BRINGING "DEAD CASH" BACK TO LIFE
The Institute for Competitiveness & Prosperity is an independent organization established in 2001 to serve as the research arm of Ontario’s Task Force on Competitiveness, Productivity and Economic Progress. The mandate of the Task Force, announced in the April 2001 Speech from the Throne, is to measure and monitor Ontario’s competitiveness, productivity, and economic progress compared to other provinces and US states and to report to the public on a regular basis. In the 2004 budget, the Government asked the Task Force to incorporate innovation and commercialization issues in its mandate.

Comments on this White Paper are encouraged and should be directed to the Institute. The Institute is funded by the Government of Ontario through the Ministry of Economic Development, Trade and Employment.

For further detail, please visit our website: http://www.competeprosper.ca.
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BRINGING

“DEAD CASH”
BACK TO LIFE

PROBLEM

• Canadian firms’ cash and short-term investments (or liquid assets) are at an all-time high; excessive accumulation began in 2001.
• While this accumulation is a rational response to changes in market and firm environments, companies have overshot optimal cash balance levels.
• The excess cash was estimated to be approximately $45 billion in 2011.

CAUSE OF PROBLEM

• The deleveraging process that began in 1995 forced companies to increase the cash and equivalents proportion of their net assets. This explains the accumulation of cash over the long-term.
• Decreases in substitutes for liquid assets, mainly accounts receivable and inventories, also pushed companies to hold higher levels of cash and equivalents.
• Increases in cash flow uncertainty led to companies being more cautious about their short-term solvency levels and accumulating more cash.

RECOMMENDATIONS

• Productivity-enhancing investments are crucial for narrowing the prosperity gap and, since Canadian corporations are not investing the excess cash, the government should provide extra incentives to ensure that they do.
• The Institute proposes a time-sensitive tax credit for investment in software and machinery and equipment, areas where Ontario lags far behind North American peers.
• Introduce new forms of management evaluation amongst companies by benchmarking innovation investment to the highest performing corporations.
Are Canadian companies holding excess cash?

There is a lively public debate about the “dead cash” problem in Canada. People are asking if companies are holding excessive amounts of cash and cash equivalents in reserve.¹ If they are, what responsibility do they have to their shareholders, and to society, to spend it? After looking at these questions for the Eleventh Annual Report of the Task Force on Competitiveness, Productivity and Economic Progress, A push for growth, the Institute for Competitiveness & Prosperity has taken a deeper look at the dead cash issue to offer a way forward.

The most recent data from Statistics Canada show that Canadian corporations’ cash and cash equivalents are at an all-time high.² During the first decade of the twenty-first century, corporations also accelerated the process of cash accumulation. Both these trends led analysts to conclude that Canada is suffering from a “dead cash” problem: a seemingly needless accumulation of cash and equivalents beyond an ideal level. This, in turn, hampers capital accumulation and economic prosperity, since the cash is not being invested in profitable projects. However, despite the arguments against this process of accumulation, no clear evidence of excess cash or explanations of the accumulation trend have emerged. This paper fills that void.

In A push for growth, the Institute showed the evolution of cash and cash equivalents of non-financial corporations over time and clearly demonstrated that faster cash accumulation has in fact occurred over the last decade.³ The ratio of cash and equivalents to assets shows that liquid assets have increased in importance in Canadian corporations’ balance sheets, evidenced by increasingly higher cash-to-net asset ratio (Exhibit 1). This ratio shows a significant increase beginning in the 2000s, marking a sharp transition in the pace of cash accumulation. The Institute’s analysis also includes an index of cash accumulation in the United States to compare the pace of accumulation, since the phenomenon of higher levels of cash balances is global. This index demonstrates that the change in the pace of cash accumulation in Canada is much faster than that of the United States (Exhibit 2).

Two factors partially explain why Canadian companies have chosen to hold more liquid assets. First, cash has become an integral part of companies’ balance sheets in Canada – more so than in the United States. This may be because Canadian business owners and managers are more risk averse than their US counterparts and therefore tend to overprotect their corporations by accumulating extra cash.

