB working paper 1785, April 2015.

- During the peak of the crisis in July 2012, redenomination risk shocks accounted for about 165 basis points (28%) of Italian, 270 basis points (39%) of Spanish and 13 basis points (28%) of French five-year sovereign yield spreads respectively.

- After ECB President Mario Draghi's speech in July 2012, the role of redenomination risk as perceived by the market became gradually and steadily smaller and by the end of 2013 its contribution sovereign yield spreads amounted to 110 basis points in Italy, 160 basis points in Spain and 2 basis points in France.

Accounting for this evidence, a range of 110-275 basis points for sovereign bond yield spreads as the impact of ceasing to be seen as core to the euro project can be assumed, in the event of an indefinite exclusion from Schengen. The lower end of the range (110 basis points) reflects the long term perceived risk while the upper end (275 basis points) is the risk associated with periods of fiscal distress.

Using this range of perceived default risk, the study estimates that the additional costs the three (of the seven states) that are members of the euro are likely to face on their outstanding debts over the years, once those debts are fully refinanced. The costs are estimated as the excess payments the countries will have to pay on their outstanding debts to compensate the creditors for their increased default risk. Table 13 below shows that these vary between €331 million for Slovenia and €3.5 billion for Greece in the long-term perceived risk addition scenario of yields elevated by 110 basis points, whilst they vary between €829 million for Slovenia and €8.7 billion for Greece in the periods of fiscal distress scenario of yields elevated by 275 basis points.[19]

Table 14: **Cost of perceived default risk associated with leaving Schengen indefinitely**

Country	Gross outstanding debt, € million	Increased yields of 110 bps, € million	Increased yields of 275 bps, € million
Austria	277 383	3 051	7 628
Slovenia	30 133	331	829
Greece	317 117	3 488	8 721

b) Impact on growth

Increased government bond yields associated with redenomination risks might imply elevated real interest rates across the economy, since a redenomination would affect all national debt contracts. Higher real interest rates arising from this source would be likely to mean lower investment and lower GDP growth.
Lower GDP growth can be estimated by using the following approximate figures. Supposing that:

Average asset life is 12 years
The average cost of capital is initially 7%, rising to 8.1% once redenomination risk raises the cost of capital by 110 basis points.
Investment exhibits unit elasticity to changes in the cost of capital — i.e. investment falls so as to keep the total amount spent, including investment and capital servicing costs, constant.

Thus, to illustrate, supposing that total investment is indexed to 100 units initially; over 12 years, at a 7% interest rate, the cost will be 184 units. If, instead, the cost of capital is 8.1%, the cost rises to 197.2 units — a rise of 7.2%. If investment falls, keeping total costs constant, the investments will fall by 6.7%.[20]
In 2015, investment in the euro area was 19.1% of GDP.[21] That implies that a fall in investment of 6.7% would mean a fall in GDP of 1.3%.

c) Total cost in scenario 3

Drawing upon the figures above, the impact on the seven states having left the Schengen Agreement would be as follows (compilation of the one-off costs, annual costs, the fiscal and macroeconomic growth cost of the perceived default risks and the cost over the full ten-year period under consideration).

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[19] The researchers acknowledge that the assumption that impacts would be the same for Austria, Slovenia and Greece is a strong one.
[20] 1.072 x 0.933 = 1.
[21] Euro area investment data, IMF.

Table 15: **Total cost ranges of the scenario**

Scenario for Schengen suspension	One-off costs (€ billion)	Ongoing annual costs		Total cost (10 years)
		% of GDP of seven affected countries	% of EU GDP	(€ billion)
Limited permanent	**0.7**	0.05 -0.1% GDP level + 0.13% lower GDP growth + 0.4%-1% fiscal cost	0.006-0.014% GDP level + 0.01% lower GDP growth + 0.05-0.12% fiscal cost	**55-70 GDP + 70-170 fiscal**

These figures are calculated as follows:

- **One-off costs of €16.9** per capita, for the 41 million citizens of the Schengen states that introduce new land borders produces a one-off cost of creating a border of €0.7 billion.

- **Ongoing annual costs**, across the seven affected Schengen countries, are obtained by summing the totals for commuters, tourists, imported freight and exported freight and the macro costs of the perceived default risk (macro cost is also included for Greece). For the minimum cost scenario, this equals €1 billion and for the maximum cost scenario the sum is €2 billion per annum. These in turn constitute 0.05-0.1% of the affected countries' GDP, or 0.006-0.014% of EU GDP.

- **The fiscal costs** are calculated as the additional interest costs on gross outstanding debt of the three Schengen countries, of our seven, that are members of the euro (Austria, Greece and Slovenia), due to the elevated bond yields of 110 basis points and 275 basis points in the low and high end scenario respectively. So for example, the low end scenario of 110 basis points elevated bond yields and a gross debt of €625bn gives a fiscal cost of €6.9bn per annum and the high end scenario of 275 basis points elevated bond yields gives a fiscal cost of €17billion per annum. These in turn constitute 0.4% to 1% of the GDP of the seven affected countries in the scenario as a whole and 0.05-0.12% of EU GDP.

- **Over a ten year** period the **total cost is €55 billion-€70 billion in GDP** and **€70-170 billion in fiscal costs.** So, for the lower end of the GDP range, the growth cost is calculated as follows: €0.7 billion + 0.05 percent of GDP in each of ten years for the seven affected countries + lost annual GDP of 0.13 in each of the three affected countries over ten years = €55 billion.[22]

It should be emphasised that in this table the figures should not be regarded as additive. Lost time weighting to transport goods across a border is lost GDP – the resources kept idle waiting at the border could have been used to generate additional output. But additional fiscal costs are not lost GDP. They constitute a transfer from one set of EU citizens to another[23.] By way of analogy, consider the impacts of a house price rise. There is a transfer from buyers to sellers (the buyers pay more; the sellers receive more) but that transfer is not in itself lost growth.

Higher house prices could induce macroeconomic impacts via various routes. In the same way, there could be macroeconomic implications if a government must pay higher debt servicing costs. We do not model one set of such impacts — lost GDP (and perhaps also lost GDP growth) associated with deadweight losses from tax distortions created when taxes are higher. However, another set of GDP losses are not the direct effect of fiscal changes but arise from the same source — namely that redenomination risk increases borrowing costs for private sector investors as well as for the government. Increased cost results in lower investment (as per the calculation above). We treat that 1.3% drop in GDP of the affected countries from lower investment, by the tenth year, as a loss of growth of 0.13% per year. That 0.13% of the GDP of the seven affected countries is equivalent to 0.01% of EU GDP.

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[22] The source for our GDP figures is Eurostat for 2014 data, with projections over the ten years from Europe Economics.
[23] We acknowledge that there is some additional complexity here when non-EU citizens hold EU debts.

Scenario 4: Impact of an indefinite suspension in all the Member States

Scenario for Schengen suspension	One-off costs (€ billion)	Cost to commuters (annual)	Cost to tourists (annual)	Cost to road freight (annual)	Macro cost (annual)	Fiscal cost of elevated yields (annual)	Total cost (10 years)*
		(€ billion)	(€ billion)	(€ billion)	(€ billion)	(€ billion)	(€ billion)
All countries permanent	**7.1**	**1.6-6.1**	**0.02-0.05**	**6.5-13**	-	-	**100-230**

a) Costs for tourism, commuters and goods transport

In scenario 4, in which the entire Schengen system ceases to exist, the impact will mostly be related to the ongoing costs for tourists, commuters and goods transporters of time delays at borders. The one-off costs of re-establishing border would be spread over a longer period (instead of those border costs being borne for only the two years of a temporary suspension) and thus the effective annual burden would be reduced.

Whereas in the case of a limited Schengen suspension, there could be additional macroeconomic growth (lost investment) and fiscal costs, in the case of full Schengen suspension, such costs are not modelled. The key reason for this is that it is assumed that markets would be more likely to regard a partial suspension of Schengen as a signal that some members were regarded differently to others (and in particular regarded as less central components of the EU 'core'), than would be the case for total suspension. Therefore, a total suspension would be less likely to create material redenomination risk.

b) 'Regulatory risk'?

It should be noted that a total suspension of the Schengen area might be interpreted by investors as being a set-back for the European project as a whole, enhancing the risk of reversal for other existing programmes (or reduced certainty for new programmes implemented in future), creating an added element of 'regulatory risk' for investors.

Europe Economics consider that there could be some theoretical added 'regulatory risk' created by full Schengen suspension, but in their view, this would be unlikely to be large compared with the effects they have identified for the indefinite limited Schengen suspension case. Therefore, this has not been quantified (and attempting to quantify such risks could be a possible extension of Europe Economics models). The quantitative impact is therefore simply an indefinite extension of the annual costs identified under Scenario 2, but with the costs of erecting a border spread out over additional years.[24] This is detailed in the table below.

Table 16: Total cost ranges of the scenario

Scenario for Schengen suspension	One-off costs (€ billion)	Ongoing annual costs		Total cost (10 years)
		% of GDP of 26 affected countries	% of EU GDP	(€ billion)
All countries permanent	**7.1**	**0.07-0.16%**	**0.06-0.14%**	**100-230**

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[24] In the summary table in the Conclusions below, we report a case in which indefinite costs and the costs of borders are aggregated over 10 years.

These figures are calculated as follows:

- **One-off costs of €16.9 per capita**, for the 420 million citizens of the Schengen states that introduce new land borders, produces a one-off cost of creating a border of €7.1 billion.

- **Ongoing annual costs**, across the Schengen countries, are obtained by adding the totals for commuters, tourists, imported freight and exported freight. For the minimum cost scenario this equals 0.07-0.16% of the GDP of the Schengen Member States, or 0.06-0.14% of EU GDP.

- **Over a ten year period,** the total of these figures is €100billion-€200billion. So, for example, €7.1billion + 0.07 per cent x GDP of Schengen area over 10 years, €140tr = €102billion for the lower end of the range, which we round to €100billion.

4. IMPACT OF BORDER CONTROLS WITHIN SCHENGEN ON THE SINGLE MARKET - ROAD TRANSPORT SECTOR CASE STUDY

KEY FINDINGS

- Under simplified assumptions, **the cost of time losses at the border in case the Schengen zone is fully disbanded is estimated between €2.5 and €5.1 billion euro annually[1].** The countries expected to incur the largest costs are Germany, France and Belgium.

- In 2013, there were an estimated **285 million road border crossings in the Schengen zone** with an origin and destination inside the zone. Around 80 million of them were heavy duty vehicles carrying freight. Road traffic from outside the Schengen area, even to and from the UK, is limited.

- If border controls are reinstated, this will create queues and vehicles will lose time waiting at the border. Depending on the intensity of the checks, we estimate the time lost at **10-20 minutes for passenger cars** and **30-60 minutes for heavy duty vehicles such as trucks and buses**.

- Waiting leads to costs for transport users. The **value of time (VOT)** depends on the motive of the traveller (business, commuting, other) or on the value of the cargo. For transport in a professional context, wage is also an important determinant of the VOT. We estimate the value of a car spending an hour waiting at the border at €30 for business travellers, €12 for commuters and €10 for travellers with a different motive (such as tourism). For buses, we estimate the VOT at €100 per vehicle per hour, while for freight, the cost is set at €50/vehicle/hour.

1. Introduction

The objective of this case study is to provide an independent and transparent assessment of the expected costs of a de facto disbanding of the Schengen agreement[2] for the road transport sector. To achieve this target, a three step approach is presented:

1. Determine the annual number of road border crossings for each pair of neighbouring countries;
2. Estimate the waiting time at the border for different vehicle types;
3. Assess the value of time (VOT) for waiting at borders to be attributed to the different vehicle types.

The focus of the present case study is on the first step, for which a full analysis of passenger and freight movements by road in the Schengen zone is performed. For the other steps, a more simplified approach is used, generally based on literature.

While there are other methods to determine the cost of reapplying border controls, using a more macroeconomic top-down approach, the bottom-up approach presented in this briefing can provide some perspective on the matter.

2. Border crossing transport volumes

In the first part of this case study, the annual number of border crossings (in each direction) is determined for each pair of neighbouring countries, separately for different vehicle types (for freight: heavy duty vehicles HDV, for passenger transport: passenger cars and buses). We also provide detail on the origins and destinations of the vehicles crossing borders, as well as their motives (for passenger transport: commuting, business, private, vacation) or commodity type (for freight: NST/R[3] class).

