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IMPLICATIONS OF CAPITAL CONTRIBUTION RECEPTION TO INDEPENDENT STATE-OWNED COMPANIES: THE CASE OF SERPRO

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ABSTRACT

This paper addresses the self-sufficiency of the operational activities carried out for cash generation purposes at the Federal Data Processing Service (Serpro) aiming at its continuity as an independent state-owned company vis-à-vis the controlling shareholder. A qualitative, descriptive and documentary study is conducted to analyze the cash flow behaviors in operating, investment and financing activities, alongside the financial statements from 2005 to 2016. The analysis pointed to: a decrease in the cash balance from 2005 onwards, with a recurring shortage of operating activities compared to cash consumption; cash reconciliation based on financing activity involving constant capital injections from the controlling entity; evidence of payment of current expenses and dividends with capital contribution; receipt of financial contribution in 2012 and 2014, without prejudice to the status of independence and therefore in prejudice to legal regulations. The analysis also reveals that Serpro was uncompliant to the characteristics and the requirements of an independent state-owned company during the period. The results of this study have practical implications as it discusses and proposes aspects regarding the planning and development of the public audits oriented to the analysis of the conditions of dependence in independent state-owned companies building on the accounting information.

Keywords: Independent state-owned company. Cash flow statement. Fiscal Responsability Law.

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1 INTRODUCTION

In the companies, as a general rule, managers have investment, financing and operational cash sources to finance the acquisition of resources. When choosing one of them, the best cost - benefit ratio must be considered. Therefore, it is well reasoned to expect that the better the performance of operational activities is, the greater is the self-sufficiency and the lower the dependence on third-party resources – loans / financing – or on capital contributions from partners as financing source of ordinary activities.

In the public sector, the dependent companies are basically characterized by the lack of self-sufficiency and by its continuity require action by its controller, that is, these are loss-making companies relying on treasury capital to finance their ordinary activities.

The need for conceptual differentiation between a dependent and independent state-owned company arises from the different legal regimes to be applied. As proposed by Art. 165, § 5 and sections of the Constitution of the Federative Republic of Brazil (1988), independent state-owned companies are included in the Investment Budget, as these ordinarily generate sufficient resources for their maintenance and, therefore, have greater budgetary, financial and equity autonomy. While the dependent companies are included in the Social Security and Fiscal Budget because they need public resources to finance their continuity (Constitution of the Federative Republic of Brazil, 1988) and, therefore, comply with all laws applicable to other entities of the direct administration, such as those issued by the Treasury Department [STN] and by the Federal Budget Department [SOF], being further subject to Law n. 4.320 (1964), Complementary Law n. 101(2000) and Law n. 6.404 (1976).

Among the fiscal restrictions set out in the abovementioned regulations, the following can be highlighted: remuneration ceiling of the administration, generation of expenses, including those with personnel and social security, and indebtedness, including regarding the execution of credit operations. Although the legislation presents such restrictions, it is not clear, however, to which type of deficit it refers – if economic or financial – when states that resources transferred in the form of economic subsidies are exclusively intended to cover deficits of companies and shall, therefore, be allocated directly to the budget of the beneficiary company.

Regarding this matter, it is possible to observe from the General Budget of the Union of the last years an increasing amount of budget allocation in independent state companies for capital increase. Among these companies is the *Federal Data Processing Service* (Serpro), which has received four contributions for capital increase from 2005 to 2014. On the other hand, the company has presented sharp reduction in cash flows – from R$ 388 million at the end of 2005 to R$ 31 million at the end of 2014 and net cash deficits on 2006, 2008, 2009, 2010, 2011, 2013 and 2014, although contributions occurred in the period have leveraged the balances, which demonstrates a possible dependence of the state company.

Given this scenario, the following question is raised: Has Serpro met the legal requirements and maintained the characteristics necessary to an independent state company from 2005 to 2016? To answer this question a research was developed aimed at evaluating the self-sufficiency of Serpro operational activities regarding cash generation, so as to allow its continuity as independent state-owned company *vis-à-vis the controlling shareholder in the period from* 2005 to 2016.

This research proves to be relevant as it aims to encourage the debate on an issue still controversial in the Brazilian public sector: the characterization of the loss of independence by state-owned companies. This debate is particularly opportune if analyzed considering that maintaining a loss-making entity as independent overloads the National Treasury, that is, the general society. Moreover, there practical consequences of contributing to the planning and execution of public audits whose purpose is to analyze the c conditions of dependence of independent state-owned companies, based on accounting information.

Moreover, the paper aims to contribute to the literature on Fiscal Responsibility. The issue develops as the approaches of previous studies (Gerigk, Clemente, & Ribeiro, 2014; Linhares, Penna, & Borges, 2013; Azevedo, 2013; Mello & Dalchiavon, 2012; Santos & Alves, 2011) are analyzed.

Finally, the study explores the discussion on whether the accounting analysis provides the knowledge of the economic, financial and operational profile of an entity in the public sector with the purpose of reducing the asymmetry of information between the company and the management of state-owned companies.

2 THEORETICAL BACKGROUND

2.1 Dependent and Independent state-owned companies in the Public Administration

The state-owned companies can only be created by legislative authorization, issued according to the case, and as regards the autonomy for executing its budget; it will depend on the characterization as to its level of dependency from the relevant controlling entity.

Complementary Law n. 101 (2000), of section II, Art. 2º, defines as controlled company those whose majority of the share capital with voting rights belongs to the Federation, while, in section III, dependent state-owned company is defined as "controlled companies that receive financial resources for the payment of personnel or general expenses, or the payment of capital expenses, excluded, in the latter case, those arising from capital increase". Based on the foregoing, it can be inferred that dependent state-owned companies are those whose income generation is insufficient to meet recurrent expenditures, thus requiring budgetary / financial resources from the National Treasury, a situation that subjects them to the provisions of Complementary Law n. 101, unlike independent state-owned companies.