Second, the rising levels and faster accumulation of cash in Canada may have been driven by expectations about future volatility. Canadian

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2. Cash and cash equivalents refer to currency, deposits, and liquid, short-term financial assets. Throughout the text, cash and cash equivalents are referred to as cash and equivalents, cash balances, or holdings, liquid assets, or simply cash.

companies, expecting higher levels of economic uncertainty for the first decade of the twenty-first century, chose to hedge against this risk by accumulating more liquid assets.

These ideas alone, however, cannot fully account for the change in cash holdings, particularly the sudden increase in proportionate holding of liquid assets that occurred in the beginning of the 2000s. Further investigation of the phenomenon of cash accumulation is necessary to identify its driving factors.

**The Institute modeled the “dead cash” phenomenon**

To explain the process of cash accumulation better, the Institute employs the approach used by Tim Opler, Lee Pinkowitz, René Stulz, and Rohan Williamson. Their model (hereafter, OPSW model) assumes that an intrinsic tradeoff exists between precautionary cash holdings and access to funding, and inefficient holdings of liquid assets. In other words, it is “costly for the firm to be short of liquid assets” and therefore the reasonable solution is to increase the holdings of cash and equivalents to reduce the probability of being short on these assets.⁴ They define being short on liquid assets as a situation in which a company either has to forgo profitable investment opportunities and reduce dividends because of the lack of access to financing, or has to sell assets other than liquid ones to raise funds. Hence, given the costs of outside financing, companies will tend to hold more cash and equivalents to finance projects and act as a cushion for uncertain events. Moreover, because management teams do not necessarily make decisions that always maximize shareholders’ wealth, firms have higher than necessary cash holdings to ensure lower risk and more manoeuvrability through periods of higher uncertainty.

With these assumptions in place, OPSW proposes that there is an ideal level of liquid asset holdings, which is determined by the costs of holding cash and liquid assets (including opportunity costs) and the cost of a shortage of these funds.⁵ This means that a firm has to conduct a cost-benefit analysis of holding more cash and liquid assets, given that being short of these assets can translate into forgoing profitable projects, facing higher risk during uncertain periods, and increasing the costs of honouring short-term liabilities.

In addition, because managers and shareholders value liquid assets differently, their evaluation of the costs and benefits of holding liquid assets will also be different. This disparity complicates financing decisions, especially because outside financiers cannot accurately evaluate the firm. Another issue arises from the fact that managers tend to over-emphasize the role of precautionary liquid asset holdings to maintain a comfortable level of solvency that might not be wealth maximizing from the shareholders’ perspective. Taking into account agency costs, which are primarily costs shareholders face to

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⁵ Formally, the optimal level of cash holdings is the level where the marginal cost of a shortage of liquid assets equals the marginal benefit of holding liquid assets, making the company indifferent about holding an extra dollar in the form of liquid assets.
monitor the actions of management teams, the analysis of the optimal level of cash holdings becomes richer, but also more complicated.

To determine the optimal cash holdings, the OPSW model presents several concepts and the variables that should theoretically affect the marginal cost of being short of funds. The focus here is on three:

**Cost of raising funds**: A firm will hold less cash and equivalents if:
- It can raise funds at lower costs by converting assets into cash more readily
- It can collect receivables more efficiently and have low inventories relative to sales
- It can cut back on dividends, which is a way of raising funds.

**Investment opportunities and financial distress**: A company will hold more cash and equivalents if:
- It has a higher number of profitable projects, which increase the marginal costs of a shortage of funds
- It has profitable investment opportunities but faces high costs of raising outside funds for a given level of investment expenditure
- It has committed upfront to investment projects (such as R&D projects) that have the risk of being cancelled if there is an insufficient supply of funds.

**Uncertainty and scale**: A firm will hold more cash and equivalents if:
- It faces higher cash flow uncertainty
- It is a smaller firm, since research has shown that there are economies of scale in cash management.