Our approach consists of different steps:

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[1] This assumes that there are no changes in behaviour of economic actors due to the reinstatement of border controls, i.e. no secondary effects are assumed on e.g. workforce mobility, tourism or logistic processes.
[2] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV%3Al33020.
[3] http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Standard_goods_classification_for_transport_statistics_(NST/R).

a) determine the traffic between each pair of Schengen countries based on output of the ETISplus[4] project;

b) convert the transport numbers for HDV and bus into number of vehicles (they are reported as tonne-km or passenger-km, not as vehicles);

c) determine for each pair of Schengen countries the routes used.

ETISplus: road transport between each pair of Schengen countries

Road transport numbers are taken from the ETISplus project for the year 2010. For passenger transport (car and bus) numbers from the « modelled » datasets are used, while numbers from the « harmonised » dataset are used for HDV.

It should be noted that for bus and coach transport, ETISplus only covers scheduled lines. Tourist coaches, which likely forms an important part of cross border bus transport, is thus not included in the results.

In this case study, only traffic between Schengen countries is considered. Therefore a limited number of Schengen border crossings from transit traffic (e.g. traffic from the UK to Germany crossing the French-German border) is not taken into account. The ETISplus database suggest that the volumes to and from the UK are relatively small compared to continental volumes (e.g. there are 8 times fewer trucks from the UK to Germany than from Belgium to Germany).

ETISplus 2010 values were updated to 2013 based on road passenger transport growth figures from the OECD[5].

Convert the transport numbers for HDV and BUS into number of vehicles

To properly calculate the costs, information is needed on the amount of vehicles crossing the border. However, ETISplus only directly covers the number of vehicles for passenger cars. For HDV, the traffic volume is indicated in tonnes, and for bus in passengers. To determine the number of border crossings, all traffic numbers first have to be converted into vehicles.

For **HDV**, the ETISplus transport volumes have to be converted from tonnes into number of vehicles, using load factors (ton/vehicle). We determined load factors based on **EUROSTAT** data for 2014 for EU28: table « Annual road freight transport by distance class with breakdown by type of goods [road_go_ta_dctg] ». The resulting load factors as used in this case study can be found in Table 1.

For **BUS**, the ETISplus transport volumes have to be converted from passengers into number of vehicles, using occupancy rates (passengers/vehicle). We used an average occupancy rate of 15.1 passengers/vehicle taken from **TREMOVE v3.5c[6]**.

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[4] http://www.etisplus.eu/default.aspx.
[5] https://data.oecd.org/transport/passenger-transport.htm.
[6] http://www.tmleuven.be/methode/tremove/Final_Report_TREMOVE_9July2007c.pdf.

Table 1:   **HDV load factors based on EU28 road freight transport numbers from EUROSTAT for 2014 (ton/vehicle)**

NST07	<50km	50-149km	150-299km	300-499km	500-999km	1000-1999km	2000+km
GT01	13.2	14.4	14.2	13.9	13.4	14.8	16.2
GT02	14.9	14.6	14.0	16.4	16.1	15.4	15.0
GT03	19.0	23.8	25.2	24.7	24.3	20.2	21.0
GT04	9.6	9.5	11.1	13.5	15.8	16.2	17.2
GT05	4.3	4.6	5.1	6.9	8.8	10.6	11.1
GT06	8.9	11.2	12.9	14.4	15.9	16.7	17.7
GT07	12.8	15.0	14.7	17.4	19.1	19.8	21.8
GT08	11.1	10.9	11.8	13.7	14.9	15.2	15.6
GT09	13.1	15.3	16.1	16.6	16.7	15.9	19.6
GT10	8.4	10.3	12.4	14.4	15.5	15.4	16.2
GT11	7.4	7.7	8.2	9.2	10.8	11.3	12.1
GT12	7.5	7.6	9.0	10.0	9.7	11.1	12.6
GT13	4.6	5.2	5.7	6.1	6.9	7.0	11.6
GT14	8.4	9.8	12.6	16.7	18.0	18.3	18.1
GT15	5.2	5.9	8.5	10.8	12.5	12.9	15.3
GT16	2.8	3.7	5.1	6.2	7.5	8.9	9.5
GT17	5.3	6.5	7.7	8.8	7.9	7.6	4.2
GT18	7.7	7.7	9.6	11.4	12.7	13.0	14.7
GT19	9.0	11.0	11.4	12.2	12.2	12.5	11.5
GT20	10.6	11.5	12.0	12.9	14.5	14.1	15.2

Source: EUROSTAT, table road_go_ta_dctg EU28 for 2014.

Approach to determine routes

The traffic numbers from ETISplus only determine the transport volumes between the country of origin and the destination country. To determine the number of Schengen border crossings, the transport routes have to be known for each Origin-Destination (OD)-pair. In this context, a « route » is considered to be a series of border crossings ; e.g. for the country pair DE-IT, DE-CH-IT and DE-AT-IT are 2 different routes.

As there are 650 pairs of Schengen countries, and often several routes are possible between each pair of countries, we had to limit the analysis to the largest traffic flows to limit the amount of work in this limited case study.

It should be noted that we also considered routes containing ferry transits (e.g. DK-NO).
A 2 step approach was followed :
- for most **neighbouring countries**, we assumed that all traffic only crossed the border between these 2 countries (e.g. all traffic between FR and ES only crosses the FR-ES border); some exceptions of note are BE-DE, DE-FR, FR-IT, LT-PL and DE-PL;
- for **non-neighbouring countries**, the routes were determined based on **TRANS-TOOLS 2.5**[7]; as this analysis is very time consuming, only the most significant traffic flows were considered.

Analysis based on TRANS-TOOLS 2.5

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[7]   ftp://ftp.jrc.es/users/transtools/public/Documentation/TTv25_Training/TRANS-TOOLS%20V2.5%20-%20Freight%20Model.pdf.

For the detailed analyses of the road traffic routes between non-neighbouring countries, a series of TRANS-TOOLS runs was performed to determine the share of the different routes between each pair of countries. The detailed analysis of routes was limited to OD-pairs where the OD-traffic is at least 5% of all traffic leaving the country of origin, OR at least 5% of all traffic arriving in the destination country. This means that a small share of total traffic between Schengen countries was not taken into account in our analysis : about 4% of total traffic for HDV, about 1% for cars and about 5% for bus. The same route share was assumed for both directions.

For each OD-pair considered, a TRANS-TOOLS run was performed using 2005 base data, taking only traffic between these 2 countries into account, to separate road traffic between the 2 countries considered from all other road traffic. This means that no congestion effects were taken into account.

From TRANS-TOOLS, separate road traffic flows are available for passenger transport and freight. The flows for passenger transport were analysed to determine the routes for cars, while the flows for freight transport were used for the routes for HDV and bus.

Example for country pair DE-IT :

Table 2:   Shares of different routes for country pair DE-IT

Route	CAR%	HDV%
DE-CH-IT	34%	2%
DE-AT-IT	55%	49%
DE-LU-FR-CH-FR-IT	0%	3%
DE-AT-LI-CH-IT	11%	46%

Source: Own calculation based on TRANS-TOOLS 2.5.

Figure 1 **Road traffic flows for country pair DE-IT for freight transport (TRANS-TOOLS 2.5 using 2005 base data)**
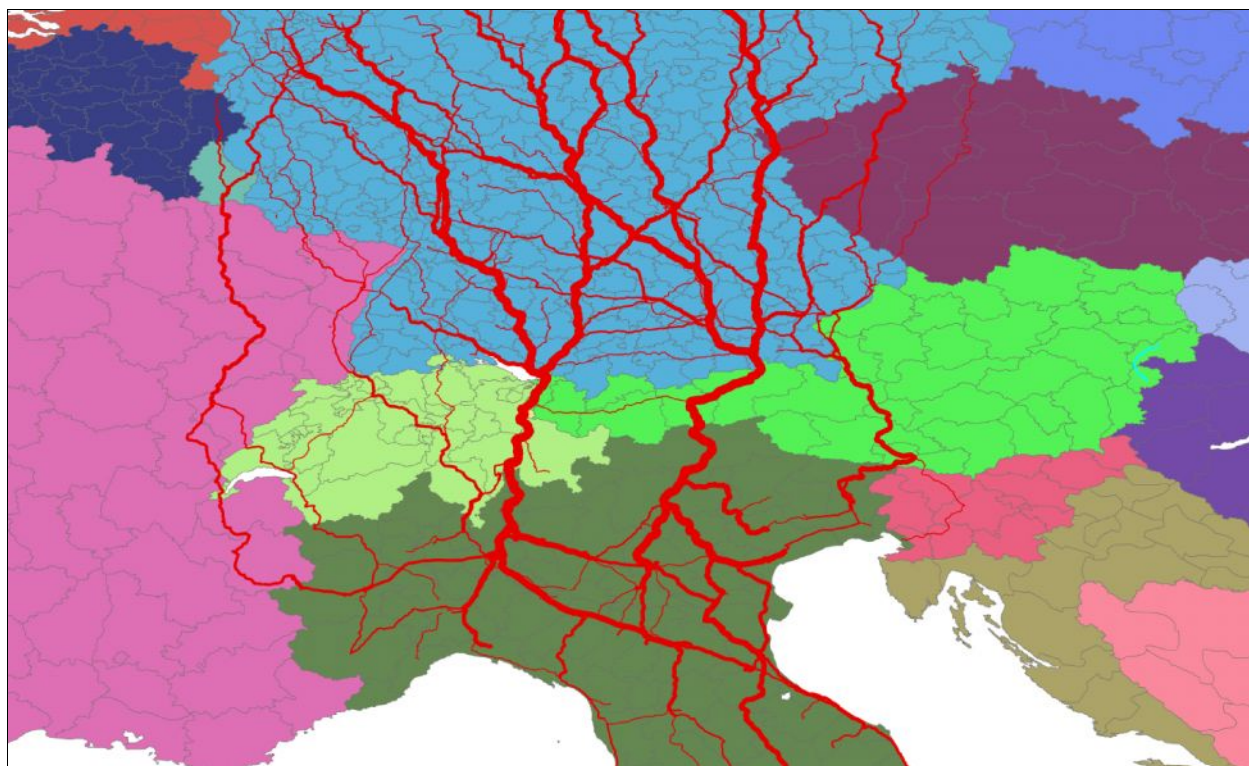
Figure 2 **Road traffic flows for country pair DE-IT for passenger transport (TRANS-TOOLS 2.5 using 2005 base data)**
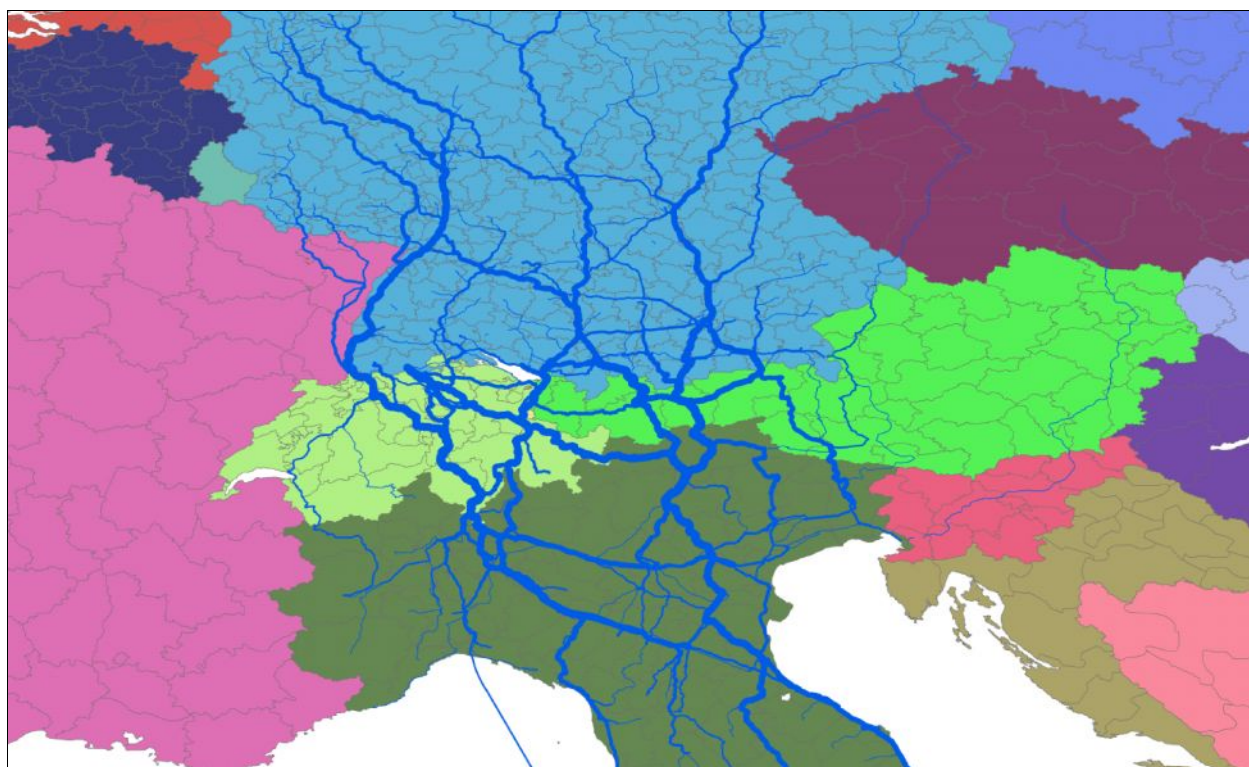
Results

The following tables reflect the amount of border crossings between each pair of neighbouring countries. The rows show the outgoing border, the columns show the incoming border. For the rest of the case study, it is assumed that border controls are only organised when entering a country.