In greater detail, the section II, of Art. 2, of the Federal Senate Resolution n. 43 (2001), further describes the fact that the company, having received financial resource in the immediately preceding year, has "budgetary authorization under the Annual Budget Law [LOA] for receiving financial resources for the same purpose". In the light of said resolution, it is evidenced the need for a payment of personnel or general expenses, or the payment of capital expenses in the previous year, with the receipt of financial resources for the same purpose budgeted in the current year. Therefore, according to this resolution, a single transfer, or sporadic transfers is not enough to characterize the company's dependence. For that, it is necessary both the receipt of financial resources in the previous year and the budgetary forecast in the current year.

This rule can make it very difficult to characterize the condition of dependence of a state-owned or mixed company, given that the financial transfer may take place a single time, but in a volume large enough to cover more than one financial year, thus avoiding a new budgetary authorization. In this way, the relevant company, from the formal point of view, remains independent, but, essentially, the resources previously received finance its continuity.

Moreover, STN Ordinance n. 589 (2001), in Art. 3 sole paragraph, alongside with Art. 7 of Interministerial STN/SOF Ordinance n. 163 (2001), establishes that resources transferred as financial allowance are exclusively intended to cover corporate deficits and should, therefore, be allocated directly to the beneficiary company's budget. Based on these legal standards, state-owned companies that are in deficit and, in such conditions, still receives public resources, shall have these amount classified as financial allowance, and the beneficiary company is included in the Fiscal Budget, as a unit of that budget, that is, the deficit characterizes the loss of independence, and thus the company is removed from the Investment Budget and covered under the Fiscal Budget.

As regards transfers of public resources to loss-making companies, Art. 167, VIII, of the Constitution of the Federative Republic of Brazil (1988), further requires specific legislative authorization when using fiscal and social security resources to cover corporate losses. Although the deficit is referred to in the two standards (STN Ordinance no. 589, 2001 and Interministerial Ordinance STN/SOF no. 163, 2001), it should be noted that the legislation does not provide the means for its characterization. This study develops a methodological choice to fill this gap (see section 2.2).

This methodological choice seeks to gather the conditions necessary to allow the characterization of a state-owned company as a dependent, namely: (1) to identify whether the expenses is budgeted in the Fiscal and Social Security Budgets; (2) even if integrating the Investment Budget, identify whether the company is in deficit when receiving resources from the controlling entity - situation which results in its inclusion in the Fiscal and Social Security

Budgets, and, therefore, in the loss of independence; (3) check in the Investment Budget whether the company receives financial contributions from the controlling entity for the payment of personnel or general expenses, or the payment of capital expenses, even if it is not in deficit (except for an increase in equity interest) in the previous year, with the receipt of financial resources for the same purpose budgeted for the next year.

2.2 Evaluation of the Financial Situation through Cash Flow Analysis

Recent studies on the economic and financial situation of companies in Brazil and abroad, such as Sun, Ding, Guo & Li (2016) and Mamede, Nakamura, Nakamura, Jones, & Jardim (2017), has focused on corporate finance, whose main objective is to analyze the capital structure of companies. The practical contribution of these works is that they present an adequate capital structure for the financial managers of institutions, whether private or state-owned, leading to a lower level of cost of capital (Aslan & Kumar, 2012; Nisiyama & Nakamura, 2015).

Furthermore, there are papers addressing public finances, discussing the control of the indebtedness of federative entities, and the logic and / or budgetary process at different levels (e.g., Hatadani, 2015, Azevedo, 2016). This paper, however, addresses the cash management of a state-owned company, discussing in particular the financial deficit as an evidence of dependence on the controlling entity.

According to Fernandes & Meireles (2013), the financial autonomy of a company can be understood as the capacity of providing itself the financial resources necessary to deal with operational setbacks. Therefore, the financial situation (deficit or surplus) is a result of such capacity / autonomy.

As referred to in section 2.1, the law is deficient in specifying which type of *deficit* – economic or financial – the company must present so that the contribution is considered an allowance and requires specific legislative authorization for the transfer of the resource, further failing in choosing the methodology for calculating such deficit. Using the concept of financial *deficit*, assessed based on the information contained in the Cash Flows Statement (DFC) disclosed in accordance with Technical Approval 03 of the Accounting Practice Committee [CPC] – PT CPC 03 (CPC, 2010) for analyzing whether there are indications of loss of independence, stands as a conservative choice when compared to economic deficit.

According to Braga & Marques (2001), many financial performance indicators can be obtained from the DFC, especially those related to the cash flow generated (or consumed) by the regular operating activities of the company. According to Quintana, Porto & Lemos (2008), the DFC is relevant as it evidences, for internal and external users, how the cash management is conducted, in other words, how the company manages the available resources in a given period, evidencing its origin and application, as well as the company's ability to honor its obligations in the short term. Thus, indexes obtained from this statement, such as those proposed by Braga &Marques (2001), can help analysts, creditors and other stakeholders in forecasting future cash flows and in the performance evaluation of the current flows, thus posing as a tool to monitor financial performance (Bachmann, Tonin, Colauto, & Scherer, 2014).

