**Annex I: CSD Cost estimates**

This annex presents costs estimates collected by ECSDA in February 2015 in the context of the [ESMA Consultation](http://www.esma.europa.eu/consultation/Consultation-Technical-Standards-under-CSD-Regulation) on CSDR settlement discipline. Data was collected from 19 EU CSDs (including the 2 ICSDs, Euroclear Bank and Clearstream Banking Luxembourg).

1. ***CSD implementation costs***
* Total (one-off) development costs to implement the requirements proposed by ESMA in relation to settlement discipline for the 19 CSDs in the sample are expected to amount to over EUR 67 million, or EUR 3.55 million per CSD on average. The estimates provided mainly include the costs for developing the IT system required to implement the ESMA proposals. In most cases, non-IT costs, for instance in cases where no full automation is possible, were not included and would thus have to be added on top of these figures.
* In addition to the one-off costs for the technical developments, CSDs estimated annual operating costs that they will face as a result of the CSDR settlement discipline technical standards. For the CSDs that participated in the survey, these would amount to EUR 13.5 million per year, or around EUR 750,000 on average per CSD.
* In order to put these figures in perspective, it is important to keep in mind that CSDs are generally small or medium size companies. The CSDs in the sample have on average 325 employees, or 132 when excluding the 2 ICSDs. Implementation costs for settlement discipline measures alone would thus translate into additional costs per employee of well over EUR 10,000.
* It is moreover important to stress that implementation costs do not proportionally decrease with the size of the CSD. There are significant fixed costs in the development of the IT system, which means that smaller CSDs will have to bear a proportionately heavier burden relative to larger CSDs. Excluding the two ICSDs, for instance, leads to average costs per CSD still around EUR 2 million, or over EUR 15,000 per employee. For certain small CSDs, the costs could even reach up to EUR 30,000 per employee.
* Considering that the sample of CSDs that participated in the survey seems broadly representative of the whole CSD industry in the EU and includes CSDs of various sizes, we can extrapolate from the figures above cost estimates for the entire CSD industry in the EU. Considering the average implementation costs per CSD (excluding the 2 ICSDs) mentioned above would give us total development costs for all 30 EU CSDs of around EUR 90 million and annual running costs of over EUR 18 million.
* It is important to note that our estimates only cover direct CSD implementation costs. An assessment of the total costs will also have to include the costs incurred by CSD participants and other impacted infrastructures (e.g. CCPs).
1. ***Comparing costs of different types of requirements***

In addition to total costs, ECSDA asked its members to provide a more detailed breakdown of the estimates, based on the three main types of measures proposed by ESMA in relation to settlement discipline:

1. **Buy-in requirements (art.11 of the draft RTS)**
* The numbers show that the proposed buy-in rules are likely to be the most costly ones for CSDs to implement, with total implementation costs of around EUR 24.5 million, or on average close to 1.3 million per CSD.
* In addition, yearly running costs for CSDs to fulfil their responsibilities under the buy-in proposals are expected to add up to nearly EUR 5 million per year, or on average more than EUR 250,000 per CSD.
* There are several important additional considerations that have to be taken into account in relation to the buy-in proposals and implementation costs:
	+ First of all, there are substantial remaining uncertainties around the buy-in process. CSDs believe that some of the measures described by ESMA in the draft RTS are simply impossible to implement in practice, and their costs can thus not be estimated. This is for instance the case for art.11(10).
	+ Similarly, the fact that CSDs are typically not involved in buy-ins today makes it difficult for them to accurately estimate implementation costs of the proposed measures. For instance, it is difficult to see at this stage the level of automation in the process that can be achieved. In case the process would require significant manual intervention on the side of the CSD (which many CSDs currently expect), the real cost would be substantially higher than the costs reported above.
	+ Moreover, the costs only include direct implementation costs for the CSD. They do not account for the impact of the measures on the CSD’s risk profile. Although hard to quantify, the negative impact in terms of increased systemic risk could be significant, for the CSD but more importantly for the market as a whole.
	+ This is also true for the wider market impact of the buy-in rules (see Annex II). Handling buy-ins at settlement level rather than at trading level would lead to various other problems, as explained in our response to the ESMA Consultation. The resulting sub-optimal outcome would need to be factored in when assessing the costs and benefits of the proposed measures.
1. **Preventing, monitoring and reporting fails (art.3-6 of the draft RTS)**
* Expected costs to implement the proposed requirements on preventing and monitoring fails are expected to be very close to the ones required for buy-ins. CSDs estimate total implementation costs to amount to nearly EUR 24 million, or EUR 1.25 million per CSD on average. The high costs are partly due to need for the ICSDs to implement the functionalities and reporting not just in relation to EU "domestic" transactions, but also to their international business.
* On the other hand, it is worth noting that there are significant cost differences across national CSDs, in particular between those participating in T2S and those outside T2S. The functionalities required by the draft technical standards will be available in T2S and were thus not separately counted by CSDs participating in T2S, since they are perceived as part of the general T2S costs. For CSDs outside T2S however, implementing the compulsory functionalities, in particular partial settlement, will cause substantial costs.
* Once implemented, the system for preventing and monitoring fails will have to be maintained. This is expected to cause further yearly operating costs similar to the ones for buy-ins, i.e. nearly EUR 5 million or over EUR 250,000 per CSD.
1. **Late settlement penalties (art.7-10 of the draft RTS)**
* Total reported costs for implementing the mechanism for cash penalties for late settlement amount to around EUR 19 million or around EUR 1 million per CSD.
* In addition, annual running costs are expected to be close to EUR 4 million or on average over EUR 200,000 per CSD.
* It is important to note that these figures only cover direct costs for CSDs having to implement the necessary IT system and do not take into account the wider market impact of cash penalties (see Annex II).
1. ***Implementation timeline***

Finally, ECSDA asked its members to estimate the timeline necessary to implement the proposed settlement discipline measures:

* CSDs which participated in the survey estimated on average that they would need more than 23 months to implement the proposed requirements.
* Estimates were quite consistent across CSDs, ranging between 18 and up to 36 months. It is however important to keep in mind that the maximum implementation time specified by the legal text will have to take as a reference the upper bound of these figures. This is particularly key for CSDs participating in T2S, who will only be able to start implementing the new settlement discipline regime once migration to T2S and the related testing have been completed.

**Annex II: Assessment of the market impact**

This annex presents a simulation exercise undertaken by ECSDA in order to help assess the market impact of the settlement discipline measures proposed by ESMA in the draft CSDR Level 2 standards. The analysis is based on settlement fails data collected from 17 EU CSDs (including the 2 ICSDs) in February 2015. The figures are based on monthly data for November 2014.

1. ***Basis for the market impact analysis***
* In 2013, the 30 ECSDA members that are established in the EU collectively processed around 350 million delivery instructions. In terms of value, these delivery instructions represented close to EUR 1.1 quadrillion. Despite generally high settlement efficiency rates across EU CSDs, the volume and value of instructions at stake means that the impact of the settlement discipline regime is likely to be substantial.
* CSDs which participated in the analysis were asked by ECSDA to provide as much granularity as possible in relation to fails data. Not all CSDs were able however to provide details based on the categories proposed by ESMA (e.g. fails per asset class or duration of fails).
* Some inconsistencies in the data were inevitable given the tight deadline and the lack of clarity as regards some of the measures proposed by ESMA in the draft standards and technical advice. The figures should thus be interpreted with caution. We are nevertheless confident that they can be used as rough indications of the actual impact of the proposed measures.
* The biggest difficulty faced by CSDs taking part in the exercise was to define the appropriate scope of instructions to be included in the fails data. Since CSDs are currently mostly not able to identify whether a financial instrument is “*admitted to trading on a trading venue*” (i.e. not only admitted to trading on a regulated markets, but also on MTFs or OTFs), the data provided often includes all instructions (in all financial instruments) processed by the CSD.
1. ***Impact of mandatory buy-ins***