We find that per year, there are around 286 million vehicles crossing internal Schengen borders via road (not counting those with an origin or destination outside the Schengen zone, as explained above). Over 70% of those are passenger cars. Centrally located Germany has over 20% of the incoming border crossings, mainly from Austria and the Netherlands. France has the second most incoming border crossing at 37 million.

Limited numbers were available for validation.

- In an online article on website bruegel.org, based on German MAUT statistics, it is estimated that 3.8 million trucks cross into Germany from Austria and 3.1 million from Poland, with only the Netherlands topping these countries at 6.5 million. We find that our overall numbers for the amount of border crossings generally matches quite well (ETISplus underestimates MAUT statistics by 17%), but at the level of individual countries, there can be differences up to 60%.
- The Economist mentions in an article published in February 2016 that 57 million trucks cross Europe's (assumed to be Schengen) borders annually. This is just under 30% lower than our ETISplus based estimate.

Table 3:   **Amount of passenger cars crossing Schengen internal borders (2013)**

#crossings Border out	Border in AT	BE	CH	CZ	DE	DK	EE	ES	FI	FR	GR	HU	IS	IT	LI	LT	LU	LV	MT	NL	NO	PL	PT	SE	SI	SK	Grand Total
AT			1,346,274	634,864	9,165,337							843,088		3,847,045	401,438										1,250,048	1,917,722	19,405,816
BE					1,387,034					8,189,220							3,282,668			8,358,616							21,217,538
CH	1,346,274				6,965,824					4,741,535				2,381,444	526,680												15,961,758
CZ	634,864				4,209,256																	1,046,065				493,317	6,383,502
DE	9,167,548	1,387,034	6,965,824	4,209,256		1,448,948			65,955	4,955,492							3,093,317			9,141,702		3,090,252		10,291			43,535,620
DK					1,448,948																165,936			2,826,347			4,441,230
EE									145,346									149,332							1,069		295,747
ES										2,361,622													3,887,522				6,249,144
FI					65,955		145,346														48,991			135,107			395,399
FR		8,189,220	4,741,535		4,955,492			2,361,622						5,729,264			1,343,970										27,321,103
GR														27,982													27,982
HU	843,088																				0			101,741		344,666	1,289,494
IT	3,844,834		2,381,444							5,729,264	27,982							23,310						591,976			12,598,810
LI	401,438		526,680																								928,118
LT																	418,534					64,414					482,948
LU		3,282,668			3,093,317					1,343,970																	7,719,954
LV							149,332									418,534								6,674			574,540
MT														23,310													23,310
NL		8,358,616			9,141,702																						17,500,318
NO						165,936			48,991															948,386			1,163,313
PL				1,046,065	3,090,252							0				64,414								81,283		142,898	4,424,912
PT								3,887,522																			3,887,522
SE					10,291	2,826,347	1,069		135,107									6,674			948,386	81,283					4,009,157
SI	1,250,048											101,741		591,976													1,943,765
SK	1,917,722			493,317								344,666												142,898			2,898,603
Grand Total	19,405,816	21,217,538	15,961,758	6,383,502	43,533,409	4,441,230	295,747	6,249,144	395,399	27,321,103	27,982	1,289,494		12,601,021	928,118	482,948	7,719,954	574,540	23,310	17,500,318	1,163,313	4,424,912	3,887,522	4,009,157	1,943,765	2,898,603	204,679,602

Table 4: **Amount of buses and coaches crossing Schengen internal borders (2013)**

Border in →

#crossings Border out	AT	BE	CH	CZ	DE	DK	EE	ES	FI	FR	GR	HU	IS	IT	LI	LT	LU	LV	MT	NL	NO	PL	PT	SE	SI	SK	Grand Total
AT			1,502	27,533	17,103							14,300		23,494	6,396										993	3,779	95,099
BE					5,779					33,598							3,511			22,622							65,510
CH	1,502				16,073					49,037				10,166	6,396												83,174
CZ	27,533				47,698																	39,723				59,831	174,785
DE	17,103	5,779	16,073	47,698		15,372			0	13,887							4,653			8,581		10,928		162			140,235
DK					15,372																240			9,515			25,127
EE									0									11,280						0			11,280
ES										43,122													15,815				58,937
FI					0		0														0			48			48
FR		33,598	49,037		13,887			43,122						11,268			4,364										155,277
GR														516													516
HU	14,300																					21			3,649	6,583	24,553
IT	23,494		10,166							11,268	516								0					8,042			53,486
LI	6,396		6,396																								12,792
LT																		29,332				10,761					40,093
LU		3,511			4,653					4,364																	12,529
LV						11,280										29,332									0		40,611
MT														0													0
NL		22,622			8,581																						31,203
NO						240			0															28,924			29,164
PL				39,723	10,928							21				10,761								42		995	62,470
PT								15,815																			15,815
SE					162	9,515	0		48									0			28,924	42					38,691
SI	993											3,649		8,042													12,683
SK	3,779			59,831								6,583										995					71,188
Grand Total	95,099	65,510	83,174	174,785	140,235	25,127	11,280	58,937	48	155,277	516	24,553		53,486	12,792	40,093	12,529	40,611	0	31,203	29,164	62,470	15,815	38,691	12,683	71,188	1,255,263

Table 5:   **Amount of trucks crossing internal Schengen borders (2013)**

#crossings Border out \ Border in	AT	BE	CH	CZ	DE	DK	EE	ES	FI	FR	GR	HU	IS	IT	LI	LT	LU	LV	MT	NL	NO	PL	PT	SE	SI	SK	Grand Total
AT			150,393	414,116	2,376,521							169,753		1,217,350	537,981										263,281	114,610	5,244,005
BE					805,217					4,159,112							1,701,281			3,151,801							9,817,411
CH	61,804				446,423					559,698				1,042,776	597,801												2,708,503
CZ	439,004				2,114,092																	1,096,731				975,032	4,624,859
DE	2,611,987	800,151	806,684	1,987,457		706,720			6,582	1,606,230							1,862,137			3,965,099		1,914,244		42,914			16,310,205
DK					652,996																65,342			249,066			967,404
EE									35,256									99,252							0		134,508
ES										2,433,935													925,386				3,359,321
FI					7,325		34,430														26,235			190,481			258,470
FR		3,255,470	764,246		1,525,388			2,372,698						887,603			628,146										9,433,551
GR														38,520													38,520
HU	197,411																					3,645			354,003	562,274	1,117,332
IT	1,069,637		1,215,167							923,671	48,238														423,590		3,680,304
LI	559,595		575,533																								1,135,128
LT																212,436						215,522					427,957
LU		1,532,665			1,672,746					752,639																	3,958,049
LV							134,899									229,434								15,239			379,572
MT																											
NL		3,785,036			4,065,365																						7,850,402
NO						47,575			7,570															357,637			412,782
PL				1,126,481	2,041,162							4,162				266,428								125,825		195,776	3,759,833
PT								866,463																			866,463
SE					40,013	215,138	0		146,691									16,426			398,786	120,118					937,173
SI	259,519											248,366		581,110													1,088,995
SK	156,656			908,993								724,817										173,044					1,963,511
Grand Total	5,355,615	9,373,322	3,512,023	4,437,047	15,747,249	969,433	169,328	3,239,161	196,100	10,435,285	48,238	1,147,098		3,767,359	1,135,782	495,862	4,191,564	328,114		7,116,900	490,363	3,523,304	925,386	981,162	1,040,873	1,847,692	80,474,261

Value of time
The concept

Apart from the costs for fuel, vehicle purchase, insurance, maintenance, taxes, etc., another important but often overlooked cost of road transport is time. Travelling from one point to another is usually not the preferred way of spending time, and comes at the expense of available time for other, more pleasant or more productive activities. As such, time can be attributed a certain value that (usually) represents **how much an individual or business would be willing to pay to reduce travel time**.

For passenger transport, this information is usually collected through an extensive process based on a "**Stated Preference**" approach, using survey techniques that allow to isolate the specific value of a unit of time under given circumstances. Indeed the methodology takes into account that a different **"value of time" (VOT)** or a "value of travel time savings" (VTTS) is appropriate for different travel motives (e.g. commuting, business travel, leisure and tourism). In case of transport in a professional context (commuting and business travel), wage costs are often an implicit part of the valuation.

For freight transport, it is possible to estimate values of time based on more objective aspects, including but not limited to the wage of the driver, depreciation of the vehicle, fuel costs, insurance costs, nature of the cargo (e.g. perishable or refrigerated goods), and secondary costs for shippers or recipients of the goods (e.g. in case of a stock shortage).

Literature

The literature base describing the practice to come to VOT estimates and examples for different countries/regions and different travel conditions is extensive. We will present a few that are relevant for the issue at hand, and discuss which values could best be used in the context of the present case study. The scope of the review will be limited to European countries only.

In the **UNITE project** (2003)[8], different values (in €$_{1998}$)[9] are provided for business travel (€21/person/hour), commuting/private travel (€6/person/hour) and leisure/holiday travel (€4/person/hour), as well as for light goods vehicles (€40/vehicle/hour) and heavy goods vehicles (€43/person/hour).

These values were also referenced in the European Commission's Handbook on External Costs of Transport (2008). However, the authors recommend to use more recent figures provided by the **HEATCO study** (2006)[10], which also provided numbers (in €$_{2002}$) for more vehicles types (car and bus) and made a distinction between short and long distance travel. For business travel, the value is in line with the UNITE project, but for other motives, a higher value is recommended, particularly for car transport (€7-11/person/hour). For freight transport, the value is provided on a per tonne/hour basis (€2.98/tonne/hour). Assuming a load of heavy trucks between 8 and 25 tonnes per vehicle, that puts the cost per vehicle at around €25-75/vehicle/hour.

The **Update of the Handbook on External Costs of Transport** (2014)[11] only provided a limited amount of additional data for the VOT assessment, based on the FORGE model (€$_{2010}$). While the model was developed by the UK government, the values are recommended for use at the EU level. A value of €35-50/person/hour is attributed to working time (business travel), while for commuting and other motives, much lower values are suggested (€8.30-9.38/person/hour).

Significance (2012) made an estimate of VOT for the Netherlands, in a study also covering the reliability of transport. For freight transport, they provide a separate estimate for containerised and non-containerised transport, with the value for container trucks notably higher than that for other trucks (€59/vehicle/hour vs. €37/vehicle/hour, average €38/vehicle/hour). These values cover all cost aspects as discussed in the conceptual section, and are exclusive of VAT. For passenger transport, estimates are provided for three motives (commuting, business and other) and 2 road vehicle types (car and bus). They are generally in line with the values provided by HEATCO and the Handbook on External Costs of Transport.

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8   http://www.its.leeds.ac.uk/projects/unite/.
9   In euros 1998, i.e.unadjusted since 1998 for inflation.
10 http://www.isis-it.com/portfolio-items/teatco/.
11 http://www.tmleuven.be/methode/tremove/Final_Report_TREMOVE_9July2007c.pdf.

TØI (2010) performed own research into the VOT of freight transport in Norway. Through a series of assumptions, they estimate the average value of time for a large truck on all trips (i.e. including a certain share of empty runs) at NOK 588/vehicle/hour, or €62/vehicle/hour.

As part of an assessment of the effects of road charging, **TML** (2012) made estimates of VOT for both passenger and freight transport in Belgium. The VOT for business travel was set at €26.36/vehicle/hour, for commuting €13.96/vehicle/hour and €7.32/vehicle/hour for other motives. It should be noted that this case study already accounts for the average amount of passengers per vehicle, which is not the case for the other studies that refer to a value/person/hour. The average occupancy rate for passenger cars is around 1.2 for business and commuting trips, and just over 2 for other trips (TREMOVE, 2011). For freight vehicles, the average VOT was around €36/vehicle/hour. This mostly accounts for the wage of the driver and the cost of goods not being available to the customer, which is in line with the calculation methods of the other studies. In a study for the French government, **Quinet** (2013) made estimates of VOT for all categories except freight, and reached a very similar outcome.