Although the model seems fairly intuitive, it goes against some established finance theories. Traditional models of corporate finance indicate that cash holdings should be irrelevant to the capital structure of the company. If companies have an optimal level of capital structure, this level should be defined solely in terms of the relationship between debt and equity. Stated differently, the financial structure of companies should be neutral with respect to changes in the internal financing of companies. Instead, all that matters is the optimal amount of net debt, given required rates of return. Therefore, these models do not clarify or propose any optimal level of cash holdings.

Nevertheless, given the assumptions of the OPSW model and its results, there are reasons to believe that there are optimal levels of cash holdings determined by the effects of industry and firm characteristics on the marginal costs of being short of liquid assets. More precisely, it is costly for firms to raise money, and they face varying degrees of access to funds, uncertainty, and agency problems, which all affect the level of cash holdings that firms want to achieve.

### The Institute used two methods to test the model

The Institute compiled detailed balance sheet data of Canadian companies from the Standard & Poor’s Compustat database. From the information on individual firms, the Institute generated the necessary variables to develop a slightly modified version of the OPSW model for the Canadian corporate scenario (Exhibit 3).

Two different methods were used to estimate the model. This was done to address potential problems that the data analysis poses. The first method, the **industry-level method**, is a macro version of the model. Even though this method considers companies

### Exhibit 3  Variables in the modified OPSW model explain the cash accumulation process

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>CALCULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash-to-net assets</td>
<td>Cash and liquid assets/net assets</td>
</tr>
<tr>
<td>Market-to-book ratio</td>
<td>1 + [(Common shares outstanding x Share price) - Shareholders' equity]/total assets</td>
</tr>
<tr>
<td>Firm size</td>
<td>Number of employees</td>
</tr>
<tr>
<td>Total leverage</td>
<td>(Short-term debt + long-term debt)/total assets</td>
</tr>
<tr>
<td>R&amp;D ratio</td>
<td>R&amp;D expenses/sales</td>
</tr>
<tr>
<td>Net working capital ratio</td>
<td>(Current assets - current liabilities - cash and liquid assets)/net assets</td>
</tr>
<tr>
<td>Capital expenditure ratio</td>
<td>Capital expenditure/net assets</td>
</tr>
<tr>
<td>Cash flow ratio</td>
<td>(Net income + non-cash expenses + Δ current liabilities - Δ receivables - Δ inventories)/net assets</td>
</tr>
<tr>
<td>Industry sigma</td>
<td>Mean of standard deviation of companies cash flows by 3-digit NAICS industry</td>
</tr>
<tr>
<td>Dividend “dummy”</td>
<td>Equals 1 if the firm paid dividend; Equals 0 otherwise</td>
</tr>
</tbody>
</table>

*Source: Institute for Competitiveness & Prosperity analysis based on data from Standard & Poor CompuStat database.*

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*OPSW assumes that the marginal cost/benefit of liquid assets is constant on the level of liquid asset holdings.*
Three main drivers of the increases in the proportion of liquid assets were identified: long-term deleveraging, net working capital change, and cash flow uncertainty.

Individually, it estimates the effects of the variables described above, eliminating industry-specific characteristics. In other words, to understand the true determinants of cash holdings, this method assumes that companies within the same industry tend to face similar strategic decisions in relation to cash accumulation.

The second method uses a micro-level approach, the firm-level method. Instead of considering industry-specific characteristics, this method estimates the equation by assuming that each individual company has a set of characteristics that defines the strategic cash and liquid assets holdings. Therefore, to estimate the overall effect of the different variables on the cash holdings accurately, this method eliminates firm-specific characteristics. The main results of the regression analyses for Canadian firms are very similar to the findings of the OPWS model (Exhibit 4).

