REPUBLIC OF FINLAND

Cash Flow Forecasting and the Rahakas Forecast System

Finnish Central Administration – Finnish State Treasury

Valtiokonttori
Statskontoret
State Treasury

Lisbon 12-13. Nov. Further redistribution subject to STF permission

Cash forecasting in Finnish State Treasury

Institutional arrangements	3 - 9
Cash forecasting practices and processes	
Bank account structure (EUR)	10
Forecasting techniques	11 - 13
Challenges and improvement plans	14 - 15
Overview of the procurement and implementation	16 - 17
Appendices	18 - 23

Liquidity Reserves

- Average central government liquidity reserves are 4 billion
  - SSF's are excluded and run their own liquidity reserves
  - Some off budget funds are included - for example the National Housing Fund
  - The EU's own resources account is included
- Yearly collected payments and payments made in 2017 were close to 91 bn
  - Funding and liquidity management operations excluded
  - Central Government budget for 2017 was 55,9 bn

Budget Execution Process

- The cash forecasting process is run separately from budget execution
  - Focus of Rahakas is mainly on funding and cash management
  - Budget appropriations are however often used in cash planning by budgetary entities

- Funding is budgeted, but the State Treasury can adjust downwards when liquidity position is sufficient

Institutional Arrangements

Budget Execution Process

- The budget figures are transferred to a common SAP-based ERP system called Kieku
- Before a budgetary entity enters into a contract or makes a payment, it is obliged to ensure that the obligation is within it's budgetary appropriations or a commitment limit (State Budget Decree)
- There is a common chart of financial accounts for each budget item. All payments are recorded on these accounts when bank accounts are reconciled daily
- A budgetary unit can monitor it's each appropriation from Kieku system

Kieku – SAP (HR, bookkeeping, revenue & expense processing)
Handi – Invoice and contract processing
Rahakas – Cash flow forecasting

Key participants in forecasting and liquidity management

- Budgetary Entities
  - Planning and provision of information
- Shared Service Centre (Palkeet)
  - Collection and provision of information
- State Treasury
  - Funding and liquidity management operations -“The end user of information”
  - Cash forecasting system (*Rahakas*) owner: instructing and monitoring the process
- Ministry of Finance
  - Defines the scope for funding and liquidity management: sets the budget for funding and limits for liquidity risk and FX risk

Institutional Arrangements

Budgetary Entities

- Mandatory cash flow planning and forecasting
  - Rolling 12 months & more emphasis on rolling 30 days
  - Similar rules for all entities, big or small
  - Each unit has one dedicated forecast contact person
- 70 budgetary entities, 70 Rahakas users
  - Tax authority collects 86% of income and makes 42% of outgoing payments
  - Top 5 income entities collect 93% of the total income
  - Top 5 expenditure entities account for 81% of the outgoing payments

Expenditure

Income

Institutional Arrangements

Shared Service Centre - Palkeet

- Payments processing, accounting and HR management for majority of budgetary entities
- Palkeet gathers and inputs cashflow forecasts into the system
- Are in regular contact with their customers
  - Excellent information channel that works both ways
- Provide technical connectivity to their payments system and invoice processing system
- 120 Rahakas users

Institutional Arrangements

State Treasury

- Front Office – 4 Rahakas users
  - Monitoring long term-liquidity → optimal timing and size of funding operations
  - Monitoring short-term liquidity → cash investment planning (depo, 3p-repo)
- Middle Office
  - Monitoring and compliance reporting regarding to the limits set by MoF
- Back Office and STF IT staff – 10 Rahakas users
  - Reconciliation of bank account balances, cash transfers
  - Contact point to the budgetary entities and service centre
  - User administration, process management (2 persons)
  - Technical monitoring, problem solving, upgrade projects (2 persons)

Practices and Processes

Group account structure

- All balances, negative or positive, are swept to main accounts at the end of the day
- Group account balance can be monitored continuously
- A budgetary entity has at least one expenditure and one revenue account
- All combined, there are circa 350 bank accounts in the budgetary unit level and another 70 technical accounts (general accounts, main accounts)