The table below provides an overview of the values found in the studies mentioned above.

Table 6:   **Overview of value of time estimates from literature**

Source	VOT	Applicable for?	Region
UNITE (2002)[12]	€21/person/hour	Business	EU15
	€6/person/hour	Commuting/private	EU15
	€4/person/hour	Leisure/holiday	EU15
	€40/vehicle/hour	Freight, light goods vehicle	EU15
	€43/vehicle/hour	Freight, heavy goods vehicle	EU15
HEATCO (2006)[13]	€23.82/person/hour	Business, car	EU25
	€8.48/person/hour	Commuting, short distance, car	EU25
	€10.89/person/hour	Commuting, long distance, car	EU25
	€7.11/person/hour	Other motive, short distance, car	EU25
	€9.13/person/hour	Other motive, long distance, car	EU25
	€19.11/person/hour	Business, bus/coach	EU25
	€6.10/person/hour	Commuting, short distance, bus/coach	EU25
	€7.83/person/hour	Commuting, long distance, bus/coach	EU25
	€5.11/person/hour	Other motive, short distance, bus/coach	EU25
	€6.56/person/hour	Other motive, long distance, bus/coach	EU25
	€2.98/tonne/hour	Freight	EU25
Update handbook on External Costs of Transport (2014)[14]	€49.20/person/hour	Car driver, working time	UK
	€35.26/person/hour	Car passenger, working time	UK
	€37.64/person/hour	Bus passenger, working time	UK
	€9.38/person/hour	Commuting	UK
	€8.30/person/hour	Other motive	UK
Significance (2012)[15]	€9.25/person/hour	Commuting, car	NL
	€26.25/person/hour	Business, car	NL
	€7.50/person/hour	Other motive, car	NL
	€7.75/person/hour	Commuting, bus/coach	NL

Source	VOT	Applicable for?	Region
	€19/person/hour	Business, bus/coach	NL
	€6/person/hour	Other motive, bus/coach	NL
	€59/vehicle/hour	Freight, container	NL
	€23/vehicle/hour	Freight, non-container, 2-15T truck	NL
	€44/vehicle/hour	Freight, non-container, 15-40T truck	NL
	€38/vehicle/hour	Freight, average	NL
TØI (2010)[16]	€62/vehicle/hour	Freight, large truck	NO
TML (2012)[17]	€26.36/vehicle/hour	Business, car	BE
	€13.96/vehicle/hour	Commuting, car	BE
	€7.32/vehicle/hour	Other motive, car	BE
	€36.37/vehicle/hour	Freight	BE
Quinet (2013)[18]	€32.7/person/hour	Business, car	FR
	€10.9/person/hour	Holiday, car	FR
	€14.4/person/hour	Other motive, car	FR
	€27.6/person/hour	Business, bus/coach	FR
	€9.4/person/hour	Holiday, bus/coach	FR
	€12.1/person/hour	Other motive, bus/coach	FR

Conclusion

Most of the values found in the consulted sources are similar. While older values are typically lower than estimates provided by more recent studies, this can be explained by inflation. As for differences between countries, wage costs are the main driver for different valuations between countries. However, in the context of the present case study, the nationality of the driver cannot be determined from the data on transport flows. This leaves the use of European average values (per motive and vehicle type) as the best compromise.

For passenger transport, three motives can be clearly identified as having separate VOTs: business transport, commuting and other trips (private, leisure, holidays). Business trips fully account for wage and productivity, and particularly for car drivers (who have few possibilities for productivity while driving), the VOT is very high, in the range of €21-50/person/hour. For commuting, the VOT is a factor 2-3 lower (€10-14/vehicle/hour). For other travel motives, the value is another 15-40% lower (€8-12/vehicle/hour).

For freight, the original objective was to assign different values to different commodity types. However, insufficient data was available to allow for such a disaggregation. The literature suggests that a range of €30-60/vehicle/hour is a reasonable average. Literature also mentions that transport time reliability can be a more important factor for transport users than the actual transport time; in other words, delivering at the promised time is more valuable than delivering the shortest time. Due to the framework constraints of this case study, more detail cannot be provided, but further research into this issue certainly has merit.

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[12] Unadjusted since 1998 for inflation (in Euros).

[13] Unadjusted since 2002 for inflation (in Euros).

[14] Unadjusted since 2010 for inflation (in Euros).

[15] Unadjusted since 2010 for inflation (in Euros).

[16] Unadjusted since 2010 for inflation (in Euros).

[17] Unadjusted since 2005 for inflation (in Euros).

[18] Unadjusted since 2010 for inflation (in Euros).

Based on the table above, we suggest to use the following VOT for the assessment of this case study:

Passengers:
- **Car, business motive: €30/vehicle/hour**
- **Car, commuting motive: €12/vehicle/hour**
- **Car, other motive: €10/vehicle/hour**
- **Bus: €100/vehicle/hour** (most cross border bus trips are assumed to be coaches with a high occupancy rate but low value of time)

Freight:
- Singular value of **€50/vehicle/hour**.

While these numbers can be subject to different interpretations and they have a fundamental impact on the outcome of calculations, the use of a simple set of values makes it easy to use alternative values, for example within the context of a sensitivity analysis.

4. Border waiting times

Equally important for the outcome of the assessment as the value of time, the amount of time spent waiting at the border is much more uncertain. The thoroughness of the control procedure, the personnel available to perform the security checks and the amount of vehicles wanting to cross the border at a given location may all vary from day to day and from hour to hour. As the Schengen agreement has been active for over 20 years, recent data on average waiting times in Europe is scarcely available (with the exception of a few very recent studies already published on the effects of reinstating border controls). Following estimates provide some context.

- In a publication by the OECD/ECMT (2000), a target is set to reduce average waiting times for freight vehicles to less than 1 hour, with vehicles operating under TIR specifications experiencing less than 10 minutes of delay. Given the context, this is likely valid for borders with countries that were not part of the Schengen area in the year 2000.
- For the California-Mexico border, HDR Decision Economics (2010) estimated that average wait times for trucks were around 2 hours.
- Felbermayr (2016) estimates that average wait times in the post-Schengen period should not exceed 20 minutes, based on estimates from the USA's border with Canada and Mexico. This estimate is valid for freight transport only.
- A paper by France Stratégie (2016) mentions observed waiting times of 30 and 45 minutes. In its scenario assessment, it refers to wait times of 10 or 20 minutes for passenger cars. For freight transport, the scenarios assume 30 or 60 minutes of waiting times.

Clearly, the waiting time depends on the thoroughness of controls. As was done in other studies, we use 2 scenarios. The first scenario assumes non-systematic or superficial checks, leading to border wait times of **10 minutes for cars and 30 minutes for buses and trucks**; the second assumes more in depth control procedures and causes average delays of **20 minutes for cars and 60 minutes for trucks and buses**.

5. Methodological remark

In the current review, it is assumed that the European economy does not react to increased border waiting times by switching to other transport modes or consuming more local products for which border crossing transport is not required. While both are distinct possibilities, these options cannot be considered within the scope of the present case study. Furthermore, we consider that the cost of waiting is a linear function of the waiting time, which is a valid assumption if queues do not become excessively long. In case they do, a more systemic review of the effects of transport delays would be needed.

In other words, **we evaluate the costs based on a given number of border crossings, without assuming changes in the behaviour of economic actors**.

6. Outcome of calculations and conclusion of the case study

When bringing all of our results together in the two scenarios described above, we find that **the cost for transport users of reinstating border controls in the entire Schengen zone would amount to between € 2.5 (first scenario, short waiting times) and € 5.1 (second scenario, longer waiting times) billion euros annually.** The countries expected to incur the largest costs are Germany, France and Belgium. If those countries closed their borders, they would also cause the greatest cost to other countries.

Table 7 and Table 8 below contain the detailed information. They should be read as follows:

- The columns are the countries that close their borders – in this overview, it is assumed that a country would close all borders. The column total thus reflects what the cost to the entire Schengen zone would be if that country would go in full lockdown.
- The rows indicate the countries incurring costs. It is assumed that costs from waiting at borders are split evenly between the origin country and the destination country of the vehicle. Countries with important transit traffic are thus likely to incur lower costs from a closure of borders than they would cause to others by closing their borders. Switzerland and Austria are examples of this. Our numbers show that Luxemburg would also be in this case, though in practice, the effect would likely be more limited due to the country's size. The row total is the cost a country would incur if the entire Schengen zone would collapse.
- Table 7 reflects the numbers for the first scenario with low waiting times, Table 8 presents the numbers for the second scenario with high waiting times.

When investigating specific scenarios, a drill down into these numbers is required. We will assess the costs of continuing the border control practices mentioned in the introduction (see: Introduction, Table 1). The values mentioned refer to the high waiting times scenario only.

- **Denmark** closing all borders would cost the Schengen zone € 70 million annually in time losses at the border. Closing only the border with Germany would reduce that to € 44 million –. Denmark itself would lose the most in that case (€19 million), while Germany would incur a cost of € 17 million and the Netherlands € 2.4 million. If the controls last 1.5 months, the cost would be € 5.5 million.
- If **Norway** would close its borders for a year, the Schengen zone would lose € 32.5 million, more than half of which would be incurred by Norway itself, and another € 12 million by Sweden. If the focus were only on ferry connections (i.e. borders with Sweden and Finland are not closed), the cost would be reduced to € 4.1 million. For a month, it would have cost around € 340,000.
- Border controls in **Sweden** would create a cost of € 69 million annually, mostly felt by the Swedes (€ 33 million), Norwegians (€ 14 million) and Danes (€ 11 million). When considering only ferry crossings and the border with Denmark, the cost is halved to € 34 million, but the cost to Denmark remains almost the same. For 1 month, the cost is around € 2.8 million.
- **Austria** closing all its borders would prove very costly (€ 376 million). For just the border with Slovenia, the cost would be nearly € 19 million (€ 4.8 million for a 3 month period).
- If **Germany** were to close its borders, it would create a cost of more than € 1 billion. Germany itself would absorb 43% of that, with the Netherlands suffering the second most at 11%. If only the land border with Austria is subject to controls, the cost drops to € 168 million (about the same as Sweden, Norway and Denmark closing all their borders combined). For the 3 month period as it happened, the cost is estimated at around 42 million. Germany would still lose the most (€ 76 million annually) in such a scenario, but losses for Austria (€ 51 million) and Italy (€ 30 million) would also be significant.
- **France** closing all its borders for 4.5 months may have cost around € 250 million (€ 670 million for a full year).
- If **Belgium** closes its border with France for a month, it would cost around € 17 million (€ 207 million for a full year).

This brings the total cost of controls that have already happened to an estimated € 320 million in waiting time losses, most of it caused by the full lockdown of France after the 13/11 terrorist attacks. In practice, the value may differ due to e.g. seasonality of traffic and active avoidance of trips to or crossing France, as described also in the methodological remark above.