To complement the analysis of the cash accumulation problem, the Institute tested the hypothesis that the more favorable corporate environment in Canada is providing incentives for multinational corporations to keep cash and equivalents in their Canadian subsidiaries to avoid higher taxation in their home country. Exhibit 5 shows the regression results including a binary variable that equals one if the company is a subsidiary of a multinational corporation. According to the results, there is some evidence that multinational corporations are keeping higher levels of liquid assets in their Canadian subsidiaries. The results show that companies that are Canadian subsidiaries of multinational corporations have a cash-to-net assets ratio that is, on average, 44 percent higher than that of domestic firms. That means the favourable corporate taxation environment in Canada, especially with respect to the United States, could be leading multinational corporations to increase artificially the cash holdings of their Canadian branches to avoid taxation.

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### Exhibit 4 Three main variables explain cash accumulation

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>INCREASE OF EFFECT ON CASH-TO-NET ASSET RATIO</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>INDUSTRY-LEVEL</td>
</tr>
<tr>
<td>Total leverage</td>
<td>0.1</td>
<td>-26.8%</td>
</tr>
<tr>
<td>Net working capital ratio</td>
<td>0.1</td>
<td>-5.3%</td>
</tr>
<tr>
<td>Industry sigma</td>
<td>0.1</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

Note: The regressions controlled for the influence of the variables in Exhibit 3 on the cash-to-net asset ratio. Year “dummy” variables were also used. Source: Institute for Competitiveness & Prosperity analysis based on data from Compusat.

### Exhibit 5 Subsidiaries maintain higher cash-to-net asset ratios than domestic firms

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>INCREASE OF EFFECT ON CASH-TO-NET ASSET RATIO</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>INDUSTRY-LEVEL</td>
</tr>
<tr>
<td>Total leverage</td>
<td>0.1</td>
<td>-26.5%</td>
</tr>
<tr>
<td>Net working capital ratio</td>
<td>0.1</td>
<td>-5.0%</td>
</tr>
<tr>
<td>Industry sigma</td>
<td>0.1</td>
<td>2.7%</td>
</tr>
<tr>
<td>Subsidiary dummy</td>
<td>From 0 to 1</td>
<td>44.1%</td>
</tr>
</tbody>
</table>

Note: The regressions controlled for the influence of the variables in Exhibit 3 on the cash-to-net asset ratio. Year “dummy” variables were also used. Source: Institute for Competitiveness & Prosperity analysis based on data from Compusat.

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7 In technical terms, this is a fixed-effects model using industry (3-digit NAICS) as the panel variable. The regression also includes year “dummy” variables.
8 In technical terms, this is a fixed-effects model using companies as the panel variable. The regression also includes year “dummy” variables.
9 In the case of Canada, most subsidiaries are branches of US multinational corporations.
10 The firm-level method was not applied to this analysis because being a multinational corporation subsidiary is in most cases an intrinsic, time-invariant characteristic of the firm. In the firm-level method (or fixed-effects model), all time-invariant characteristics are eliminated.
What caused the accumulation of cash?

The second step of the analysis, after adapting the OPSW model to the Canadian Compustat data, consists of applying the model to the Statistics Canada data to try to explain the pattern of cash accumulation since 1989. This part of the analysis provides the Institute with a framework for identifying the main drivers of cash accumulation. This exercise, however, is not free from caveats. One of the main problems with applying the model to a different dataset is the comparability of variables. The quarterly balance sheet data from Statistics Canada provide similar data to the Compustat dataset, but at a higher level of aggregation. That means some of the variables that are readily available from Compustat must be derived from sets of variables from the Statistics Canada dataset. Although this procedure should result in reasonable measures of the variables of interest, it also adds more uncertainty in terms of measurement error. In any event, after constructing the variables using Statistics Canada data, the Institute is confident that the results are good approximations of the variables needed.

Three main drivers of the increases in the proportion of liquid assets were identified: long-term deleveraging, net working capital change, and cash flow uncertainty.