In this sense, it would be possible to check from the DFC: (a) the company's capacity to generate future positive net cash flows; (b) the company's capacity to honor its obligations, to pay dividends and loans assumed; (c) the company's liquidity, solvency and financial condition; (d) the rate of the conversion of earnings to cash; (e) to compare the operational performance of different companies, by eliminating the effects of different accounting treatments for the same transactions and events, among others (Braga & Marques, 2001). In other words, the use of indicators obtained from the DFC facilitates the interpretation of the company's financial situation (in particular, in the present study, the financial deficit), which, therefore, highlights the relevance of these indicators compared to the conventional structure, profitability and return indicators obtained from the Balance Sheet, for instance.

Braga & Marques (2001) present the following groups of financial indexes that can be obtained from the information disclosed in the DFC: (i) Cash Coverage Ratio; (ii) Capital Expenditure Ratio; (iii) Cash Flow Return Indicators and (iv) Performance Quality Ratio. The study of these authors focused on illustrating these indicators with data from Companhia Vale do Rio Doce and Centrais Elétricas de Minas Gerais (CEMIG). While this study amplifies the application of these indicators, alongside with the proposal of Almeida (2000) (see section 4).

3 METODOLOGY

This study consists of a descriptive and documentary research of a qualitative nature focused on the Serpro case. Analyzes have been carried out horizontally and by indicators, based on the information obtained from the financial statements of the company studied hereunder, from 2005 to 2013, as Serpro began to publish such statements only as of 2005.

Initially, aimed at analyzing the financial situation of Serpro, a horizontal analysis of cash balances and cash flows from operational (FCO), investment (FCI) and financing activities (FCF). The assessment of the he horizontal variation has used as basis the previous year. In this sense, 2005 is the benchmark only for 2006, and so on.

Almeida (2000) presents a comparative table (Table 1), through which it is possible to classify in which stage a company is by means of a cash flow analysis. Worth noting, however, that such analysis shall be carried out alongside other indicators in order to confirm the observed trends. For this purpose, two indicators listed in Table 2 are later calculated, with reference to Braga and Marques (2001) & Almeida (2000).

Table 1
Stages of the Organization

Cash Flow / Stage	Creation	Expansion	Maturity	Decline
Operational – FCO	-	+	++	+
Investment – FCI	- -	-	-	+
Financing – FCF	++	+	-	-

Note. Source: Almeida (2000)

In summary, information contained in Table 1 can be interpreted from the organization's development cycle. Upon the Creation, a greater contribution is required to dealing with the permanent investments and, therefore, the operational cash flow (FCO) tends to be negative. In the *expansion phase*, the FCO is expected to be positive, however, still requiring the fund raising to address necessary investments. In the *maturity* phase, the organization presents a greater inflow of resources via FCO and, to the same extend, the payment of funds raised and dividends occurs, via negative financing cash flow (FCF). Finally, in the *decline* phase, a positive FCO is expected, given the reduction of receivables and inventories. However, due to the demobilization, the investments cash flow (FCI) becomes positive. Table 2 summarizes the indicators used in the present study.

Table 2
Indicators for performance analysis from the DFC

Indicator/formula	Indicators against the research objective
Payment of debts with cash = (FCO – dividends) ÷ liabilities	Aims to evaluate the ability of Serpro to honor its obligations, only with the free cash generated by the company's business. The indicator assists institutions in assessing the entity's ability to honor its obligations, with the cash generated from its operations, to cover existing debts.
Payment of dividends with cash = FCO ÷ total dividends and interest on equity	Provides evidence of Serpro's ability to pay dividends and interests on current equity based on the FCO flow.
Performance Quality = FCO ÷ earnings before interest and taxes	This indicator aims to provide the study with the following evidences: (i) indicate the operational cash generated by the operational performance; (ii) indicate the dispersion between operational cash flows and operational profits disclosed by Serpro.
Investment/financing = FCI ÷ FCF	Compare Serpro net flows necessary for the purposes of investment with those generated from financing.
Coverage of Investments = FCO ÷ FCI	Evaluates Serpro's ability to finance its investments with resources generated from its operation.

Continue

Table 2 (continued)

Indicator/formula	Indicators against the research objective
Total Return = FCO ÷ (FCI+FCF)	Assesses the level of Serpro's internal resource generation for its investment and financing activities.
Return on Profit = FCO ÷ Net Income for the year	Indicates how much of Serpro's net income is realized financially. The return of net income as regards cash.
Return on assets = FCO before interest and taxes ÷ total assets	The cash value generated by Serpro operations for each monetary unit of the applied asset.
Return on Equity = FCO ÷ net equity	Evidences if Serpro has been able to generate cash. In this sense, it presents the of cash recovery rate of investments made by its shareholder - the Union.

Note. Source: Braga, R., & Marques, J. A. V. D. C. (2001). Evaluation of the liquidity of companies through analysis of cash flow statement. *Revista Contabilidade & Finanças, 12*(25), 06-23.

Regarding the indicators, it is worth noting that, an adaption to the cash return on assets is made so that the study comprises only fixed and intangible assets, considering that these are the most expressive items in the consumption of financial resources. The investment-financing indicator has not been used, as the investment coverage index itself is sufficient for the purpose hereunder. Moreover, for calculating the indicators: (a) the "financial performance" is the concept of interest used in the formulas, which is the sum of the financial income less the interest for the year, reported in the Income Statement for the year; (b) dividends plus interest on shareholders' equity is the concept of dividends used; (c) the FCI is converted to positive so as to enable the analysis of the financing and investment ratios and (d) the FCF and FCI are converted to positive so as to enable the analysis of the total return index.

Therefore, the horizontal analysis has enabled to compare homogeneous elements of successive periods - cash by cash -, that is, a perspective evaluation of the cash flow. In addition, the analysis of indicators has further enabled the comparison of cash flow items with elements of other statements, such as: Explanatory Notes, Budget Laws and Decrees authorizing the capital increase on recurring receipts of contributions for capital increase in Serpro.

