

Cash Management and Forecasting – Analysis and Proposals Albanian Government case study

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Abstract—The purpose of this research paper is to analyze the processes of cash management and forecasting in public finance and propose a new approach for an effective and efficient cash management and forecasting. During our research, we will identify the processes carried out for cash management and forecasting, analyze and find the problems associated with these processes, propose the necessary changes to the processes that inflict an in effective and in efficient cash management and forecasting and a new technological solution as a new approach for the future. The new approach will imply the implementation of a sophisticated decision-making support system.

Our research is based on the Albanian case, which allowed us to study a concrete scenario and propose concrete actions for the improvement of cash management and forecasting functionality in the Government of Albania.

Keywords—cash management; cash forecasting; Decision support system, public finance

I. DEFINITIONS AND OBJECTIVES OF CASH MANAGEMENT

Government cash management may be defined as “the strategy and associated processes for managing cost-effectively the government short-term cash flows and cash balances both within government and between government and other sectors” [1].

Cash management is a daily task aiming to ensure that sufficient liquidity is available for solving daily liquidity needs [2].

All definitions of cash management emphasize the time value of government money. Strokey (2003) provides the following definition: “cash management is having the right amount of money in the right place and time to meet the government’s obligations in the most cost-effective way.” Other definitions emphasize active cash management of temporary cash surpluses and temporary deficits [3].

Cash flow forecasting or cash flow management is a key aspect of financial management of a business, planning its future cash requirements to avoid a crisis of liquidity [4].

Liquidity management is used as a general term, which includes both cash management and cash-flow forecast, i.e. all the activities aiming to ensure the availability of sufficient liquidity.

Cash management has four major objectives [5]:

- To ensure that adequate cash is available to pay for expenditures when they are due. Pooling revenues in a treasury single account (TSA) facilitates this.
- To borrow only when needed and to minimize government borrowing costs.
- To maximize returns on idle cash, i.e., to avoid the accumulation of unremunerated or low-yielding government deposits in the central bank or in commercial banks.
- To manage risks, by investing temporary surpluses productively, against adequate collateral.

The importance of an effective cash management in public finance is crucial as it has a direct effect on the implementation of the fiscal policy targets as well as on the public debt [5].

II. OVERVIEW AND ANALYSIS OF THE CURRENT PRACTISE OF CASH MANAGEMENT AND FORECASTING IN ALBANIA

A. General Overview

The mission of the Ministry of Finance (MoF) is to achieve economic stability through efficient, effective and transparent management of public finances [6].

An important step forward to achieving its mission is the implementation of the Albanian Government Information System (AGFIS), which is being in live operation since 2010.

The AGFIS system is currently the only source of government financial information through which is carried out the entire state budget execution process of all Central Governments Units (CGU) nationwide and the government’s consolidated financial reporting. The functionalities of this system reflect correctly all internal financial control rules associated with this process, strictly respecting the legal financial framework in force, making it a highly sophisticated system, appreciated by international organizations such as the World Bank, the International Monetary Fund, the European Union, etc.

The AGFIS system is being used by the MoF staff, 36 Treasury District Offices (TDO) through which the Budget Institutions (BI) perform their financial activities and since 2013 the AGFIS system is accessed also from 15 BI's, who perform their financial activities directly into the system and not through the corresponding TDO.

The AGFIS functional processes are classified as:

- Budgeting (Appropriation, Budget Breakdown and Budget Releases)
- Procurement and Payment Management (Commitments and Purchase Orders, Expenditure Requests, Payment Execution)
- Revenue and Cash Management (Revenue Accruals, Revenue Reconciliation and Distribution, Bank Statement Reconciliation, Cash Forecasting)
- Fixed Asset (FA) Management (Off-line FA management, FA journaling, On-line FA management, Asset Additions, Asset Transactions and Depreciation)
- Accounting and Financial Reporting (General Ledger Accounting and Reconciliation, Period Closing Fiscal Reporting) [7]

The cash management module, implemented in the AGFIS system has very limited functionality, which do not allow MoF for a proper and effective cash management and forecasting process.

Overall, MoF's current cash management focuses on short term targets; liquidity management in the lack of creditable preliminary liquidity and risk planning is characterized by short term last minute administrative interventions, which are not able to ensure long term sustainability [2].

Current cash-flow forecasting practice is mostly considered as an administrative task, basically it is a seasonally adjusted version of the budget plan, therefore its current version does not show real projected cash in and outflows. Liquidity management and cash forecasting do not form a coherent system, as liquidity management means mainly the application for short term interventions, basically stopping of the payments and budget allocation for a month ahead [2].