Long-term deleveraging increases firms’ cash balances

The evolution of the financial leverage of Canadian firms over time shows a clear trend toward deleveraging, starting in 1995 (Exhibit 6). Decreases in total leverage tend to increase the proportion of cash holdings. In other words, as companies decrease their total leverage, the proportion of cash they hold in order to finance potential projects increases. From the Statistics Canada data, total leverage decreased from roughly 47 percent in the last quarter of 1995 to 30 percent in the fourth quarter of 2011. This drop of 17 percentage points led to a roughly 3 percentage point increase in the proportion of liquid assets. More important, most of the decrease in the total leverage occurred after 1999. In the last quarter of 1999, total leverage was at 41 percent, which means that it fell by roughly 11 percentage points from 2000 to 2011. This helps to explain the increase in the cash and equivalents balances from a long-term perspective.

This process of deleveraging is not confined to Canada. Other developed countries have experienced, or are currently experiencing, the same process. One of the possible explanations for this phenomenon relates to expectations about uncertainty. On the one hand, higher levels of debt are sometimes necessary to ensure that profitable projects are in fact carried out. On the other hand, debt is a more stringent and time-sensitive form of financing. Debt has strict covenants, and payment must be made when due, otherwise there is the possibility of bankruptcy. In this case, higher leverage means that companies need to be mindful of, and ensure, their solvency levels.

Exhibit 6  Decline in total leverage explains part of the long-term trend in cash accumulation

| Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada. |
It is possible that firms coming from a decade of higher leverage started to reduce the level of debt to reduce risk and approach a more optimal capital structure. Yet, when the Canadian macroeconomic and microeconomic scenarios are combined, a different conclusion could be drawn. On the macroeconomic front, the Canadian financial account, which measures the balance between foreign control of domestic assets and the domestic control of foreign assets, shows a sharp increase in its deficit beginning in 2000, which indicates that Canada added to its position as a net lender. In other words, Canada has more capital leaving the country than capital arriving for investment.

Although it is common for developed economies to be net lenders, the microeconomic scenario, in which companies are greatly reducing their debt levels, points to a lack of profitable prospects. The steady decrease in the firms’ leverage signals that management teams are not uncovering profitable investment opportunities, leading them to pay off the debt and accumulate cash. In addition, the financial account deficits might be showing that the foreign sector is also unable to find profitable opportunities in Canada. The long-term trend of reduction in debt levels, together with sharp increases in the financial account deficits, could signal a long-term stagnation of Canadian economic prospects, which can only be solved through innovation, investment, and increases in productivity. These findings help to explain the long-term increases in the proportion of cash holdings of Canadian corporations.

Net working capital decline contributed to cash accumulation
To explain the accumulation of cash, it is also crucial to take into account the changes in net working capital. The evolution of the net working capital ratio over time shows a decrease, with a sharp change between 1999 and 2004 (Exhibit 7). Given this trend, the Institute concludes that the steady long-term deleveraging process has occurred simultaneously with a steady decrease in current assets other than cash and liquid assets. Coupled with that, relatively constant levels of current liabilities have led to the decrease in the net working capital ratio. Given that the data show short-term loans and accounts in affiliated companies have increased considerably over time, the conclusion is that companies, while reducing longer-term borrowings, have shifted part of their liabilities to shorter-term accounts, particularly non-debt accounts. Therefore, two phenomena have contributed to the increase in the proportion of liquid assets. First, there was a sharp and clear reduction in the levels of substitute assets – current assets other than cash and equivalents that can be converted into cash. Second, the shift in the composition of maturity of corporate debt toward shorter-term liabilities made higher cash balances necessary for solvency and short-term risk management.

The most prominent of these changes is the decrease in current assets other than cash and equivalents. Specifically, inventories and

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Exhibit 7  Abrupt decreases in net working capital affect cash accumulation

Canada, quarterly data, 1989-2011

Net working capital and cash-to-net asset ratio

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Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada.