Practices and Processes

Sources of information

- Budgetary entities produce the basic forecast for rolling 12 months. Sources:
  - Financial plans (produced for next 4 years), Budget
  - Information on realised cash flows from Rahakas or Kieku (SAP)
- Payment system API with Palkeet and with the Tax Authority
  - Payments for the following day (Palkeet)
  - Payments for the following 2 days (Tax Authority)
- Invoice processing system API
  - Information on upcoming foreign currency payments for the following 20 days
- API for Hourly account balance information from banks
- API for Hourly updates from treasury management system (WSS)

Practices and Processes

General View of the Rahakas Forecast System

Practices and Processes

Time Frame for Forecast Process

	P
Revenue	296,858
Realised Revenue	252,045
Expenditure	-213,119
Realised Expenditure	-213,815

Challenges

- Process for manual input and manual updates can be complicated
  - Sometimes people forget to check and readjust the original 12 month plans
  - Payments and planning are usually done by separate instances
  - Typically people postpone their forecasts until the new budget is confirmed
- Fitting manual and automated forecast together is sometimes troublesome
  - For example: a human can tell there is a payment coming up, even though the invoice is not in the system yet
  - Tracking and matching budget items – payment system doesn't have this information
- Technical limitations with the current system, which is based on MS Silverlight
  - The development by Microsoft has ceased, support will cease in 2021

Improvement plans

- System procurement coming up in few years time
  - Next system could be a set of various tools: database, reporting tool, analysis tool and a GUI for manual input
- Currently only the Tax Authority is using statistical modelling. Adding more simulated forecasts is being evaluated from two different views
  - Bottom up and top to bottom
- More efficient use of invoice processing information
  - Extension to EUR forecasts

Implementation

Selecting the current system

- Previous system was run in the MoF until early 2009
  - Process for improving the system started in 2006 and it was decided that the State Treasury will be the new owner of the system and the process
- Some key requirements for the new system
  - Low supplier risk
  - Modern software with universal technical interfaces
  - Information security
- The vendor was selected in early 2008 and implementation started in autumn
- System was up and running in spring 2009

Implementation Related Tasks

Different tasks during the Rahakas implementation (2008-2009):

1. Process evaluation: Is the existing process sufficient?
2. User interviews: What kind of changes in process are preferable or tolerable?
3. Setting up the system: Working with the vendor staff
4. Migration of functionality and data from the old system: less is better
5. Testing
6. User guidance: on-site training, animated guide videos, tailored user guides
7. Extensive user support during the first days of use

Appendices

- Payment insfrastucture
- Technical infrastucture
- Example reports

Practices and Processes

Payment infrastructure for domestic currency

Commercial Bank Money
Payments to/from goverment agencies

Central Bank Money
Debt management & Liquidity management operations

Payment infrastructure for foreign currency

All CA entities' currency payments are made from STF's currency accounts in Bank 1 and then balanced in EUR in bookkeeping accounts between STF and the entity