Table 7: low waiting time scenario

Costs	Country closing all borders																									
Country incurring cost	AT	BE	CH	CZ	DE	DK	EE	ES	FI	FR	GR	HU	IT	LI	LT	LU	LV	MT	NL	NO	PL	PT	SE	SI	SK	Grand Total
AT	55,111,318		3,689,239	3,146,289	26,542,089					1,570,047		3,247,459	11,931,010	418,366										2,694,697	3,590,869	111,941,383
BE	1,073,149	95,646,603	2,730,258	1,207,501	30,336,841	414,363		2,053,014		43,026,057		1,697,756	858,520			36,355,108			37,186,638		1,968,285	220,744			240,996	255,015,834
CH	2,401,039		35,464,153	1,239,169	13,828,719					6,241,609		3,440,940	941,091			111,800					577,263					64,245,784
CZ	5,545,500	559,680	431,370	34,666,583	21,658,308					1,112,830		2,252,589	1,557,190	431,370					661,916		5,550,012			2,381,690	9,889,114	86,698,152
DE	55,447,285	44,942,700	30,381,144	35,607,430	217,164,213	9,666,319	129,119	6,402,977	144,544	41,900,228		3,957,462	12,755,282	11,338,365	1,625,425	45,274,237	555,854		65,578,586	527,660	26,719,212	661,574	1,674,236	1,246,135	8,524,922	622,224,908
DK		319,933			11,530,992	14,839,023													1,603,290	732,729	931,704		5,440,137			35,397,808
EE					148,471		2,289,498		419,150						1,039,150		2,238,437				400,410					6,535,117
ES		3,935,842		1,549,272	6,907,895			42,568,134		42,465,928		3,606,833				364,103			1,521,440		1,193,980	13,538,034				117,287,357
FI					155,143		940,422		2,897,777							364,103	538,148			367,518	120,075		2,516,553			7,899,739
FR	4,102,618	71,808,441	17,877,431	4,081,311	39,424,284			21,336,699		133,304,419	41,184	70,887	18,974,112	1,719,779		14,611,046		3,208	19,786,994		2,407,090	1,277,333		448,397	108,263	351,383,494
GR	77,792		1,353,457	667,070						86,812	640,840	954,603	730,368											297,743	1,353,457	6,162,144
HU	4,236,388			5,792,375	2,517,774							12,360,959	1,908,364								98,629			3,726,564	9,262,815	39,903,868
IT	44,442,342	4,230,867	33,984,705	6,476,934	19,223,702			4,050,794		35,917,293	599,656	4,115,088	64,608,140	14,081,741		6,523,893		19,291	1,175,958		2,725,193	425,088		10,363,794	1,837,197	254,801,679
LI	364,507		1,129,186		193,317									1,276,743												2,963,753
LT					656,908		500,769		44,764						4,814,280		2,734,164				2,324,799					11,075,840
LU		5,779,700	129,860		5,450,023					3,935,416						17,060,665			744,369							33,100,033
LV					383,734		1,279,459		62,864						3,614,992		3,505,319				1,071,957					9,918,325
MT										3,208		25,706						22,499								51,413
NL	540,703	57,135,408	2,414,316	925,016	55,668,213	1,193,718		1,675,373		15,686,316		1,697,017		82,043		2,945,109			88,752,226		2,703,177	131,385				231,550,019
NO					463,091	1,516,520	1,870		149,792						1,309		1,870			8,150,709	239,744		6,848,095			17,372,997
PL	5,285,948	2,743,398	805,926	26,382,254	45,797,642	944,209	537,134	748,289	138,641	4,721,255		2,374,580	178,694		3,547,831	1,570,504			2,524,835	403,020	47,640,100		1,882,543		2,627,403	150,854,207
PT		512,128			852,444			18,233,745		4,689,046		324,645									204,373			16,254,158		41,070,538
SE					1,533,142	6,476,059			1,969,179							408,099	408,099				6,119,782	1,766,260	16,281,079			34,961,700
SI	5,388,395	144,324		453,695	1,804,971					466,971		1,079,272	3,864,927			144,324								8,021,812	353,816	21,722,507
SK	4,205,815	183,463	5,918	11,414,508	2,897,898							5,138,893	1,153,648	5,918							2,343,259			1,852,688	18,374,153	47,576,162
Grand Total	188,222,799	287,942,488	129,043,507	134,295,794	505,806,884	35,050,211	5,678,271	97,069,025	5,826,711	335,127,435	1,281,681	33,177,212	130,650,518	31,332,630	15,415,190	123,026,182	11,552,395	44,997	219,740,625	16,301,417	100,781,151	32,508,316	34,642,642	31,033,519	56,163,005	2,561,714,606

Table 8

Costs	Country closing all borders																									
Country incurring cost	AT	BE	CH	CZ	DE	DK	EE	ES	FI	FR	GR	HU	IT	LI	LT	LU	LV	MT	NL	NO	PL	PT	SE	SI	SK	Grand Total
AT	110,222,636		7,378,479	6,292,578	53,084,178					3,140,095		6,494,917	23,862,021	836,731										5,389,393	7,181,737	223,882,766
BE	2,146,299	191,293,207	5,460,516	2,415,002	60,673,682	828,727		4,106,029		86,052,114		3,395,512	1,717,039			72,710,217			74,373,277		3,936,570	441,487			481,992	510,031,669
CH	4,802,078		70,928,307	2,478,338	27,657,438					12,483,219		6,881,880	1,882,182			223,599			1,323,833		1,154,527					128,491,567
CZ	11,091,000	1,119,359	862,740	69,333,165	43,316,617					2,225,660		4,505,177	3,114,380	862,740					11,100,024					4,763,380	19,778,228	173,396,304
DE	110,894,569	89,885,400	60,762,288	71,214,860	434,328,425	19,332,638	258,238	12,805,953	289,088	83,800,455		7,914,924	25,510,563	22,676,730	3,250,850	90,548,473	1,111,709		131,157,172	1,055,250	53,438,425	1,323,149	3,348,472	2,492,270	17,049,843	1,244,449,817
DK		639,866			23,061,984	29,678,046													3,206,580	1,465,458	1,863,409		10,880,275			70,795,617
EE					296,943		4,578,997		838,300						2,078,300		4,476,873				800,820					13,070,234
ES		7,871,684		3,098,543	13,815,790			85,136,268		84,931,856		7,213,665							3,042,879		2,387,960	27,076,067				234,574,713
FI					310,286		1,880,844		5,795,555							728,206	1,076,295			735,036	240,149		5,033,106			15,799,478
FR	8,205,235	143,616,882	35,754,862	8,162,622	78,848,567			42,673,399		266,608,837	82,368	141,773	37,948,224	3,439,558		29,222,093		6,416	39,573,988		4,814,180	2,554,666		896,793	216,526	702,766,988
GR	155,585		2,706,914	1,334,141						173,624	1,281,681	1,909,207	1,460,736											595,486	2,706,914	12,324,287
HU	8,472,776			11,584,749	5,035,547							24,721,919	3,816,728								197,258			7,453,128	18,525,630	79,807,736
IT	88,884,684	8,461,735	67,969,410	12,953,868	38,447,403			8,101,589		71,834,587	1,199,313	8,230,176	129,216,281	28,163,483		13,047,787		38,582	2,351,916		5,450,386	850,177		20,727,587	3,674,394	509,603,358
LI	729,013		2,258,372		386,635									2,553,486												5,927,506
LT					1,313,817		1,001,537		89,527						9,628,560		5,468,328				4,649,598					22,151,368
LU		11,559,401	259,720		10,900,046					7,870,833						34,121,329			1,488,737							66,200,066
LV					767,468		2,558,918		125,729						7,229,984		7,010,638				2,143,915					19,836,651
MT										6,416		51,413						44,997								102,826
NL	1,081,405	114,270,817	4,828,632	1,850,032	111,336,426	2,387,436		3,350,746		31,372,632		3,394,035		164,086		5,890,218			177,504,451		5,406,354	262,770				463,100,038
NO					926,182	3,033,040	3,739		299,583						2,617		3,739			16,301,417	479,487		13,696,189			34,745,994
PL	10,571,897	5,486,795	1,611,853	52,764,508	91,595,285	1,888,419	1,074,269	1,496,577	277,282	9,442,510		4,749,159	357,388		7,095,663	3,141,009			5,049,670	806,040	95,280,200		3,765,085		5,254,806	301,708,415
PT		1,024,255			1,704,888			36,467,490		9,378,091		649,290							408,746			32,508,316				82,141,077
SE					3,066,284	12,952,117			3,938,358							816,199	816,199				12,239,563	3,532,521	32,562,158			69,923,400
SI	10,776,790	288,649		907,389	3,609,942					933,941		2,158,543	7,729,854			288,649								16,043,624	707,633	43,445,015
SK	8,411,630	366,926	11,836	22,829,017	5,795,795							10,277,787	2,307,297	11,836							4,686,519			3,705,377	36,748,305	95,152,324
Grand Total	376,445,598	575,884,975	258,087,015	268,591,587	1,011,613,768	70,100,422	11,356,542	194,138,051	11,653,423	670,254,870	2,563,361	66,354,423	261,301,037	62,665,261	30,830,379	246,052,365	23,104,791	89,995	439,481,250	32,602,835	201,562,302	65,016,633	69,285,285	62,067,038	112,326,009	5,123,429,213

5. KEY CHALLENGES OF RE-IMPOSING BORDER CONTROLS WITHIN SCHENGEN FOR THE SINGLE MARKET

KEY FINDINGS

- Existing estimates of the economic cost of ID checks, vehicle searches, and the resulting delays at Schengen borders vary widely. **Most of the variation is due to different assumptions and methodologies for estimating the direct ("ad-valorem") cost of these trade barriers relative to the corresponding value of trade**.

- Some of the large estimates of direct costs result from the inappropriate application of gravity models of bilateral trade. There are good reasons to believe that these studies **mix up the true (small) effects of Schengen (elimination of ID checks) with the much larger effects of the completion of the Single Market (elimination of customs controls)**.

- One carefully specified study implies that **ID checks raise trade costs for goods by approximately 0.4% to 0.9% of the value of trade** (depending on the assumed elasticity of trade to trade costs) **at every Schengen border**. Slightly higher costs apply to trade in services.

- For Germany and Austria (two prominent countries with controls at Schengen borders), these direct costs translate into a real income loss of 0.4% or less (depending on trade elasticity) if ID checks are introduced at **all** Schengen borders; in the **realistic case** that **ID checks are limited to major refugee routes**, real income declines by 0.1% or less.

- These **small costs are easily outweighed** by **fiscal cost savings** for those countries that manage to **turn away significant numbers of refugees** that arrive from other EU (i.e. safe) countries.

- Arguably, the Schengen system will only survive if member states agree to **manage the external Schengen border jointly, with shared administrative and fiscal responsibility** (including a common asylum system).

- Member states can take **interim measures** to reduce the delays due to border controls, such as to provide **adequate infrastructure** for ID checks and vehicle searches (sufficient numbers of police, extra traffic lanes) and to **coordinate controls across countries** so as to shut down any irregular migration routes with minimum intervention. **Countries of first arrival in the EU should continue to be supported** with additional international staff and funding to police borders, process asylum applications, share fiscal costs, and redistribute recognized asylum seekers across the EU.

1. Introduction

Several Schengen countries have recently re-imposed ID checks at their internal Schengen borders. Their motivations fall into one of two categories: Scandinavian countries, Germany, and Austria aim to **reduce or at least manage the inflow of refugee migrants**. France and Belgium imposed ID checks to help **apprehend terrorists** following the recent attacks in Paris and Brussels.

Irrespective of their motivation, border controls impose a **cost on cross-border traffic** and put at risk the gains from integration that have been achieved through the Schengen agreement (Ademmer et al., 2015). **Several analyses of the cost of "non-Schengen"** have recently been released with widely diverging estimates. In Section 2, we review these studies, explain their methodologies, and conclude that the **true costs are at the lower end** of the range of available estimates.

While little can probably be done about the need to set up roadblocks in hot pursuit of criminals, it is not clear whether controls at Schengen borders to turn away refugees arriving from other EU (i.e. safe) countries are an appropriate instrument to address the refugee situation. we demonstrate in Section 3 that **from the point of view of some individual Schengen countries, the economic cost of border controls is indeed far lower than the fiscal cost** that they would incur if they did not limit the inflow of refugees.

However, member states that close their border to refugees arriving from neighbouring EU countries mostly shift their potential fiscal burden onto other countries. Therefore, we argue that in the medium to long run the Schengen area can only survive if Schengen countries **fully share administrative and fiscal responsibility for managing their external border**, including through a common asylum system. Since this may not come about in the very near future, we propose interim measures to reduce the delays due to Schengen border checks and to continue logistic and financial support for EU member states where refugees first arrive (Section 4).

2. Estimating the cost of "Non-Schengen": Methodology and existing studies

ID checks on individuals at Schengen borders and the associated delays **increase**, first and foremost, **the cost of cross-border travel and transport**. Thus they affect all cross-border transactions where individuals move physically across a border: merchandise trade (ID checks on lorry drivers and vehicle inspections to ensure there are no blind passengers); trade in services (day tourism, shopping, etc.); labour mobility (cross-border commuters); etc. In each case, there is a **direct cost** involved: lorry drivers' wages; extra transport equipment needed because each trip takes longer; time lost by consumers and cross-border commuters, wages of border guards; infrastructure at border posts; etc.

Speaking in economic terms, this direct cost makes **cross-border transactions less attractive relative to purely domestic transactions**. This observation is key to understanding **the true economic cost** of "non-Schengen": **Economic agents adjust** to higher costs at the border by conducting more transactions domestically. As a result, the true economic cost of "non-Schengen" is **lower than the hypothetical direct cost of controls at the original volume of cross-border transactions**.

However, **economic agents do lose some of the gains from open borders** – such as the integration of national markets for goods (economies of scale, advantages of specialization, etc.); access to employment opportunities abroad; access to foreign service providers; etc. This is the basis for estimating the **true cost of "non-Schengen"**. In the following subsection, we explain the basic methodology; further below, we review cost estimates from existing studies.