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account receivables declined steadily. The decrease in inventories can be explained by the adoption of different logistics and manufacturing practices that became mainstream in the late 1990s (an idea that was also proposed by a recent C.D. Howe Institute report). Even though the idea of Lean Manufacturing is not recent, the adoption of more sophisticated methods of manufacturing and inventory management became more widespread in the second half of the twentieth century. The continuing evolution of these methods can be seen in the evolution of inventory levels.

In the case of account receivables, two important aspects could explain the steady decrease. First, firms might have become more efficient in managing these accounts, and were able to shorten their cash conversion cycle by reducing their receivables conversion period. This phenomenon might be closely related to the evolution of inventories, since a firm planning on keeping leaner inventory levels also needs to manage its cash conversion cycle more efficiently.

Second, there was a sharp increase in the level of securitization starting in the year 2000. Loosely defined, securitization represents the process of transforming accounts that are to be collected in a future period into current cash using a financial institution. The firm surrenders its receivables in exchange for cash, and the financial institution will generate securities, or financial instruments, based on the income stream from these receivables.

Adding together the evolution of inventories and the securitization process, the result is a reduction in substitutes for cash and equivalents. Taking into account the fact that current liabilities are roughly constant, companies need to compensate for the lack of short-term liquidity by increasing the proportion of cash holdings. In addition, given the abruptness of the change in the net working capital ratio between 1999 and 2004, the sudden change in the cash-to-net asset ratio can be partially explained.

Cash flow uncertainty accounts for some cash accumulation
One other variable also explains this

Exhibit 8  Cash flow volatility explains increases in precautionary cash accumulation

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Cash flow volatility and cash-to-net asset ratio

Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada.

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sudden change in proportionate cash holdings: the volatility of the cash flow ratio, which is a proxy for the level of overall market uncertainty. Cash flow volatility was measured here as a 5-quarter standard deviation of the cash flow ratio, using two past quarters, the current quarter, and two future quarters. This method was chosen to capture the forward looking nature of firms, and the fact that insiders can more accurately predict future developments in firms’ projects and can adapt ahead of time.

Using this measure, it is clear that there was a significant increase in uncertainty between 1999 and 2007, with the largest spike during the period between 2002 and 2003 (Exhibit 8). This finding suggests that managers expecting higher future uncertainty increased the proportion of liquid assets to create a cash cushion. Since the change in uncertainty was relatively abrupt over this period, so was the response in the accumulation of cash. After that, regardless of the subsequent decrease in volatility, the long-term effects of deleveraging, changes in the maturity composition of debt, and decrease in net working capital combined to sustain higher levels of liquid assets.

Despite the comparability issues between Compustat and Statistics Canada datasets, the analysis proved to be helpful in identifying the reasons behind the changes in cash accumulation. It shows that the change in firms’ behaviour can be explained in terms of reasonable responses to changes in finance structures and market environment.

**Excess cash holdings represent a lost opportunity**

The remaining question is whether this new level of proportional cash holdings is optimal or whether firms have excessive amounts of cash on their balance sheet. The simplest way to answer this question is to compare the cash ratios from the modified OPSW model using Statistics Canada data to the actual cash and liquid assets observed for the period between 1989 and 2011 and assume that the model provides the optimal level of cash holdings. In this way, the differences in the proportion of cash and equivalents between actual and predicted values will indicate excess cash holdings.

Comparing predicted and actual values suggests that there are excess cash reserves (Exhibit 9). Long-term increases in the proportion of liquid assets can be explained by the modified OPSW model, but over time corporations have overshot the accumulation of cash pattern, ending up with excess cash. Therefore, the Institute concludes that Canadian firms have rationally adapted the proportion of cash holdings on their balance sheets; however, these firms have maintained a higher than optimal level of cash accumulation.

Given that the companies’ cash balances and liquid assets are in circulation within the financial markets, the Institute believes that not all of the cash is “dead.” However, some of it needs to be brought back to life. Canadian corporations are holding excess balances of cash and liquid assets, which are being deployed to ends that do not directly contribute to closing the prosperity gap. The amount of excess cash in 2011 was estimated to be around

![Exhibit 9](image-url)
Dead cash could be used to close the prosperity gap.