Considering the object hereunder, data have been subject to nominal analysis, without deflation, which, therefore, poses as a limitation to the results. Additionally, the study has been conducted with a single dependent state-owned company. Another limitation lies in the fact that this paper has been developed from the perspective of the external user, thus unconnected to the process of preparation of the financial statements as a primary source. And, within such perspective, it has not been possible to identify any references to expansion plans or projects budgeting that demand specific contributions.

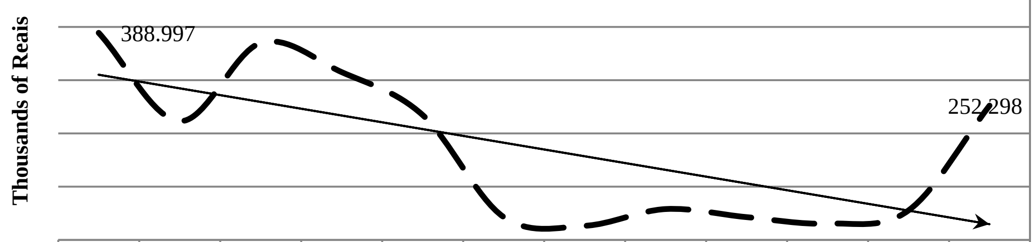
4 ANALYSIS OF RESULTS

As stated in the Management Report, Serpro was established by Law no. 4,516 (1964) and falls under Law n. 5,615 (1970) as a state-owned company, with full capital from the Union. Since 2004, Serpro has migrated from the Social Security and Fiscal Budget to the Investment Budget of state-owned companies, thus assuming the status of an independent state-owned company. The main implication of this shift is the suspension of financial resources from the National Treasury to finance current expenditures.

After becoming independent, Serpro has been authorized to receive some resource contributions, namely: (1st) June 2008 in the amount of R$ 271 million for capital increase (Law 11,647, 2008); (2nd) December. 2010, in the amount of R$ R$ 250 million (Provisional Measure No. 515, 2010), with financial transfer carried out in two installments: R$ 184 million (2011) and R$ 66 million (2012); and (3rd) 2014, in the amount of R$ 193.6 million (Law No. 12,942, 2013).

4.1 Cash balance analysis

Considering the occurrences during the period hereunder (2005-2016), an analysis was developed observing the behavior of the final cash balance, according to Figure 1.



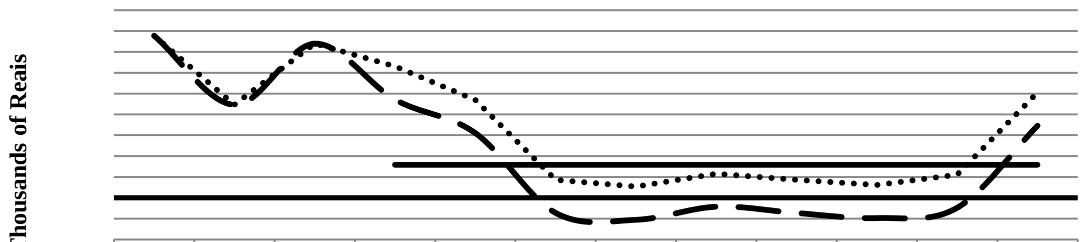
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Saldo de caixa	388.997	223.200	369.913	315.207	234.679	43.167	26.615	58.047	42.932	30.825	55.538	252.298

Figure 1. Evolution of the final cash balance for 2005-2016
Source: Research data (2017).

It is clear that, in 2005, Serpro has presented a significant cash reserve in comparison with the following balances of this item. However, Figure 1 evidences a sharp reduction in the final cash balance over the period analyzed, especially up to 2014. From R$ 389 million at the end of 2005, Serpro jumps to R$ 31 million at the end of 2014 – its first year as an independent company –, representing a reduction of 92%, although the balances have been leveraged by contributions during the period. In the years of 2015 and 2016, a recovery of the cash balance is observed, amounting to R$ 55 and R$ 253 million, respectively, but it is still lower than the beginning of the historical data series. In the period from 2005 to 2014, it can be observed that the injections of resources in Serpro via capital increase were not sufficient to meet the successive reductions of resources available. The increase in the need for resources evidences possible signs of inefficiency of the internal cash generation when recomposing balances used.

The trend graph, shown in Figure 2, where the final cash balance is evidenced with and without the effect of the contributions in order to comparatively verify the financial performance of the company, corroborates this analysis. In spite of the transfers of funds occurred on a timely basis in 2008, 2011, 2012 and 2014, the average has been used in this study in order to find a trend in the effect of the contributions for the period (2008-2016). This procedure is particularly justified considering that the balances were leveraged after the transfers. Adopting this procedure, it is observed that the contributions rectify a situation of total cash exhaustion, and are used to leverage the balance line.

Since 2009, considering the line without capital contribution (Figure 2), the result of the analysis started to indicate the loss scenario, where without the support of the Union, there would not be financial resources to pay regular operational expenses, such as personnel expenses, until the end of 2015.



Anos	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Com aporte	388.99	223.20	369.91	315.20	234.67	43.167	26.615	58.047	42.932	30.825	55.538	252.29
Aporte				79.406	79.406	79.406	79.406	79.406	79.406	79.406	79.406	79.406
Sem aporte	388.99	223.20	369.91	235.80	155.27	-36.23	-52.79	-21.35	-36.47	-48.58	-23.86	172.89

Figure 2. Evolution of the final cash balance for 2005-2016 with linear distribution of the contribution
Source: Research data (2017).