The true economic cost of "non-Schengen": methodology

Although ID checks and delays affect all cross-border transactions, most formal cost estimates focus on the impact **on merchandise trade**. This is justified because (i) merchandise trade represents the lion's share of cross-border transactions that involve the physical movement of individuals and are therefore affected by "non-Schengen"; (ii) the methodology of estimating the true economic cost of merchandise trade barriers is well-established, in contrast to other international transactions that would each require their own

methodology. Accordingly, in this briefing note, we focus on merchandise trade while discussing other transactions when appropriate.

Formally speaking, ID checks and associated delays drive a **wedge between domestic and export prices for goods** and thus act as **trade barriers**. In this particular case, the difference between domestic and international prices represents a **direct waste of resources**. By contrast, other trade barriers such as customs tariffs also drive a wedge between domestic and international prices, but generate tariff revenue for governments. Therefore, the welfare loss to the economy from a tariff is much smaller than the ad-valorem tariff rate (or price wedge) might suggest.

The process of estimating the true economic cost of "non-Schengen" starts by estimating the **direct cost** of ID checks and associated delays **(Step 1)**. This may be done **"bottom-up" (Step 1a)** by **measuring the length of delays** at border crossings and **estimating various relevant categories of cost**: extra wages; capital cost of cargo tied up in transport; capital cost and depreciation of extra transport equipment; etc. Finally, the resulting estimate of the total direct monetary cost is related to the value of trade before ID checks to estimate the an "ad-valorem equivalent" increase in bilateral trade costs.

Depending on context, one may want to include items like the **fiscal cost** of ID checks at Schengen borders (staff, infrastructure, etc.) with the direct monetary cost of "non-Schengen". However, since fiscal costs are borne by the government rather than private economic agents, they would need to be accounted for separately (and tediously) when the true economic cost of "non-Schengen" is estimated in Step 2.

Bottom-up estimates of the direct cost of delays **(Step 1a)** involve several **assumptions for which few hard data are available**. Therefore, several studies pursue an alternative approach at estimating the implied increase in trade costs. Based on a **gravity model of bilateral trade**, they measure directly **how much extra trade occurs across Schengen vs. non-Schengen borders**. The extra trade may be **translated back into the underlying difference in trade costs** by assuming a standard value for the elasticity of bilateral trade to trade costs **(Step 1b)**.

Finally, our estimate of the direct cost of "non-Schengen" (Step 1) needs to be **translated into the true economic cost to the affected economies** (i.e. after economic agents have adjusted to the new level of international transport costs; **Step 2**). The standard approach is to use a **computable general equilibrium (CGE)** model - in short, a numerical description of one or several economies, given our best knowledge and economic intuition from national accounts statistics, household surveys, and plausible assumptions about parameters such as demand and supply elasticities.

The **"base run"** of the CGE model reproduces the database and yields an **estimate of real income under the original level of transport cost**. The model is then re-run under **alternative assumptions about the increase in the cost of bilateral trade.** For example, ID checks and delays may either affect the full length of a country's border or selected border crossings only ("external margin"). Similarly, estimating the direct cost of non-Schengen (Step 1) is subject to data uncertainty ("internal margin"), including about the size of the trade elasticity (Step 1b). **Alternative scenarios** that reflect a range of assumptions provide a sense of how **sensitive** estimates of the true economic costs of "non-Schengen" are to the underlying assumptions. **Real income in the economy under each scenario may then be compared to the base run** to yield an estimate of the true economic cost ("welfare loss") of "non-Schengen".

CGE models have the **advantage of providing fairly detailed insights into the structural change** induced by changes in trade costs or other "shocks". However, they are also time-consuming to set up and maintain. If we are merely looking for an estimate of the overall welfare loss due to "non-Schengen", given an estimate of the direct cost, we may use a simple **approximation** that only requires assumptions about the change in the expenditure share of domestic goods and the elasticity of trade with respect to trade costs (Arkolakis, Costinot, Rodríguez-Clare, 2012). This information is available from Step 1b and greatly facilitates Step 2 of the analysis (see, for example, Felbermayr, Gröschl,Steinwachs, 2016).[i]

The economy-wide change in real income is also a good quantitative measure of how the **welfare of consumers** is affected by "non-Schengen". Because of higher trade costs, the prices of imports increase relative to domestic goods. While consumers may adjust by switching to domestic product varieties, they

end up with fewer product varieties to choose from at higher prices. Other "non-Schengen" effects include reduced access to shopping opportunities in other Schengen countries, particularly in border areas.

Direct cost of "non-Schengen": bottom-up estimates (Step 1a)

Bottom-up estimates of the direct cost of ID checks and delays at Schengen borders simply **list the delays and their monetary cost equivalents that economic agents incur for various cross-border transactions**. This is particularly useful for understanding the cost of ID checks and delays because there may be no direct historical precedent for the current situation. At present, many border controls are improvised, without sufficient personnel or infrastructure – such as motorway traffic from Austria to Germany being forced from three lanes onto one lane at the border, generating lengthy delays at daily peak times. By contrast, before the Schengen agreement, there would have been proper border stations with a sufficient number of dedicated traffic lanes for passenger cars, lorries and buses so ID checks could be undertaken with minimal delay (as is still the case at any European motorway toll station).

In their recent France Stratégie paper, Aussiloux and Le Hir (2016) offer an instructive list of possible effects and attempts to measure them. Their starting point is the recent imposition of ID checks on all incoming and outgoing traffic at all French borders, following the Paris terrorist attacks. They work with a low-cost and a high-cost scenario, where the high-cost scenario involves simply doubling all costs from the low-cost scenario.

Above all, the expected effects are very small (Table 1) – even for comprehensive ID checks on all traffic at all borders and even if we double the amounts in Table 1 for the high-cost scenario. French GDP in 2015 was close to €2,850 billion, whereas the various amounts in Table 1 are all below €1 billion. Foreign trade turnover amounted to approximately €956 million, of which just under 60% was with EU countries (and probably a little less with Schengen countries); the extra cost to lorry transport is estimated at €248 million under the high-cost scenario – less than one half of one tenth of one percent of the value of trade.

These figures are typical of similar estimates of the cost of delays at Schengen borders for different countries and under a wide range of assumptions (e.g. Felbermayr, Gröschl, Steinwachs, 2016, 19-20). The main conclusion is always that the effects are very small, measured by their ad-valorem equivalent in relation to the corresponding trade flows.

Direct cost of "non-Schengen": estimates based on gravity models of bilateral trade (Step 1b)

Gravity models have been used extensively to analyse the **determinants of bilateral trade** (cf. Luecke, Stoehr, 2015). By analogy with the gravitational force in physics, a bilateral trade flow is considered a function of the "**mass**" of the two economies (typically measured by GDP, or a combination of GDP per head and population) and their **economic distance** from each other. Economic distance includes many possible components: geographic distance as a proxy for transport costs; a common language (reduces transaction costs); a preferential trade agreement; etc.

Intuitively, the **Schengen Agreement must have reduced the "economic distance"** between its member countries through a variety of channels. As a first approximation, the impact of Schengen on merchandise trade may be captured by including among the explanatory variables of a gravity model a **dummy variable** that takes the value of 1 if both trading partners are Schengen members and 0 otherwise (Aussilon, Le Hir, 2016).

Table 1:   The direct costs of "non-Schengen" – France – "low" scenario (Aussiloux, Le Hir, 2016)

International transaction affected	Length of delay (all individuals, all French borders)	Important additional assumptions	Annual monetary cost (€ million)
Loss in revenue from incoming tourists	Single-day visitors: -5% Two-day visitors: -2.5%	Tourist expenditures by categories	Loss in revenue (note this is not welfare loss in an economic sense) €498 million
French cross-border commuters	10 minutes twice daily	Value of travel time at €10 per hour	€253 million (€723 per commuter)
Lorry transport	0.5 hours per lorry crossing the French border	Value of time in goods, value of time for transport firm	€124 million

Source: own compilation.

One immediate concern is that the impact of Schengen may be difficult to identify if other developments around the same time also increased bilateral trade. The successive implementation of the Schengen Agreement coincided (broadly) with the completion of the EU Single Market in 1992 that involved the elimination of customs controls and other barriers at intra-EU borders and clearly increased intra-EU trade. Depending on the choice of data and the specification of the gravity model, the Schengen and Single Market effects may be difficult to disentangle; this problem appears to affect, in particular, the early study by Davis and Gift (2014) as well as the estimates by Mayer and Umana Dajud reported by Aussiloux and Le Hir (2016; Table 2).

By contrast, Felbermayr, Gröschl, Steinwachs (2016; book-lengh version: 2016a; academic article in English: 2016b) address this concern by identifying the impact of Schengen based on the **number of Schengen borders that trade flows between two countries typically cross**. For example, their Schengen variable takes the value of 4 for trade between Poland and Portugal (once the two countries plus all in between are part of Schengen); for German-French trade, the Schengen variable takes the value of 1 from 1992 (when the Schengen Agreement was implemented on the ground). Furthermore, they use data starting in 1992 so that EU membership is equivalent to being part of the completed Single Market.

The extra trade effect due to Schengen from gravity models (Step 1b; Table 2) appears large compared with the direct cost estimates of "non-Schengen" (Step 1a). If we assume a trade elasticity of 5 with respect to trade costs (a fairly typical value), a 15% increase in trade due to Schengen implies a 3% reduction in trade costs; a 2.7% increase in bilateral trade for every Schengen border between the two countries implies a 0.5% reduction in trade costs for every border. Either figure is far higher than any of our bottom-up estimates suggest; there we found ad-valorem equivalents mostly below 0.1%. We draw two conclusions from this discrepancy:

1. **Bottom-up estimates (Step 1a) represent a lower bound for the ad-valorem equivalent of the explicit and implicit trade barriers** generated by ID checks at Schengen borders. For example, the average delay suffered by travellers may not fully reflect the cost of the uncertainty created by volatile delays, particularly in tightly organized supply chains. Anecdotal evidence from the German border with Austria suggests that the average delay is approximately 30 minutes, but delays of 90 or even 120 minutes occur often enough to be of concern for transport firms. Therefore, regression analysis of observed trade developments based on carefully specified gravity models (Step 1b) provides an important additional perspective.

2. In empirical gravity models (Step 1b), **the Schengen effect needs to be specified carefully and distinguished clearly from the larger effects of the simultaneous completion of the Single Market**. It seems intuitively plausible that the Schengen effect is larger when more Schengen borders need to be crossed from one country to another. Therefore, the specification by

Felbermayr, Gröschl, and Steinwachs (2016; number of Schengen borders to be crossed) is more appropriate than a simple dummy variable for whether or not the two countries are part of the Schengen area (Aussiloux, Le Hir (2016).

Total economic cost of "non-Schengen" (Step 2)

The details of Step 2 are of considerable interest to economic modellers, but of less immediate relevance to understanding the size of the economic effects of Schengen border controls. The extra cost of transport due to delays is often modelled as an **"iceberg" cost** to international trade: a certain percentage of goods is assumed to "melt away" as they cross the border. This is a simple, yet appropriate way to model the direct loss of resources due to delays at the border.

Table 2:   **Estimates of the increase in bilateral trade through Schengen**

	Aussiloux, Le Hir (2016)	**Felbermayr, Gröschl, Steinwachs (2016)**
Percent increase in bilateral trade due to Schengen	**13%** to **21%** if both countries in Schengen area	**2.7%** for every Schengen border between two countries
Database	Alternative datasets (global, expanded Europe); disaggregated by major economic sectors; years not given	1992 to 2014 data; disaggregated by major economic sectors
Specification	Some important coefficients (dummies for FTA, EU, GATT, shared currency) are very volatile; no separate coefficient for the completion of the Single Market	Separate estimates for services trade; the Schengen border effect for services is only barely significant, but larger in size than for trade in goods (4.1%)
Comments	Gravity model estimated by Thierry Mayer and Camilo Umana Dajud	

Source: own compilation.

The simulations by Felbermayr, Gröschl, and Steinwachs (2016; Table 3) are especially instructive because their definition of the Schengen border variable allows them to create four **scenarios** depending on how extensive ID checks are: (1) all Schengen borders plus intercontinental trade also crosses one Schengen border; (2) all Schengen borders, but intercontinental trade not affected; (3) Schengen borders on Balkan and Italy refugee routes only; (4) German border with Austria only. The wide range of estimates reported in Table 3 reflects different assumptions about the elasticity of trade with respect to the cost of trade (a high elasticity of 7 implies a smaller welfare loss than a low elasticity of 3).