Cash-flow forecasts and risk management are not used for the purpose of planning and measuring planned action results, meaning that long term effects are not taken into consideration.

The cash management and forecasting process is carried out by the Treasury Operations Directorate (TOD), at the General Treasury Directorate (GTD) of the Ministry of Finance of Albania.

The Treasury Single Account (TSA) is the sole cash management account for the Central Government, which is located at the Bank of Albania (BoA).

The liquidity situation in TSA results in four forms of money. In ALL (Albanian Lek), where most of the government's economic and financial activity is based,

in Euro, which represents the inflows of debt and settled liabilities, in USD and SDRs.

Cash management process involves several different directorates of the Ministry of Finance. The GTD has responsibility for monitoring cash flows and cash balances, and executes the daily transactions via the AGFIS system.

The General Budget Directorate (GBD) prepares the fiscal table, that represents the monthly budget profile according to the main revenue sources and economic classification. General Macro and Fiscal Directorate (GMFD) provides the necessary revenue data, whereas General Debt Directorate (GDD) provides the data related to the debt.

GMFD is the responsible unit for preparing the revenue estimations in the budget and is also responsible for a monthly profile of the revenues.

Regarding the expenditures, the fiscal table offers a benchmark for monitoring and reporting of the budget execution within the fiscal year [8].

GTD perform the expenses executions based on the expenditure profile in the fiscal table. At the beginning of the year, Line Ministries present to the GTD their liquidity plans for salaries, operational expenses and capital expenses for the entire year, detailed by their subordinate institutions [9].

GTD checks the liquidity plans submitted by the Line Ministries to ensure that the total amount for each month is within the monthly expenditures in the fiscal table and then imports in the AGFIS system the liquidity plans, forming the monthly payment limits. Further on, GTD performs several other analyses, taking into account, the liquidity plans, the historical data, the GDD debt plan, together with the payment schedule and expenses profile, and prepares the daily cash plan for the entire year.

The daily plan defines a limit for the daily payments and is used to monitor the payments during the year.

B. Processes of cash management and forecasting

GTD is the main unit within the MoF for the cash management and forecasting. In order to carry out this task, GTD performs several activities and collects and analyze several information coming from different sources within and outside MoF.

To start with, GTD checks the status of the accounts (foreign exchange, TSA). The checking is done accessing online the Bank of Albania (BoA) system. MoF uses also transit accounts which are kept at commercial banks and are swept daily to the TSA and reconciled.

The information on the collected revenues is obtained from two different sources:

1. Through BoA – BoA sends an electronic file daily, containing information on the revenues collected in the TSA. The information is aggregate and contains

the total amount of the collected revenues for each commercial bank. This file is imported in the AGFIS system.

2. Through commercial banks – The revenues are collected in the transit accounts at commercial banks. Each commercial bank sends an electronic file daily, containing detailed information on the revenues collected in the correspondent transit accounts, but they are not further detailed by the type of income. These files are also imported and reconciled in the AGFIS.

The revenue information on the AGFIS system is not detailed by the type of income, therefore the General Directorate of Taxation (GDT) and the General Directorate of Customs (GDC) bring to the GTD the collected revenue data detailed by type of income, which is recorded in the AGFIS system and then reconciled. Currently, MoF and GDT exchange this information electronically, whereas with GDC has not yet been established an electronic exchange of detailed revenue collection information and those data are manually entered in the AGFIS system by GTD employees.

Beside the collected revenues, in order to perform the cash management and forecasting, the forecasted revenues are also needed. This information is submitted to GTD from GMFD and GBD, but they do not use any system or advanced tool to prepare the revenue forecast. They are done outside of the system in excel sheets. Analysis and practice have shown that these forecasts are not accurate and do not reflect the real expected incomes. The AGFIS system contains historical data on income since 2010.

Information provided by GDD about the related in and outflows are of crucial importance for a proper cash management and forecasting. This information is available in the debt management system (DMFAS) and GDD, based on the data recorded in the DMFAS system, prepares and provides to the GTD the necessary information in excel sheets. Excel sheets are regularly updated when changes occur.

Information on the actual expenditures is available in the AGFIS system. The data input is performed by the TDOs on behalf of the BIs and 15 BIs that access the AGFIS system. While regarding the expected budget payments, GTD has little information. The AGFIS system offers the possibility to record pre-commitments, commitments and payment schedules, but this functionality is being used only recently and only by the BIs that access the system. Beside them, the other cases are not captured in the system, therefore, most of the information is missing.