To complement this previous analysis, Table 3 shows a summary of the cash stock, year by year, with their respective flows.

The first contribution occurs in 2008, in the amount of R$ 271 million. In that year, there is still an initial cash balance in the amount of R$ 369 million, ending with R$ 315 million, representing a reduction of 15%. Excluding the contribution, the final cash balance would be R$ 44 million, which would not support the demand for cash in 2009, in the amount of R$ 80 million (variation in the cash flows from activities).

The cash balance of 2010 carried for 2011 is R$ 43 million. In 2011, it is observed that the deficit in the FCO alone is greater than this amount, thus exceeding the entire balance of the inventory and further requiring R$ 2 million, which is then covered by the FCF surplus, through capital contribution. In 2011, therefore, it is reasonable to determine the dependence of Serpro on the contribution to pay operational obligations.

Worth mentioning that, according to income statement of 2010 and 2011, Serpro has recorded two consecutive losses of R$ 176 million and R$ 175 million, which reinforce the deficit situation of the company and, therefore, the contribution to the capital increase received in this period is in the form of a current economic subsidy, as it is intended to meet the cash needs and the amortization of operational financial deficits.

In the legal scope, besides the requirement that the transfer is authorized by specific law, there are also the implications provided for in the Budget Guidelines Law (LDO). As the transfer of funds to Serpro is not intended to (a) increase ownership, (b) supply of goods or services, (c) payment of loans and financing granted and (d) financing, which are the exceptions provided for in the LDO's, Serpro would be removed from the Investment Budget and transferred to the Fiscal Budget, thereby losing its independence and being subject to the state-owned companies legal regime. Worth pointing that, in 2011, there has been a payment of dividend in the amount of R$ 40 million and, given the aforementioned reasons, it raises indications that these may have been paid with funds provided by the Union.

As regards 2014, the following should be highlighted: as the cash balance at the end of 2013 transported to 2014 is R$ 42 million, this would be the limit for a possible deficit in the operational activity to be demonstrated in the FCO, which has been exceeded by R$ 65 million (FCO performance of -108 million). Corroborating this observation, in the 2013 budget, a special loan of R$ 193.6 million (Law No. 12,942, 2013) has been approved in favor of the Ministry of Finance to make a capital contribution to Serpro in 2014. So, at this moment the need for capital contributions to finance its operational activities is fully confirmed.

From the data listed herein Serpro's loss of independence is verified, given that in 2012 the company has received the amount of R$ 66 million and, in 2014, the same financial resources to finance recurrent deficits. According to art. 2, item II, of Federal Senate Resolution n. 43 (2001), it would become a state-owned company.

Table 3

Statement of compound cash flows with opening and closing balances

Item	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Opening cash balance	335.955	388.997	223.200	369.913	315,207	234.679
FCO	409.612	66.689	313.372	-171.858	57.819	-134.219
FCI	-42.014	-106.130	-127.232	-90.735	-128.347	-57.293
FCF	-314.556	-126.356	-39.426	207.739	-10.000	0
Variation	53.042	-165.797	146.713	-54.854	-80.528	-191.512
Balance other banks				147		
Closing cash balance	**388.997**	**223.200**	**369.913**	**315.207**	**234.679**	**43.167**
Item	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Opening cash balance	43.167	26.615	58.047	42.932	30.825	55.538
FCO	-45.192	163.564	103.469	-108.303	147.832	323.812
FCI	-115.252	-198.132	-118.584	-97.454	-123.119	-127.052
FCF	143.892	66.000	0	193.650	-	-
Variation	-16.552	31.432	-15.115	-12.107	24.713	196.760
Balance other banks				-	-	-
Closing cash balance	**26.615**	**58.047**	**42.932**	**30.825**	**55.538**	**252.298**

Note. Value in thousands of reais; Variation = Opening cash balance + FCO + FCI + FCF.
FCO – Operational Cash Flow
FCI –Investment Cash Flow

FCF – Financing Cash Flow
Source: Research Data (2017).

In summary, for the analysis of cash balances, it cannot be assumed that in all years presenting a deficit in the FCO there are indications of a possible fragility of Serpro's independence condition, as these deficits could be financed with stock from previous years. However, for the years 2011, 2013 and 2014, the indications are clear. In 2011, considering that the inventory of cash transported was insufficient to cover the operational deficit, the administration has resorted to the contribution to cover the difference, that is, Serpro has paid the current operational expenses with funds from the capital contribution of 2011. In 2013 and 2014, considering that it incurs in the hypothesis of direct dependence established by Federal Senate Resolution n. 43 (2001). This means that the receipt of resources from the Union as a contribution to the capital increase, at the deficit situation in which the Serpro was, has not adhered to the provisions of the relevant regulations.

4.2 Horizontal analysis of operational, investment and financing activity flows

Table 4, below, show the ability of the resources generated by FCO to, at least, maintain the potential level of production of the equipment and facilities of the company's current installed capacity.

Table 4
FCO deducted from financial resources intended for depreciation (in thousands of reais)

Item	2006	2007	2008	2009	2010	2011
(a) FCO	66.689	313,372	-171.858	57.819	-134.219	-45.192
(b) Depreciation/Amortization	-53.166	-73.863	-93.692	-102.124	-110.563	-133.610
(c) = (a) – (b) free FCO	13.523	239.509	-265.550	-44.304	-244.782	-178.803
Item	**2012**	**2013**	**2014**	**2015**	**2016**	
(a) FCO	163.564	103.469	-108.303	147.832	323.812	
(b) Depreciation/Amortization	-108.829	-120.835	-133.495	-39.995	-44.719	
(c) = (a) – (b) free FCO	54.735	-17.366	-241.797	107.837	279.093	

Nota. FCO – Operational cash flow
Source: Research Data (2017).