The figures collected from 11 CSDs were sufficiently granular to draw conclusions for the buy-in process. It was impossible however to take into account any exemptions or differences in the extension period as proposed by ESMA. Based on the default buy-in process (buy-in initiated after ISD+4), the figures indicate that:

* Had the rules been in place in November 2014 for the 11 CSDs included in the sample, more than 150,000 buy-ins would have been initiated that month, for a total value of around EUR 214 billion. In other words, each business day, more than 7,500 buy-ins would have been triggered for a value of EUR 10.7 billion on average. Assuming that November 2014 figures are broadly representative of a typical month, the total number of buy-ins per year could thus reach over 1.8 million, representing a total value of more than EUR 2.5 trillion.
* Not surprisingly, the two ICSDs account for the biggest share of the fails still pending after ISD+4 (around 85%), as a result of their overall size, but also due to their significant global cross-border business. However, the figures also show that buy-ins would be far from insignificant for the remaining 9 CSDs. In these markets, around 20,000 buy-ins would have been initiated during that month, with 4 markets counting more than 1,000 buy-ins (and up to 7,500).
1. ***Impact of late settlement penalties***

Based on data collected from 17 CSDs, we attempted to draw some conclusions for the expected value of late settlement penalties to be collected and redistributed by CSDs on a monthly basis. It should be noted that the figures were calculated on a gross basis, without taking into account the possibility for CSDs to net penalty payments per participant at the end of the month. The actual payments to be made at the end of the month based on the rules proposed by ESMA are therefore likely to be lower.

On the other hand, we have assumed that no further penalties are due after ISD+4, once the buy-in is triggered, which may lead, to a certain extent, to an underestimation of the real amount of the penalties to be collected.

* According to November 2014 data, the accumulated gross late settlement penalties to be collected by the 17 CSDs would have amounted to over EUR 183 million or around EUR 9 million a day. Assuming that the month of November is representative, this translates into yearly gross late settlement penalties of close to EUR 2.2 billion.
* While the two ICSDs hold the largest share of late settlement fines to be collected (75%), the difference is less striking than for buy-ins. Excluding the two ICSDs, the remaining CSDs would on average still each account for more than EUR 3 million per month. Among these CSDs, figures range between very close to 0 and EUR 15 million per month, and only 5 CSDs would have collected less than EUR 100,000 worth of penalties.
1. ***Difference in the settlement fail rate per instrument***
* Not all CSDs were able to provide settlement fail rates per asset type based on the categories provided by ESMA. In particular, it was not possible to distinguish the fail rate of "*SME growth market shares*" from other equities.

Based on the sample and with only few exceptions, equities and ETFs combined seem to display the highest fail rate, compared to other asset categories - in most cases, at least 2-3 times the fail rate for debt instruments. Only 3 CSDs provided separate figures for ETFs, which suggest that the fail rate for ETFs is even higher than that of equities. Debt instruments seem to have the lowest fail rate relative to other instruments. In most cases, a distinction between government and corporate bonds was however not possible. Whenever the distinction was made, the rates were broadly aligned - with a few exceptions where fail rates on corporate bonds were significantly higher (however possibly due to a few significant outliers).

The fail rate for all other instruments including investment funds was in general relatively high as compared to debt instruments and similar to the rate of equities and ETFs. This however differs quite substantially across CSDs and seems to depend very much on the specific instruments that each CSD settles.

* Most CSDs did not provide numbers for fails due to a lack of cash. In the few cases where this data was available, their value accounted for 5-15 % of the total number of fails.
* In general, it is also interesting to note that the relative weight of the instruments settled differs significantly across CSDs/markets. While some CSDs settle mainly equities, other CSDs primarily settle debt instruments (mainly government bonds). This obviously has an impact on the amount of the penalties collected, given that the penalty rate is significantly lower for government bonds in the ESMA proposal.
* Based on the figures, the proposed rates would lead to an average effective penalty rate over all instruments and CSDs of 0.79 bp. This rate differs however significantly across CSDs, ranging between close to 1 bp (if mainly equities and others) and only slightly above 0.3 bp (if mainly government bonds).