Based on the above data collection and analysis, GTD prepares daily cash forecasts. It compares the forecasts with the actual status of the TSA, analysis the cash-flow forecasts and decides on the necessary actions to be taken. This function exists in the AGFIS system on a very limited way, basically constrained on stopping the payments immediately or for a month

ahead, without taking into consideration the longer-term effects and there are no other actions, transactions planned and ordered.

Based on the daily cash forecast, GTD sets daily limits for the payments, for each TDO. This means that in case of liquidity shortage the payments are stops maximum for a month. GTD sets daily limits at least three times a day.

Under the current circumstances GTD is not able to give the right order for the GDD, when ordering a transaction. Cash flow forecast is not reliable; therefore, it cannot be differentiated short term and long-term positions, and the GDD is not ready to act as any active market participant. Currently GDD covers shortages only occasionally. Temporary balance surplus is not placed on the market as GTD does not give such an order for the GDD and GDD is not prepared for this type of transaction [2].

Regarding foreign exchange payments, they are being performed by the BIs themselves. BIs check the foreign exchange rate quotation of the different commercial banks and order the conversion by the given commercial bank themselves. TDOs are executing the transactions as ordered by the BIs, it means they are providing ALL coverage of the transactions to the commercial banks, while commercial banks are executing the foreign exchange payments.

Cash-flow forecasting and data analysis. GTD prepares cash-flow forecasts on the basis of the data received from the GMFD and GBD by using some historic data. Data provided by MoF's other departments are seasonally adjusted data of the budget plan.

The figure below shows the current cash flow cycle:

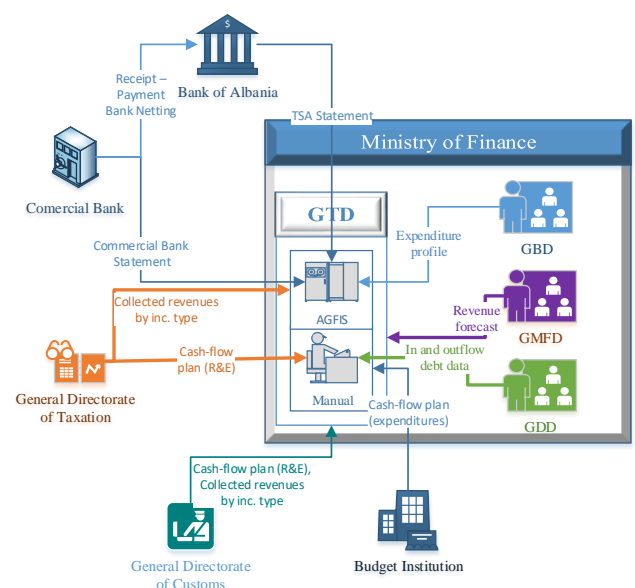


Fig.1. Cash flow cycle.

III. ANALYSIS AND PROPOSALS

A. Analysis of the Cash Management and Forecasting processes

In the previous section we described the processes of the current cash management and forecasting process. We are now going to analyze each of them to identify the problems that cause the inefficacy of the cash management and forecasting in MoF.

We believe, given the current situation, that accessing the BoA system online, to check the status of the accounts, provides sufficient and accurate data in due time for cash management purposes. There is no need for further centralization of revenue receipts. Sweeping of accounts once per day meets the current requirements

Accurate cash-liquidity forecasts, cannot be prepared since historic data and information provided by GMFD are not sufficient. In the lack of relevant data for comparison between forecasted and actual status (and as currently surplus balances are not placed on the market), the related costs of unrealized profit cannot be measured. This poses a serious problem for a proper liquidity management.

Another potential risk affecting the liquidity management and forecast, comes from the GDD. The information provided by GDD are not under the control of GTD. Debt information is derived from the debt management system, but it is further manipulated in excel sheets by GDD employees. Human intervention may jeopardize the accuracy of the information.

As mentioned earlier, payment execution is performed through the AGFIS system, therefore these data are accurate and reliable. But they are not enough to support liquidity management. Additional information related to planned expenditures is needed and this information is only partially available to GTD. Therefore, efficient liquidity management is limited, even though the functionality of AGFIS system exists.

The daily cash forecast is as well lacking of accuracy. The information on revenues, budget execution and the current liquidity management practice cannot be considered satisfactory for an efficient liquidity management. GTD differentiation of short term and long-term corrective actions does not exist. Cash management and cash forecasting are treated separately; it does not form a coherent system. Action planning is basically focused on cash management plans and during action planning cash-flow plans are not taken into consideration. The described information flow and the currently applied practice, limits the potential for the proper planning of the transactions as GTD does not have disposal of the necessary information for a well based decision making.