As can be seen, in the period from 2008 to 2011, and also in the years of 2013 and 2014, the operational activities have not been able to generate sufficient cash to maintain Serpro's current installed capacity. In these years, the replacement of fixed and intangible assets was borne with the resources from the contribution made by the controlling entity.

Another important information to be observed from Table 4 is the instability of FCO, which can indicate either that the resources have not been invested efficiently and, therefore, are not generating sufficient operational cash, or the default by major customers. When compared the behavior of FCO with the criteria presented by Almeida (2000), Serpro falls under the first scenario (see Table 1), at the initial stages of its existence, where the recurrence of a negative or modest FCO is common for investments. This scenario occurred in 6 of the last 11 years under analysis, with a persistence in the period from 2008 to 2011.

Table 5 shows Serpro’s investment activities flow against depreciation / amortization for the period, and aims to enable the evaluation of the company’s investment policy. If FCI is closer to the depreciation/amortization it means that the company is investing to maintain its installed capacity. How the investment is paid is not analyzed, if using the resources from the operations or with resources of the controlled entity, but rather the amplitude of the investment and if it, at least, covers the current conditions so that there is no discontinuity.

Table 5
Expansion / retraction of investments (in thousands of reais)

Item	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
(a) FCI – Investments cash flow	106.130	127.232	90,735	128,347	57,293	115,252
(b) Depreciation/Amortization	53.166	73.863	93.692	102.124	110,563	133,610
(c=a-b) Expansion/retraction	52.965	53.369	-2.957	26.223	-53.270	-18.359
Item	**2012**	**2013**	**2014**	**2015**	**2016**	
(a) FCI – Investments cash flow	198.132	118.584	97.454	123.119	127.052	
(b) Depreciation/Amortization	108.829	120.835	133.495	39.995	44.719	
(c=a-b) Expansion/retraction	89.303	-2.251	-36.041	83.124	82.333	

Note. Source: Research data (2017).

As observed from Table 5, during the entire period under analysis the FCI has consumed resources and, based on information contained in DFC and the Explanatory Notes, the investments are basically directed to fixed and intangible assets. The years of 2006, 2007, 2009, 2012, 2015 and 2016 present sings of expansion of the installed capacity. In these years, the consumption of resources in the investment activity was higher than the sum of depreciation and amortization. Which indicates the investments have exceeded the amount necessary to maintain the installed capacity. In the other years, sings of retraction of the installed capacity are observed, as a result of the decrease in the investments below the necessary for the replacement.

In other words, despite the negative FCI, which indicates the resources have been directed to fixed and intangible assets, the returns (of this investment) do not contribute to the sufficient generation of FCO, that is, the assets resulted from the investments have not yet demonstrated efficiency gains in production capacity. Given this scenario, it is reasonable to assume that the cause for retraction in investments relates to Serpro’s inability to generate operational surpluses, considering that in the years of retraction (except for 2013) a deficit in the FCO is also evidenced. Worth noting that the FCO has "competed" with the FCI for the remainder of the FCF or the company's cash stocks.

The insufficient generation of operational cash observed in many years within the period under analysis combined with the recurrent resource demands on investment activities provides grounds for the surplus in the cash flows from the surplus financing activities, which have posed as an important source of funds for the company's cash balance, and also for covering operational expenses.

As regards the partners, considering the period when Serpro has paid dividends and Interest on shareholders' equity (2005 a 2011), the total of R$ 275 million have been paid (see Table 6), while three contributions totaling R$ 521 million have been received in the period.

Table 6
History of partners' remuneration from 2005 to 2011 in thousands of reais)

Item	**2005**	**2006**	**2007**	**2008**	**2009**	**2011**	**Total**
Distribution of Ordinary Dividends	20,494	41,321	29,414	56,966	10,000	40,108	198,303
Distribution of Complementary Dividends	19,460	21,020	-	-	-	-	40,480
Interest on shareholders' equity	-	-	25,000	-	10,905	-	35,905
Dividends + Interest on shareholders' equity	39,954	62,342	54,414	56,966	20,905	40,108	274,688

Note. Source: Research Data (2017).

As already mentioned, in the years of 2008, 2010 and 2011, operational activities have generated a negative FCO and, even in this case, Serpro has distributed dividends and / or Interest on shareholders' equity in the relevant years. In the light of that, it is reasonable to infer that the resources from the capital contributions have also been used to remunerate partners.

Considering the three cash flows – FCO, FCI and FCF – accumulated throughout the historical data series, the following profile of cash generation, in nominal terms: (1) FCO has generated cash in the amount of R$ 1,126 million, presenting deficit in four years (2008, 2010, 2011 and 2014); (2) the FCI has consumed R$ 1,331 from the cash, with the occurrence of disinvestment in some years; (3) the FCF represents a contribution of R$ 120 million, which, added to the FCO generated in the period and subtracted from the FCI, represents a net deficit of R$ 85 million in 11 years.

In summary, as the generation of operational cash was insufficient compared to cash consumption in other activities, the company has used funds from the Federal Government and the cash balance from previous years. Such failure could have led to insolvency if the Union had not provided resources. More specifically, in order to meet its obligations, Serpro has relied not only on the financial resources of third parties, but also on recurring contributions from the controlling shareholder (R$ 714.6 million).

An horizontal analysis of FCO, FCI and FCF has made it possible to verify that the company has not reached self-financing capacities and, in order to continue its operations, it has resorted to the aid of the controlling entity, which has made contributions for the capital increase. But, as mentioned above, whenever the company was in a deficit scenario the resources should, essentially, be received and recognized as an allowance. Therefore, Serpro has not meet the legal requirements in order to maintain the necessary characteristics of an independent state-owned company in the period from 2005 to 2016.