In Table 3, we reproduce the estimates of total economic cost only for the two most realistic scenarios: one with large-scale border controls (Scenario 2), one focussed on all refugee routes (Scenario 3). With **comprehensive controls** (Scenario 2), the simulated loss in real income is safely **below one half of one percent for both Germany and Austria** – even when the trade elasticity is assumed to be only 3. If controls remain limited to **refugee routes** (Scenario 3), the **welfare loss is one tenth of 1 percent or less**.

Table 3:   **Estimates of direct cost and total welfare loss due to "non-Schengen"**

	Aussiloux, Le Hir (2016)	Felbermayr, Gröschl, Steinwachs (2016)
Direct cost of non-Schengen (ad-valorem equivalent)	**3%** on all trade flows between current Schengen countries	**0.39% to 0.90%** (merchandise trade) **0.59% to 1.37%** (services trade)
Impact on level of GDP/ real income	France: -0.5% All Schengen: -0.8%	**Scenario 2**: controls at all Schengen borders, but not on extra-Schengen trade; merchandise and services trade **Germany: -0.14% to -0.36%** **Austria: -0.15% to -0.38%** **Scenario 3:** controls on Balkan/ Italy refugee routes only **Germany: -0.04% to -0.11%** **Austria: -0.03% to -0.07%**
Model type	MIRAGE CGE model	Approximation based on Arkolakis, Costinot, Rodríguez-Clare (2012)

Source: own compilation.

We have explained above why we think the estimates reported by Aussiloux and Le Hir (2016) are too high (cf. Table 3). At the same time, their methodology to estimate the direct cost of border controls (Step 1b) is fundamentally similar to Felbermayr, Gröschl, and Steinwachs (2016). Therefore, it is **reassuring** that when the impact of Schengen is carefully distinguished from the completion of the Single market and, furthermore, the extent of departures from the Schengen regime is specified realistically, the estimated overall welfare loss becomes much smaller.

In conclusion, the **true economic cost of "non-Schengen" is quite small** – certainly smaller than some alarmist contributions to the public debate suggest. However, there is a well-documented cost – economic and in terms of political symbolism. If we wish to devise a policy strategy to return to open borders throughout the Schengen area, we must first understand what **benefits** some EU member states expect from ID checks at their Schengen borders.

3.   The motives for ID checks at Schengen borders

Some ID checks were recently implemented in an attempt **to apprehend terrorists** fleeing the scene of major crimes. Such border controls are normally short-lived and the disruption that they create is part of the disruption that inevitably results from terrorist attacks. Full cooperation among EU member states' security forces is the long-term answer to the threat posed by criminals that freely move across intra-EU borders. While this is widely understood, authorities about to implement a large-scale manhunt may still have to rely on temporary ID checks and roadblocks at traffic junctions and other traffic bottlenecks, both within member states and at Schengen borders.

More importantly in the medium and long run, some EU member states have implemented ID checks at their Schengen borders because the **management of certain external borders of the Schengen area has collapsed**. As a result, large numbers of refugees have entered the Schengen area – initially through Italy and more recently through Greece. Most were not registered in their countries of first arrival as they should have been according to EU law. As long as they could freely travel within the Schengen area, most of them

chose to apply for asylum in a small number of countries where they believed conditions were most favourable. One after another, countries felt **overburdened by a large number of asylum seekers and implemented ID checks at their Schengen borders in order to turn away refugees** that were arriving from other EU member states (which are, by definition, safe countries for refugees).

Sweden

Sweden is a case in point. Since the beginning of 2016, **ID checks** affect individuals arriving in Sweden by **ferry** (where no extra time is lost because ferry passengers have always been subject to ID checks) as well as **rail travellers, especially commuters, across the Öresund bridge** from Copenhagen to Malmö. No ID checks are carried out on motor vehicle traffic on the Öresund bridge. These restrictions have **effectively stopped the inflow of refugees** that was beginning to overstretch Sweden's capacity to care for them.

Delays experienced by rail passengers probably constitute the lion's share of the direct cost of these ID checks. A bottom-up, back-of-the-envelope estimate helps to understand its order of magnitude. Approximately 30.000 rail journeys take place across the Öresund bridge daily. Most passengers are Swedes who have to go through barriers at Copenhagen's Kastrup airport to have their IDs checked before they return to Sweden. Let us assume that 15.000 individuals are delayed for half an hour each day and value their travel time at €10 per hour. Then the **direct cost of the delays adds up to €27 million per year**, plus infrastructure and guards.

By contrast, Sweden reportedly expects to spend €6.5 billion caring for refugees in 2016. If the inflow of refugees had continued in 2016 at the same pace as in 2015, the number of refugees in Sweden and the associated fiscal cost would have grown sharply. Let us assume that without the border controls, the fiscal cost due to refugees in 2016 would be 20% (or €1.3 billion) higher. From this example, it is clear that the **small cost of ID checks, mostly to commuters in the Öresund region, is easily outweighed by Sweden's cost savings** from not having to care for an even larger number of refugees.

Austria

Because of its peripheral location in Europe, Sweden can relatively easily limit the inflow of refugees. The opposite case is Austria which is located **in the centre of Europe** on two major refugee routes: first, the **Balkan route** from Greece via Macedonia, Serbia, Croatia, and Slovenia (the first Schengen country after Greece) on to Germany (and, formerly, Sweden); and second, the route **from Italy via the Brenner mountain pass on to Germany**. At the same time, Austria is itself a relatively attractive location to apply for asylum.

Austria has now worked with the Western Balkan countries to effectively close the Balkan route, preventing refugees from leaving Greece to enter Macedonia. Austria has also made it clear that it will similarly **close its border with Italy to refugees if the inflow of refugees from Italy were to increase again** to the much higher level last seen in the summer of 2015. One may speculate that France, Switzerland and Slovenia will follow suit if refugees from Italy were to try to circumvent Austria on their way north.

The **cost to Austria of these carefully targeted border controls** is probably below one tenth of one percent of GDP (a maximum of **€242 million** according to Scenario 3 in Felbermayr, Gröschl, Steinwachs, 2016; Table 3 above). The fiscal cost of caring for refugees in Austria during 2015, 2016, and 2017 combined has been estimated at €2.7 billion (Österreichische Nationalbank, 2015); expenditures for one refugee are close to €11,000 per year. Thus **if border controls reduce** the number of refugees living in Austria **by more than 22,000**, which seems likely, **fiscal cost savings exceed the economic cost of controls**.

Countries of first arrival

From the narrow point of view of the preferred destination countries of refugees (e.g. Sweden), re-introducing ID checks and closing borders to refugees may be a cost-saving proposition. However, if implemented fully, this approach leaves the countries where refugees first arrive in the EU in a difficult position. According to EU law (**Dublin** regulations), these countries are obliged to register asylum seekers, provide them with food and housing, process their asylum applications, and return them to their countries

of origin if they have no legitimate claim to protection. In fact, they are supposed to bear not only **full administrative responsibility** for the asylum process, but also its **full fiscal cost**.

Observers have long argued that this allocation of administrative and fiscal responsibility is **neither practical nor fair**. Neither the countries of first arrival nor the refugees have any interest in following the rules: Most refugees want to move elsewhere, and the countries of first arrival have every incentive to limit their costs by allowing refugees to move on.

However, "waiving on" refugees becomes impractical when the next country in line (such as Austria) refuses entry to irregular immigrants. For a durable and fair solution, all stakeholders need to understand that the **challenges of managing the external border of the Schengen area, which include caring for the refugees that arrive, have now become so large that they need to be addressed by the EU and member states together**. Accordingly, all Schengen states should contribute to this task based on their administrative and financial capacity, rather than their geographic location either on the periphery of the Schengen area or further inland.

Managing the external Schengen border: towards joint administrative and fiscal responsibility

At present, it is difficult to imagine how a proposal to allocate administrative and fiscal responsibility for external border management (including the asylum system) **comprehensively** to all Schengen states could win the necessary **political support**. However, **small steps in this direction** have become possible because many EU member states are keen to avoid a repeat of the untenable situation of refugee migrants in the Mediterranean region in 2015.

Greece is now **supported by civil servants from EU institutions and member states in the implementation of the EU Turkey agreement on refugee return**. If things go well during the coming months, irregular migration from Turkey to Greece will be reduced; refugees without a valid claim to protection in the EU will be returned to Turkey; and Syrian refugees will be resettled in the EU directly from Turkey in an organized fashion. All this will occur with substantial involvement of EU institutions and "willing" member states – rather than the countries of first arrival being left to their own devices.

Already there are plans to phase out ID checks on the German border with Austria because far fewer refugees are now arriving in Germany. It remains to be seen whether a coalition of "willing" EU member states can pull off a sufficiently comprehensive solution that would have to meet three important criteria:

- First, now that the Balkan refugee route has been closed, people smugglers will search for **alternatives** (through Albania, Libya/ Italy, etc.); **EU member states need to pre-empt this** – preferably without closing additional Schengen borders.

- Second, **as long as many bona-fide refugees in the Middle East live in great poverty and under considerable insecurity, with little prospect of economic integration in their countries of residence, they have a strong incentive to move on to Europe by any means available to them**. Arguably, it would not be feasible or even desirable to invite all refugees to Europe. However, the EU has the means and therefore the responsibility to ensure that all refugees in the European Neighbourhood region can live decently, if modestly.

- Third, while some EU member states find it politically easier than others to receive refugees, all member states should strive to **share fiscal responsibility** for the external management of the Schengen border **according to their ability to pay – i.e. in line with their contributions to the EU budget.**

An effective external Schengen border management system, including a common asylum system, would render ID checks at internal Schengen borders redundant. By contrast, if large numbers of refugees can enter the EU and then move on to a destination country of their choice (as until recently), some EU member states will inevitably find themselves overburdened and may seek to limit their expenditures on refugees by turning away those who arrive across Schengen borders from other (safe) EU countries.

4.   Conclusions

At present, the **economic cost of ID checks at Schengen borders is low** (only a fraction of one percent of the affected countries' GDP). Even if controls were much more comprehensive, many countries would still find that the cost of controls is smaller than their **fiscal cost savings by turning away refugees** who arrive from (safe) EU countries.

Ultimately, only an effective **common management of the external Schengen border** will render ID checks at internal Schengen borders redundant. Since an important component – a common asylum system – will not be created overnight, it makes sense to think about **interim measures** to reduce the extent of ID checks and lower their economic cost:

- **Some border controls at present are simply badly designed** (the German border with Austria comes to mind). In a security emergency, improvised roadblocks may be inevitable. However, if border controls are maintained for any length of time, it is imperative to invest in the **necessary infrastructure** – for example, to widen roads to a sufficient number of lanes and assign enough border police to conduct checks with minimum delays, even at peak traffic times. Many motorway toll stations all over Europe demonstrate how easily this can be done.
- If EU member states consider border controls necessary to curb irregular immigration by refugee migrants, **international cooperation may help to limit the extent of controls**. For example, if a refugee route needs to be closed that runs through several countries, it may be possible to concentrate controls on selected stretches of border. Thus, if Austria's southern border is effectively policed and refugees are turned back or registered, there may be no need for additional checks at Germany's border with Austria. All parties would benefit from limiting controls in this way.

Even in the absence of a common asylum system, the **EU countries where refugees first arrive may be supported by the EU and "willing" member states** in several important ways:
- **Administrative staff and security forces** from EU institutions and member states may help with the processing of refugees and the policing of the external Schengen border.
- **Refugees with a recognized claim to protection** in the EU may be **resettled** within the EU.
- If countries of first arrival have disproportionately high expenditures on refugees, they may be **supported financially** by the EU or member states on an ad-hoc or (preferably) systematic basis.

All these would be politically feasible and, at the same time, significant steps by the EU and its member states towards the long-term objective of jointly managing the external Schengen border and re-

6.   CONCLUSIONS

Today, the Schengen Agreement is undoubtedly acknowledged as an important complement to the Single Market, giving tangible reality to the four freedoms outlined in Article 26 TFEU. By removing checks on persons at the internal borders, the participating states have indeed also facilitated intra-EU trade flows, and thus boosted the functioning of the Single Market. The trade effect related to the Single Market translates into a growth effect of roughly 2% of EU GDP.

Conversely, re-introducing border controls would not only deprive people of the benefits of free movement across borders, but could also give rise to non-trivial economic costs for citizens and businesses. Such clear findings result from the assessment of the costs of re-establishing border controls within the Schengen area, i.e. the costs of non-Schengen.