IT-system and connections

Technical overview

Example reports

General overview of EUR liquidity

Jakso: 2.4.2018 - 7.12.2018 Kerroin: x 1 000 Raportointivaluutta: EUR

	16.4.2018	17.4.2018	18.4.2018	19.4.2018	20.4.2018	23.4.2018	24.4.2018	25.4.2018	26.4.2018
Alkusaldo	1 612 960	1 635 601	1 607 929	1 507 798	1 654 124	1 581 472	1 576 954	1 494 869	1 525 588
+ Kassaanmaksut	225 466	39 905	59 891	48 630	186 380	411 741	94 777	75 931	128 856
Kassaanmaksut TOT	233 405	78 070	60 148	58 199	188 204	442 287	81 219	80 429	68 894
Ennustevirhe tulot	7 939	38 165	257	9 570	1 824	30 545	-13 558	4 498	-59 962
+ Kassastamaksut	-63 047	-367 336	-35 568	-502 667	-107 867	-44 106	-106 707	-181 224	-272 905
Kassastamaksut TOT	-78 270	-386 842	-35 870	-499 571	-95 554	-47 889	-107 777	-160 530	-286 770
Ennustevirhe menot	-15 223	-19 507	-302	3 096	12 313	-3 783	-1 071	20 694	-13 865
* Kassajäämä 1A ennuste	162 419	-327 431	24 323	-454 037	78 513	367 635	-11 930	-105 293	-144 049
* Kassajäämä 1A TOT	0	0	0	0	0	0	0	0	0
+ Sijoitusten korko	-12	-27	-26	-56	-11	-20	-16	-4	-7
+ Velan korot	-696 273	0	0	0	0	0	0	0	3 181
+ Korot myönnetyistä lainoista	0	0	0	0	0	0	0	0	0
+ Suojausten korot	461 108	-214	-29	664	0	72 767	-82	16	-3 602
* Korkokassavirta	-235 177	-241	-55	608	-11	72 747	-98	12	-428
+ EU-maksut ja erilliset kulut	0	0	0	0	0	0	-58	0	0
* Kassajäämä 1 ennuste	-72 757	-327 671	24 268	-453 429	78 502	440 382	-12 085	-105 281	-144 477
* Kassajäämä 1 TOT	0	0	0	0	0	0	0	0	0
+ Velan muutos	0	0	0	0	0	0	0	0	983 583
+ Myönnetyt lainat muutos	0	0	0	0	0	0	0	0	0
+ Suojausten ja valuuttakauppojen pääomat	0	0	0	-245	-1 155	0	0	0	11 682
* Pääomakassavirta	0	0	0	-245	-1 155	0	0	0	995 265
+ Rahastot ja liikelaitokset	-32 602	0	0	0	0	0	0	0	0
Kassajäämä 2 ennuste	225 466	39 905	59 891	48 630	186 380	411 741	94 777	75 931	128 856
Kassajäämä 2 TOT	0	0	0	0	0	0	0	0	0
+ Vakuussiirrot	28 000	0	-454 400	0	0	-14 900	0	-64 000	0
+ Sijoitusten muutos	100 000	300 000	330 000	600 000	-150 000	-430 000	-70 000	200 000	-820 000
* Kassan muutos ENN	22 641	-27 671	-100 132	146 327	-72 653	-4 518	-82 085	30 719	30 788
* Kassan muutos TOT	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
* Likvidikassa eurot	4 165 601	3 837 929	3 407 798	2 954 124	3 031 472	3 456 954	3 444 869	3 275 588	4 126 376
Loppusaldo	1 635 601	1 607 929	1 507 798	1 654 124	1 581 472	1 576 954	1 494 869	1 525 588	1 556 376
* TOT päivän loppusaldo	1 628 317	1 626 587	1 507 752	1 666 790	1 595 609	1 603 717	1 480 240	1 550 780	1 482 548