Worth highlighting that such assertion is made within the limitations of the adopted methodological procedures, both as regards the choice of indicators herein and given the fact the information are obtained in the condition of external user, implying that internal that could reveal a different scenario are not considered. It is also important to note the limitations of the type of analysis and research carried out , namely: qualitative and documentary research..

4.3 Analysis of Indicators

The analysis of the indicators, shown in Table 7 according to their categories – liquidity, investment and return for the period 2005-2016, corroborates the results presented in the horizontal analysis

Table 7
Summary of indicators for the period from 2005 to 2016

Indicators	2005	2006	2007	2008	2009	2010
Payment of debits with cash	1,23	0,01	0,82	-0,64	0,08	-0,27
Payment of dividends with cash	10,25	1,07	5,76	-3,02	2,77	-
Investment / financing	0,13	0,84	3,23	-0,44	12,83	-
Coverage of Investments	9,75	0,63	2,46	-1,89	0,45	-2,34
Total Return	1,15	0,29	1,88	-1,47	0,42	-2,34
Return on Profit	3,73	0,42	3,26	-237,73	1,34	0,77
Quality of the result	2,32	0,23	2,00	-3,66	0,79	0,47
Return on equity	0,69	0,10	0,42	-0,17	0,06	-0,16
Return on fixed / intangible assets	1,15	0,15	0,60	-0,32	0,10	-0,22
Indicators	**2011**	**2,12**	**2013**	**2014**	**2015**	**2016**
Payment of debits with cash	-0,18	0,30	0,16	-0,16	0,19	0,40
Payment of dividends with cash	-1,13	-	-	-	-	-
Investment / financing	-0,80	-3,00	-	-0,50	-	-
Coverage of Investments	-0,39	0,83	0,87	-1,11	1,20	2,55
Total Return	-1,58	1,24	0,87	-0,37	1,20	2,55
Return on Profit	0,26	2,48	2,21	-6,68	-0,42	-2,00
Quality of the result	0,32	1,21	0,55	-1,40	-0,34	-1,78
Return on equity	-0,05	0,16	0,10	-0,08	0,18	0,79
Return on fixed / intangible assets	-0,09	0,27	0,16	-0,16	0,23	0,66

Note. Source: Research Data (2017).

Based the liquidity indexes, it is found that Serpro has faced difficulties to pay its short-term debt, considering that, except for 2005, where for each R$ 1.00 of debt the free operating activity has generated R$ 1.23, the indicator of coverage of debt with cash has showed a low-liquidity result. It can be observed that the reason for the negative results of this indicator in the years of 2008, 2010, 2011 and 2014 is the operational deficits occurred in those years. It is shown that, besides not generating funds to pay installments of short-term debt, the demand for capital injections of the controller has also increased. Another fact to be highlighted is that, only in 2005 (1,25), 2007 (0,82) and 2016 (0,40) this indicator has reached the level considered adequate (equal to or greater than 0.4) for healthy companies, according to Casezy and Bartzcak (1984, as quoted in Almeida, 2000). These results indicate that the company faces difficulties in generating cash through the operations to honor its financial debts.

As regards the dividends, in the years of 2010 and 2012 to 2016, there has not been any distribution thereof – null cash dividends coverage index. In the other years, despite the *deficit*s in FCO, distributions have occurred in 2008 and 2011. In 2008, dividends may have been paid with resources from the capital contribution. While in 2011 the possibility that the dividends were paid with the contribution is more evident, as the previous cash balance of 2010 (R$ 43 million) transferred to 2011 was lower than the operational *deficit* (R$ 45 millions). However, both the uncovered part of the *deficit* (R$ 43 – R$ 45) and the dividends made use of the *surplus* arising from the financing activity resulting from the contribution of the controlling entity.

As regards the investment indicators, a sharp variation is observed. The investment / financing indicators have presented negative results in 2008 (-0.44), 2011 (-0.80), 2012 (-3.00) and 2014 (-0.50). It shows that the financing activity has contributed to the payments of the investments, via capital increase. It supports the idea that, during the first two years, financing has completely covered the investments and there has been still resources left over, which have been used for regular / current operational activities. In the years of 2005 (0.13), 2006 (0.84), 2007 (3.23) and 2009 (12.83), the FCI has recorded deficit. In the years of 2010, 2013, 2015 and 2016 no movements in the flow have been recorded

As regards the return indicators, a distancing between the return on profit and the quality of the result indicators is observed. That occurs because the indicator of quality of the result disregards the effect of items that do not affect cash, such as interest, taxes and depreciation, which results in a better approximation of the cash to the results (Braga & Marques , 2001). As regards the return on profit indicator, besides some high results, its oscillations also stand out. The years of 2005 (3.73), 2007 (3.26), 2009 (1.34), 2012 (2.48) and 2013 (2.21) present positive results, while the opposite occurs in 2006 (0.42), 2008 (-237.73), 2010 (0.77), 2011 (0.26), 2014 (-6.68), 2015 (-0.42) and 2016 (-2.00). It may occur due to debts from previous periods or be a reflex of the impact caused by steep records of provisions, deferred tax credits, among others.

In most of the years under study, the quality indicator of the result, unlike the return on profit, presents low conversion of profit into cash. Although the quality indicator of the result has showed that the operational result has generated cash in 2006 (0.23), 2009 (0.79) and 2013 (0.55), it is observed that these values are relevant only in 2005 (2.32) and 2007 (2.00), which demonstrates the poor quality of the result generated. In the year of 2008 FCO was negative, and, in 2010 and 2011, both earnings before interest and tax were negative, which justifies the poor quality of the result generated.