In order to assess these costs, two different scenarios (each including two sub-scenarios) were used: firstly, estimates were made of the economic impact after two years (which corresponds to the legal limit of time for reinstating temporary border controls in the context of the current Schengen Agreement) in a limited number of Schengen states (seven countries which have already reinstated temporarily border controls were selected) and then in all the Schengen countries; secondly, similar calculations were made on the economic impact of an indefinite suspension of Schengen after a 10-year period, for both a limited number of Schengen states and for all the Schengen countries.

In all scenarios, direct costs would have to be incurred by countries reinstating border controls. In addition to the unavoidable administrative costs associated with erecting permanent borders and border controls (from €0.7 billion – for a limited number of Schengen states (7), to €7.1 billion – for all the Schengen countries), the loss of time arising from crossing borders would have negative repercussions on job mobility, tourism and hospitality industries, as well as on trade in goods and services. Such scenarios would affect the whole EU, although some countries would be more affected.

Scenario for Schengen suspension	Total costs (€ billion)
Limited two-year suspension	2.5-5
All countries two years suspension	25-50
Limited indefinite suspension	55-70
All indefinite suspension	100-230

For the Schengen area as a whole, the **total cost of a reintroduction of border controls** would amount **to as much as €51 billion** in the case of **a two- year suspension** of the Agreement. A full and **permanent suspension of Schengen** would represent **a loss of up to 0.14% of EU-GDP annually, i.e. €230 billion** (calculated over ten years).

Moreover, beyond these findings, there are also indirect costs: a failure of Schengen would reduce the future benefits of the Single Market and EU integration. Reducing free movement would also jeopardise one of the most visible and powerful symbols of European integration. It could lead to a decrease in cultural exchanges and cross-border movements, a loss of confidence in the euro, a loss of trust by citizens in much of what Europe has achieved over the past 30 years. The damage to the European project would be serious and the narrative of integration, with Schengen as its most powerful symbol, would be strongly affected.

At this stage, it is too early to make an assessment of the impact on consumers and consumer prices.

Price formation depends on several factors: the intrinsic specificities of transported goods (e.g. storability, perishable nature, seasonality), the market structure (e.g. intensity of competition at each step of the chain, number of intermediaries in the chain) as well as the existing public policies. The assessment of price transmission typically aims at addressing the following issues:

- the magnitude of the price adjustment, i.e. how much of the price change linked to the changes to Schengen and slower cross-border traffic is transmitted to the downwards step;

- the speed of the price adjustment, i.e. the pace at which changes in prices at one level of the supply chain are transmitted to the other levels (e.g. are price changes transmitted instantaneously or distributed over time?).

However, it requires relevant and reliable price data. The situation tends to be problematic at the level of the (food) processors and retailers, hampering any complete measurement of the degree of price transmission. Moreover, data on prices at the wholesale level are virtually non-existing, leading to aggregate the impact of the distribution sector into the sole consumer price indicator. It is thus not possible to distinguish between the effects of the transport, wholesale and retail sectors in the price transmission analysis linked to changes to the Schengen agreement, and the introduction of ID-checks at various internal borders.

The economy-wide change in GDP (real income, see above) is also often seen as a proxy and a good quantitative measure of how the welfare of consumers is affected by "non-Schengen". Because of higher trade costs, the prices of imports may increase relative to domestic goods. While consumers may adjust by switching to domestic product varieties, they end up with fewer product varieties to choose from at higher prices. Other consumers' "non-Schengen" effects include reduced access to shopping opportunities in other Schengen countries, particularly in border areas.

Different estimates reflect the complexity of assessing the impact of non-Schengen or of the integration process set in reverse

The reintroduction of ID-checks at internal Schengen area borders entails a negative impact on the economies of the European Union. The loss of time resulting from such checks triggers a complex economic chain of effects. It is likely to come with a cost that is set to increase over time.

All estimates used in chapter 5 suggest that the burden on EU citizens and firms has so far remained limited (or between 0.05 and 0.10% of GDP for affected EU Member States. If the current state of play is maintained this should result in a maximum annual cost of between €7 and €14 billion for the entire EU. However, these costs are to a large extent outweighed by the fiscal cost savings to individual EU Member States if ID checks allow them to turn away significant numbers of refugees which arrive from other EU (i.e. safe) countries.

Extra costs, however, may prove higher if border controls are more systematically and durably re-introduced. In this case, the total direct cumulative macroeconomic costs, i.e. for road freight transporters, cross-border workers and public administration will be more significant and are estimated to range between €14 and €64 billion (0.1% - 0.4% of EU GDP) per year for effectively terminating the Schengen agreement.

The extra cost on road freight trade crucially depends on waiting times at the individual borders. The studies presented in this paper are based on rather different scenarios and provide significantly different costs on trade:

- A new study presented by Transport and Mobility Leuven (see: chapter 4) estimates the cost for transport users of reinstating border controls in the entire Schengen area to amount merely between €2.5 billion and €5 billion annually (waiting times 10-20 minutes for passenger cars and 30-60 minutes for lorries).

- A forthcoming study by European Economics for EPRS 2016 (see: chapter 3), calculated much higher costs. Based on a waiting time of one hour, this study estimated trade costs for the entire Schengen area at €6.5-13 billion per year.

- The results of the above studies compare very favorably with the economic cost of a severe trade disintegration. For example, an extreme scenario assuming a fall in intra-EU trade of 10% - 15%

would imply trade losses in the range of €200 – 300 billion and a negative impact on GDP of 1% to 2%. Please note that, as of today, the latter is not seen by experts as a realistic simulation of a non-Schengen scenario.

Not only trade flows would be affected, but also FDI and investment decisions. Furthermore, 'contagion' effects may be substantial. Indeed, beyond the quantification of its direct economic costs, the 'free movement of persons' is perceived by EU citizens as one of the most important achievements of the EU. Reluctance in sharing the burden and effectively coordinate the management of common crisis may eventually result in weakening coordination in other areas where the EU has already accomplished significant results. To the extent that rolling-back Schengen sets in motion a process that puts at risk the integrity and depth of the single market, the medium-term costs of non-Schengen may be dramatically much higher.

These different estimates reflect the complexity of assessing the impact of non-Schengen or of the integration process set in reverse. It is beyond the capacity of the all available models and analysis to simulate all different aspects at once, and the results are partial at best. That said, a sustained period with border controls and a failure to shoulder the impact of the current migration flow across countries may prove markedly more costly than these simulations suggest. Conversely, the presented effects could equally be seen as the possible costs of 'not-perfecting' Schengen.

ANNEX I – FINDINGS OF PREVIOUS STUDIES AS TO THE COST OF NON-SCHENGEN

A number of previous studies have evaluated the costs of non-Schengen, and a summary of the findings and methodologies of these is given below, with a brief statement of the scenario used in the studies, followed by the identified drivers of costs, the cost estimates and the methodology used to estimate these.

I – Bruegel (2 February 2016)

Scenario details
– Waiting times at the border would increase commuting times.

Drivers of cost
– Commuting times; personal and business trips; freight costs; first step towards potential renationalisation in other areas.

Cost estimate
– Commuting times: €3-4 billion a year.

Method
– Appears to be calculations made for an opinion article published in *Wirtschaftswoche* and *El Mundo*. May be based on a study, but the attribution is not clear.

II – *France Stratégie* (3 February 2016)

Scenario details
– Re-establishing permanent border controls within the Schengen area.
– Scenario 1: random controls for private cars and lorries, as before Schengen, with moderate delays.
– Scenario 2: more frequent but not systematic controls, leading to a doubling of average delay times.

Drivers of cost
– Tourism – reduction in revenue from short-term visits from other Schengen Member States. Potential impact on Schengen Visa not quantified.
– Commuting time – willingness to pay to avoid commuting time.
– Cross-border job opportunities – assume 0.5 elasticity of job supply to wages and apply commuting time impact as wage equivalent.
– Freight transport: 30 minutes extra time for goods and haulier for goods loaded in France and unloaded in another Schengen country, or vice-versa.
– Trade impacts: shadow tax of 3% on the value of exchanged goods and services.
– Other effects, not quantified: impacts on foreign direct investment and financial flows; impact on the European project.

Cost estimate
– Tourism – Scenario 1: €500 million a year; Scenario 2: €1 billion a year.
– Commuting time – €250 million a year; Scenario 2: €500 million a year.
– Cross-border job opportunities – Scenario 1: €150 million. Scenario 2: €300 million.
– Imports and exports - Scenario 1: €62 million; Scenario 2: €124 million each for imports and exports.
– Trade impacts: French GDP 0.5 per cent lower in 2025 compared to BAU, Schengen area as a whole 0.8 per cent (equivalent to over €100 billion).

Method
– Partial equilibrium estimates for a series of individual components for the short-run impacts of delays. Modelling of 3% ad valorem tax on trade flows using the MIRAGE CGE model.

III – Bertelsmann Stiftung (22 February 2016)

Scenario details

– Permanent reintroduction of checks at all internal borders. The potential complete loss of the Schengen Agreement. Two scenarios: conservative – 1% rise in import prices; pessimistic – 3% rise in import prices.

Drivers of cost

– Higher import prices lead to a general rise in prices. Households and business real incomes fall and therefore also consumption and investment levels. Wage demands then increase, leading to a further rise in prices, which then raise unit costs and diminish international competitiveness, while increasing interest rates.

– Other costs are considered briefly on a qualitative basis: impacts on complex value chains; tourism; interstate workers; potential loss of the single Schengen visa; impact on infrastructure projects; loss of security-relevant data in the Schengen Information System (SIS); reduction in coordination of asylum and refugee policy; noticeable regression in broader unification; loss of mechanism for non-EU countries to integrate with EU; symbolic value to citizens; and reduction in cultural exchange.

Cost estimate

– Scenario 1: EU-24 (excluding Luxembourg, Malta, Cyprus and Croatia) would see a loss in annual growth of 0.04 percentage points, which would amount to total macroeconomic losses of €471 billion by 2025.

– Scenario 2: EU-24 would see a loss in annual growth of 0.12 percentage points, which would amount to total macroeconomic losses of €1 430 billion by 2025.

Method

– Increases in import prices are implemented in a global forecast and simulation model (VIEW, developed by Prognos AG), which should capture interactions between countries.

IV – Morgan Stanley (1 March 2016)

Scenario details

– Suspension of Schengen, 5% increase in transport costs.

Drivers of cost

– Reduction in intra-European trade, leading to a reversal of some benefits of the Single Market (e.g. product specialisation, economies of scale and institutional competition) to be reversed.

Cost estimate

– Bilateral trade flows could decline by 10-20%. Overall loss of GDP growth: 0.2%, 2% reduction in gross operating surplus in manufacturing industry.

Method

– Simulation using existing economic model, no details provided.

V – European Commission (4 March 2016)

Scenario details

– Full re-establishment of border controls within the Schengen area.

Drivers of cost

– Additional costs for road transport of goods; lost tourism; administrative costs in managing border controls.

Cost estimate

– €5-18 billion a year (0.05-0.13 per cent of GDP), of which the largest impact would be a €1.3-€5.2 billion increase in costs for cross-border workers.

Method

– Not reported in press release.

A summary of the cost estimates from the above-mentioned research are presented in Table 1 below.

Table 1: **Summary of cost estimates from previous research**

Study	Cost estimate
Bruegel	Commuting times: €3-4 billion a year.
France Strategie	Tourism – Scenario 1: €500 million a year; Scenario 2: €1 billion a year.
France Stratégie	Commuting Time - Scenario 1: €250 million a year; Scenario 2: €500 million a year.
France Stratégie	Cross-border job opportunities – Scenario 1: €150 million. Scenario 2: €300 million.
France Stratégie	Import and Export - Scenario 1: €62 million each for imports and exports; Scenario 2: €124 million each for imports and exports.
France Stratégie	Trade impacts - French GDP 0.5 per cent lower in 2025 compared to BAU, Schengen area as a whole 0.8 per cent (equivalent to over €100 billion.
Bertelsmann Stiftung	Scenario 1: EU-24 (excluding Luxembourg, Malta, Cyprus and Croatia) would see a loss in annual growth of 0.04 percentage points, which would amount to total macroeconomic losses of €471 billion by 2025.
Bertelsmann Stiftung	Scenario 2: EU-24 would see a loss in annual growth of 0.12 percentage points, which would amount to total macroeconomic losses of €1,430 billion by 2025.
Morgan Stanley	Bilateral trade flows could decline by 10-20%. Overall loss of GDP growth: 0.2%. 2% reduction in gross operating surplus in manufacturing industry.
European Commission	€5-18 billion a year (0.05-0.13 per cent of GDP), of which the largest impact would be a €1.3 billion-€5.2 billion increase in costs for cross-border workers.

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