

A Financial Stability Analysis of Zombie Firms in Canada

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Abstract

We measure the prevalence of zombie firms in Canada and assess how they could potentially affect the financial system.

Bank topics: Credit and credit aggregates; Financial stability; Sectoral balance sheet

JEL codes: G, G3, G32

Résumé

Nous mesurons le phénomène des entreprises zombies au Canada et évaluons comment elles pourraient nuire au système financier.

Sujet : Crédit et agrégats du crédit; Stabilité financière; Bilan sectoriel

Codes JEL : G, G3, G32

Zombie firms have become more prevalent globally

Zombie firms—firms that have been around for some time and have persistent difficulties generating enough income to make their interest payments—have become more prevalent across a number of advanced economies.¹ This increased prevalence has been highlighted in recent studies by the Bank for International Settlements and the Organisation for Economic Co-operation and Development (Banerjee and Hoffman 2018; Adalet McGowan, Andrews and Millot 2017). In the Canadian context, analysis by Deloitte finds that between 2015 and 2017, 16 percent of publicly traded firms were zombies (Deloitte 2018).

The growth in the number of zombie firms has been linked to two sources. First, declining interest rates may give lenders less incentive to call in non-performing loans because the proceeds will likely be reinvested at lower rates (Banerjee and Hoffman 2018; Santor and Suchanek 2013). Second, lenders may alter the terms of their existing loans to avoid having to recognize losses and potentially falling below their minimum regulatory capital requirements. (Schivardi, Sette and Tabellini 2017; Caballero, Hoshi and Kashyap 2008).

Recent studies have found that zombie firms lower productivity and economic growth by tying up resources that could be used by more productive firms; however, few studies have looked at the potential implications of zombie firms for financial stability. Indeed, whether defaults of these zombie firms would lead to large losses for creditors and shareholders or have significant macroeconomic implications through job cuts remain open questions. We focus on measuring the prevalence of zombie firms in Canada and their potential impact on the financial system.

The proportion of zombie firms in Canada is fairly large and growing

We use firm-level data from the Compustat database. This dataset captures the financial statements for publicly listed firms across several countries. We classify a firm as Canadian if it is legally incorporated in Canada.² This screening yields a sample of 3,690 firms and 38,000 firm-year observations since 1980.

For comparability with other studies, we consider two definitions of zombie firms (**Table 1**). First, we use a broad definition that identifies a firm as a zombie if it is older and persistently has not been able to generate enough income to make its interest payments. The age requirement is imposed to avoid classifying younger publicly listed firms as zombies based solely on profitability measures when they are likely in the process of growing their business (Adalet McGowan, Andrews and Millot 2017).³ Second, we consider a narrow definition that has the additional requirement that a firm's profitability is expected to remain weak in the future (Banerjee and Hoffman 2018).⁴ This condition is met if a firm's stock market value divided by the book value is below its industry's median. Checking this helps avoid misclassifying a

¹ Some research also identifies zombie firms as those receiving subsidized credit (e.g., Caballero, Hoshi and Kashyap 2008). Our dataset does not capture the data needed to make this identification.

² A firm's activities do not necessarily take place in the country of incorporation. Thus, our results should be viewed as estimates of the extent to which zombie firms are active in Canada.

³ These firms can continue to operate under certain conditions: their lenders alter the terms of their original debt contracts; they draw down on their liquid assets, selling longer-term assets; they take on additional debt or equity.

⁴ If any data needed to construct an indicator are missing, we assume the indicator would suggest the firm is a zombie. Our results are unchanged if we omit all missing data from our analysis.

firm as a zombie if it has been unprofitable for an extended period but is expected to return to profitability in the future. For instance, it may take several years for a firm to return to profitability following an investment that involved large upfront costs.

Criteria	Measurement	Definition	
		Broad	Narrow
Mature firm	IPO date > 10 years ago	✓	✓
Persistent difficulty making interest payments	$\frac{\text{EBITDA}}{\text{Interest Payments}} < 1^*$ for three consecutive years	✓	✓
Expectations that future profitability remains low	Stock market value / book value below industry median		✓