The total return indicator, which measures the level of internal resource generation in Serpro for application in its investment and financing activities, has presented the best performance in the years of 2005 (1.15), 2007 (1.88) and 2012 (1.24). In other years, the indicator reveals an inversion of the flow, with the financing activity covering the insufficiency of the operational activity.

The return on fixed and intangible assets, due to the fact that the company has presented negative FCO in 2008, 2010, 2011, 2015 and 2016, was also negative in these years, which indicates that the company does not contribute as regards the investments. In 2005, the highest return was recorded, generating R$ 1.15 per FCO for each R$ 1.00 invested in the expansion of production capacity. In the other years, the return on fixed assets and intangible assets is below 1, which indicates that the investment decisions, evidenced from the FCI, have not been adequate.

In summary, the results of the analysis of the indicators have indicated a scenario of low liquidity and low quality of results, as well as inefficient returns on Serpro's investments in the period under study. The majority of indicators, as shown, have evidenced the need to use the capital contribution for the payment of debits. It was found, from the period analyzed, that in 2006 – second year of Independence – Serpro has actually presented dependency evolution, marked by the negative net cash variation (R$ 165 million) and decrease in the FCO value. This trend has remained in the following years, with: (1) sharp fall in the cash stock from R$ 388

(2005) to R$ 43 (2013), regardless of the contributions; (2) insufficiency of operating activities - without the contribution, from 2010 onwards, the liquidity would face difficulties; (3) evidence of inadequacy in investments – recurring negative FCO; (4) Recurring positive FCF, financing also the operational activities; (5) cash balance carried for 2011 lower than the operational deficit and (6) sharp fall in the liquidity indicators and investment ratios, confirming that the financing covers investment and operational activities, as already evidenced by horizontal analysis.

Addressing the compliance with formalities required in transactions with capital contributions, a non-compliance with Federal Senate Resolution n. 43 (2001) in found, given that, while considered independent, Serpro has received financial resources from the Union, in fiscal year 2012 and obtained a budgetary forecast in 2013, with contribution in 2014, which characterizes dependence.

Finally, two aspects can be highlighted from the analysis. The first refers to the need to review the recognition of the capital contributions in the controlling entity in the periods in which the transfers have occurred to, as a matter of fact, cover Serpro's financial deficit. As the resource has been formally intended to capital increase, the cash counterpart, in the controlling entity, was accounted as investment, when, essentially, the counterpart should account for as effective expense, thus changing the net equity. The second addresses the need to reflect the situation against the requirement of specific law to authorize the allowance, as defined in the Constitution of the Federative Republic of Brazil (1988) and Complementary Law n. 101 (2000).

5 CONCLUSION

This study has aimed at analyzing whether Serpro should have remained as an independent state-owned company from 2005 to 2016, considering the characteristics and requirements to fall under this condition. Based on the legal standards, as well as the horizontal analysis and the analysis of indicators, this study concludes the existence of indications of possible conditions of dependence by Serpro on the Union resources in the financing of current expenses, what indicates the non-compliance with the regulations on the characteristics and requirements necessary to an independent state-owned company.

More specifically, the study has analyzed the behavior of cash stocks as regards the operational, investment and financing activities flow. The analysis of cash balances has evidenced the inability of the operational assets in maintaining or producing new cash stocks. The cash of a R$ 388 million stock at the end of the year of 2005 – first year of Serpro as an independent company -, has jumped to R$ 31 millions at the end of the year of 2014, which represents a reduction of 92%, even having the balances leveraged by the contributions occurred in the year. In the following year (2015 and 2016) some recovery is observed in the balance, however, still below the initial balance of the historical data series (252 millions), which condition is aggravated if considering the contributions made in the amount of R$ 715 million (accumulated net cash deficit for the period in the amount of R$ 798 million).

The reason for such performance is explained in the analysis of the flows and confirmed by the results of liquidity, investment and return indicators. The combination of these analysis have demonstrated the insufficiency of the operational activities, given the absence of conditions to generate enough surpluses to cover the investments, leading the independent state-owned company to the recurrently resort to the assistance of the Union.

Based on the evidence that the cash balance of 2010, carried for 2011, has not been sufficient to cover not even the operational *deficit* of 2011, it is therefore characterized the indications necessary to prove that Serpro was in a deficit situation and that any such assistance by the union would, essentially, represent an economical allowance for financing current expenses. Such indication is corroborated by the fact that the company has received financial resources in 2012 and 2014. Therefore, it indicates that Serpro, in 2011, 2013 and 2014, no longer met the characteristics and requirements necessary to fall under independent state controlled company, pursuant to Complementary Law n. 101 (2000) and Federal Senate Resolution n. 43 (2001). As regards the years of 2015 and 2016, although it has generated a positive FCO, it has recorded losses (2015 = R$ 356 million, 2016 = R$ 162 million) and a reduction in its shareholders' equity (2015 = R$ 804 million, 2016 = R$ 410 million).

Worth emphasizing that the results described hereunder are limited to the analysis object and shall not be considered to other independent state-owned companies. Additionally, regarding the research limitations, the indicators hereunder have not been adjusted to the inflation of the period. In future research, the methodology herein proposed should be used, but using inflation-adjusted accounting data, in order to identify the extent to which the conclusions herein evidenced could be changed or ratified, as well as the use of this methodology for other companies, in order to validate or not the use of such indicators for the analysis of independence. As an alternative, the applicability of the indicator proposed by Fernandes and Meireles (2013) can be assessed, in order to verify the occurrence of a possible economic deficit by Serpro.

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