$45 billion dollars, based on the average value of the industry and firm-level methods (Exhibit 10). Interestingly, the phenomenon started at the beginning of the twenty-first century. From 1989 to 2000, excess cash was close to zero, and was actually negative between 2001 and 2002, when companies’ cash holdings were below the optimal level. However, starting roughly in 2003, excess cash accumulation spiked sharply, reaching its highest level around 2010.

The economic effect of this cash accumulation was significant. The Institute showed in its latest report that Canada could have closed the machinery and equipment (M&E) gap with the United States if companies had invested an average of 11 percent of their total cash accumulation each year from 2002 to 2011. Repeating the same exercise for the current amount of excess cash reveals that if firms had invested on average 58 percent of their excess cash annually, Canada could have closed the M&E gap with the United States by 2009 (Exhibit 11).

The time to address the excess cash issue is now

As a result, the Institute believes that the government should encourage companies to spend the excess cash in productivity-enhancing investments. However, the Institute is not recommending a “dead cash tax,” and would have profound concerns if one were implemented. The research

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**Exhibit 10  Excess cash accumulation started in 2002–2003**

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash and liquid assets (C$ billion)</th>
<th>Excess cash (C$ billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>0</td>
<td>Firm-level method</td>
</tr>
<tr>
<td>1991</td>
<td>0</td>
<td>Industry-level method</td>
</tr>
<tr>
<td>1993</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>0</td>
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<tr>
<td>2009</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada.
shows that firms respond to market and finance structural changes and that Canadian firms display similar behaviour to their counterparts in other developed countries. That means a tax on excess cash is not a solution to the problem, since this tax would only force companies to hold less cash, but not necessarily to invest in productive projects. It would merely represent a transfer between the private and public sectors, which does not guarantee a more efficient allocation of this excess accumulation of liquid assets.

The most obvious question that then arises is how to identify productivity-enhancing investment opportunities. Other studies have shown the importance of investing in M&E and have proposed tax incentives aimed at increasing investments in this area. Therefore, the government has on its hands viable suggestions to address the M&E gap.

One other area that deserves special attention is software investment. Previous research by the Institute has found that Canada is far behind the United States in information and communications technology (ICT) investment on a per worker basis, with the main gap being in software investment.15 Given that Canadian firms already match the level of hardware investment of US firms, the Institute believes that the constant upgrading of software could lead to significant improvements in the productivity of the Canadian work force.

Repeating the same exercise of identifying the potential effect of investing the excess cash, the Institute found that, if Canadian firms

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had invested on average 28 percent of the excess of cash and liquid asset holdings in software each year beginning in 2003, Canada could have narrowed the gap with the United States by 2010 (Exhibit 12).

**Introduce a time-sensitive software tax credit**

Instead of using negative reinforcement to deter holding onto cash, the government can encourage greater spending on software by providing a time-sensitive tax credit for firms that invest in software. The sooner a firm pays for the investment expense in software, the higher the tax credit for that fiscal year. In other words, to minimize their tax burden, companies would have to settle their software investment expense earlier than normal and avoid entering into payment structures that increase their liabilities beyond the period under consideration. In practice, if the government structures the tax credit on a quarterly basis, a company would have to ensure that a software investment in the current quarter is settled in the same quarter, so that current liabilities would not increase by the end of the quarter.

Moreover, this tax credit structure should also take into account firm size. Since the Institute’s research finds that larger firms tend to manage cash more efficiently and hold lower proportions of cash-to-net assets, the tax credit should provide extra incentive for Canadian small- and medium-sized enterprises to invest more heavily in software.