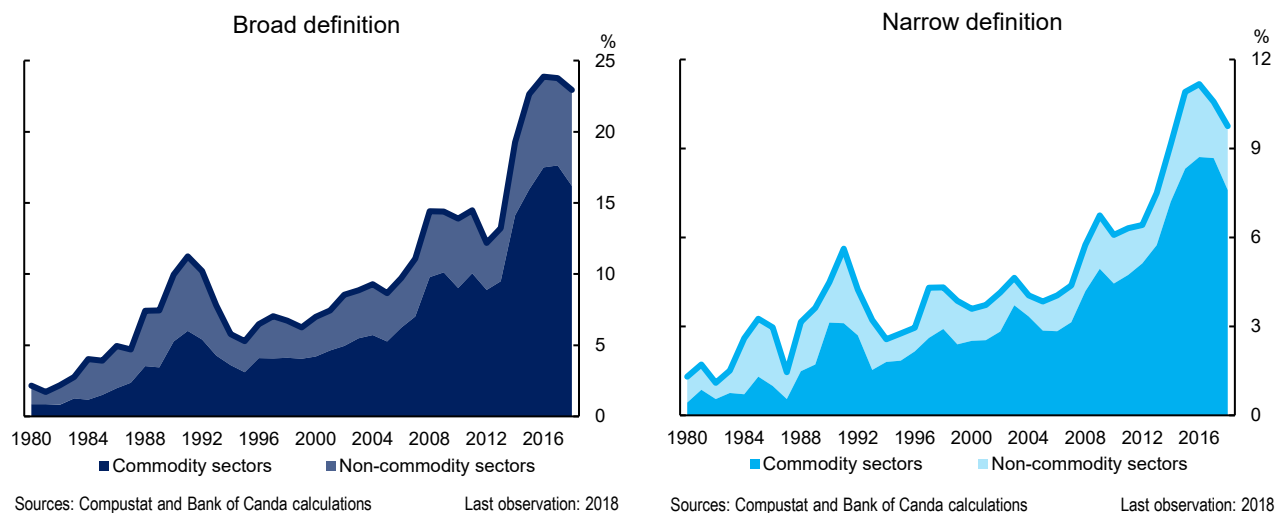
*IPO is initial public offering, and EBITDA is earnings before interest, taxes, depreciation and amortization.

Regardless of the definition applied, we find that the share of zombie firms in Canada has been increasing since the mid-1990s (**Chart 1**). In 2018, about 25 percent of Canadian firms were zombies under the broad definition and about 10 percent under the narrow definition. In addition, we find that Canada has a greater proportion of zombie firms compared with other countries. For instance, across advanced economies in 2016, [Banerjee and Hoffman \(2018\)](#) find that about 12 percent of firms were zombies under the broad definition and 6 percent under the narrow definition. The proportion of zombie firms was about twice as large in Canada over that same period.⁵

The growing share of zombie firms and their relatively large prevalence in Canada is due mainly to firms in commodity industries. Around two-thirds of the zombie firms in Canada in 2018 were in industries exposed to commodity prices: 75 percent of these firms were in metal, coal and mineral mining; 10 percent in oil and gas extraction; and 15 percent in other commodities-related sectors (e.g., petroleum manufacturing and wood and paper manufacturing).⁶ The noticeable pickup in the share of zombie firms starting in 2014 is tied to weakness in metal and mineral prices in 2011–12 and then to a broader-based decline in commodity prices in 2014–15.

⁵ [Banerjee and Hoffman \(2018\)](#) data were obtained from the Worldscope database and include firms from Europe, North America, Japan and Australia. Also, our estimates are slightly higher than Deloitte's in their analysis of Canadian firms. This difference is likely because different datasets were used.

⁶ We use two- and three-digit Standard Industrial Classification (SIC) codes to identify firms in commodity industries. Specifically, we include mining (including oil and gas extraction), pipeline transportation, petroleum and coal manufacturing, chemical, plastics and rubber products manufacturing, and wood and paper manufacturing.

Chart 1: Proportion of zombie firms has been trending higher

Zombies are not a source of vulnerability to the financial system

Although Canada has a high proportion of zombie firms, it is unclear how large an impact these firms could have on the financial system if they defaulted on their debts. To quantify this potential impact, we calculate zombie firms' share of the overall level of debt, employment and market capitalization among all Canadian firms in our dataset.⁷ The larger a zombie firm's share of the overall debt, the greater the effect on lenders would be if that firm were to default on its loans. Furthermore, defaults by zombie firms could have large second-round effects if their employees defaulted on their private debts because they lost their job. Finally, the stockholders of zombie firms would also lose their investments in the event of a default.

Table 2 shows the results from this exercise. We find that zombie firms account for less than 2 percent of the overall debt, employment or market capitalization among all Canadian firms. This implies that defaults by zombie firms would not impose large losses on creditors or shareholders. As a result, it is unlikely that zombie firms pose a significant vulnerability to the financial system.

⁷ Because of data limitations, we use total liabilities as a proxy for total debt. Total liabilities include total debt (typically bank loans and bonds) as well as other liabilities such as accounts payable and wages payable. We are not able to determine which specific entities, investors or other suppliers would face losses if zombies were to default.

Table 2: Zombie firms' share of total debt, employment and market capitalization in Canada (%)						
	Broad definition			Narrow definition		
	Debt	Employment	Market capitalization	Debt	Employment	Market capitalization
Non-commodity sector	0.3	0.2	0.3	0.1	0.1	0.1
Commodity sector	1.4	0.7	1.4	1.2	0.6	0.4
Total	1.7	0.9	1.7	1.3	0.7	0.5

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