Forecast evolution

Jakso: 7.11.2018 - 26.11.2018 Kerroin: x 1 Raportointivaluutta: EUR

	7.11.2018				
	0pv	2pv	3pv	4pv	5pv
- Ennusteen muodostuminen, tulot	8 746 091	8 746 091	8 746 091	8 945 091	8 945
STM 550, tulot	18 000	18 000	18 000	18 000	18
Opetus- ja kulttuurimin. 600, tulot	63 000	63 000	63 000	63 000	63
Puolustusvoimat 251, tulot	590 909	590 909	590 909	590 909	590
ELY-keskukset 380, tulot	313 636	313 636	313 636	313 636	313
Liikennevirasto 456, tulot	1 156 818	1 156 818	1 156 818	1 156 818	1 156
Valtiokonttori 301, tulot	51 227	51 227	51 227	51 227	51
Valtioneuvoston kanslia 125, tulot	0	0	0	0	
TraFi 457, tulot	3 207 000	3 207 000	3 207 000	3 406 000	3 406
Poliisihallitus 224, tulot	183 955	183 955	183 955	183 955	183
TEM 540, tulot	19 045	19 045	19 045	19 045	19
Aluehallintovirastot 360, tulot	227 273	227 273	227 273	227 273	227
Oikeusministeriö 150, tulot	771 955	771 955	771 955	771 955	771
Maahanmuuttovirasto 232, tulot	72 000	72 000	72 000	72 000	72
Viestintävirasto 495, tulot	90 909	90 909	90 909	90 909	90
VALTORI 320, tulot	1 035 227	1 035 227	1 035 227	1 035 227	1 035
Verohallinto 305, tulot	14 545	14 545	14 545	14 545	14
ARA 701, tulot	1 409	1 409	1 409	1 409	1
Tekes 509, tulot	0	0	0	0	
THL 561, tulot	399 909	399 909	399 909	399 909	399
Suomen Akatemia 605, tulot	0	0	0	0	
PH:n rakennuslaitos 252, tulot	2 000	2 000	2 000	2 000	2
MMM 400, tulot	527 273	527 273	527 273	527 273	527
Verohallinto/proteus, tulot	0	0	0	0	
- Ennusteen muodostuminen, menot	-33 515 887	-45 418 636	-45 418 636	-45 418 636	-45 418
VM Hallintoyksikkö 300, menot	-41 507	-90 909	-90 909	-90 909	-90
STM 550, menot	-1 810 210	-170 000	-170 000	-170 000	-170
Tulli/Proteus 302, menot	-18 097	-77 273	-77 273	-77 273	-77
Opetus- ja kulttuurimin. 600, menot	-348 141	-2 727 000	-2 727 000	-2 727 000	-2 727

Example Reports

Report for comparing API input to manual input

Jakso: 2.10.2017 - 27.10.2017 Kerroin: x 1 000 Raportointivaluutta: EUR

	2.10.2017	3.10.2017		5.10.2017	
		Ennuste	Jäädytetty web ennuste	Ennuste	Jäädytetty web ennuste
Veronkannon menoerät	-14	-144 834	-121 763	-52 430	-46 350
Tilitys veronsaajille	0	0	0	0	0
Palautukset	-14	-144 834	-121 763	-52 430	-46 350

Forecast of closing balances in selected currencies

Jakso: 7.11.2018 - 16.7.2019 Kerroin: x 1 000 Raportointivaluutta: Alkuperäinen

	7.11.2018	8.11.2018	9.11.2018	12.11.2018	13.11.20
USD	7 337	7 317	10 210	9 821	9 81
SEK	4 784	4 784	4 756	4 753	4 75
NOK	9 364	8 385	8 385	7 308	7 30
GBP	4 071	4 061	3 978	3 954	3 62
CHF	1 294	1 293	1 293	1 293	1 29
DKK	3 387	3 387	3 387	3 387	3 38
CAD	464	464	464	464	46
AUD	639	639	639	639	63
JPY	7 362	7 362	1 262	1 262	1 26
CZK	1 745	1 745	1 717	1 704	1 69
HUF	0	0	0	0	
PLN	0	0	0	0	0

	7.11.2018
USD	7 337
Alkusaldo	8 453
Kassastamaksut	-1 256
Rondo	-1 256
Asiatarkastamattomat	-266
Asiatarkastetut	0
Maksatuksessa	-105
Pohjaennusteet	0
Myöhässä	-885
Tilisiirrot OP	0
OP Loppusaldo	7 197
Nordea alkusaldo	140
Velan korot	0
Korot myönnetyistä lainoista	0
Suojausten korot	0
* Korkokassavirta	0
Velan muutos	0
Suojausten ja valuuttakauppojen pääomat	0
* Pääomakassavirta	0
Tilisiirrot Nordea	0
NORDEA Loppusaldo	140
Loppusaldo	7 337

Contacts

Back Office

Ms. Taina Nissinen +358 (0)295 50 2580

Mr. Jukka Aaltio +358 (0)295 50 2666

Finance IT

Mr. Santtu Seppälä +358 (0)295 50 2650

Mr. Karri Kesti +358 (0)295 50 2912

Forename.surname@statetreasury.fi

http://www.treasuryfinland.fi