This could have two important benefits. First, the extra tax incentive would counteract the effect that scale has on cash holdings: small firms tend to hold larger proportions of cash and liquid assets than large firms. Second, providing incentives to smaller enterprises to invest in software guarantees higher productivity in these firms, which could boost their growth. Given that the Institute’s past research has shown that large firms contribute disproportionately more to employment and value creation, this tax credit would create an incentive for companies to make growth-generating investments that they may not otherwise make. The Institute has previously demonstrated that Canadian fiscal policies tend to lead to a culture of stagnation for small and medium enterprises. This tax credit could be a step in a new and more promising direction.

**Add new benchmarks for management**

In the Task Force’s Eleventh Annual Report, the Institute advocated for a market-based solution to “dead cash.” Government has done some of its part through tax reductions to free up capital in corporations so they could make productivity-enhancing investments. In the face of growing

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**Exhibit 12** Holding excess cash widened the Canada-US software investment gap

<table>
<thead>
<tr>
<th>Year</th>
<th>Canada Actual</th>
<th>Canada Lost Opportunity</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>500</td>
<td>500</td>
<td>2,000</td>
</tr>
<tr>
<td>1991</td>
<td>1,000</td>
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<tr>
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<td>1,500</td>
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</tr>
<tr>
<td>1995</td>
<td>2,000</td>
<td>2,000</td>
<td>3,500</td>
</tr>
<tr>
<td>1997</td>
<td>2,500</td>
<td>2,500</td>
<td>4,000</td>
</tr>
<tr>
<td>1999</td>
<td>3,000</td>
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</tr>
<tr>
<td>2009</td>
<td>5,500</td>
<td>5,500</td>
<td>7,000</td>
</tr>
<tr>
<td>2010</td>
<td>6,000</td>
<td>6,000</td>
<td>7,500</td>
</tr>
</tbody>
</table>

Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada and the Centre for Study of Living Standards.
public concern, multiple reports, and admonition from Minister Flaherty and former Governor of the Bank of Canada, Mark Carney, there is little to suggest that Canadian corporations are changing their behaviour. Therefore, another proposition that stems from this analysis relates to long-term corporate culture and evaluation. Government actions can only encourage firms’ investment on productivity-enhancing projects to a certain extent. To change the overall Canadian panorama of cash accumulation, perhaps a more long-lasting approach would be to change the managers’ and shareholders’ behaviour toward performance evaluations. The current process of evaluation inevitably relies on benchmarking companies’ profitability against competitors and industry leaders. Shareholders tend to evaluate management teams by their capacity to meet goals set against earnings benchmarks. Although this behaviour is in line with expectations about the firms’ objectives in a free market environment, there might be alternative forms of evaluating management teams.

Benchmarking firms with respect to innovation goals could be an important tool. For example, to avoid inefficiencies, such as the excess cash problem, shareholders could focus on defining innovation and productivity-enhancing investment goals that management teams need to meet to be considered successful. By setting innovation investment as a corporate goal, shareholders would be signaling to management teams that short-term goals, such as current profits, are just as relevant as long-term financial goals. Coupled with government incentives, these innovation goals could help minimize firms’ suboptimal behaviour, such as holding excess cash.

Overall, the accumulation of cash and liquid assets by Canadian firms is a result of structural changes in companies’ balance sheets. However, part of this accumulation represents an excess of cash. Perhaps the most important finding is that some chronic economic problems in Canada – such as the constant underinvestment in software – can be overcome if a fraction of the excess cash is invested in profitable opportunities.

Business leaders in Canada and abroad are encountering difficulties in identifying profitable opportunities, which is contributing to the cash hoarding phenomenon. The Institute believes that the government could step in and provide appropriate incentives to correct this apparent market failure. The intervention, however, must be in the direction of economic growth, innovation, and prosperity. The Canadian economy will not turn the page on excess cash accumulation by being forced to reduce cash holdings by taxation. Instead, capital must flow freely toward efficient allocations, with a push rather than a pull from policymakers when necessary. The Institute believes the time is now for governments to push corporations to bring some of the dead cash back to life.

Government and business must seize the opportunity to raise productivity by bringing dead cash back to life.
How to Contact Us

To learn more about the Institute and the Task Force please visit us at:
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