Setting daily limits can be considered a passive reaction and may have a negative effect on the economic and legal stability of the country. Setting a daily limit, which in case of liquidity shortages will stop the payments from being executed, does not solve the

problem, but it just postpones it. Reaching the daily limit proves a poor cash management process, that should be corrected. On the other hand, continuing this practice, does not stop the reoccurrence of the issue in the future and this practice does not provide long term sustainability. The actions are of administrative nature which requires valuable administrative capacity from the TDOs, CGUs and the GTD. The action contributes to the distortion of the real facts, it means real liquidity shortage of the system can hardly be measured (as the participants of the system refrain putting in some of the payment requests and consequently MoF cannot see the real volume of the payments due).

The incapacity to coordinate actions between GTD and GDD regarding active participation in the marked influences the functioning of GTD and as a consequence of the whole process. It is out of the scope of this research paper to deal in details with the functioning of GDD.

Foreign exchange payments process, as described in the previous section is highly ineffective and needs to be addressed. According to the best practice it is not the task of the BIs to make foreign exchange conversions, but it is the GTD who initiates these types of transactions.

Finally, cash-flow plans are not realistic as these plans are not reflecting the expected in and outflows. The preparation of cash-flow plans are merely routine processes, where the BIs do not provide accurate information, but, in most cases, equal mathematical divisions of the cash-flow plan by month, within the fiscal year. Cash-flow plan regular analysis is missing; analysis results are not built into the consequent cash-flow plans. Cash-flow plans are not prepared and regularly revised by the BIs and it is not prepared on a rollover basis.

B. Proposals

Based on this analysis of the current practice, it is obvious that there are lots of pending issues to be solved. In this section, we will make proposals to address the above issues.

As specified earlier, there is no need for changes in the current system for checking the accounts situation at BoA. If a dedicated information system solution for cash management and forecasting will be implemented, then MoF should consider receiving the data on the status of the accounts electronically and import them in the new system. In the longer term, the sweeping of accounts more than once per day may be introduced.

Regarding the revenues, as per the analyses done earlier, the main issue remains the forecast of the expected revenues to be collected. A new approach should be established. General Directorate of Taxation (GDT) and General Directorate of Customs (GDC) collect approximately 90% of the revenues in the budget. The role of these two institutions is crucial for the cash management and forecasting. Therefore, GTD should establish direct connection with both of them and

get the information from the source and not through the other units. These BIs should strengthen their ability on performing data analysis and offer more accurate information on the expected revenues.

The risk identified on the information provided by GDD regarding debt plan and payment scheduling, can be substantially diminished if the AGFIS system and the debt management system will be connected directly and exchange the necessary information. This will not require any additional effort, since the AGFIS system has already an interface developed for this purpose.

Regarding the expenditures, we identified that the data related to the planned expenses is mostly missing, which impacts substantially the cash management and forecast. There are different possibilities to sort out this issue. Daily cash flow plans that will be discussed later could be used for this purpose. Still, the most transparent solution, which facilitates the control of the payments also, is to put into the system all the pre-commitments and the contracts upon their occurrence together with a potential scheduling. This functionality is supported by the AGFIS system, but since the majority part of the BIs do not have direct access to the AGFIS system, this solution is practically not applicable. Allowing the BIs to access the system, through a web portal, will resolve this issue. Whereas, regarding the data of the executed payments, this information is available in the AGFIS system and can be used accordingly for cash management and forecasting.

Major elements of the current information flow do not provide a solid and accurate background for daily cash forecast. If the suggested proposals on revenues and payment execution forecast will be considered and applied, daily cash forecast will be realistic, therefore cash management will be improved.

If the cash management and forecasting procedure will be improved, based on the above proposals and actions to be taken, MoF should consider stopping the daily limit setting. Other proactive approaches can be adapted.

GTD is not able to differentiate between short-term and long-term position, therefore GTD should properly define short and long-term position from liquidity management point of view. GTD should be ready to identify temporary balance surpluses, to give orders for the placement and check the execution of transactions. GDD must be prepared for the placement of balance surpluses, which require capacity development, identification of tools available in order to minimize counterparty risk, limit setting and development of procedure manuals.

Another approach should be followed to address the issue of foreign currency conversion. We propose that this process should be centralized in the GTD. The main advantage of this approach is that GTD has the relevant knowledge to manage these transactions and if foreign currency transactions are centralized, the volume will be much higher, therefore, GTD has the opportunity to get a more favorable quotation from the commercial banks

than any individual BI for any given transaction could achieve. The proposed process would increase the efficiency of the whole system, it will also relieve the burden of the individual BIs and bring profit on the system level.

Another important element is the recording of the cash plan in the AGFIS system. Cash plan is different from cash forecast. The forecast focuses on what will happen and not on what should happen. Cash plan is crucial for an accurate forecasting. GTD prepares the cash plan on monthly bases and records this plan in the AGFIS system. Currently the way GTD plans the monthly cash is not according to a good practice, since they define as a monthly plan 1/12 of the fiscal year plan. This does not reflect the real-world cash flow, since the cash flow is not equal or approximately equal each month. The best way to have a realistic cash plan is that GTD should prepare the cash plan based on the information received by the BIs. On the other hand, BIs should create an accurate plan, since they have a more realistic view of the expected cash flow. The BIs should prepare a monthly cash-flow plan and submit it to GTD at the beginning of the year and daily cash plans which should be submitted to GTD at the end of the previous month. Since the revenues collected by GDT and GDC represent approximately 90% of the total income of the budget, the revenue collected by the other BIs have an insignificant impact in the budget. For this reason, there is no need for them to include in their cash-flow plan the revenues, but only the expenditures. Regarding GDT and GDC, their daily and monthly cash-flow plan should contain both planned revenues and expenditures. We suggest that for the sake of accurate data, considering that the volume of the data will be large and frequent, GTD should at least establish a standard way of reporting for easy analysis, such as predefined excel sheet formats or at best offer an online application for the preparation of the cash-flow plans.

The above-mentioned proposals will contribute in the improvement of the cash management and forecasting, but implementing them is another issue that should be addressed. In summary, we can identify three crucial elements in all the processes: Data collection, Data analysis and Decision making. Data collection means that GTD should have access to the information we have specified above. This information should be accurate and reliable and collected at the right time. These constrains can be fulfilled if the data is:

1. Produced in a reliable information system, that serves as the source. In some cases, such as BI cash-flow plans, it may not be possible to produce data from an information system, since not all BIs can have such a system in place. Instead, GTD may offer an online application that can be used by the BIs, or as a short-term solution, a predefined excel sheet to be filled in by them.

2. Is extracted from the source system and transferred to GTD electronically, avoiding as much as possible human intervention

3. Is imported and integrated in a single database environment at GTD. This is important for analysis purposes.

4. GTD should have in place an information system to be used for data analysis for cash management and forecasting purposes.

5. The information system should be equipped with sophisticated and advanced tools for data analysis, cash management and forecasting techniques

6. The system should support decision-making. This is a very important element, because it will define in future the type of system that GTD should implement. The purpose of data gathering and data analysis is to make decisions of the future actions for managing and forecasting the cash.

It is not the scope of this paper to deal with the information system solution, therefore, we will present only a general view and elaborate it in the future.

These systems are known as Decision Support Systems (DSS).

A decision support system (DSS) is a set of expandable, interactive information technology techniques and tools, designed for processing and analyzing data and for supporting managers in decision making. To do this, the system matches individual resources of managers with computer resources to improve the quality of the decisions made. [10].

The data warehouse is the heart of the architected environment, and is the foundation of all DSS processing. The job of the DSS analyst in the data warehouse environment is immeasurably easier than in the classical legacy environment because there is a single integrated source of data (the data warehouse) and because the granular data in the data warehouse is easily accessible. [11].

For the purpose of advanced analysis, we propose the implementation of Business Intelligence tools on top of the data warehouse. They will allow GTD to view and analyze the data in specific ways and offer decision-making support.

IV. CONCLUSIONS

Based on the description and analyses developed in this paper, we can summarize that the process of cash management and forecasting is complex and is linked to other procedures that are carried out not only within MoF, but also in other institutions of the General Government. In addition, we managed to present that

the cash management and forecasting procedure is basically passive, not effective and far from reality, impacting significantly the government liquidities.

Cash management and forecasting is a decision-making process which is based on the analysis of accurate data. In this paper, we managed to identify the processes that need to be followed and how they should be changed and the data and data sources that should be used for cash management and forecasting purposes. We also proposed a new contemporary way that involves the usage of information technology as a mean to achieving an efficient and effective cash management and forecasting process in MoF.

The new approach will completely change the way MoF manages public finance.

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